Achieving Access to Antimalarials: Views From Ghana on the Political-Economy of Adopting and Implementing the Affordable Medicines Facility-Malaria (AMFm)

ACHIEVING ACCESS TO ANTIMALARIALS

VIEWS FROM GHANA ON THE POLITICAL-ECONOMY OF ADOPTING AND IMPLEMENTING THE AFFORDABLE MEDICINES FACILITY– MALARIA (AMFM)

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ABSTRACT

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Abstract

My research examines the adoption and implementation processes involved in transferring a global health policy into national-level practice. More specifically, I consider how high-level stakeholders adopted and street-level, private-sector retailers implemented the Phase I pilot of the Affordable Medicines Facility- malaria (AMFm) between mid-2009 and end-2011. The AMFm — a large-scale program housed at the Global Fund to Fight AIDS, TB and Malaria — sought to improve access to high-quality malaria treatment through financing and delivery strategies using the public and private sectors. To date, the median implementation outcomes have been considered in the Independent Evaluation commissioned by the Global Fund but country-level processes and nuanced considerations of outcomes have gone unexplored. To better understand the AMFm pilot in Ghana, I collected both quantitative and qualitative data between August and December 2011.

To consider adoption, I first use a grounded, qualitative approach to address: *What explains the stands taken by national stakeholders towards and against participating in the AMFm's Phase I*? I generate explanatory categories about the different views — stands — key stakeholders in Ghana took about joining Phase I. Public health goals; indirect policy goals; and concerns about personal, organization, and national reputation help to explain the views of different high-level stakeholders. Second, I consider the actions taken by different stakeholders: *To what extent can a multiple-streams approach to policy*

adoption help clarify Ghana's decision to join in the AMFm's pilot? I find the Multiple-Streams Approach cannot be used to explain adoption of the AMFm pilot in Ghana. However, a modified version accounting for the global and national levels simultaneously can explain this case.

To consider implementation, I ask: *Do retailers in Northern Region comply with Ghana's the advertised AMFm Recommended Retail Price among for-profit, private-sector retailers?* And, *does non-compliance vary systematically with features of retailer structure or conduct?* I find high compliance based on reported retail prices. I also find that neither measures of spatial competition nor having seen regulation enforced in the past explain the pattern of non-compliance. Rather, variation in the terminal supply price is highly associated with a retailer's decision to charge at or above the RRP.

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KEY TERMS & ACRONYMS

ACT:		Artemisinin-based combination therapy (usually pronounced by letter)
	QA.ACT:	Quality-assured artemisinin-based combination therapy (WHO-approved) Subsidized (under the AMFm) quality-assured ACT.
	s-QA.ACT:	Any antimalarial that is not a QA.ACT, including non-approved ACTs and partner drugs in ACTs, which can be sold as monotherapies, including artemisinin, amodiaquine, lumefantrine, mefloquine & SP
AMFm:		Affordable Medicines Facility–malaria
AMT:		Artemisinin monotherapy
AL:		Artemether-lumefantrine, an ACT formulation
AA:		Artesunate-amodiaquine, an ACT formulation
CHAI:		Clinton Health Access Initiative (formerly Clinton HIV/AIDS Initiative)
CCM:		Country Coordination Mechanism (for the Global Fund)
DfID:		Department for International Development (UK)
FLB:		First-Line Buyer (importer under the AMFm)
FDB:		Food and Drug Board, Ghana
GH₵:		Ghanaian cedi; currency. An exchange of GH₵ 1.67 = US$ 1.00 is used in this thesis.
GHS:		Ghana Health Service
GF:		Global Fund to fight AIDS, TB & Malaria (also, "the Global Fund")
GMEP:		Global Malaria Eradication Program
IndE:		Independent Evaluation of the AMFm
IOM:		Institute of Medicine (of the U. S. National Academies of Science)
LCS:		Licensed Chemical Seller (recently renamed Over-the-Counter Medicine Sellers)
MoH:		Ministry of Health
MSA:		Multiple-Streams Approach, rooted in Kingdon's work (*Kingdon 1995; Zahariadis 2007*)
NDC:		National Democratic Party, Ghana
NHIA:		National Health Insurance Authority, Ghana
NHIS:		National Health Insurance Scheme, Ghana
NGO:		Non-governmental organization (roughly synonymous with not-for-profit)
NPP:		New Patriotic Party, Ghana
OTC:		Over-the-counter (*i.e.*, non-prescription)
PMI:		President's Malaria Initiative (US)
PMAG:		Pharmaceutical Manufacturers of Ghana
PSGH:		Pharmaceutical Society of Ghana
PSI:		Formerly Population Services International, now only an acronym
RBM:		Roll Back Malaria Partnership
RRP:		Recommended Retail Price
SLBT:		*Saving lives, buying time: Economics of malaria drugs in the age of resistance* (*Arrow, Panosian, and Gelband 2004*)
SP:		Sulfadoxine-pyrimethamine
UNIDO:		United Nations Industrial Development Organization
USAID:		United States Agency for International Development
WHO:		World Health Organization

PREFACE, POSITIONALITY, AND ACKNOWLEDGEMENTS

PREFACE AND POSITIONALITY

I arrived in Ghana in January 2011 to begin organizing a separate malaria study (Preserving ACTs (PACT), described in (*Raifman et al. 2014*)). During the initial conversations this study, the diversity of views underlying Ghana's decision to pilot the AMFm became apparent (to me). At that point in time (see Figure 3), Ghana had applied to join the pilot (in June 2009); subsidized, quality-assured ACTs (s-QA.ACTs) had been flowing into the country for four months (since August 2010); and the formal launch lay one month in the future (February 2011). Yet, stakeholders expressed continued uncertainty about having adopted the AMFm and the implementation process that lay ahead.

This struck me as an intriguing story, important to understanding access to antimalarial medication in Ghana as well as broader issues of global health policy processes in low- and middle-income countries (LMICs). It was a story I was physically and temporally positioned to collect and evaluate and, moreover, one which people seemed willing to tell me.

Throughout, the reader should remain aware that I am a white, female researcher that was, for this work, attached to both Harvard and Innovations for Poverty Action in Ghana. This has implications for which data I could collect myself and that which I decided, along with my survey team, not to. It may have implications for the data I received. (For one recent examination of the effects of a specific positionality — "the white-man effect" in sub-Saharan Africa — on the answers received in Sierra Leone, see (*Cilliers, Dube, and Siddiqi 2015*).)

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A thesis seems like a lone and lonely process, with only data and tea (or stronger) to keep you company, right up until you realize how many people you have to thank. No matter how I've tried to keep tabs, I am sure I have forgotten people – if you know you played a role, please give yourself a pat on the back.

This is an empirical dissertation based almost entirely on primary data, which would not exist without willing respondents. In Tamale, this includes many private-sector retailers who gave their time to answer a lot of tiresome questions. These answers, in turn, would not have materialized without the long-standing support of a core survey team, with special thanks to Abass Adam Yidana, Damba Mohammed Majeed, and Alidu Osman Tuunteya. *N tuma*. In Accra, many people not only consented to be interviewed but have been patient guides and kept in touch (with some encouragement) and helped this thesis over its long trajectory. These include: George Amofah, Kwabena Asante, Dennis Awitty, Frank Boateng, Samuel Boateng, Alex Dodoo, Keziah Malm, Yuniwo Nfor, Louis Nortey, Daniel Norgbedzie, Elianne Oei, Yuniwo Nfor, Ellen Sam, Sylvester Segbaya. Alex Dodoo and Daniel Norgbedzie have gone above and beyond. There would literally be no words (or numbers) without you.

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PART 1: INTRODUCTION AND METHODS

Figure 1: Central Mosque in Tamale, Ghana (with street market foreground)
[image courtesy of Rachel Strohm]

CHAPTER I: BACKGROUND, GOALS, AND STRUCTURE

Of all continents, SSA suffers the heaviest burden of malaria, with over 77% of global malaria cases and 90% of all global malaria deaths (*Global Malaria Programme, WHO 2014*).[*] Reducing the burden of malaria requires, in part, increasing access to effective antimalarial treatment (*Global Malaria Programme, WHO 2014*). Starting in 2010, global health leaders trialed a new approach to improving access to malaria treatment in sub-Saharan Africa (SSA). This was Phase I of the Affordable Medicines Facility- malaria (AMFm). From mid-2010 to early-2012, this initiative enabled the financing and delivery of high-quality antimalarial treatment in seven selected pilot countries.[†] In this dissertation, I describe and analyze the processes of adopting and implementing the AMFm's Phase I pilot in Ghana, with particular attention to the experiences of national stakeholders.

This thesis constitutes a case study of adopting and implementing the AMFm in a country, bounded geographically by its focus on Ghana and temporally between end-2008 and end-2011. The processes of 'doing' the AMFm form the thread running throughout this thesis. But why unfurl a thesis-worth of ink and sweat (including malarial) on a single program? Because not only did the Phase I pilot of the AMFm address an important and costly problem (malaria), it did so with success relative to its own goals (*Independent Evaluation Team 2012*). The analyses in this thesis support this conclusion.

Moreover, the AMFm represented an "innovative" and controversial approach to financing and delivering malaria treatment (*Global Fund 2008a; Independent Evaluation Team 2012*). Given this, global health leaders took an explicitly experimental approach to testing the new mechanism, intended to be a proof-of-concept learning experience to inform subsequent decision-making (*Adeyi and Atun 2010*). To this end, donors mobilized US$ 470 million to support national stakeholders to implement the initiative at scale in

[*] These figures represent the reported cases and deaths attributed to two specific malaria parasites, *P. falciparum* and *P. vivax*, as per the numbers provided in the most recent World Malaria Report (*Global Malaria Programme, WHO 2014*).

[†] This includes eight national-scale pilots in seven countries: Ghana, Kenya, Madagascar, Niger, Nigeria, Tanzania (mainland and the semi-autonomous Zanzibar are considered as separate pilots), and Uganda.

seven countries, entering the public and private sector supply chains in each (*Kamal-Yanni 2012*). This scale and stated commitment to learning warrant careful analysis. The AMFm should continue to be analyzed, understood, and mined for lessons.

This thesis is motivated by the idea that learning from the AMFm is sharpened by taking a particular tack to analysis, accounting for national stakeholder perspectives and actions and taking seriously big-P and small-p politics, economic pressures, and social relations. The AMFm was defined and designed at the global-level and subsequent decisions about its continuation — theoretically based on evidence produced through the pilot process — took place at the global level. But in the crucial interim of theory meeting the turf, it was national stakeholders at both the high-level and street-level that did the hard work of adoption and implementation during the Phase I pilot. Their work unfolded in a compelling narrative, of a contested but ultimately clinched high-level adoption, followed by smooth high-level implementation, and street-level implementation that imposed some burden on implementers but ultimately met expectations.

What, then, is the AMFm? In brief, the AMFm's approached achieving access by making high-quality, globally recommended — but more expensive — antimalarial treatment accessible compared to the availability and retail cost of older and more familiar — but flaggingly effective — antimalarial medications. A key feature of the AMFm approach is the use of both public and private sector supply chains for the delivery of these treatments, thereby requiring cooperation between global and national public and private sectors. The AMFm's designers predicted that increased access to the recommended artemisinin-based combination therapies (ACTs) through the action and interaction of both of these sectors would, in turn, increase use and, ultimately, reduce mortality from malaria while also delaying the development of parasite resistance to artemisinin.[‡]

[‡] ACTs include cocktails of artemisinin with a partner antimalarial (active pharmaceutical ingredient), such as amodiaquine (AA formulation) or lumefantrine (AL formulation).

This thesis is rooted in the specifics of Ghana's efforts to make antimalarial treatment accessible through the AMFm mechanism — and as argued above, the AMFm is important to study deeply in its own right. Nevertheless, and while urging caution in generalizing from a specific case study to broad global health practice, I aim to generate lessons applicable beyond this country, disease, or program. The political, economic, and social history of a single project can shed light on how global health and development are approached and achieved (*Keshavjee 2014*).

Here, this light falls on the political and technical processes, challenges, and opportunities of facilitating access to health commodities (here, pharmaceutical treatment) using a program designed at the global level but adopted nationally and implemented as locally as the (idealized) corner drug store. More specifically, the experience of the AMFm (re-)highlights that the views of national stakeholders matter — and may be divided — on global health policies that they ultimately will be the ones to adopt and implement at the country level, no matter where they were designed. This motivates my attention to national stakeholder perspectives throughout this thesis. National stakeholders face individual, organizational, and national risks in aligning with and carrying out global health policy, which are not acknowledged when viewing these processes as strictly technocratic. However, in this thesis I also show that a conflicted adoption phase can be followed by successful implementation — defined as meeting the goals set by the intervention itself — when incentives to implement as-planned are in place at the national-level and street-level (*Matland 1995*).

In this introduction, I provide an overview of why the AMFm matters and what it is, contextualizing the initiative in a brief of global health efforts to reduce malaria from the 1940s to the 1990s. I close with the goals and structure of the thesis.

SECTION I.1: OVERVIEW OF THE AMFM AND THESIS

WHY FOCUS ON THE AMFM?

The AMFm is important to study for several reasons, including the focus of the intervention on malaria, the AMFm's unprecedented approach to expanded access to treatment, the scale at which the AMFm was piloted, and the intention of the pilot evidence to inform decision-making.

GOALS AND OBJECTIVES OF THE AMFM

The malaria parasite remains costly to the people of Ghana in terms of lives, well-being, and resources. Malaria is endemic throughout Ghana and is the leading cause of under-5 child mortality, a top cause of all-age morbidity, and the top cause for out-patient visits in public facilities (*Global Malaria Programme, WHO 2013; Ghana News Agency 2014*).

High quality treatment is necessary to reduce severe morbidity and mortality. But in SSA, access to high-quality treatment is hindered both by the availability and affordability of the recommended pharmaceuticals. Ghana is not an exception. Despite this, there was uncertainty and resistance among some high-level stakeholders in Ghana to adopting the AMFm at the moment when this decision was necessary. Ghana did adopt the AMFm; not all national Ghanaian stakeholders wanted or had control over the AMFm. But, ultimately, Ghana implemented the initiative well at both the high-level and street-level, as documented by the Independent Evaluation (IndE) commissioned for the program (*Independent Evaluation Team 2012*). This previews the narrative in this thesis. Following the end of the Phase I pilot in 2012, Ghana pursued an AMFm-like option under the Global Fund to Fight AIDS, TB, and Malaria (GF or the Global Fund) as the Private Sector Co-Payment Mechanism for ACTs (*Global Fund 2013*).

The specific goals of the AMFm mirror the broader global-health aims of increasing access to effective health commodities (*Conteh and Hanson 2003; Frost and Reich 2008*). The AMFm was designed to facilitate patient access to effective antimalarial treatment. Essential public health commodities or technologies — health products — include easy-to-use preventatives, treatments, and diagnostics that meet central public health goals. Following Frost and Reich, I use access to refer to whether people are

aware of these products and whether the products are available, affordable, and acceptable to potential users (*Frost and Reich 2008*). This definition is in line with other multi-faceted concepts of access in the literature, including the one used to measure medicines access under the Millennium Development Goals (*United Nations Development Group 2003*). Facilitating access includes technical, logistical, operational, and financial challenges of supply chains but also has important political and social dimensions, which stem from, *inter alia*, national-level goals, street-level implementer practices, and consumer demand.

THE AMFM APPROACH

I elaborate on the design of the AMFm in Chapter IV to provide context on its adoption and implementation in Ghana. To follow the analyses of the responses of various national actors to the AMFm, it is important to understand the details of the program, how it was conceived and perceived by global players, and the underlying conception of how it would achieve its intended outcomes (that is, its theory of change (*Weiss 1995*)).

To pursue improved ACT access, the AMFm's operational designers relied on a suite of market interventions. Supply-side interventions consisted of global-level price negotiations with manufacturers and global-level subsidization for the high-quality antimalarial medication they produced, as well as national-level strengthening of monitoring on data collection efforts. The demand-side activities included, at the global level, a program-specific green-leaf logo applied across pilot countries to identify the high-quality ACTs included under the AMFm as well as, nationally, in-country communication efforts to create awareness and preference for ACTs to treat malaria.

Those components deemed "innovative" (*Adeyi and Atun 2010*) — even "radical" (*Maxmen 2012*) — include the global-level subsidization and logo-ing of approved antimalarial treatments, the explicit national-level use of the public *and* private sector delivery mechanisms, and the relatively "hands-off" (*Fink et al. 2014*) approach to regulating the distribution of the s-QA.ACTs (subsidized, quality-assured ACTs under the AMFm); importers (First-Line Buyers or FLBs) were the only supply chain actors required to formally commit to pass the subsidies down the supply chain to consumers (*Adeyi and Atun 2010;*

Maxmen 2012; Fink et al. 2014). Further, donor-funded approaches toward facilitating access to malaria treatment have historically focused on the public sector; the AMFm represents one of "the first large-scale medical aid initiatives to partner directly with the unregulated commercial sector in [SSA]" (*Maxmen 2012*). The other side of innovative, radical approaches, however, is that they are often untested, particularly at scale (see, among others (*Frost et al. 2009*)).

Scale and intention of the AMFm Phase I pilot

This explains, in part, why the AMFm was launched first as a large-scale pilot (Phase I): to see if the theory could be translated into practice. To this end, in 2008, through the action of a various global stakeholders, the AMFm was established as a program housed at the Global Fund (*Global Fund 2008a*). Over the course of the Phase I pilot from early-2009 to late-2012, donors spent US$ 470m to pursue this effort (the AMFm) to improve ACT access in the seven SSA pilot countries (*Kamal-Yanni 2012*). As discussed further in this chapter as well as Chapter IV, the explicit intention of the Phase I pilot of the AMFm and the large-scale Independent Evaluation of this effort was to inform whether and how to pursue similar efforts in the future. It was, therefore, an explicit attempt to set-up for evidence-informed decision-making.

Overview of the thesis

In this dissertation, I describe and analyze the process and outcomes of these efforts in Ghana. Using a variety of data sources and analytic techniques, I trace the political, economic, and social processes underlying the national-level adoption (Chapters IV, V and VI) and street-level[§] implementation (Chapters VII and VIII) of the AMFm in Ghana, focusing between early 2009 to the end of 2011. More specifically, I consider why there was both national level support and resistance for the pilot initiative; how the initiative was adopted; and ACT pricing outcomes among retailers once the AMFm was adopted. I consider how relevant high-level stakeholders as well as street-level implementers in Ghana viewed the AMFm. Throughout, readers should note the tension between an initiative that involved global-level planning and

[§] Throughout this thesis, following Pressman and Wildavsky's study on implementation, I use the phrase "street-level" implementers to refer to what may also be called front-line or field-level workers (*Pressman and Wildavsky 1984*).

negotiation – a central strength of the AMFm approach – and any claim to national-level ownership and decision-making power in the program. This is a point I return to explicitly in Chapter X.

The AMFm relied on both public (government) and private distribution channels to achieve its access goals. Before moving forward, a note on terminology is required. In discussing the history of access to public health products, the private sector is an umbrella term covering a range of facilities of varying formality: from registered pharmacies and clinics, to shops licensed to sell over-the-counter medicines, to general convenience stores, informal drug shops, and mobile drug peddlers. Depending on the definition of private, this sector also includes NGO and mission clinics and pharmacies. Such facilities may penetrate farther into remote or otherwise underserved areas than a government's health care network. In addition to geographic convenience, and compared to the public sector, private facilities may attract patients with their shorter waiting times, longer operating hours, more courteous and amenable staff, and less frequent stock-outs (for select examples, see (*Goodman, Brieger, et al. 2007; J. M. Cohen et al. 2010; Patouillard, Hanson, and Goodman 2010*)).

To set the stage for my examination and analysis of the AMFm pilot, in the next sub-section I outline the history of global attention to, and efforts at, malaria control in SSA from the end of World War II through the late 1990s. This is to show the rise and fall of malaria on the global agenda and, therefore, why it may have seemed urgent to address malaria treatment access in the mid-2000s. Further, the background I provide on changing first-line malaria treatments should elucidate why access to high-quality and effective treatment remained a problem in the early 2000s.

The close of World War II is not the standard point for beginning a consideration of the AMFm; such considerations usually jump back to ancient China and the first record of using *Artemisia* against malaria or begin recently, with the widespread deployment of ACTs as the recommended first-line treatment for malaria. I have two reasons for not following this norm.

First, rather than simply starting with the idea that antimalarial treatment *is* widely available in the private sector across SSA, I try to provide some background as to why this is so (*Arrow, Panosian, and Gelband 2004; Patouillard, Hanson, and Goodman 2010*). Second, in the opening pages of his history of "the struggle against" malaria in SSA, James Webb notes that it is "a long history of well-intentioned malaria interventions that have been allowed to lapse" (*J. L. A. Webb 2014a*).

In this dissertation, I examine the adoption and implementation of one malaria intervention; it is not yet (in December 2015) clear whether the principles and mechanisms underlying the AMFm will ultimately lapse and what the implications will be if it does or does not. But the reader may wish to keep this background — of trends in malaria control and treatment in SSA, the distribution of antimalarial treatment in the private sector, and the wave of started and stalled control and treatment initiatives in SSA — in mind will considering the AMFm as a new, innovative approach to treatment delivery and financing throughout this dissertation.

SECTION I.2: MALARIA, TREATMENT, AND THE GLOBAL HEALTH AGENDA: 1940S TO 1990S

In the decades following WWII (as well as during the inter-war years), malaria was a priority public health concern around the globe. In the 1940s through the 1970s, the United States, Australia, and several European countries (such as Greece, Italy, the Netherlands, Portugal, and Spain) eliminated malaria as a serious health threat through large, publicly funded eradication campaigns and the application of new chemical weapons like dichloro- diphenyl- trichloroethane (DDT).

During this period, malaria was also a global (or international) health concern. To address such cross-border concerns, two parallel approaches were taken: (1) the large-scale application of DDT, largely under the auspices of the Global Malaria Eradication Program and (2) the less-organized but widespread distribution of antimalarial treatments.

From 1955 to 1969, the World Health Organization (WHO) ran its massive Global Malaria Eradication Program (GMEP), focused on chemically wiping out the disease in 48 selected countries that seemed ready to undertake and benefit socially and economically from such efforts. Many of these were newly independent countries, including participants in South and Southeast Asia, the Eastern Mediterranean, Eastern Europe, Latin America and the Caribbean, and some African islands (*Packard 1997*). GMEP envisaged a four-phase approach for each country: planning, attack (spray with DDT to disrupt transmission and eliminate the parasite), consolidation (find cases and treat with chloroquine (CQ), an "important tool in eradication" (*Payne 1987*)), and maintenance (*Payne 1987; Packard 1997; Nájera, González-Silva, and Alonso 2011*).[**] However, DDT remained the focus.

The urgency around the World Health Assembly's 1955 launch of GMEP from Mexico City was spurred both by excitement about the potential benefits for the newly developed DDT — given successes in Crete, Italy, Mexico, Sri Lanka, and Venezuela — as well as the startling realization that some parasites had already developed resistance to this powerful chemical weapon (*Packard 2010*). Packard notes that "the governments of malarious countries were not universally enthusiastic about eradication" but found compelling financial and political reasons to sign on (*Packard 2010*). Scientists who favored eradication believed political resistance to be as much of an impediment to eradication efforts as parasite resistance to DDT (*Soper 1955*). Parallels with the AMFm's beginning should be clear or become so in Chapter IV.

As a result of the GMEP efforts, the national provenance of the disease became "tropical," generally poor, often newly independent, and increasingly African (*Packard 2010*). In 1969/1970, WHO advisory panels recommended rolling malarial control into regular primary health care processes (*Packard 2010*).[††] Given

[**] Given this, it is not quite accurate to say that continental SSA was excluded from GMEP but African countries remained in the early, planning stages of activity rather than moving to the more visible attack portion of the four-step plan (*Dalrymple 2013*).

[††] At this time, 18 GMEP countries had declared malaria eradicated. These were a special subset, however, and should not be taken as signifying success of the program overall. Those that declared eradication at this point were usually rich and/or islands and/or socialist. These are: Brunei, Bulgaria, Cuba, Dominica, Grenada, Hungary, Jamaica, Mauritius, Poland, Puerto Rico, Réunion, Romania, Saint Lucia, Singapore, Taiwan, Trinidad and Tobago, the Virgin Islands, and Yugoslavia (*Packard 2010*).

GMEP's phased approach, many participating countries (both those that succeeded and those that did not) had focused more heavily on DDT and less on systems for surveillance, case-finding and case-management, and integrating with national primary health care. It is thus not clear what they were supposed to roll into their regular processes. Moreover, those policies and systems established at the end of the 1960s often lapsed in the 1970s and 1980s (*Nájera, González-Silva, and Alonso 2011*).

In a largely parallel trend of malaria control that started before and continued past the large-scale eradication plans of GMEP, companies mass-produced CQ following WWII – first in Switzerland, then Czechoslovakia, then China (*J. L. A. Webb 2014a*). SSA manufacturers also began adding to the supply of CQ tablets, syrups, and injections in the late 1970s (*Dodoo 2014*). A "chloroquine era" stretched from the drug's wide availability in the 1940s — and particularly starting in the 1960s in SSA — through the 1990s (*Knol 2012; R-13, n.d.*). During this period, CQ became "universally affordable and popular" (*Knol 2012*) in low-income countries, facilitated by inexpensive manufacturing and uncomplicated transport and storage (*Payne 1987; Shah 2010; Knol 2012; Warhurst 2014*).[‡‡]

"CQ overtook aspirin as the drug of choice for fevers, and even aches and pains" (*McGregor 1982*) and "a village health worker with a jar of CQ" (*Arrow et al. 2004*) became, for better or worse, the ubiquitous mainstay of malaria control (*McGregor 1982; Payne 1987; World Health Organization 1993; Arrow, Panosian, and Gelband 2004; Shah 2010*). Researchers and development organizations ran trials of chloroquinated table salt in the late 1950s and early 1960s (in Angola, Ghana, and Tanzania) and mass administration of tablets from the late 1950s through the 1970s (in what is now Burkina Faso, Cameroon, Nigeria, Tanzania, and Uganda) (*Payne 1988; von Seidlein and Greenwood 2003; J. L. A. Webb 2014a*).

Some of these trials were pre-eradication pilots under the GMEP umbrella (in Burkina Faso, Cameroon, Liberia, Nigeria, Senegal, and Uganda), efforts to "clean-up the human reservoir of parasites" in hopes

[‡‡] CQ, a synthetic form of quinine, was discovered in 1934 by Johann Andersag and colleagues at Bayer Laboratories (*Krafts, Hempelmann, and Skórska-Stania 2012*).

that mainland SSA would one day be ready to follow GMEP's phases towards eradication (*J. L. A. Webb 2014a*). Though there is limited information about the distribution of CQ at this time, GMEP pilots closed in the early 1960s and CQ's distribution thereafter "was largely uncontrolled by national or international interventions," absent "a new rural health delivery system or any intervention by malaria experts" (*J. L. A. Webb 2014a*). As such, much of the action happened in the private sector, as defined above.

In part, the heavy activity in the private sector followed from many newly independent governments not taking up the GMEP pre-eradication agenda, preferring to focus more broadly on economic development or on specific health efforts on their urban constituencies (*J. L. A. Webb 2014a*). Global malaria experts encouraged the on-going treatment of fevers as malaria — that is, presumptive treatment[§§] — but did not organize broad treatment interventions (*Brinkmann and Brinkmann 1991; McCombie 1996; N. J. White 2004; Shah 2010*). While governments focused on urban areas, private traders continued to distribute CQ to even remote rural areas through small firms and peddlers,[***] fueled by an "astonishingly" (*Webb 2014a*) low price and word-of-mouth reports of its efficacy (*Packard 2014; J. L. A. Webb 2014a; J. L. A. Webb 2014b*). Current debates on public versus private distribution of antimalarials should keep this historical reality in mind.

Although researchers confirmed parasite resistance to CQ in Southeast Asia and Latin America in the 1960s, and then in the 1970s in East Africa, SSA relied extensively on the drug from the late 1950s to the 1990s. The chloroquine era in malaria control thus had two key features: (1) widespread use for fever

[§§] From the 1970s, through the March 2010 release of the 2nd Edition of WHO's *Malaria Treatment Guidelines*, global policy for malaria was presumptive treatment across the public and private sectors-- that is, to treat all malaria-like symptoms as malaria (*World Health Organization 2010; "WHO Guidelines for the Treatment of Malaria, Second Edition | MMV" 2010*). As the underlying epidemiology of fevers has changed over time, the likelihood of an antimalarial being the right answer to a fever has also changed, generally with any given fever being *less likely* to be caused by malaria than previously.

[***] In Ghana, one (Akan) term for such peddlers, *apam pam* literally translates to "store on head" (*Amofah 2014*).

prophylaxis and presumptive treatment in the public and private sectors, and (2) limited or laxly enforced regulation in how the drug was used (*Packard 2010*).[†††] In 1988, David Payne lamented that the:

> *"as yet incalculable effects of the loss of CQ as the universal drug for malaria prophylaxis and treatment should alert everyone to the dangers of the uncontrolled use of drugs and should limit future experimentation and utilization to regimes that ensure a drug is always used to its maximum potential and is not compromised for financial reasons or operational expediency"* (*Payne 1988*).

In general, experts view the 1970s and 1980s as a time of limited donor funding for malaria control (*World Health Organization 1993*). Then, in the early 1990s, WHO and others made arguments for increased attention to and a "renewed attack on" (*WHO 1993*) malaria, given deteriorating control measures, rising mortality reports, failures of CQ, and promising advances in treating bednets with insecticides (*World Health Organization 1993; Knol 2012*).

Arguments for increased attention came first through a variety of consultative and ministerial meetings, a World Declaration on the Control of Malaria, and the publication of a new Global Strategy on Malaria Control, which promoted, amongst its components, early diagnosis and prompt treatment (*Kidson 1992; World Health Organization 1993*). More broadly, the 1990s witnessed rising global attention to Africa, including a focus on health as a driver of economic development (*World Bank 1993*). This occurred for many reasons but recall that in the 1990s, the end of the Cold War reshaped international collaboration. A global public audience paid attention as the Apartheid regime fell in South Africa and a US Black Hawk helicopter fell in the First Battle of Mogadishu; genocides in Rwanda and Burundi captured media attention as a hell on earth; and AIDS raged and enraged across SSA.

As the decade closed, African governments committed to fighting malaria as part of an overall development strategy in the Harare Declaration of 1997 and the Abuja Declaration in 2000 (*Organisation of African Unity 1997; Organisation of African Unity 2000*). Organizational and funding commitments followed these national political commitments, cemented by the 1998 joint launch of the Roll Back Malaria

[†††] Researchers using statistical models suggest it seems plausible that the patterns of use in SSA may have contributed to the appearance of resistance there (*Payne 1987; Warhurst 2014*).

(RBM) Partnership by WHO, UNICEF, the World Bank, and the United Nations Development Programme (UNDP) to "provide a global coordinated response to the disease" (*de Savigny and Tanner 2008; Roll Back Malaria Partnership 2014*).

Following this, malaria was named as a priority disease within the Millennium Development Goals (Goal 6) and researchers worked to demonstrate causality in a suspected reality: that malaria was caused by but also perpetuated poverty, implying that controlling malaria would allow economic growth (*Shepard 1990; Packard 1997; Gallup and Sachs 2001*). The formation of the Global Fund and the Gates Foundation catalyzed a surge of dedicated funding for malaria (*Global Fund 2014; "History - Bill & Melinda Gates Foundation" 2014*).

The late 1990s and early 2000s also marked a new era in treating malaria, with ACTs as the new first-line treatment. This decision followed on the development of resistance to not only CQ but also sulfadoxine-pyrimethamine (SP) and mefloquine in rapid succession after their introduction (*Bloland and Ettling 1999; Williams, Durrheim, and Shretta 2004*). This created an uncertain but hopeful environment when ACTs were introduced as the first-line treatment, pulled from ancient Chinese medical texts and refined through scientific research under Mao Zedong in the 1960s. In October 2015, Youyou Tu received the Nobel Prize in Medicine for her (re-)discovery of Artemisinin (*NobelPrize.org 2015*).

WHO added Coartem© to its Model List of Essential Medicines in 2002 and pre-qualified it as the first safe, efficacious ACT for treating malaria in 2004 (*Premji 2009*). ACTs offered hope for global researchers and policymakers worried that malaria cases are rarely treated promptly or effectively – and when they are, with increasingly ineffective drugs (*Arrow, Panosian, and Gelband 2004; Dalrymple 2013; Wilson 2014*). Accordingly, endemic countries began to revise their treatment policies, often skipping over SP‡‡‡ as a

‡‡‡ Please refer back to page *ix* as a reference for acronyms and abbreviations throughout the thesis.

first-line treatment option and moving to directly to the effective but expensive combination of treatments offered in ACTs (*Williams, Durrheim, and Shretta 2004; Amin et al. 2007*).

This dissertation is set against the background painted in broad strokes above: increasing attention and funding[§§§] for malaria in the 1990s and 2000s, falling[****] malaria burden over the same period (see Figure 2, below, for evidence of a possible downward trend as well as the discrepancy in numbers between different estimations), changing national policies that mandate the use of ACTs in place of CQ despite constrained national budgets, high expectations for ACTs and fears about parasites developing resistance to it, and intensifying controversy about how to and who should prioritize and use these new funds for preventing, diagnosing and treating malaria (*Snow et al. 2008; Global Malaria Programme, WHO 2012*).

[§§§] In Ghana, funding for malaria rose steadily over the 2000s to a peak in 2011, after which it plateaued and tapered slightly (*Global Malaria Programme, WHO 2014*).

[****] Though the downward trend is somewhat accepted, the precise numbers are not. For 2013, WHO reports ~480,000 admitted cases (and 1,639,451 confirmed cases) against IHME's estimate of 2,405,896 cases (Global Malaria Programme, WHO 2014; Murray et al. 2014). Reported cases were actually rising in Ghana in the period just before the AMFm, given increased access to testing in light of the National Health Insurance Scheme (see, as one example, (*Blanchet, Fink, and Osei-Akoto 2012*)).

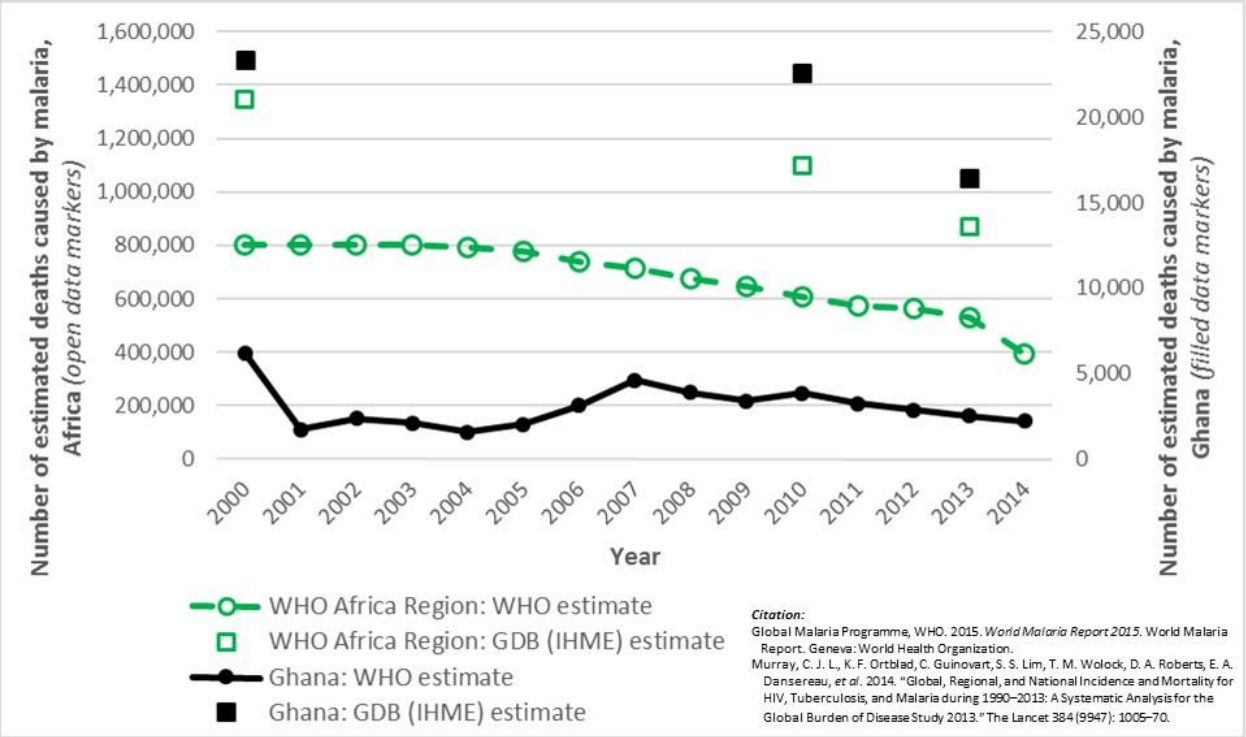


Figure 2: Estimates of malaria mortality in Ghana 2000 - 2013, from the World Health Organization and the Global Burden of Disease (Institute of Health Metrics and Evaluation)

SECTION I.3: GOALS OF THE DISSERTATION

In this thesis, I examine ACT access achieved through a specific globally designed mechanism (the AMFm) introduced for adoption and implementation in a specific country context (Ghana). To do so, I first consider policy transfer of the AMFm approach to access, from a global health nerve center (Geneva) to Ghana's capital (Accra), its mixed reception, and its subsequent adoption by Accra-based decision-makers and high-level stakeholders (including, but not limited to, politicians). I then shift attention to northern Ghana (Tamale, in Northern Region) and the private-sector drug retailers who stocked and priced the AMFm-subsidized, quality-assured ACTs (s-QA.ACTs). Ghana adopted and implemented the AMFm with success, as validated in the IndE (*Independent Evaluation Team 2012*). In the rest of this thesis, I tease out the nuances behind the adoption and implementation processes of the AMFm pilot in Ghana.

In examining the processes of transfer, adoption, and implementation, I have four principal goals, which fit with key lacunae in the literature. The first is straightforward: documentation. The details of the

AMFM's unfolding in Ghana have been only cursorily recorded to date, in the IndE and in a piece on the high-level implementation work partially orchestrated by Ghana's National Malaria Control Program (NMCP) (*Independent Evaluation Team 2012; K. L. Malm et al. 2013*). Some of the processes and viewpoints considered in this dissertation are not the sort that always become public or become the subject of academic analysis. Yet they are essential to learning how to plan feasible programs and policies.

Laying out the details is a critical task taken up in this thesis and so, therefore, is finding theory that fits the case rather than settling for extant theories that only account for a portion of the case material. But this is not an admission that practical and theoretical lessons from this case do not generalize. Rather, as per Lincoln and Guba, thickness of description is necessary for readers to judge whether part or all of the case lessons may be applicable elsewhere (*Lincoln and Guba 1986*).

Relatedly, second, I assess and emphasize the importance of national stakeholders in global health programming by capturing processes and perspectives on the AMFm in Ghana. National and sub-national stakeholders enact programs and policies, even if designed at the global level. This implementation must be preceded by adoption, with national stakeholders agreeing to (or attempting to block) the program's responsibilities and workload. However, the views and actions of national stakeholders (whether considered as high-level figures or as all citizens) are under-represented in the literature and, perhaps, the more general discourse around the AMFm.[††††]

Views *about* the AMFm are distinct from reported awareness *of* the AMFm or a recounting of the steps involved in implementing the AMFm (the latter is done in detail in the IndE as well as a paper authored

[††††] Of the approximately fifteen empirical articles published between January 2012 and July 2015 (located via a Google Scholar search for the keyword "affordable medicines facility" and "AMFm") on aspects of the AMFm, only one (*Rusk et al. 2012*) documented and reported the subjective views of those involved in adoption and implementation about the AMFm and ACTs during Phase I (*Rusk et al. 2012; Tougher et al. 2012; Ajayi, Soyannwo, and Akpa 2013; J. L. Cohen et al. 2013; Efunshile et al. 2013; O'Meara et al. 2013; Larson et al. 2013; M. A. Briggs et al. 2014; Ezenduka et al. 2014; Fink et al. 2014; Morris et al. 2014; Thomson et al. 2014; Tougher et al. 2014; Willey et al. 2014; Joda et al. 2015*).

by members of Ghana's NMCP (*Independent Evaluation Team 2012; L. Malm et al. 2013*)).[‡‡‡‡] In this dissertation, by drawing on Ghanaian stakeholder perspectives from direct interviews and other data sources and analyzing them in more depth, I offer small counterweight to the under-representation of national stakeholder experiences with the AMFm, linking these with AMFm process and outcome findings. This includes a description, at least, of some of the risks borne by different national stakeholders in adopting and in implementing the AMFm.

Third, I add to the evidence base on the AMFm and the extent to which its access goals were met in Ghana. As of July 2015, of the empirical analyses published on the AMFm, none of the single-country studies have focused on Ghana, though John Amuasi has on-going work using the IndE data for Ghana (*Amuasi et al. 2012*). Here, I examine adoption and implementation processes in more detail, incorporating the perspectives of stakeholders involved in these processes as well as retail-level outcomes. I analyze the patterns of pricing of s-QA.ACTs, reinforcing and clarifying the findings of the IndE for Ghana.

Fourth, I bring in theoretical frameworks to what has so far been a heavily empirical investigation of whether the AMFm achieved its goals in each of the pilot countries. I draw on theories that help shed light on how these goals were achieved.

From the outset, I emphasize that my goal is not to critique the AMFm as *an approach to* antimalarial financing, delivery, and access. That is, this thesis is not a critique of the AMFm's theory of change, nor of a pooled approach to financing and procurement, nor the use of the private sector to aid in the delivery of an essential health commodity. Rather, the insight and critiques I generate are on *the approach taken* to introducing and implementing the AMFm in pilot countries – and the experimental pilot approach itself.

[‡‡‡‡] The IndE, and the stakeholder report that fed into it, report high-level views but do not analyze them; the African-authored argument for the continuation of the AMFm beyond Phase I expresses some high-level viewpoints about the AMFm (*Matowe and K'omolo 2011; Talisuna, Adibaku, et al. 2012; Independent Evaluation Team 2012*).

SECTION I.4: STRUCTURE OF THE DISSERTATION

To address these goals, I trace the AMFm through time and geographic space, down hierarchies of power and through the heuristic stages in the process of designing and implementing a policy. A stylized version of this policy process starts with the prioritization of a problem, and then the identification and selection of a policy solution to that problem. These solutions may be home-grown or transferred in from other settings. Once identified and refined, this solution can be endorsed — adopted — and then implemented with varying degrees of success relative to the *ex-ante* goals.

Each stage has distinct stakeholders, decision-makers, and requisite activities which offers a useful and intuitive way of dividing the policy process — and a dissertation. Though different researchers present slightly different terms, the essence of the policy stages include: (1) priority-setting among problems and selection of a solution from alternative proposals; (2) adoption and decision-making; (3) implementation and institutional change. Ideally, this includes monitoring and then cycles around to evaluation and problem (re-) identification (*deLeon 1999; González-Rossetti and Bossert 2000; M. J. Roberts et al. 2008*).

This division into policy stages — priority-setting, transfer and adoption, and implementation — provides a structure for this thesis. I acknowledge that some researchers question whether this model has a role beyond categorization – that is, whether a policy-stages model has any causal explanatory power or is overly linear and rigid (*Sabatier 2007*).[§§§§] Nevertheless, the stages are heuristically useful for structure and analytically useful as dependent variables (*González-Rossetti and Bossert 2000*). It is not my intent to improve the heuristic, only to employ it as far as it is useful. I utilize qualitative methods to explore adoption and both quantitative and qualitative methods to analyze implementation.

[§§§§] A key issue with a stages model is where the policy itself fits in the temporal process. Policy proposals may result from the prioritization of a problem but a full-fledged proposal may also beget or frame the problem and fuel its prioritization (*Wildavsky 1979*). A policy proposal that launches an adoption process may be significantly re-worked during that time to add critical detail or those details may be left intentionally vague to gain agreement on the general idea, leaving the operational nuts-and-bolts to be sorted only during implementation (*Matland 1995*).

In Figure 3, I provide a timeline of the period covered in this dissertation, including the division by policy stage. I also show the timing of the primary data collection that contributed to this thesis. In this figure, I visualize how this dissertation's chapters map onto relevant timelines: events related to malaria control at both the global and national level as well political-economic events in Ghana. These events are the topics of the narratives in Chapters IV and VII and the analysis in V, VI, and VIII. As such, not all of the events shown in Figure 3 will be familiar to the reader at this point in the dissertation.

The vertical columns show both (1) chronological time (in the black row) as well as what is covered by (2) different policy stages at the global and Ghanaian levels. The rows indicate categories of information relevant to this thesis. Above the black timeline row, these include the chapters of the dissertation as well as the periods of time during which I collected the primary data that informs this thesis. Below the black timeline, I highlight events relating to malaria in Ghana, to Ghana's political economy, and to global decision-making about malaria.

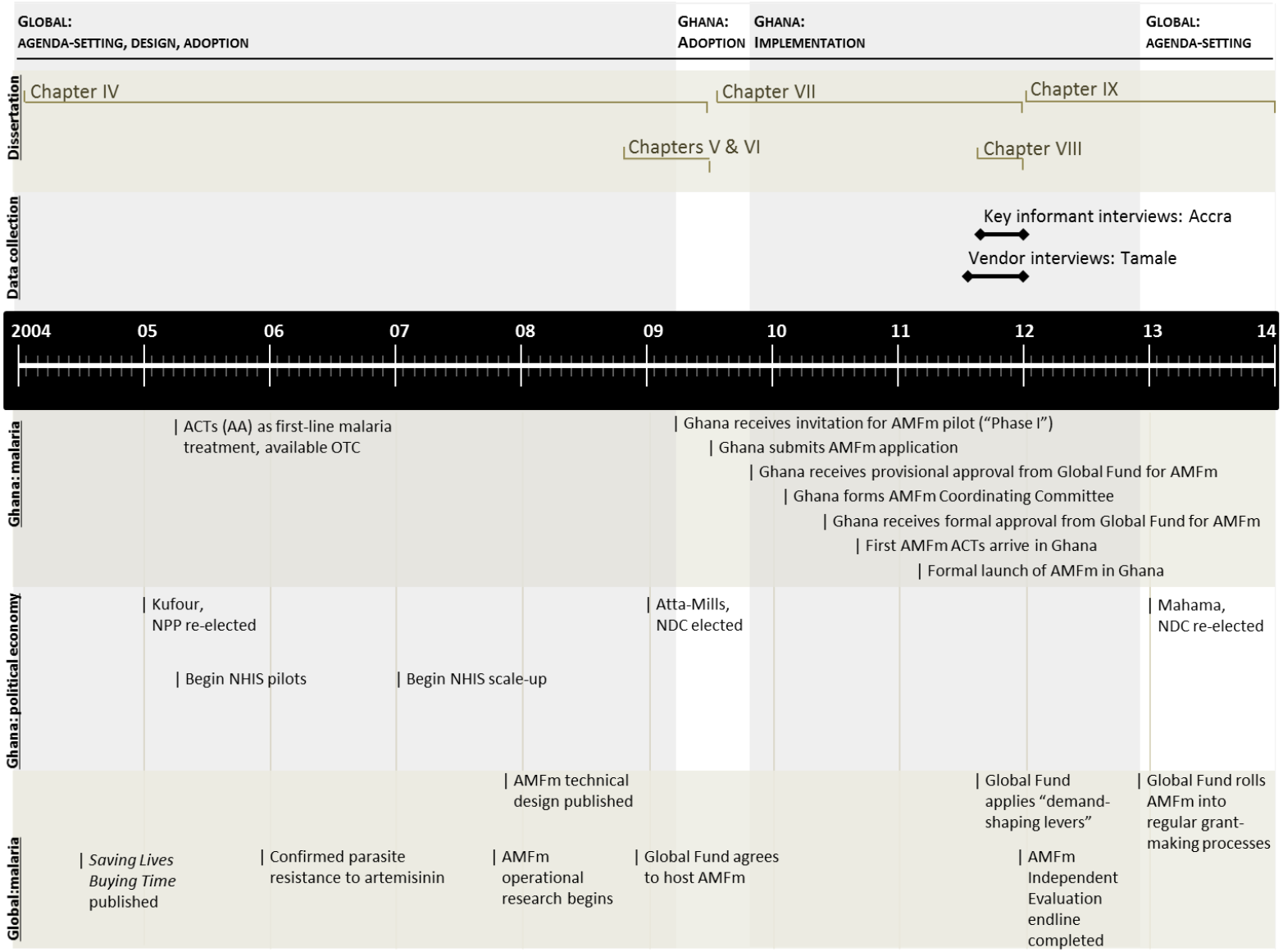


Figure 3: Timeline of dissertation data collection and coverage, the AMFm adoption and implementation events

Along with this opening in Chapter I, in Chapters II and III, I provide the context and methods of this thesis. In Chapter II, I discuss and justify the selection of Ghana as a case for studying the AMFm adoption and implementation — as well as outline its limits for the reader to bear in mind throughout. In Chapter III, I describe the data sources and methods of collection and organization. Though in each analysis – in Chapters V, VI, and VIII – I employ different theoretical frames and empirical approaches, I draw on all these data sources throughout and hence introduce the methods early and separate from the individual analyses.

The remainder of this thesis is divided into three parts, guided by the policy stages and my perception of the critical events in these phases (as highlighted in Figure 3 and described in more detail in Chapters IV and VII). The second part addresses the transfer and adoption of the AMFm, focusing on mid-2009 to mid-2010. The third part addresses implementation, focusing on late-2010 to late-2011. The fourth and final part winds up, concludes, and looks forward. Both the second and third parts include what I term case narrative chapters that are purely descriptive and case analysis chapters, in which I attempt to make sense of the narrative. Chapters IV and VII are narrative; Chapters V, VI, and VIII are analytic.

In the narrative chapters, I use primary data and quotations whenever possible, to allow the reader to follow the analyses and consider the interpretations I offer in the subsequent chapters. As possible, I try to use the case narratives to introduce all relevant data, such that no new data are introduced in the analytic chapters. Where it does not result in long tangents that distract from the narrative, I draw links to the broader literature. If the tendency is towards too much detail, recall how little ink has been spilled on local processed and Ghanaian perspectives so far in considerations of the AMFm. I have curated the material in Chapters IV and VII, so the reader can be assured that what I provide — I feel — serves a purpose in the analysis and interpretation that follows.

Chapter IV begins in 2001. When I asked key informants to tell the AMFm story, they often started in 2001. In *Alice's Adventures in Wonderland*, the King of Hearts advises the White Rabbit: "when you have something to say, begin at the beginning and go on till you reach the end" (*Carroll 1920*). I take this advice

and the cue from the respondents to set my starting point. This lays a technical, economic, political, and social foundation for the analyses of Ghana's adoption of the AMFm. In Chapter IV I describe *what* happened. In Chapters V and VI, I analyze *how* and *why* Ghana achieved certain policy outcomes under the AMFm and why certain obstacles arose, using an appropriate theoretical frame for each analysis.

In Chapter V, I employ a grounded qualitative approach to examine initial, high-level stakeholder reactions to the AMFm in Accra when Geneva handed down the idea. By grounded, I mean that the categories of answers to research questions comes from considering the range of data itself, rather than from a pre-defined theoretical framework (*Strauss and Corbin 1997*). The nature of the data is itself qualitative: interview transcripts, meeting minutes, and newspaper reports. The central research question I address is: *What explains the stands taken by national stakeholders towards and against participating in the AMFm's Phase I*? In brief, I find that the public health goals of the AMFm as well as indirect policy goals and concerns about reputation help to explain the views of different high-level stakeholders.

In Chapter VI, I use a theory-based qualitative approach of backwards process-tracing to examine the adoption of the AMFm in Ghana. By backwards process-tracing, I mean testing hypotheses from qualitative data — again the primary data used in this chapter — within a single case, working from the outcome back to the causes (*Bennett and George 1997; Collier 2011*). The central research question of this chapter is: *To what extent can a multiple-streams approach to policy adoption help clarify Ghana's decision to join in the AMFm's pilot?* The multiple-streams approach (MSA) draws on the work of John Kingdon and others to propose that policy change happens only when the right people pay attention to the right problem at the right political moment – and a viable, acceptable policy solution is available (*Kingdon 1995*). I also follow other researchers who suggest that MSA can be applied to adoption as well as agenda-setting (*Lemieux 2002; Zahariadis 2007; Ridde 2009*). In brief, I find that MSA only successfully fits the case at hand if modified to account for the global and national levels simultaneously.

The pattern of case description followed by case analysis repeats in Chapters VII and VIII, where I focus on implementation of the AMFm in Ghana from mid-2010 through mid-2011. In Chapter VII, I describe

implementation at both the policy-level, in Accra, and the street-level, in and around the city of Tamale, the capital of Ghana's Northern Region (for the regions of Ghana, see Figure 4) (*Pressman and Wildavsky 1984*). This provides a narrative bridge between adoption and implementation – as well as between Accra and Tamale — and also introduces Ghana's decision to use a Recommended Retail Price (RRP) as part of its national-level AMFm strategy to facilitate affordability. I also introduce some relevant literature in this chapter. In Chapter VIII, the last analytic chapter, I use primarily quantitative data and logistic regression analysis to examine retailer compliance with Ghana's chosen RRP in Tamale. The key research questions in these chapters are: *Do retailers in Northern Region comply with Ghana's the AMFm RRP?* And, *does non-compliance vary systematically with features of retailer structure or conduct?* This aligns with and expands on the pricing outcomes examined in the IndE. In brief, I echo the IndE finding of high compliance and target median prices with the RRP, with no clear patterning to non-compliance.

The final part of this thesis, Chapters IX and X, provides denouement, conclusions, and reflections. In Chapter IX, I provide a brief closure to the overarching case narrative, covering events from late-2011 to mid-2014, as the Global Fund and Ghana decided to move forward after the Phase I experimental pilot closed. I then conclude, in Chapter X, with a summary of the findings, the contributions of each analysis, and the implications of the collective findings for future practice and research.

Again, the AMFm was simultaneously innovative and part of a cycle of enthusiastic global efforts to treat malaria in SSA; efforts that are not always sustained. In the next section, I further justify the AMFm as an important program to study and consider why Ghana provides a suitable case for so doing.

CHAPTER II: JUSTIFYING THE AMFM ADOPTION & IMPLEMENTATION IN GHANA AS A CASE

In this chapter, I first justify the importance of studying the AMFm at the national level and discuss some potential constraints on the generalizability of findings from this analysis. The reader may bear these limits in mind throughout. Second, I consider the aptness of Ghana as a case for studying malaria programming, in general, and the AMFm, in particular.

SECTION II.1: AMFM AT THE NATIONAL LEVEL

The AMFm provides an important and informative case for studying global health policy as it translates at the national level. I introduce it briefly here; details of the program are the subject of Chapter IV. The AMFm combined financing mechanisms for reducing the price of ACTs imported into selected countries with use of their existing public and private supply chains and regulations to deliver these imported ACTs. At the global level, Phase I of the AMFm mobilized a large volume of funding as well as strong opinions among global stakeholders on whether and how to run such a program (for one review of global stakeholders and processes, see (*Frost et al. 2009*)).

In response to these opinions, GF set up Phase I of the AMFm as an explicit experiment, meant to be studied and analyzed to provide lessons on a critical global health question (achieving access to ACTs) about a critical global health problem (malaria). The global community was *meaningfully* uncertain about whether the mechanism would improve availability and affordability of ACTs and, ultimately, outcomes related to morbidity, mortality, and parasite resistance (*Freedman 1987; Frost et al. 2009; Independent Evaluation Team 2012; McKenzie 2013*).

Relative to its scale, novelty, and import, the AMFm has received insufficient academic treatment. As a global health financing and delivery program, it has innovative features and may be a harbinger of future approaches to achieving access utilizing private markets (*UNITAID 2014*). To date, researchers have focused on a few outcomes: availability, affordability, market share, and, to a lesser extent, use. The IndE

of the AMFm, commissioned by GF, examines these Phase I outcomes — based on before-and-after comparisons with documentation of possible confounders — in detail across each SSA pilot country (*Independent Evaluation Team 2012*). These findings are supplemented by additional studies, particularly in Kenya, Nigeria, Tanzania, and Uganda (*Rusk et al. 2012; Yadav et al. 2012; J. L. Cohen et al. 2013; Efunshile et al. 2013; Larson et al. 2013; Mikkelsen-Lopez et al. 2013; O'Meara et al. 2013; M. A. Briggs et al. 2014; Fink et al. 2014; Morris et al. 2014; Thomson et al. 2014; Tougher et al. 2014; Tougher et al. 2014; Willey et al. 2014; Yavuz 2014; Palafox et al. 2015*). However, the AMFm process, including stakeholder experiences of adopting and implementing the AMFm at the national level, have received scant attention to date, with the key exceptions noted in Chapter I (*Wilson 2014*). This is a serious lacuna: national-level stakeholders, from the high-level to the street-level, were instrumental in adopting and implementing the AMFm. In sum, whether or not AMFm works has been evaluated but the process of getting AMFm adopted and implemented has not. This thesis fits in this gap.

CONSIDERATIONS FOR GENERALIZABILITY

Aspects of the AMFm require some caution in generalizing the lessons from this thesis to all cases of global health policy transfer, adoption, and implementation. I discuss these in more detail in Chapter IV. GF introduces a unique decision-making body into each country which receives its funds, called a Country Coordinating Mechanism (CCM), which makes many of the national-level decisions about all GF programs, relating to HIV/AIDS and TB as well as malaria. This differs from how decisions are made in some other global health programs.

In addition, the AMFm brought together a novel array of stakeholders, involving the private sector at global and national levels, in order to function. This means that the tasks and implementation effort required of CCM under the AMFm differed from its regular processes (*Woolcock 2013*). Ghana provides an apt case to study the AMFm because of its: (1) burden from malaria and programmatic efforts to alleviate it, (2) potential to implement malaria programming well, and, given the array of stakeholders affected by a nationwide initiative involving both the public and private sectors, (3) political-economy. I cover the first two points in this section and the third point in the last section, considering political and

economic aspects in Ghana made relevant by the fact that the AMFm required both public and private sector actors for implementation.

SECTION II.2: MALARIA POLICY AND THE AMFM IN GHANA

MALARIA AND EFFORTS TO LESSEN ITS BURDEN IN GHANA

Malaria is a key health concern in Ghana and the national government actively engages in malaria control efforts. Malaria is endemic across Ghana (100% of the population is at risk), exacting heavy human and economic costs on households and the state (*Adegoke et al. 2008; International Monetary Fund 2009; Gething et al. 2011*). Ghanaians suffer 3.4 million confirmed cases per year,[*****] making malaria the top cause for out-patient visits, with 11.3 million visits to in public facilities reported in 2013 (*Global Malaria Programme, WHO 2013; Ghana News Agency 2014*).[†††††]

Across Ghana over the past decade, many malaria indicators have fallen in absolute numbers but flat-lined in terms of their relative contribution to the national disease burden (see Figure 2 for the absolute numbers). Through the 1990s and 2000s, malaria accounted for a similar percentage of all recorded outpatient visits – averaging between 35 and 40% – even though the total number of outpatient visits grew in the later 2000s with the introduction of the National Health Insurance Scheme (*Adams, Darko, and Accorsi 2004; Blanchet, Fink, and Osei-Akoto 2012; USAID, President's Malaria Initiative 2012*). Similarly, while the absolute numbers of child mortality from malaria were on a downward trend across the first decade of the 2000s, it consistently remained the top contributor (18%) to Ghana's under-5 mortality rate (*Apoya and Marriott 2011; Global Malaria Programme, WHO 2012*).

[*****] This number, from WHO, broadly accords with the incidence estimates for Ghana from the Institute of Health Metrics and Evaluation: 2.41m (with a range from 1,293,177 to 4,322,408) (Murray et al. 2014).

[†††††] The Government of Ghana spent about 0.5% of its Total Health Expenditure in 2009 *directly* on malaria (*WHO 2012; Global Malaria Programme, WHO 2012*).

To pursue preventative and curative measures Ghana has relied heavily on outside funding, including on grants from GF. In 2007, GF provided about 40% of total reported funding for malaria (while the Government of Ghana contributed 0%) (*Global Malaria Programme, WHO 2008*). GF's contribution to fighting malaria rose to almost 50% in 2008 (*Global Malaria Programme, WHO 2009*). Ghana has performed well on these grants, reflecting the administrative and implementation competence that fuels Ghana's status as a donor darling (*Schmitt 2008*). This implied that Ghana had a reasonable chance of being able to implement the AMFm, making it a good case for studying the AMFm processes.

Ghana had the potential to implement the new initiative well because its legal and organizational approach to malaria medicine aligned with the AMFm's mechanism. In 2004, Ghana changed their treatment policy to make ACTs the official first-line treatment for uncomplicated malaria. Further, Ghana declassified ACTs in 2006, allowing for legal, over-the-counter (OTC) sale in the private sector, which includes registered pharmacies and Licensed Chemical Shops (LCSs) (*Seiter and Gyansa-Luerodt 2009; Independent Evaluation Team 2012*). LCSs are a class of retailers allowed to sell OTC medicines, established by the Pharmacy Act in 1994 (*Pharmacy Council 1994*).[ǂǂǂǂǂ] As in much of SSA, many people in Ghana commonly seek malaria treatment in the private sector (*Patouillard, Hanson, and Goodman 2010*); in 2009, Ghana's NMCP estimated that 60% of Ghanaians first seek malaria treatment in the private sector (*"Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009; Patouillard, Hanson, and Goodman 2010*).

SECTION II.3: POLITICS AND ECONOMICS AND DEMOGRAPHICS IN GHANA

Ghana also presents an interesting site for studying the AMFm adoption and implementation processes because of its political and economic context: a democratic nation with a growing economy (during the focal period of this dissertation) on a continent where many countries cannot make these claims. Ghana's increasingly robust democracy makes it apt for studying policy decision-making, particularly those that

[ǂǂǂǂǂ] These are similar to the other *level II* facilities, particularly private Proprietary and Patent Medicine Retailers (PPMVs) in Nigeria; they are somewhat similar to the Accredited Drug Dispensing Outlets (ADDOs) in Tanzania (*Wafula, Miriti, and Goodman 2012*).

affect the public and private sector, as such decisions can have electoral consequences. Those decisions also involve various interest groups, including a growing private sector as well as citizen expectations for growth-oriented and social-protection policies.

Within SSA, Ghana is often portrayed as a success story and aspirational for much of East and West Africa (for examples, see (*Gyimah-Boadi 2009; Crook 2011*)), themselves aspiring to firm middle-income status. Ghana has one of the highest life expectancies in SSA (64 years), ranks 7th in SSA for good governance, and performs above the SSA average for adult literacy (*World Bank 2013; "2013 Ibrahim Index of African Governance (IIAG)" 2014*).

In terms of political context, Ghana's Fourth Republic was established in 1992, re-instituting multi-party democracy that has since grown increasingly free and fair (*Freedom House 2014*).[§§§§§] The new constitution established a constitutional democracy with a president and unicameral parliament, with power heavily concentrated in the executive, at the expense of a "tame" (*Hyden 2010*) and even "weak" (*Hyden 2010*) parliament, with MPs more attuned to answering their constituents than checking the executive (*Hyden 2010; Abotsi 2013; Strohm 2015*).

In their work on developmental patrimonialism, Kelsall and Booth suggest that from 1981 to 1992, Ghana could be considered as having centralized power (and a centralized means for seeking, creating, and distributing rents) and a long-term view of how to invest those rents: what could be considered developmental patrimonialism[******] (*Kelsall and Booth 2010*). With the creation of the Fourth Republic and re-introduction of elections – and therefore election cycles – Kelsall and Booth suggest that Ghana

[§§§§§] Free and Fair is, incidentally, also the name of a Licensed Chemical Shop (LCS) in Tamale.

[******] The authors, taking a cue from Weber, describe patrimonialism as "markedly personalistic and clientelistic, governments of men, not laws" (*Kelsall and Booth 2010*). Developmental patrimonialism, then, is characterized by these features but when rent-seeking is both centralized and distributed in ways that account for the long-term, combined with "broadly pro-capitalist policies" – a foundation the authors suggest is destroyed by "*vigorous* multi-party competition in African contexts" and the short-term views this engenders among leaders (*Kelsall and Booth 2010*).

moved to a more federal system, with more decentralized mechanisms of extracting rents and a more "limited view of the rent process, as [leaders] focus their energies on short-term regime survival" (*Kelsall and Booth 2010*). The authors suggest that in this dimension, Ghana is similar to contemporary Côte d'Ivoire, Tanzania, and Uganda, among other countries (*Kelsall and Booth 2010*); Tanzania and Uganda were part of the AMFm pilot.

As in many strengthening economies and multi-party democracies, Ghana faces internal and external expectations on the role of the state and social contract. Over the past decade, the government has pushed for immediately tangible social protection policies, including strides towards universal health insurance coverage through its nascent National Health Insurance Scheme (NHIS) (*Weyland 2005; Apoya and Marriott 2011; Abiiro and McIntyre 2012*).[††††††] These measures remain high among Ghana's political priorities and presented challenges and opportunities for the AMFm (*Whitfield 2011*). Finally, as I elaborate in Chapter IV, this study is set in a unique moment, amidst a global economic downturn and just following the 2008 presidential election in Ghana, which resulted in a change in ruling power.

In terms of economic context, in 2012, the World Bank re-categorized Ghana up to a lower-middle income country, for statistical as well as economic reasons (*Moss and Majerowicz 2012*). Agriculture and primary product exports (cocoa, gold, petroleum) have constituted the bulk of Ghana's GDP up to 2009. However, economists and economic theory suggest that continued growth into firm middle-income status requires strengthened service and manufacturing sectors (*Organisation for Economic Co-operation and Development 2012*). This raises the economic and political importance of these sectors, introducing interest groups with claims to be heard in the discussion around adopting and implementing the AMFm.

Unlike many other countries in SSA, Ghana has planned and worked to implement — though has not yet fully achieved — a national health insurance program coverage, demonstrating organizational and

[††††††] NHIS coverage was incomplete in 2010, at the time of the IndE baseline for the AMFm. As such, the median price paid for a quality-assured ACT in the public sector at that time was non-zero, which made Ghana distinct from the other AMFm pilot countries, which offered free malaria care through the public sector (*Tougher et al. 2012*).

bureaucratic capabilities. Also, pressures from democratic elections, tight party competition, and the growing needs of the manufacturing and service sectors may not (yet) apply across the African continent.

SECTION II.4: GEOGRAPHY, DEMOGRAPHY AND SOCIOECONOMIC STATUS IN GHANA

In addition to these political and economic considerations, basic welfare variables can help place Ghana within the larger SSA context and, therefore, provide insight into the extent to which lessons from this study may apply elsewhere. To generalize lessons from this case study – of the AMFm adoption and implementation in Ghana – requires two *geographic* levels of comparison and considerations of representativeness. First is the extent to which the experience in Ghana reflects and can offer lessons to SSA – particularly for adoption. Second is the extent to which Ghana's Northern Region represents the country as a whole – particularly for implementation.

The welfare indicators provided below do not fully answer this question but provide an initial way of considering the similarities and differences between the smaller units of study and the larger units to which one might generalize lessons. These indicators also did not guide the selection of Tamale or Ghana for this study. They are simply standard ways of getting a broad-brush sense of a given context. More thoughtful considerations of whether the adoption and implementation processes that unfolded in Ghana require a detailed consideration of the infrastructural and institutional support structures available in Ghana and elsewhere (*Cartwright and Hardie 2012; Iversen and Lanthorn 2015*). These institutions and processes are highlighted throughout this thesis.

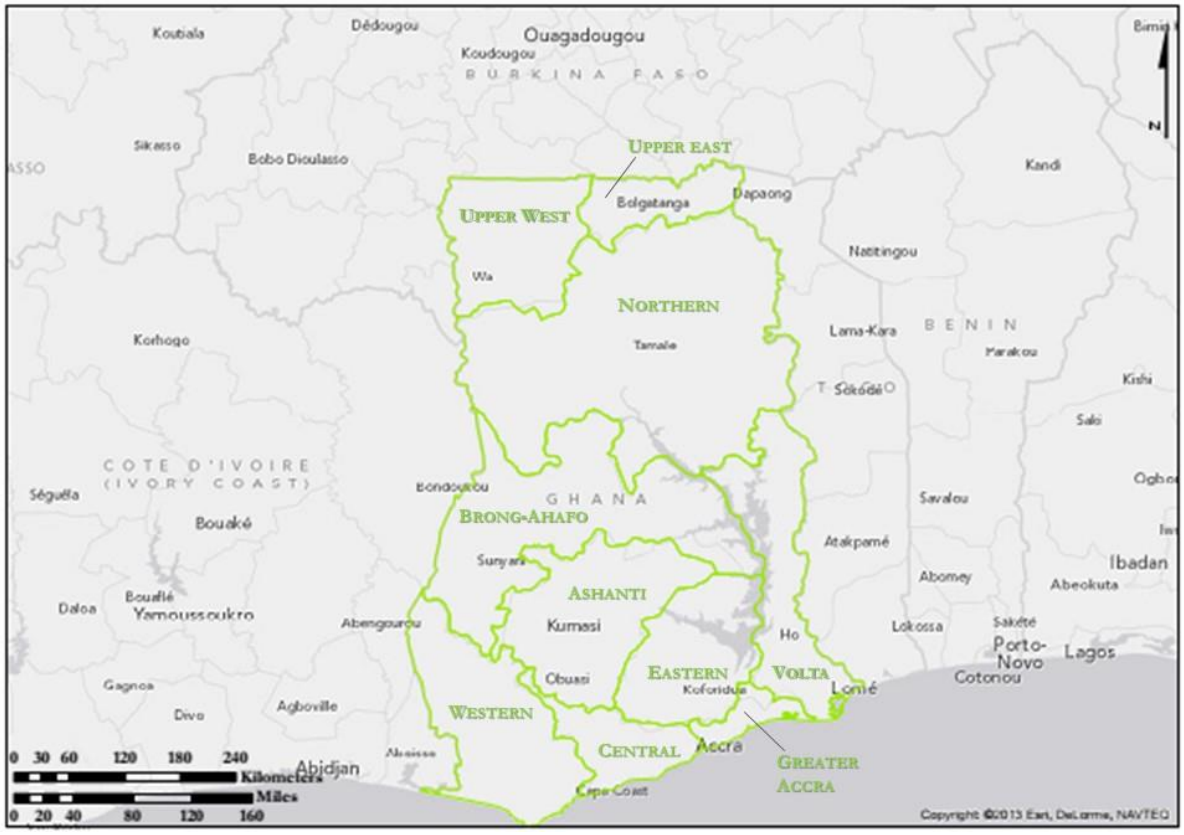


Figure 4: Map of Ghana and its regions, including Northern Region and its capital, Tamale

In Table 1, I present key welfare indicators — such as consumption, education, and access to water and sanitation — for Northern Region, Ghana, and SSA, to allow for a rough demographic and socio-economic comparison between the three geographic levels.

Indicator	Sub-Saharan Africa	Ghana	Northern Region
Total population		**24.9 * 10^6** (2011)[1]	**24.9 * 10^5** (2010)[3]
Population density (people / km^2)	**37** (2011)[1]	**110** (2011)[1]	**35** (2010)[3]
Average household size	**5.1** (~2000)[4]	**4.0** (2008)[2]	**5.5** (2008)[2]
Life expectancy (at birth)	**54.6 years** (2011)[1]	**64.2 years** (2011)[1]	
Under-5 mortality rate (per 1000 live births)	**108** (2011)[1]	**78** (2011)[1]	**137** (2008)[5]
Adult literacy rate (ages 15+)	**63%** (2010)[1]	**67%** (2010)[1]	**34%** (2008)[5]
School attendance (primary school net attendance ratio, ages 6 - 11)		**74%** (2006)[2]	**54%** (2006)[2]
Mean annual per capita expenditure		**US$ 429** (2006)[2]	**US$ 243** (2006)[2]
GDP/capita (PPP, 2011 International $)	**US$ 2363** (2011)[1]	**US$ 1870** (2011)[1]	
% population with access to improved drinking water source	**61%** (2010)[1]	**86%** (2010)[1,5]	**73%** (2008)[5]
% population with access to sanitation	**31%** (2010)[1]	**14%** (2010)[1]	**4%** (2008)[5]

Citations

1. World Bank. 2013. "World Development Indicators". Washington, D.C..
2. Ghana Statistical Service. 2008. "Ghana Living Standards Survey: Report of the Fifth Round". Accra.
3. Ghana Statistical Service.. 2011. "Ghana 2010 Census: Provisional Results". Accra.
4. Bongaarts, J. 2001. "Household Size and Composition in the Developing World in the 1990s." Population Studies 55 (3): 263–279.
5. Ghana Statistical Service (GSS), Ghana Health Service (GHS), and ICF Macro. 2009. Ghana Demographic and Health Survey 2008. Accra.

Table 1: Comparing Ghana and Northern Region on demographic, economic, malaria indicators

In Ghana, welfare and living standards are, in general, lower in Ghana's three northern-most regions (including Northern Region, see Figure 4 for a map) as compared to the Ghanaian average. For example, as shown in Table 1, both consumption and literacy in Northern Region are about half the Ghanaian average (56% and 51%, respectively).

Tamale (pronounced ˈtamalɛ) was chosen for the PACT study – and therefore the site of much of the data included in this thesis — specifically because it was not Accra, represented a *best case* implementation scenario and thus may not yield convincing evidence that the intervention under evaluation could be

scaled throughout Ghana (*Raifman et al. 2014*). Beyond useful for this randomized evaluation, Northern Region more broadly provides a useful proof-of-concept site for the AMFm.

Of Ghana's three eco-epidemiological zones — northern savannah; tropical rainforest; and coastal savannah/mangrove swamps — Northern Region falls in the first. In the implementation chapters of this thesis (VII and VIII), I focus on Northern Region. Its capital, Tamale, sits at an altitude of 180 meters above sea level. Despite being savanna-land, noted only for being "hot, flat and dusty" in *Lonely Planet*, Tamale has moderate urban transmission of malaria, with higher transmission in its rural surrounds (*P. Briggs 2007; Gething et al. 2011*). Northern Region has one rainy season per year, from roughly May to September (*McSweeny, New, and Lizcano 2008*).

Tamale Metropolis is one of the twenty-six districts in Northern Region and one of six Metropolitan Assemblies in Ghana. Sixteen percent of Northern Region's population lives in Tamale, making the Tamale Metropolitan District the third largest city in Ghana, though only a quarter the size of each of the two largest cities, Accra and Kumasi. The main ethnic groups represented in Tamale include Dagombas, Gonjas, Mamprusis, Akan, and Dagaabas (*Ghana Statistical Service 2014*). Tamale lies about 375 miles – a 10- to 15-hour bus-ride – north of Accra.[‡‡‡‡‡‡] A spreading and merging amalgamation of villages with a central market and mosque, Tamale is purportedly the fastest-growing West African city (*Ziem 2013*). The city's growth fuels and is fueled by infrastructure improvements, upgrading its airport to international status, building a new stadium for the 2008 Africa Cup, and becoming an outpost for Accra-based NGOs.

[‡‡‡‡‡‡] As noted in Chapter III, the specific part of the Tamale Metropolitan District and surround examined in this thesis is defined by an approximately 1-hour motorbike ride from the center of Tamale – roughly, 45 miles (70 kilometers). Most captured retailers were within 30 miles (~50km) of the center of town, marked by a main market and mosque. The entire study area falls within what the AMFm IndE team, using the Accessibility-Remoteness Index of Australia, consider "highly accessible" or "accessible" (*Independent Evaluation Team 2012*).

Tamale is a useful location to consider the implementation of the AMFm — and the potential challenges faced — given its distance from Accra and the main sea ports of Ghana. This distance from where imported pharmaceuticals flow in, combined with the more limited infrastructure and lower population density found in the northern three regions of Ghana as compared to the south, make it more likely that supply chain problems will emerge and communication and monitoring efforts will not reach Tamale. The Tamale metro area covers both urban and rural areas, providing variation in infrastructure and population density within the study site. In some of its characteristics, such as population density, Northern Region is more similar to the SSA average than to the Ghanaian average. This is an important consideration when considering translating implementation lessons from Tamale to other settings.

With this context in place, I turn to a description of the data collection, organization, and verification processes that generate the substance of this thesis.

CHAPTER III: DATA SOURCES, METHODS OF COLLECTION & ORGANIZATION

SECTION III.1: DATA SOURCES AND METHODS OF COLLECTION AND COMPILATION

The data I use in this dissertation come from two main sources: a series of in-depth qualitative interviews with key informants in Accra and a series of in-depth quantitative and qualitative interviews with drug retailers in Tamale. I also draw on four auxiliary sources: technical documents and meeting minutes related to the AMFm; content analysis of news articles; household interviews; and an additional set of drug retailer follow-up interviews.

Each chapter utilizes different combinations of these data. Chapters V, VI, and VIII rely on their own theoretical frameworks and analytic strategies, which I describe and justify in each respective chapter. Across these chapters, I rely both on key informants and the interview team to review, validate, and refine my interpretations. As this approach of member-checking is common across the analytic chapters, I include it here, in the final sub-section (*Lincoln and Guba 1986*).

Funding for the PACT household data collection and entry, and the larger study around it, came from Clinton Health Access Initiative (CHAI, formerly Clinton HIV/AIDS Initiative) as part of the AMFm operational research. I funded all other data collection and entry. Innovations for Poverty Action, Ghana provided workspace in both Tamale and Accra.

The interview guides both for high-level key-informant interviews and the retailers interviewers were reviewed as part of the overall Institutional Review Board (IRB) approval process under the PACT research project, which included review by Ghana Health Services (*Raifman et al. 2014*). These two interview guides generated the majority of the primary data included in this thesis.

IN-DEPTH KEY INFORMANT INTERVIEWS AND TEXT-BASED DATA

IN-DEPTH INTERVIEWS

I conducted a series of in-depth interviews with 15 key informants (see Figure 5 for more details on informants). Individual interviews rather than group interviews were suitable for this work, given the contested nature of the adoption process under study as well as the goal of capturing and analyzing differing perspectives. I identified initial informants through technical documents noting them as very involved in the AMFm adoption process. I then identified key, active informants through snowball sampling, relying on prior interviews and technical documents, as is common in qualitative research (*Bernard 2006*). The total sample size reflects the total number of national stakeholders identified who were also willing to speak with me.

Initial, in-person interviews took place between September and December 2011; identification and recruitment of these respondents took place throughout 2011. Most initial interviews lasted one hour and took place in the respondent's office or another convenient location; as needed and as possible, I followed-up with these informants for further clarification and corroboration of findings, again, as is standard in qualitative research (*Lincoln and Guba 1994*). Often, the conversations that took place in late 2011 continued over email and telephone through mid-2015, a continued dialogue that has enriched this dissertation and for which I am grateful. Some of these conversations also led to new contacts and additional, useful email exchanges.

At the beginning of each interview, I established my role as a doctoral student and received verbal consent to conduct the interview and later use the information in an academic manuscript, which informants had an opportunity to review.

To guide the interviews, I used a semi-structured interview schedule, focused on stakeholder views and actions**.** I took detailed notes during each interview. Between interviewing days, I adjusted the guide to accommodate new insights and to encourage richer discussions, following the qualitative tradition of initiating and using data analysis in parallel with data collection (*Strauss and Corbin 1997*).

Each key informant received a respondent code, in the form R-*n*.[§§§§§§] I use these throughout the analysis to maintain the anonymity of quoted respondents. In Figure 5 below, I show the affiliation(s) of each respondent. CCM is the central Ghanaian decision-making body with regards to the AMFm adoption, as I describe in more detail in the following chapter. The "pharmacy and pharmaceutical sector" includes representatives from the Pharmaceutical Society of Ghana (PSGH), the Pharmaceutical Manufacturers Association of Ghana (PMAG), and private pharmacists. "Multilaterals and international NGOs" includes representatives of GF headquarters, the Clinton Health Access Initiative (CHAI), and the United Nations Industrial Development Organization (UNIDO). "Ghanaian government" includes representatives from the Ministry of Health (MoH), Ghana Health Service (GHS), and the National Malaria Control Program (NMCP). All of these are introduced in more detail in Chapter IV (Table 5).

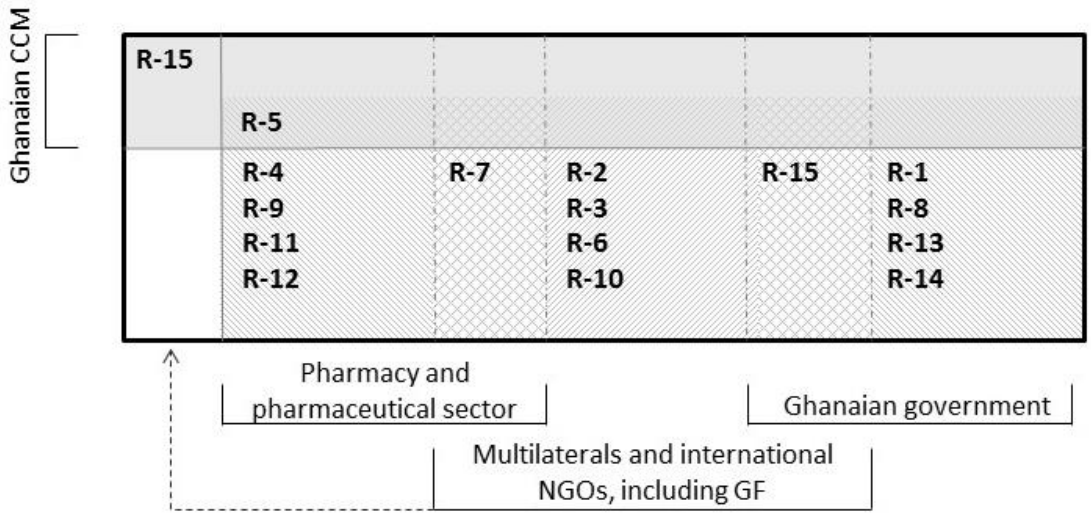


Figure 5: Affiliations of key interview respondents (n=15)

TECHNICAL DOCUMENTS RELATING TO THE AMFM

I draw on a variety of technical reports, meeting minutes, and Ghana's application for the AMFm. Meeting minutes from Ghana's CCM as well as Ghana's AMFm application proved particularly useful.

[§§§§§§] n signifies the chronological order of the first interview with a given respondent.

DATA ORGANIZATION

I combined data from the in-depth interviews and the AMFm technical documents into a single narrative for analysis. For organization, I entered typed interview and document notes into a single spreadsheet column, with one sentence or complete thought per row. The text followed the chronology of the AMFm events, with each informant's contribution noted in a different font-color (*Grbich 1999*). This generated a history of Ghanaian ACT policy and the AMFm deliberations that retained both facts on and stakeholders' subjective views of the same events, allowing for triangulation. These are presented in Appendix A. In analyzing and presenting these data, I maintained the originally noted words used by interviewees or in documents.

The period in which the interviews took place is reported in the present tense; at the time of the interviews, the decision to pilot had been taken and implementation was underway but GF's decision on the AMFm was still a year away. In Figure 3, I present a timeline for reference.

NEWS DATABASE

Political and public sentiments regarding public health and malaria may influence how and why the AMFm was adopted in Ghana. Understanding this provides context to the AMFm adoption process.

To obtain data on relevant political statements and public sentiment during the period leading to adoption, I compiled a database of news items from 1 November 2008 to 30 June 2009, 242 days that included the presidential election (28 December 2009) and President Mills' first 100 days in office, as well as touchstones such as World Malaria Day. I relied on ghanaweb.com, one of Ghana's major online news aggregators, which pulls from the Ghana News Agency (GNA). This is the most comprehensive source I found and does not have a clear political bias.[*******] I found n=197 unique news items with "malaria" (35

[*******] In 2014, Freedom House rated Ghana as 14/16 on "freedom of expression and belief" (*Freedom House 2014*). In its 2009 report, closer to the time period of interest for the adoption of the AMFm, Freedom House reported that "freedom of expression is constitutionally guaranteed and generally respected. Numerous private radio stations operate, and many independent newspapers and magazines are published in Accra. However, Ghana has yet to pass legislation protecting freedom of information… Both the NPP and the NDC were also accused of using inflammatory

in 2008, 162 in 2009) and n=262 unique articles for "national health insurance" (105 in 2008, 157 in 2009). A search for the exact phrase "affordable medicines facility" yielded no results in 2008 or 2009; similarly, "AMFm" yielded no hits.

This context is intrinsically helpful but also allows insight into the priorities and actions of some stakeholders unwilling or unable to be interviewed: President Atta-Mills, Vice President Mahama, Minister of Health Sipa-Yankey, and President Bill Clinton.

DATA ORGANIZATION

For coding, I transferred details of the news articles to a spreadsheet. Through an iterative process of open coding, I developed a series of labels to describe the use of "malaria" or "national health insurance" in the articles. I applied up to four labels to each news item; these are provided in detail in Appendix B, including example articles for each code. Because this content analysis is a peripheral dataset and analysis within the overall project of this thesis, I did not employ a second reviewer for this work. The full dataset is available on request for checks on reliability and validity of the coding.

For "malaria," I identified 11 main themes and 49 sub themes (for example, "call for prevention" may be a theme and "call for prevention using a bednet" and "call for prevention by keeping the environment clean" are sub-themes under it). I allowed each news item up to four codes, for a total of n=327 coded mentions. The 11 codes are: (1) a call for malaria prevention; (2) a call for malaria eradication; (3) a report on distribution or donation related to malaria; (4) a report on malaria's prevalence, its incidence in out-patient facilities, and Ghana's progress towards the Millennium Development Goals; (5) a comment on malaria treatment and treatment-seeking; (6) a statement linking malaria and Ghana's economic development; (7) a call for domestic innovation and production related to malaria; (8) a call for additional resources or supplies to address malaria; (9) a report on an environmental clean-up activity related to

language and inciting violence in the final months of the campaign, though no significant violence resulted during the election itself" (*Freedom House 2009*).

malaria; (10) use of "malaria" as a metaphor for the common man or of common humanity[†††††††]; and (11) miscellaneous references to malaria.

For "national health insurance," I identified 19 main themes. I gave each news item up to three codes — the most that any article seemed to require once the codes were consolidated — for a total of n=337 coded mentions. These are: (1) claims, appeal for prompt reimbursement; (2) claims, promise of prompt reimbursement; (3) coverage, report on conditions covered as well as free care to pregnant women; (4) coverage, call to expand the conditions or treatments covered, including considering the needs of women and persons living with HIV/AIDs; (5) enrollment, call to enroll or renew (including reports of enrollment events); (6) enrollment, reports of increased enrollment; (7) enrollment, reports that enrollment had increased attendance at facility; (8) enrollment, reports of increased revenue to facility through enrollment; (9) NHIS is an National Patriotic Part (NPP) success; (10) NPP promises to improve NHIS; (11) NHIS was not NPP's idea or in line with their traditions; (12) NPP poorly implemented NHIS (not nationwide, not sustainable, too corrupt); (13) National Democratic Congress (NDC) promises to sustain and expand NHIS, including improving health infrastructure and issuing one-time premium; (14) NPP critiques NDC implementation; (15) NHIS is not political; (16) NHIS requires human resources; (17) premiums are too expensive; (18) report of someone sponsoring premiums for those who could not afford; and (19) miscellaneous references to NHIS.

RETAILER INTERVIEWS AND SPATIAL DATA

In July 2011, a team of surveyors from Innovations for Poverty Action – Ghana conducted an initial retail census amongst the variety of stationary drug retailers in and around Tamale: pharmacies, LCSs, and public and private clinics. This census was separate from any work carried out for the AMFm IndE and covered retailers regardless of their legal registration status.

[†††††††] I explain this further with examples in Appendix B. In brief, malaria can be used to represent a disease specifically of non-elites or, more broadly, a disease common to everyone, as mosquitoes are not particular about wealth, religion, or political affiliation.

This census covered a circular area bounded by a radius representing approximately 1-hour motorbike rides from the center of Tamale. All covered retailers were within 30 miles (~26 km) of the center of town, marked by a main market and mosque. The total sample size the distance radius and the willingness of respondents to participate in the interview.

The entire study area falls within what the AMFm IndE team, using the Accessibility-Remoteness Index of Australia, considers "highly accessible" or "accessible" (*Independent Evaluation Team 2012*). This geographic location and informed consent were the only exclusion criteria used. As noted in Chapter III, in the initial census, we found 14 public facilities (including hospitals, clinics, and Community-based Health Planning zones), 9 private clinics (including hospitals, clinics, and maternity homes), 16 private, for-profit pharmacies, 174 LCSs, and 2 provision stores selling antimalarials. During the initial July 2011 census, the study team obtained a verbal expression of willingness to participate in future research and, if consent was granted, recorded the GPS coordinates.

Of these, 14 LCSs and 153 pharmacies (88% of identified retail locations) were open, available and, consented to an in-depth interview. In addition, 66 retailers were added to the list over the course of the study period, from August to December 2011, based both on snowball sampling and new openings. With consent, GPS coordinates and interviews were also taken with these retailers if the shops were open; we interviewed all but two of these retailers (Institutional Review Board and Ethics Review Committee approvals are provided in Appendix C). Overall, 23 retailers could not be interviewed because the shops were never open during the study period or they refused interview. An additional 14 did not have s-QA.ACT stock at the time of the interview. Of those with stock, 5 shops did not provide s-QA.ACT retail prices (so the number of shop observations with s-QA.ACT retail prices is n=232). Of those shop observations that yielded retail prices, 96% also provided supply prices.

The team interviewed sixteen retailers twice in full at different points in time — usually by different interviewers — and one thrice during the study due to a record-keeping mix-up. To account for this, standard errors in the analyses in Chapter VIII are clustered at the level of the firm/shop, with n=214.

Judging from respondents' information on other retailers in the area, we may have missed nine retailers or else could not properly match the formal name of the shop with the way the respondent described it. Nevertheless, as this represents a best-effort census of private-sector retailers in the catchment area, sampling weights are not used in the analyses of these data.

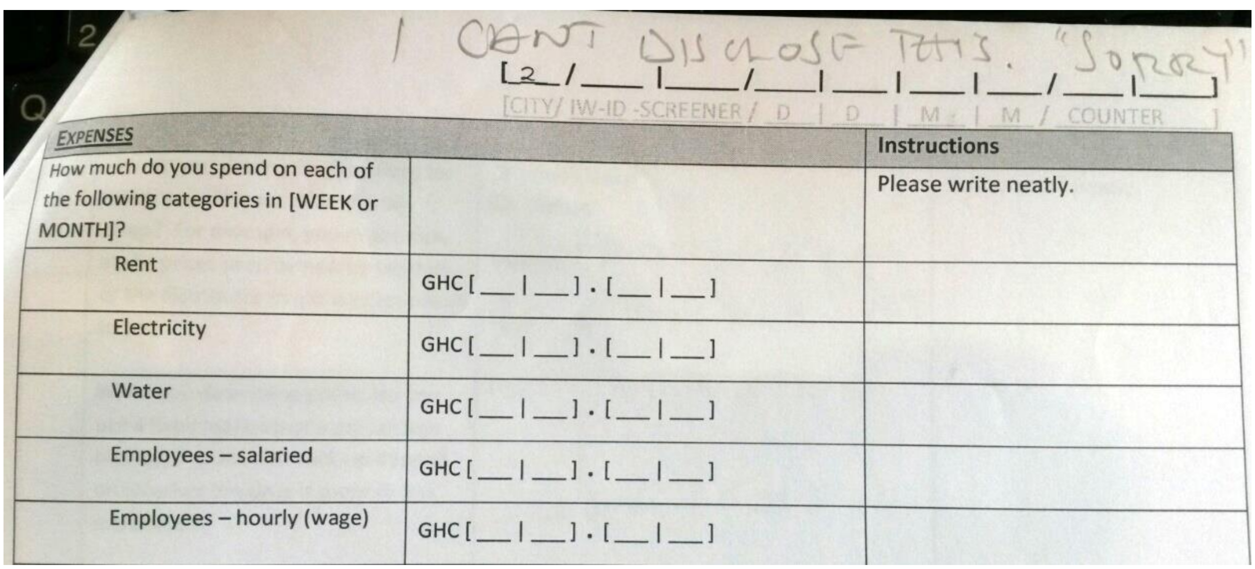
I developed the semi-structured interview guide with two key aims. First, to explore specific hypotheses related to compliance with the RRP, drawing both on economic ideas of market competition and social ideas related to reputation and retailer integration into the community. Second, to align, as much as possible, with the larger scale IndE work, so that the IndE work provides a check on the validity and representativeness of the data I collected. To this end, the interview guide contained closed- and open-ended items on the following domains: (1) Retailer characteristics and history; (2) Other retailers, competition and pricing decisions; (3) Expenses; (4) Sales practices and customer relations; (5) Monitoring and regulation; (6) Consumer preference and malaria medication; (7) Stock audit of antimalarials, including volume and wholesale and retail prices; (8) Stocking decisions; (9) Suppliers; (10) the AMFm awareness and perceptions; and (11) the AMFm stocking and pricing. The questionnaire was first modeled after the monitoring questionnaire developed for use by the Pharmacy Council in tracking the AMFm in Ghana. The domains largely overlap with the questionnaire used in the AMFm IndE, which was in turn based on the ACTWatch© questionnaire (*Shewchuk et al. 2011; Independent Evaluation Team 2012*).

A team of four surveyors carried out these semi-structured interviews on the premises of each of the drug retailers. Because of concerns about whether retailers would trust a white researcher, I was not present during any of these interviews. Before each interview, the surveyor informed the respondent of the organizations involved in the study, the main aims of the projects and that s/he could terminate the interview at any time. Thus informed, the respondent provided verbal consent if s/he was willing to proceed with the interview. Interviews ranged from one to four hours and, as needed, were broken into several sessions, to fit with the retailer's workload. Surveyors took detailed notes during these interviews. In addition, surveyors noted observations about the retailer and sales during the interview. Surveyors

were instructed to follow the flow of the conversation rather than strictly adhering to the ordering of the interview guide, allowing trust and rapport to be built as suited each interview.

Once every three work days, I reviewed completed questionnaires and provided written suggestions of new and follow-up questions to add and consider, in order to obtain richer and more complete data. Such revision during data collection is common in qualitative work (*Bernard 2006*). I revised and printed questionnaires accordingly; as needed, surveyors re-visited or phoned retailers for clarifications. To review these changes and discuss other research challenges and opportunities, I met with the survey team once a week.

Through these meetings, for example, we dropped difficult and sensitive questions from the interview guide, such as about monthly expenses and licensing fees, in an effort to avoid biasing the overall results due to respondent discomfort. Additionally, a full worksheet on monthly expenses was dropped in favor of a dichotomous question asking whether revenues exceeded costs in the previous month (see Figure 6).


I CANT DISCLOSE THIS. "SORRY"

[2 /___ |___/___|___|___|___/___|___]

[CITY/ IW-ID -SCREENER / D | D | M | M / COUNTER]

EXPENSES		Instructions
How much do you spend on each of the following categories in [WEEK or MONTH]?		Please write neatly.
Rent	GHC [___ | ___] . [___ | ___]	
Electricity	GHC [___ | ___] . [___ | ___]	
Water	GHC [___ | ___] . [___ | ___]	
Employees – salaried	GHC [___ | ___] . [___ | ___]	
Employees – hourly (wage)	GHC [___ | ___] . [___ | ___]	

Figure 6: Refusal to provide costing information

We also added questions based on topics that came up in other interviews. These included asking about specific shortages of Artesunate + Amodiaquine ((AA) one ACT variant) formulations of s-QA.ACTS (the

subsidized, quality-assured package of ACTs available under the AMFm). In addition, we added specificity about what happens if a main supplier is out of s-QA.ACTs and including questions about retailers on motorcycles. We also added a few questions part way through reflecting the interests of organizations working on the AMFm in Ghana, including a question about how retailers would feel if the RRP was lowered from US$ 0.90 to US$ 0.60 (that is, from *1.50 Ghana* to *1.00 Ghana*). Note that the iterative process of adding and removing questions means not all of these questions were asked of all respondents. This mostly affected the open-ended questions about the AMFm. The final questionnaire is provided in Appendix D.

Due to the length of the questionnaire and the small size of the interview team, collection of these data took place over five months, as shown in Figure 7; this period included a change from rainy to dry season as well as a change in the AMFm approval policy for s-QA.ACTs, as described in Chapter VIII and shown in the timeline in Figure 3. Due to time and human resources constraints, most retailers were only interviewed once over this period (we intended to interview each only once); the number of interviews conducted each month was subject to the same constraints. In total, we interviewed 234 different retailers in 251 interviews, with a total of 346 s-QA.ACT observations across these retailers (retailers stocked an average of 1.25 brands of s-QA.ACTs). The number of interviews and s-QA.ACT observation (an interview could yield no observations, depending on retailer stock and willingness to discuss stock, but also up to six observations, given that six brands of s-QA.ACT were available in Tamale) over the study period are shown in Figure 7.

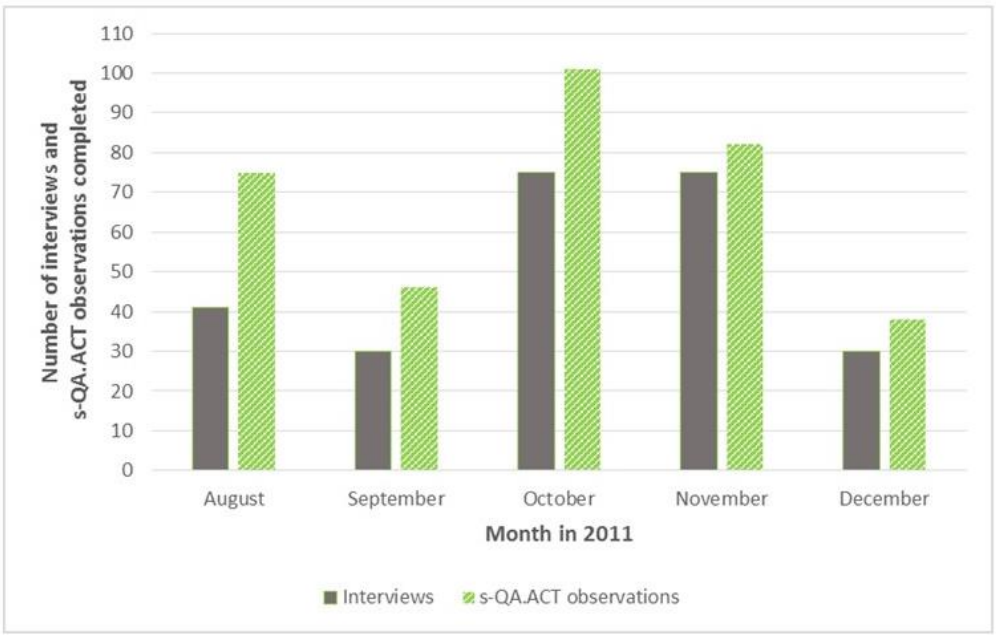


Figure 7: Number of retailer interviews and s-QA.ACT price observations completed each month in Tamale, Ghana

Although 98% interviewees reported having ever stocked s-QA.ACTs, 94% stocked s-QA.ACTs at the time of the interview (95% in pharmacies 94.3% in LCSs). For all of Ghana, the IndE reports 90.1% of pharmacies and 78.4% of LCSs stocking s-QA.ACTs (*Independent Evaluation Team 2012*). Of the respondents of the in-depth work in Tamale, 94% provided price information about their stocked s-QA.ACTs (n=8 of these were only for pediatric dosages and are therefore not included in the main analysis). This compares favorably to the ~70% reporting the information to calculate price mark-ups reported in other work on antimalarial prices and mark-ups in West SSA (Benin and Nigeria) drawing on ACTWatch© data, though is less than the 100% rate reported in the IndE (*Independent Evaluation Team 2012; Palafox et al. 2015*). The overall provision of information by respondents allowing me to calculate mark-ups on the full set of antimalarial stock are more similar to the findings of Palafox *et al*, with 72% reporting both buy and sell prices.

DATA ORGANIZATION

I entered all data into Excel©; this entry was checked against the paper questionnaires by one independent data entry analyst. Discrepancies were resolved between me and the analyst, with reference to the paper

questionnaire. Quantitative data were exported to STATA for statistical analysis and ArcGIS for spatial analysis (*STATA (version 11.0), n.d.*). I kept qualitative data in Excel© for analysis.

Open-ended questions that lent themselves to becoming categorical variables were coded first by me and then, using a codebook, two independent coders. Where there were discrepancies in coding, which were rare, we discussed and came to a consensus about the coding scheme. The raw data (corrected for spelling and shorthand) of answers with coding are provided in Appendix E.

PACT FACILITY- AND HOUSEHOLD-BASED INTERVIEW DATA

Household interview data were collected within a larger randomized trial assessing ACT completion (PACT, clinical trial NCT01722734; (*Raifman et al. 2014*)). To recruit participants, surveyors stationed at health facilities (hospitals, clinics, pharmacies, and LCSs) recruited people buying malaria medication. We conducted follow-up home visits between 58 and 72 hours post-sale with those purchasing an ACT, as well as meeting other inclusion criteria and providing consent. We recruited participants from 73 of the facilities we had included in the July 2011 census; 85% of the sample was drawn from 14 core facilities: 5 public hospitals and health centers, 3 private hospitals or clinics, 2 private pharmacies and 4 private LCSs.

Facility-level PACT data in this dissertation focuses on the n=XXX patients recruited from private pharmacies and LCSs and the n=1543 that we followed-up in person. Household-level data used in this dissertation draws on these n=1543 interviews, conducted between 30 July 2011 and 11 October 2011. During these, participants answered questions about choice of malaria treatment, perceptions about those treatments, and awareness of the AMFm. See Appendix G for the relevant questionnaire modules.

There is no meaningful correlation between a retailer hosting a PACT recruiter and pricing outcomes reported in the retailer interviews.

DATA ORGANIZATION

These data were double-entered from paper questionnaires by a data entry team with Innovations for Poverty Action - Ghana. Mismatched entries were compared between data entry operators and the original document to resolve discrepancies. These data were stored as a Stata file (*STATA (version 11.0), n.d.*); I transferred qualitative components to Excel© for coding.

PACT FOLLOW-UP RETAILER INTERVIEWS

At the end of the PACT trial, in mid-October 2011, the field manager went to each participating retailer to thank them and interview them about the process of working with PACT and their thoughts on the intervention. These are, then, a subset of retailers included in the retailer questionnaire. Sixty-five (89%) of these retailers consented to an interview. These follow-up interviews included Likert-scale items with options for open-ended elaboration. These questions covered the process of engaging with the research project, observations and suggestions about PACT, and observations and suggestions about ACTs more generally. The field manager took detailed notes of retailer responses. These questions related to the contents and approach of the experimental program, their implementation, and to the AMFm in general. In part, we based these questions on comments and concerns raised by retailers and patients throughout the trial. These qualitative responses are provided in full in Appendix F.

It is worth pausing for a moment to reiterate that the on-going AMFm research in Tamale – that is, the PACT project – may have made the site slightly more conducive to overall implementation of the AMFm. Among those retailers who did participate in PACT and consented to a follow-up, just under two-thirds mentioned that, following PACT, they are more diligent about keeping ACT stock and promoting ACTs to customers. They reported — unprompted, when reflecting on PACT — that it was hosting the PACT surveyors that educated them about ACTs, gave them more trust in ACTs, and encouraged them to maintain a stock of ACTs. Some noted that their customers, having received text messages in addition to a dose of ACT, came back to "testify as to the effectiveness" of the drug, which they said, in turn, further encouraged stocking (*e.g.* "people who testified on the good aspects of the drugs as a result of completing the dosage made us to keep more ACTs in stock" and "to be honest, it was the start of your study and the

subsequent positioning of a surveyor at your shop that made me to purchase ACTs, and now I have many varieties of green leaf drugs") (*V-52 2011; V-79 2011; V-146 2011*).

DATA ORGANIZATION

Retailer responses were entered in a spreadsheet. I averaged Likert-scale type items across respondents. For open-ended answers, I used a process of iterative open coding to label responses with themes. Given that these results are not central to the analysis, I did not engage an independent coder. However, the reader can use the raw data provided in Appendix F to assess my coding.

SECTION III.2: REVIEWING THE WHOLE THESIS: MEMBER CHECKING

Member-checking, or validation, is a means of allowing key informants and research participants to reflect on the researchers' analytic interpretations (*Lincoln and Guba 1994*). Ensuing dialogue can allow researchers to refine their interpretations, expand conclusions, and inform future hypotheses for testing. It thus serves as a loose counterpart to specification checks in econometric analysis and can enhance the trustworthiness of results (*Lincoln and Guba 1986*).

In Chapters V and VI, I draw on in-depth interviews and technical documents related to adoption as data sources. I shared manuscripts of these two chapters with all the key informants I could reach — all but two — to allow comment and flagging of factual errors relating to the independent variables in the analysis and/or errors in interpretation. The analyses in Chapters V and VI reflect key-informant feedback; I flag where discrepancies remain between my description and respondent input.

In Chapter VII, I draw heavily on the retailer interviews and geo-coded data. The original survey team reviewed the methods and results section of this manuscript as a check against serious misinterpretations I may have made of the data (*Lincoln and Guba 1994*). As relevant, I incorporated their insights into the results and conclusion.

PART 2: TRANSFER AND ADOPTION

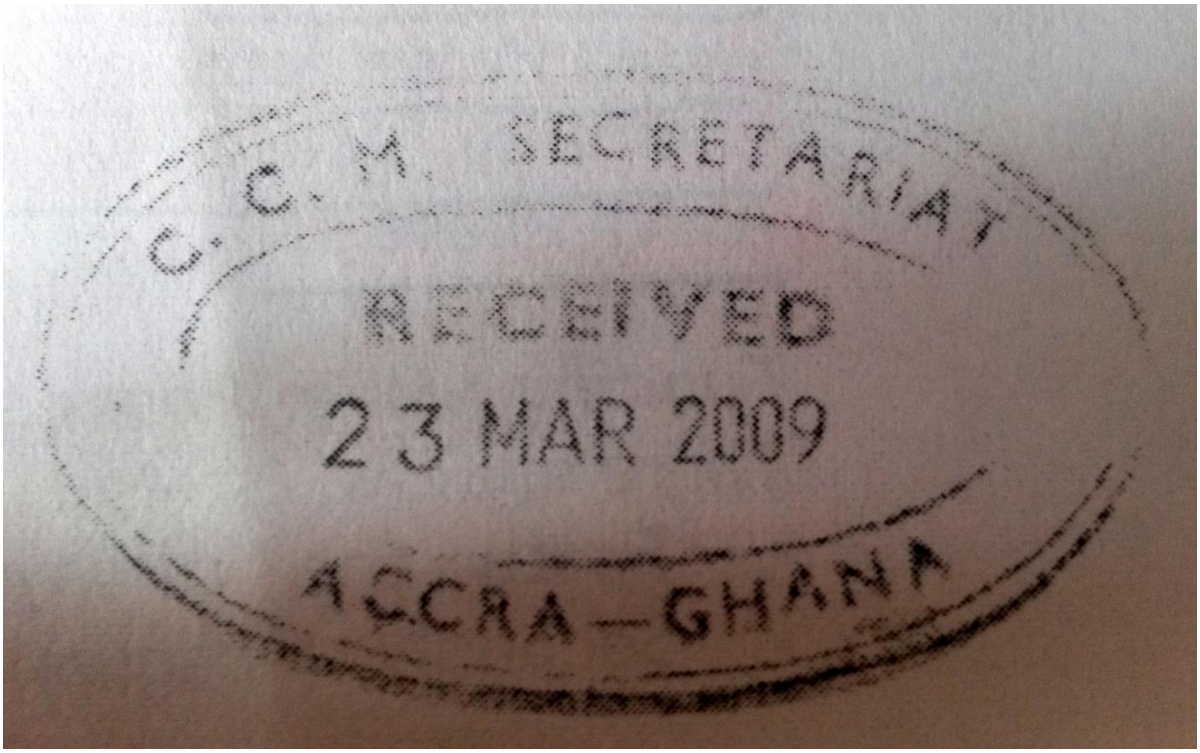


Figure 8: Stamp of arrival on the AMFm invitation to Ghana's Country Coordinating Mechanism
[image courtesy of Daniel Norgbedzie]

CHAPTER IV: CASE NARRATIVE - PROGRAM TRANSFER & ADOPTION

In this chapter, I review the descriptive case from 2001 through Ghana's 2009 decision on joining the AMFm's pilot Phase I. As noted in Chapter II, 2001 marked a global turning point in antimalarial treatments and a national turning point in Ghana's democracy. With these pivots, 2001 provides a reasonable starting point for this narrative. The narrative is divided into two main time segments: 2001 through 2007 (Section IV.1) and 2008 through mid-2009 (Section IV.2).

I do not intend to introduce analysis in this chapter; in fact, I strictly avoid analytic or interpretive statements. Throughout this chapter, I present original, descriptive data; in particular, in Section IV.2, I use direct quotes from key informants and from meeting minutes to capture national perspectives on the unfolding events of adopting the AMFm in Ghana. Appendix A provides complete details on informant responses and meeting minutes. Overall, I try to incorporate most of the responses during interviews to provide a complete picture. When a quote is not used in the narrative of this chapter, it is because a similar, indicative quote is already included.

My goal is to weave together ample background and narrative data here, then pull the threads apart for analysis in Chapters V and VI. I use the several storylines and empirical sources presented in this chapter for the subsequent analyses, with the intent that no new data are added in the analytic chapters. Therefore, the reader is invited to read the story presented here knowing that I have curated the material as much as possible — but no further — in order to set up the analysis in Chapters V and VI and to allow the reader to assess whether her interpretations align with mine.

A few points are particularly relevant for the analyses in Chapters V and VI. At the global level, this includes GF's decision to pilot, then evaluate, the AMFm before committing beyond Phase I. It further includes the implementation responsibilities implied for Ghanaian stakeholders by the AMFm's global design. At the national level, the 2008 presidential election immediately precedes GF's invitation letter to Ghana for the

AMFm. Events in the 2008 election, shaped by events in the 2000 and 2004 elections, provide a backdrop of campaign commitments, issues around health care and insurance planning, and malaria programming.

Throughout Part 2 of this dissertation — *Transfer and Adoption* — I identify key stakeholders in the AMFm adoption in Ghana positively (who was at the table) rather than normatively (who ought to have been at the table) (*Gilson et al. 2012*). That is, I analyzed people and organizations identified as *key* either (1) based on in-depth interviews during which respondents reflected on the process of adopting the AMFm in Ghana, or (2) as participants or speakers recorded in meetings relating to adopting the AMFm in Ghana, or (3) through the review of relevant newspaper articles in the period leading to adoption, as described in Chapter III. This is not based on frequency of mention but rather on the import given by an informant or data source to a stakeholder. In Table 5, presented later in the text, I detail the identified key stakeholders.

As a consequence of identifying stakeholders in this way, some voices, such as the citizens of Ghana, are left out of the analysis of adoption – as they were, seemingly, left out of the adoption decision itself. In addition, and perhaps surprisingly, bilateral agencies, international NGOs, the National Health Insurance Authority (NHIA), MoH, and individual pharmacies and LCSs all have a curtailed role (or lack one entirely) in the description and analysis that follow (*Acheampong 2014; Nfor 2014*). This is because they were not present or vocal in key meetings and therefore do not appear in meeting minutes or in stakeholder recounting of the meetings and decision-making process. In the case of one *loudly* quiet stakeholder — the US's President's Malaria Initiative, under the US Agency of International Development (USAID) — the USAID-PMI advisor from the time notes that much of PMI's opposition to the AMFm happened at the global level, whereas at country level, advisors felt their job was largely to let national stakeholders lead (*Psychas 2015*).

Throughout Part 2, I focus on what the identified active stakeholders did, rather than analyzing why others remained outside the debate. I remain agnostic to whether a stakeholder or her claims are "legitimate," instead describing those who came forward with self-identified stake (*Friedman and Miles 2006*).

In the description that follows, I trace three main strands of history. First, the global and Ghanaian approaches to lessening the burden of malaria. Second, the political and economic changes, priorities, and commitments in Ghana leading to the period immediately relevant to adopting the AMFm's Phase I. Third, the development of the idea of the AMFm itself, first at the global level and then transferred to countries invited to pilot the initiative, including Ghana.

SECTION IV.1: 2001 – 2007, DEVELOPMENT OF AN IDEA & A DEMOCRACY

GLOBAL

MALARIA AND THE GLOBAL FUND TO FIGHT AIDS, TB & MALARIA

The Global Fund was launched in 2002 and immediately became a major stakeholder in global health. This was a key element in the increasing focus on — and funding for — malaria over the 2000s. Since its launch through 2010, GF held ten funding calls for countries and partner organizations, such as United Nations agencies, to submit programming ideas for financial consideration. These were standard requests for applications, prioritizing certain topics and requiring certain criteria (such as strengthening health systems). But specific approaches were left to the applying country. There was no assurance of funding.

To enhance country ownership and harmonize with national health agendas, GF has required from the outset for grant-receiving countries to establish a Country Coordinating Mechanism, populated by different individuals and organizations in each country. In these multi-sectoral bodies, stakeholders come together to make project decisions and oversee implementation for HIV/AIDS, TB, and malaria programming (*Global Fund, n.d.*). Across countries, CCMs include varied compositions of government agencies, NGOs and businesses, and civil society groups. In some CCMs, there is notable skew towards representation from government or from the HIV/AIDS community (*Global Fund 2008b*).

A CCM's oversight and planning processes are, by design, separate from national legislative processes. They are meant to be independent of government. But, as one respondent described for the case of Ghana, this creates a tension because, "at many times, [CCM] needs the government [bureaucracy] in

order to move" (*R-8, n.d.*). That is, when those stakeholders who will be involved in implementing a program are not present in the decisions to adopt the program, adopted programs may not move forward or may do so fitfully.

Malaria treatment and the origins of the AMFm: bringing global attention to a new problem

Effective treatment is a critical element in strategies to lower malaria mortality. As noted in Chapter I, by the early 2000s, standard treatments were failing across Southeast Asia and sub-Saharan Africa (SSA). The World Health Organization (WHO) responded by declaring, in 2001, ACTs as the recommended first-line treatment for uncomplicated (non-severe, non-cerebral) malaria (*World Health Organization 2010; Boseley 2006*). Since then, 79 of the 88 countries in which *P. falciparum* malaria is endemic — including Ghana — have adopted ACTs formulations as first-line treatment.

ACTs replaced less-expensive, more-stocked, more-familiar, and more user-friendly antimalarial drugs as the first-line treatment (*Williams, Durrheim, and Shretta 2004; Buabeng et al. 2008*). WHO's policy change presented large implementation challenges and two key stumbling points for appropriate use of malaria treatment. First, the *under-use* of ACTs for malaria cases leads to needless mortality (*Hanson et al. 2004; Tougher et al. 2012*).

Second, the *mis-use* of ACTs – through treating non-malarial fevers with ACTs as well as dispensers failing to administer and patients failing to complete the correct dosage — provides parasites an opportunity to develop resistance (*Arrow, Panosian, and Gelband 2004; Global Malaria Programme, WHO 2010; Global Malaria Programme, WHO 2012*). ACTs have a retail price between 10- and 20-fold more expensive‡‡‡‡‡‡‡ than older antimalarials, such as CQ and SP. In response, patients may opt for a different antimalarial or only buy or complete a partial ACT dose (such as a cut-apart foil blister pack).

‡‡‡‡‡‡‡ ACT cost is driven by the costs of the active pharmaceutical ingredients constituting an ACT and of combining them into a single drug (*Bosman and Mendis 2007; Amin and Snow 2005*).

Even as the world tried to increase access to ACTs, unconfirmed reports of parasite resistance to artemisinin flowed out of Southeast Asia, followed by confirmatory laboratory analysis (*Duffy and Sibley 2005; Vijaykadga et al. 2006; Independent Evaluation Team 2012*). But, the pharmaceutical pipeline for malaria treatment was not flowing with new ideas (*Shah 2010*). For those interested in tackling malaria through treatment, protecting the effectiveness of artemisinin was a high priority.

Malaria treatment and the origins of the AMFm: bringing global attention to a new proposed solution

The switch in first-line treatment made access to ACTs -- and appropriate use thereof -- a key concern for treating and beating global malaria. In response to these changes and challenges, in 2001, USAID requested the US Institute of Medicine (IOM) to convene a team to examine the economic challenges of global ACT access (*Arrow, Panosian, and Gelband 2004; Frost and Reich 2009; Global Fund 2009b*). Nobel Laureate in Economics Dr. Kenneth Arrow chaired this team of economists and epidemiologists (*Frost and Reich 2009*). Two linked goals drove their work: lowering malaria mortality by expanding access to ACTs but also reducing opportunities for the development of parasitic resistance to ACTs.

In 2004, the IOM team published their recommendations as *Saving Lives, Buying Time*: *the Economics of Malaria Drugs in an Age of Resistance* (*SLBT*) (*Arrow, Panosian, and Gelband 2004*). The treatment-seeking patterns in malaria-burdened, low-income countries struck the authors as they analyzed the available evidence. In low- and middle-income countries, the public sector may fail to provide access to health products, hindered by weak supply chain organization, ineffective regulation, inadequate infrastructure, and insufficient retailer or consumer demand (*Rockefeller Foundation, Results for Development Institute 2008*). The private sector can and does fill gaps in availability and acceptability with health products, although of variable quality (*Patouillard, Hanson, and Goodman 2010; Littrell et al. 2011*). In SSA, half of fevers among under-5s are first treated in the private sector, suggesting that the private sector had the reach and operational capacity to make malaria drugs broadly *available* (*Littrell et al. 2011*).

However, just because a health product is manufactured and can be made available on the market does not mean that individual retailers will stock it, as private providers, in general, respond more to consumer

demands and profit incentives than population-level health data and welfare goals. Even when private suppliers make health products available, profit-maximizing firms still might charge prices unaffordable for segments of the population. Given that health product consumers face difficulties in assessing quality prior to purchase and use, health products are subject to a variety of market failures, including supplier-induced demand, supplier misinformation about quality, and price discrimination (*Folland, Goodman, and Stano 2007; Roberts and Reich 2011*).

The *SLBT* authors considered a number of alternative solutions to the access problem. But the private distribution of antimalarial treatment — far-reaching though inconsistently regulated — led the team to conclude that two primary goals needed to be addressed: making ACTs available using all existing national delivery chains and making them affordable (*Arrow, Panosian, and Gelband 2004*). To lower prices, they proposed a global subsidy on quality-assured ACTs (QA.ACTs), applied high in the supply chain (a buyer subsidy, applied at global ACT manufacturers' "factory gates") (*Arrow, Panosian, and Gelband 2004*).

This subsidy would, they hypothesized, lower retail prices to be competitive, on cost, with more-familiar but less-effective antimalarials In turn, the authors expected lower retail prices to improve *availability* (stocking, given less up-front costs to retailers) and *affordability* (price, given a lower price to the consumer), leading to more frequent — as well as more appropriate — use, ultimately "saving lives"(*Arrow, Panosian, and Gelband 2004*). Cost-competitive prices might expand market-share for quality-assured ACTs (QA.ACTs) relative to other antimalarial treatments (especially monotherapies of Artesunate and partner drugs used in combination therapies[§§§§§§§]), delaying the development of parasite resistance — "buying time" for the effectiveness of artemisinin, while also allowing for the development of synthetic versions or alternative drugs (*Arrow, Panosian, and Gelband 2004*).[********] Agencies could also

[§§§§§§§] As per the IndE, "the objective of crowding out oral AMT was generally of limited importance, as the oral AMT market share was less than 5% at baseline except in Nigeria and Zanzibar." In Ghana, 49% of surveyed outlets stocked an AMT at baseline and 41% did at endline; most of this was accounted for by private, for-profit outlets. Total AMT market share in Ghana was 3.6% at baseline and 2.5% at endline (*Independent Evaluation Team 2012*).

[********] Reducing the chance for resistance to developed involved gaining market-share for ACTs relative to artemisinin monotherapies. While this formulation poses a significant threat in Southeast Asia, it turned out not to

buy time for effective ACTs if lowered prices lead to more appropriate use of ACTs, following a hypothesis that high prices are a primary reasons that patients purchase or complete partial doses of ACTs — saving, sharing, or selling the remainder (*Arrow, Panosian, and Gelband 2004*).

In *SLBT,* the authors used the idea of global public goods to frame access to and preservation of ACTs as an issue requiring global action (*Kaul and Faust 2001; Arrow, Panosian, and Gelband 2004*). This grabbed the attention of global health and development communities, including the World Bank. For some, the proposal represented an attractive and "elegant" (*Frost and Reich 2009*) intervention to improve access to quality-assured ACTs while seeking to reduce the probability of parasites developing resistance to artemisinin (*Laxminarayan, Over, and Smith 2006; Frost and Reich 2009; Laxminarayan and Gelband 2009*).[††††††††] Not everyone agreed, as discussed below (*Bate and Hess 2009; Frost and Reich 2009; Kamal-Yanni 2010*). Through this mechanism, both the public and private sectors could potentially benefit from an increased volume of less-expensive ACTs. These global disagreements anticipated later disagreements that played out in Ghana during adoption, though they are not the focus of my analytic work here.

Global disagreement centered on whether treatment access was central for lowering malaria mortality and, if so, how to achieve it. The technical design for the AMFm was completed amidst this "heated" global debate (*Frost and Reich 2009*). Skeptics and critics of the *SLBT* proposal questioned the mechanism and its ability to realize targeted outcomes (*Frost and Reich 2009; Independent Evaluation Team 2012*).

Critiques of the mechanism included: whether the global malaria community should focus on treatment rather than prevention; whether it was appropriate or necessary to involve the private sector in delivering public health; whether it was ethical to handle malaria treatment as a commodity rather than distributing

be as widespread in the AMFm pilot countries in SSA, with Nigeria, Ghana, and Zanzibar having oral AMTs that had 5% or more of the market share of antimalarials (*Independent Evaluation Team 2012*).

[††††††††] As the AMFm and this dissertation largely focus on sub-Saharan Africa, I reference 'malaria parasite' as casual shorthand for the *Plasmodium falciparum* parasite carried by the female *Anopheles* mosquito, which is the dominant cause of SSA's malaria and the only cause in Ghana (*Global Malaria Programme, WHO 2013*).

ACTs for free; whether it was wise to make ACTs more accessible absent widespread availability of point-of-care diagnostic testing; and whether the AMFm effectively subsidized pharmaceutical companies, giving them extra profits and lowering their incentive to develop new antimalarials (*Laxminarayan, Over, and Smith 2006; Laxminarayan and Gelband 2009; Moon et al. 2009; Kamal-Yanni 2010*).

For the access outcomes, global actors questioned whether distributors would capture the subsidy rather than passing it on to patients. If the subsidy was captured in the supply chain, patients would not see lowered retail prices. It was further unclear if even the target retail prices (in either the public or private sector) were even low enough to be affordable to the poor and therefore truly improve access.

For the longer-term intended outcomes, it was not clear that the assumptions linking the AMFm, access, and appropriate use would hold on-the-ground and lower malaria mortality. Threats to these assumptions included the ability of private sector retailers to appropriately dispense ACTs; the possible treatment of non-malarial fevers – absent point-of-care diagnostics – with ACTs; and patient willingness and ability to adhere to ACT regimens (*Kamal-Yanni 2010; Moon et al. 2009; Laxminarayan and Gelband 2009; Laxminarayan, Over, and Smith 2006*).[‡‡‡‡‡‡‡‡,§§§§§§§] Others expressed concerns that the AMFm would crowd-out supplies to a public sector that already experienced frequent stock-outs of antimalarial medication or that patients would opt for private facilities over public ones if ACTs were available.[*********]

[‡‡‡‡‡‡‡‡] More detailed descriptions of the early agenda-setting and policy-specification processes and debates can be found in works by Frost and Reich and are recapitulated in the AMFm's IndE (*Frost and Reich 2009; Frost et al. 2009; Independent Evaluation Team 2012*). Here, I concentrate on aspects of the global debate that mirror or inform the debate and Ghana and provide details on the policy content that aid understanding of adoption and implementation in Ghana.

[§§§§§§§] Key adverse effects of taking an ACT when not infected with malaria relate primarily to (1) putting off or foregoing the correct treatment, (2) wasted malaria resources, and (3) threats to the continued effectiveness of ACTs.

[*********] For evidence on stock-outs in SSA, see *e.g.*, (*Zurovac et al. 2008; Kangwana et al. 2009; O'Connell et al. 2011; Sudoi et al. 2012; Githinji et al. 2013; Mikkelsen-Lopez et al. 2014*).

THE AFFORDABLE MEDICINES FACILITY–MALARIA (AMFM): SPECIFYING ITS DESIGN

The technical plan produced by RBM's AMFm Task Force maintained the "spirit" (*Frost and Reich 2009*) of *SLBT* but packaged both supply- and demand-side interventions into three components or prongs (Figure 9) (*AMFm Task Force of the Roll Back Malaria Partnership 2007; Frost and Reich 2009; Adeyi and Atun 2010*). Prong I includes negotiations with global manufacturers to sell ACTs at public-sector prices to the private sector (representing reductions of 29% – 78%), as per a 2001 Memorandum of Understanding between WHO and Novartis to "available at cost price for distribution in the public sector of malaria-endemic developing countries" (*World Health Organization 2011; Tougher et al. 2012*). Prong II includes both the subsidy[†††††††††] and the green-leaf logo applied to the AMFm ACTs as they leave the factory gates.[‡‡‡‡‡‡‡‡‡] Prong III includes interventions to shape (but not control) the s-QA.ACT market, supporting implementation of the AMFm and the appropriate use of antimalarials (*Adeyi and Atun 2010*). As shown in Figure 9, all three prongs involved a supply-side component. However, the national-level work under Prong III had both demand- and supply-side activities.

[†††††††††] Most AMFm documents use the phrase 'buyer co-payment' in place of 'subsidy' as part of a rebranding effort to win over global actors uncertain of the AMFm's concept and with knee-jerk reactions to the term 'subsidy' (*Frost and Reich 2009*). In this dissertation, I use the more familiar 'subsidy' for the sake of clarity, though 'co-payment' is used in the IndE and related publications.

[‡‡‡‡‡‡‡‡‡] Given this pairing of subsidy and logo, I refer to s-QA.ACTs interchangeably as "subsidized" and "AMFm-branded" in this dissertation. The use of a logo was promoted by the early operational research projects, such as the consortium for ACT private sector subsidy (CAPSS) work in Uganda and the Tibamal pilot in Tanzania (*Talisuna, Daumerie, et al. 2012; Kedenge et al. 2013*).

PRONG	LEVEL OF RESPONSIBILITY	FOCUS	CONTENTS
I. Price negotiations	*Global*	*Supply-side*	To lower cost to importers and consumers, the global malaria community negotiated lower ACT prices with selected pharmaceutical manufacturers – specifically chosen from among those already pre-qualified by WHO to produce quality-assured ACTs.
II. High-level subsidy and logo 			To lower cost to consumers, a high-level subsidy, along with its associated 'green-leaf' logo of quality, was applied to ACTs from the chosen manufacturers (AMFm Task Force of the Roll Back Malaria Partnership). This was backed by about US$ 460 million from donors, channeled through GFATM. Once in-country, subsidized drugs entered existing supply chains – public and for-profit – through registered importers.
III. Supporting interventions (SIVs)	*National*		To ensure supply quality, in-country activities were carried out by national actors (AMFm Task Force of the Roll Back Malaria Partnership). Funded by 're-programming' existing Global Fund malaria grants, these activities could include: • National regulatory preparedness • Wholesaler incentives and pricing • Provider training & supervision
		Demand-side	To generate ACT demand, in-country activities – mainly public awareness and education - were carried out by national actors. These activities were funded by 're-programming' existing Global Fund malaria grants (AMFm Task Force of the Roll Back Malaria Partnership).
Adapted from: AMFm Task Force of the Roll Back Malaria Partnership. 2007. *Affordable Medicines Facility - Malaria: Technical Design*. Geneva: Roll Back Malaria Partnership. rbm.who.int.			

Figure 9: Design of the AMFm, including prongs and contents

I present AMFm's theory of change in Figure 10. This figure, adapted from the IndE, illustrates the underlying logic of how the AMFm's designers expected the program would achieve its goals.

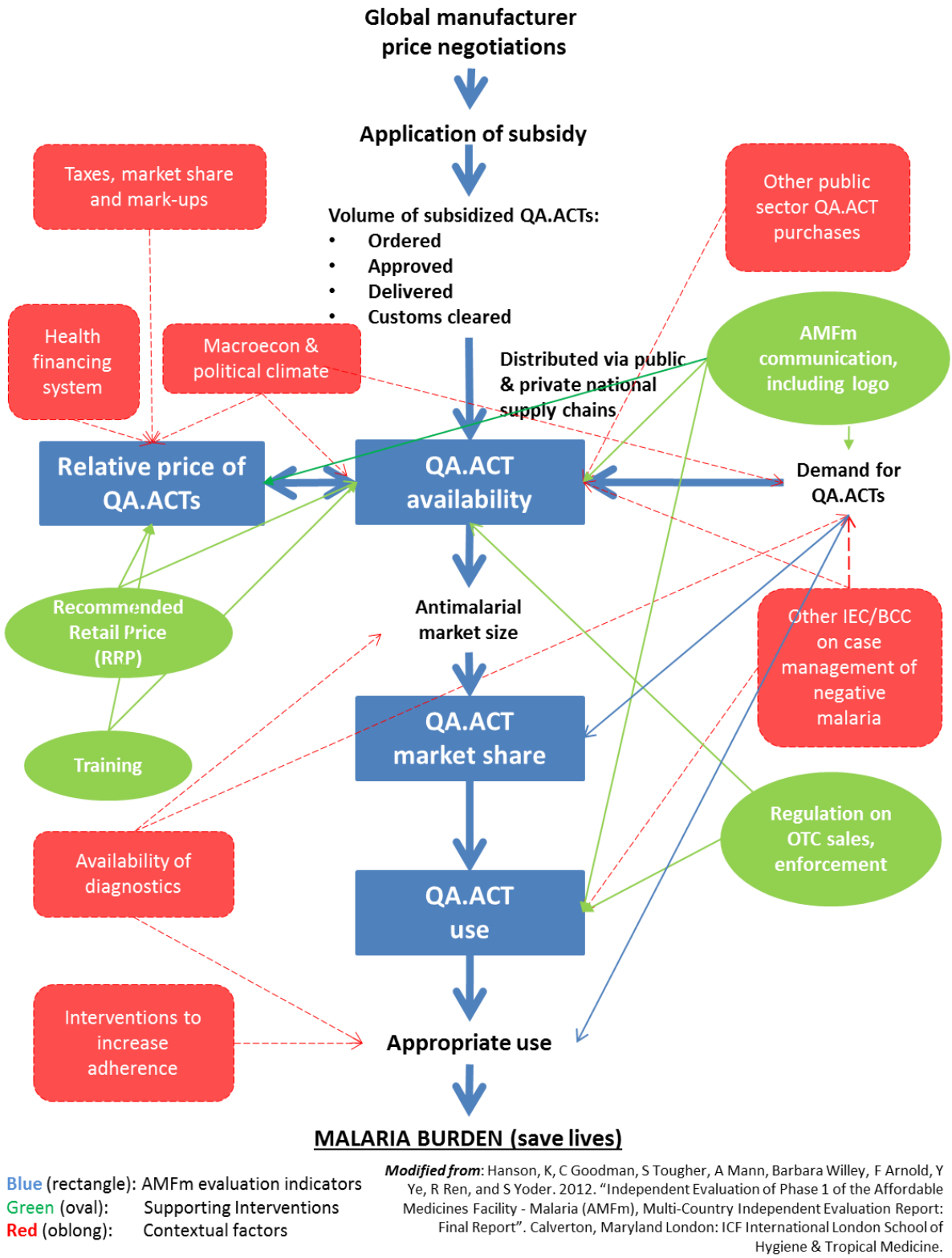


Figure 10: Theory of change for the AMFm, lightly adapted from the authors of the AMFm Independent Evaluation (IndE)

At the top of the figure are inputs. s-QA.ACTs enter national supply channels — public and private — at wholesale prices similar to other antimalarial medications. This was made possible through manufacturer price negotiations and the application of the subsidy from the AMFm fund housed at GF. Then, market forces (shown in the blue rectangles) drive key features of access — availability, market share, and retail prices of s-QA.ACTs — towards those of the other antimalarial medications (*Arrow, Panosian, and Gelband 2004*). The pressure of competitive, local market forces is a key assumption of the AMFm's theory of change; I explore this further in Chapter VIII. QA.ACT availability, relative market share, and relative price, also constitute the major benchmark indicators for the GF-commissioned IndE of the AMFm (*Schäferhoff and Yamey 2011; Independent Evaluation Team 2012*).

To complement these market forces, countries designed Supporting Interventions of oversight (monitoring) and demand-generation (education and persuasion for retailers and consumers) mechanisms.[§§§§§§§§§] These are shown in green ovals in Figure 10 and accounted for about 9% of the overall donor spending on the AMFm (*Kamal-Yanni 2012; Willey et al. 2014*). These include initiatives like:

- advertising the AMFm *green-leaf* logo,
- issuing behavior change communication about the importance of opting for ACTs over other antimalarial treatments,
- developing and enforcing regulations related to the national treatment guidelines for malaria,
- training public and private street-level workers, and,
- as I analyze in Chapter VIII, setting and advertising an RRP.

The hypothesized action channels of these measures are shown in green arrows in Figure 10. Overall, these Supporting Interventions constitute many of national-level implementation responsibilities for a country in the AMFm's Phase I pilot.

[§§§§§§§§§] An underlying assumption of the AMFm, especially without the demand-generating interventions, is that patients see all antimalarials as differentiated mainly by price and quality and that availability and affordability are the binding constraints on pursuing the higher-prices, high-quality option. That is, designers assumed that given a choice between equally priced courses of SP, a non-quality assured ACT, and an s-QA.ACT, a patient would choose the latter. Absent data, it is not clear this was the case. Briggs *et al* provide suggestive evidence from Tanzania (2012 data) that even when SP and s-QA.ACTs were equivalently priced, a minority of patients chose ACTs (*Briggs et al. 2014*). Higher patient-perceived efficacy of and satisfaction with CQ and SP were also noted in Nigeria during Phase I of the AMFm (*Efunshile et al. 2013*).

The elements of the AMFm are implemented against the local contextual backdrop, shown in the red rounded rectangles in Figure 10. These could enhance or impede — that is, they could moderate — progress towards reducing the malaria burden at various points. Moderating effects are indicated by dashed red arrows and include the influence of the health financing systems in place in different countries (such as the NHIS in Ghana) and other on-going programs related to malaria. Figure 10 also includes the broader political and economic environment and more specific issues around importation rules and tariffs.

Besides seeing the expected flow of the AMFm's influence in the theory of change diagram, it is worth noting that the key outcomes measured in the AMFm IndE – availability, price, and market-share, shown in blue rectangles – fall only midway down the expected causal chain. The precise underpinnings of this decision are unclear but the intended timeline for Phase I seems a likely key component (*Schäferhoff and Yamey 2011*). The main reasons for not including the household survey in the IndE to generate data on ACT use are cost considerations of data collection, the AMFm Phase I implementation timeline, and the ability of the evaluation to yield conclusive results********** (*Global Fund 2010a; Global Fund 2010b*).

GHANA

POLITICS, ECONOMICS, AND THE HEALTH SYSTEM

The date of 7 January 2001 marks an important step in the consolidation of Ghana's democracy: Jonathan Kufour was inaugurated as president, enacting the first turnover of party power since the founding of the Fourth Republic in 1992.

After gaining independence from the British in 1957 under the leadership of Kwame Nkrumah, Ghana fell into a period of successive coups and government turnovers. In 1981, Flight Lieutenant J. J. Rawlings had overthrown the 1979-elected government. He set up a dictatorial regime described as "quasi-military"

********** The meeting minutes note that "the TERG [Technical Evaluation Reference Group] advised the AMFm Ad Hoc Committee to be aware that the IndE alone will not yield unambiguous findings to guide decision making" (*Global Fund 2010a*). This could potentially be interpreted, in part, as risk aversion.

and "authoritarian–bureaucratic" (*Whitfield 2009*). During this time, health care and health status in Ghana declined, though life expectancy at birth remains steady or increasing over this period; the nation became one of the case study examples of the negative health effects of macroeconomic policies of the 1980s in UNICEF's *Adjustment with a Human Face* (*Cornia, Jolly, and Stewart 1988; Anyinam 1989; World Bank 2013*).

In 1992, Rawlings relinquished his dictatorship, resigned from the military, and ushered in Ghana's Fourth Republic. He also called for free national elections – in which he ran.

Rawlings represented the new NDC party, with Atta-Mills as his running mate (*Kopecký 2011*). Rawlings won both the 1992 and 1996 elections. In 2000, Kufour of the NPP, defeated NDC's Atta-Mills and NPP gained a Parliamentary majority as well; NPP and Kufour bested Atta-Mills again in 2004.[††††††††††] This set the tone for the 2008 elections, contemporary with the AMFm adoption decision.

Returning to the early days of independence, in the 1960s, Ghana pursued import-substitution policies and indigenization / Economic Ghanaization, leading to "nascent but inefficient industry" (*Whitfield 2010*) (*Boafo-Arthur 1999; Whitfield 2010; Aryeetey and Owoo 2015*). Much of this eroded as trade liberalized and trust between the local business community and the state broke down during Rawlings' tenure as dictator in the 1980s (*Aryeetey and Owoo 2015*). At the end of the Third Republic, as Rawlings took the presidency, Ghana discussed intentions to revive (better-planned) import-substitution industrialization. More broadly during this period, Ghana declared the national goal of attaining middle-income status by the year 2020 (*Ghana - Vision 2020: the First Step; Moss and Majerowicz 2012*).

[††††††††††] Although Ghana is a competitive, multi-party democracy, elections so far in the Fourth Republic resemble a *de facto* two-party system, with tight races between NDC and NPP (*Kopecký 2011*). While both parties ultimately pursue similar policies, each has a distinct founding mythology dating to the colonial and immediate post-independence period, self-described ideological image, and traditional constituencies, all of which they use to mobilize votes (*Whitfield 2009; Ayee 2011*). NDC was established in the tradition of Kwame Nkrumah, with center-left and "populist interventionist" ideologies, and traditionally responding to "the plight of the masses," representing the urban working-class, the unemployed, and the rural poor. NPP traces its foundation to J.B. Danquah and Kofi Busia, espouses center-right and (ethnically) elitist ideologies, and represents the urban middle- and upper-class, including intellectual, professional, and business elites (*Lindberg and Morrison 2005; Kopecký 2011*).

But industrial intentions faced serious barriers in the 1990s: growing aid dependency, return to short-term, election-cycle economic planning, and general distrust between business and the state. The combination of in/actions during Rawlings's military and civilian leadership meant that, by the 2000 election, NPP (Kufour himself was a businessman) could portray NDC as anti-business and unsupportive of the domestic private sector (*Whitfield 2010; Aryeetey and Owoo 2015*).

Also during the 2000 election, NPP fomented support in part by promising to "abolish" the "inhumane" system of health-care user-fees (*NPP 2000*). In place of this scheme, dubbed *cash-and-carry*, they would establish a national health insurance program (*NPP 2000*). User fees in Ghana had become more burdensome to citizens over time – acutely so in the mid-1990s, when the government shifted towards full cost-recovery (that is, less subsidization) for health services and medicines.

In the heady days of independence, the public sector provided free health care. But economic troubles in the 1960s necessitated the government to introduce some fees. In the mid-1980s and again in the early 1990s, under economic pressure as well as external pressure to pursue structural adjustment, the government (NDC) introduced hospital user fees (1985) and then *cash-and-carry* (1992). The latter required patients to pay a portion of all service costs and the total cost of all medicines (*Boafo-Arthur 1999; Nyonator and Kutzin 1999; Rajkotia 2007; Whitfield 2010*). With these changes, public health care use dropped and health outcomes stagnated or worsened (*Anyinam 1989; Lavy et al. 1996*).

While the NDC began experimenting with community-based health insurance schemes in the late 1990s, by the 2000 election, the costs of health care constituted a public problem and a political priority (*Kingdon 1995; Rajkotia 2007; Kusi-Ampofo et al. 2015*). Once in office, NPP drafted a technical design for the NHIS that could pass through Parliament before the 2004 election and could be rapidly implemented nation-wide. Party elites demanded the design embody NPP ideals and allow NPP to brand the new scheme as their own (*Rajkotia 2007; Agyepong and Adjei 2008*). From the outset, many thought the design was flawed and unlikely to be sustainable (*ILO 2006; Rajkotia 2007; Agyepong and Adjei 2008*).

This potentially flawed proposal went up for Parliamentary vote in mid-2003 after only a week of debate (*National Health Insurance Act* 2003). Voting for NHIS and the NHIA followed party lines – that is, when the NDC voted. Most NDC representatives walked out in protest; and NHIS (Act 650) passed (*Rajkotia 2007*).‡‡‡‡‡‡‡‡‡‡ Implementation of Ghana's "bold experiment" commenced during NPP's second term (*Apoya and Marriott 2011*). NHIA was established, with the CEO appointed by the President. Pilot tests began in 2005, followed by scale-up in 2007 and continuation through the present. NHIS again arose as an issue in the 2008 election, just before the Ghana received the invitation to join the AMFm's Phase I.

MALARIA

Like many malaria-endemic countries in the 2000s, Ghana, in 2005, implemented a revised national policy on malaria treatment that made ACTs (in particular, the Artesunate+Amodiaquine (AA) combination) the first-line treatment protocol (*Williams, Durrheim, and Shretta 2004; R-7, n.d.*). Shortly thereafter, it granted them OTC status for private retail (in both pharmacies and LCSs) (*Pharmacy Council, Ministry of Health 2009; "Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009*).

At the same time, Ghana banned imports of CQ and SP, which seems to have spurred local production and not deterred use (*"Ban on Chloroquine Still in Force" 2014*). With these changes, Ghana paralleled many countries, which switched from CQ in the wake of increasing evidence of parasite resistance to it. This change was also spurred on by GF's new rule that the antimalarial treatments it funded be WHO-quality-assured ACTs (*Williams, Durrheim, and Shretta 2004; Shretta, Adegoke, and Segbor 2007*).

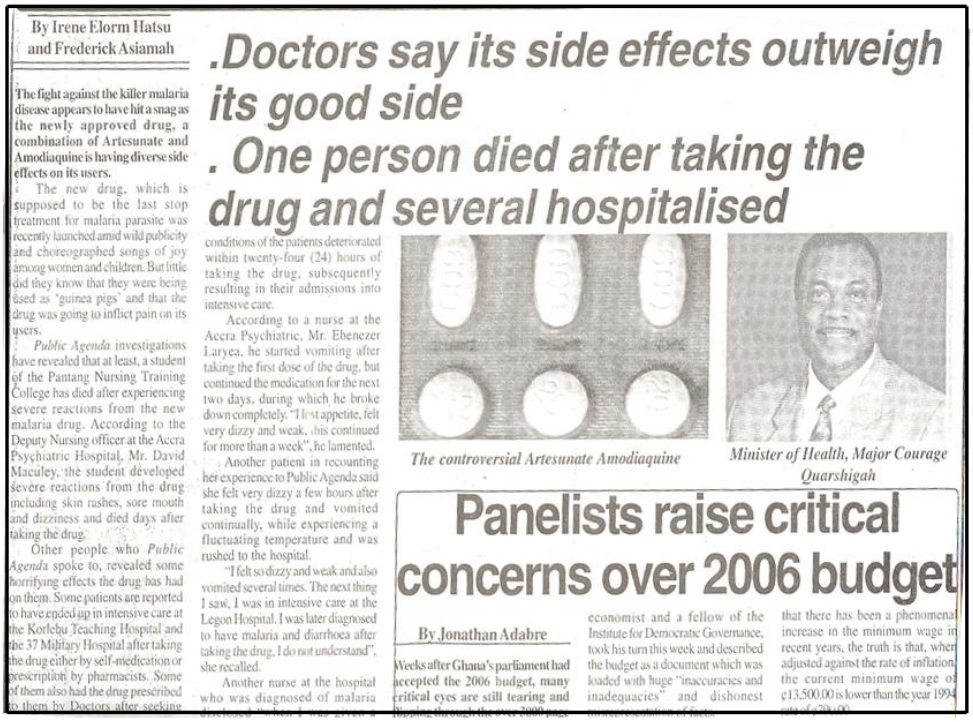
The initial 2005 launch of the AA variety of ACTs in Ghana was not smooth. Some people experienced negative reactions to the new medicine, leading the media to ask questions in articles with headlines

‡‡‡‡‡‡‡‡‡‡ To contextualize this move, note that in Ghana "for most of the time, each Member of Parliament (MP) operates with little guidance from the party Whip and an anomic party culture (with low party loyalty and low intra-party deliberation) prevails. A hierarchical culture (with high loyalty and low deliberation) evolves in situations of 'crisis' when the party reputation or status is being threatened and everyone is potentially adversely affected " (*Hyden 2010*).

including "*Artesunate Amodiaquine: A killer drug or a curer*?" and the one in Figure 11, highlighting the side effects of the medication (*Nketia 10*).[§§§§§§§§§§] This experience fostered some bias against AA, with amodiaquine – as AA is sometimes referenced — colloquially called "*I-go-die-a-quick*" (*R-9, n.d.*). This experience may have led to lingering distrust of the AA formulation and sometimes-cited reluctance to use it in Ghana (*Ghana Statistical Service , Ghana Health Service, and ICF Macro 2009; R-7, n.d.*).

In late 2005, amid controversy and blame about the quality of AA on the market and the resulting illnesses, the MoH temporarily withdrew AA and later relaunched it, amending the suggested first-line ACTs to include AA as well as Artemether+Lumefantrine (AL), and dihydroartemisinin+piperaquine (*Ghana News Agency 2005; Yeboah 2005; USAID, President's Malaria Initiative 2008; Ghana Statistical Service , Ghana Health Service, and ICF Macro 2009*).

[§§§§§§§§§§] It is worth noting how some people responded to the negative press and experience of AA. The two drugs comprising AA were in separate pills – yellow and white h-- in the same foil blister pack ('co-blistered' rather than co-formulated as a single fixed dose), such that a patient had to take both a white pill and a yellow pill in one go to receive a combination therapy. But some patients decided the yellow pill was worryingly strong. In response, many just took the white (artemisinin) pill and skipped the yellow (amodiaquine) pill, rendering the treatment a monotherapy (i.e. artemisinin taken neat rather than as part of the intended cocktail) and less effective.



By Irene Elorm Hatsu and Frederick Asiamah

.Doctors say its side effects outweigh its good side

. One person died after taking the drug and several hospitalised

The fight against the killer malaria disease appears to have hit a snag as the newly approved drug, a combination of Artesunate and Amodiaquine is having diverse side effects on its users.

The new drug, which is supposed to be the last stop treatment for malaria parasite was recently launched amid wild publicity and choreographed songs of joy among women and children. But little did they know that they were being used as 'guinea pigs' and that the drug was going to inflict pain on its users.

Public Agenda investigations have revealed that at least, a student of the Pantang Nursing Training College has died after experiencing severe reactions from the new malaria drug. According to the Deputy Nursing officer at the Accra Psychiatric Hospital, Mr. David Maculey, the student developed severe reactions from the drug including skin rashes, sore mouth and dizziness and died days after taking the drug.

Other people who *Public Agenda* spoke to, revealed some horrifying effects the drug has had on them. Some patients are reported to have ended up in intensive care at the Korlebu Teaching Hospital and the 37 Military Hospital after taking the drug either by self-medication or prescription by pharmacists. Some of them also had the drug prescribed to them by Doctors after seeking

conditions of the patients deteriorated within twenty-four (24) hours of taking the drug, subsequently resulting in their admissions into intensive care.

According to a nurse at the Accra Psychiatric, Mr. Ebenezer Laryea, he started vomiting after taking the first dose of the drug, but continued the medication for the next two days, during which he broke down completely. "I lost appetite, felt very dizzy and weak, this continued for more than a week", he lamented.

Another patient in recounting her experience to Public Agenda said she felt very dizzy a few hours after taking the drug and vomited continually, while experiencing a fluctuating temperature and was rushed to the hospital.

"I felt so dizzy and weak and also vomited several times. The next thing I saw, I was in intensive care at the Legon Hospital. I was later diagnosed to have malaria and diarrhoea after taking the drug, I do not understand", she recalled.

Another nurse at the hospital who was diagnosed of malaria

The controversial Artesunate Amodiaquine

Minister of Health, Major Courage Quarshigah

Panelists raise critical concerns over 2006 budget

By Jonathan Adabre

Weeks after Ghana's parliament had accepted the 2006 budget, many critical eyes are still tearing and

economist and a fellow of the Institute for Democratic Governance, took his turn this week and described the budget as a document which was loaded with huge "inaccuracies and inadequacies" and dishonest

that there has been a phenomenal increase in the minimum wage in recent years, the truth is that, when adjusted against the rate of inflation, the current minimum wage of ¢13,500.00 is lower than the year 1994

Image courtesy of Dr. Alex Dodoo

Figure 11: Ghana's initial launch of artesunate amodiaquine (AA, a variaty of ACT) as the first-line treatment for malaria was problematic

The policy naming ACTs the first-line treatment, once relaunched, made these drugs more important in Ghana. It did not, however, automatically make them more accessible. Access continued to be constrained by limited availability, prescribing patterns, and prices. The limited contemporary, peer-reviewed evidence on aspects of access such as stocking and treatment is mixed and no data could be found on consumer preferences absent budget constraints.[**********] Private facilities, particularly those outside

[**********] In the follow-up PACT work (described in Chapter III and provided in full in Appendix F), a small set of responding retailers noted that the number of pills in an ACT treatment course was a potential deterrent, such as:

- *"some people complain that the ACT pills are just too many*" and
- *"sometimes some patients fear too many pills*" and
- "*they believe the pills are too many*" and
- "*they do complain that the pills are many*" and
- "*many clients do complain that the 4 pills at a time is many*" and
- "*the 4 tablets of ACTs, most patients think is too much*" and
- "*most people, especially from villages, believe that ACTs, because they have more tablets, means that they can just take some of the pills*" and
- "*many clients do complain that the 4 pills at a time is many, so patients do not complete the dosage*" and
- asking if we could "*do anything to reduce the number of pills from 4 pills to 2 pills or 1 pill? More people find it difficult to complete the dosage because it is 4 pills*" each time.

Greater Accra, more often stocked monotherapies – of SP, CQ, Artesunate, or amodiaquine – reflecting medicines supply and/or demand (*Adjei et al. 2008; Buabeng et al. 2008; USAID, President's Malaria Initiative 2008; Dodoo et al. 2009; "Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009; Buabeng et al. 2010*). These sources suggest that between 2005 and 2009, only limited amounts of ACTs may have been stocked, prescribed, and used.

While the treatment patterns described above may reflect adult care-seeking, parents often seek appropriate care for their children. In the Demographic and Health Survey (DHS) data collected in Ghana in 2008, focusing on surveyed households reporting children under the age of 5 having a fever in the previous two weeks (n=544, about 20% of the surveyed sample), 41% reported seeking care at a public facility (of any sort), 28% sought care at any private facility (of any sort), and 31% reported seeking no care. Of the 88 households in Northern Region reporting fever in the previous fortnight, about 26% did not seek treatment, while 44% sought care at a public facility and 30% sought care at a private facility. The type of treatment received for children under 5 reported to have a fever in the past two weeks is described in Table 2, reported in percentages. The ACT numbers are driven almost entirely by AA.

	SP/Malafan	Chloroquine	Camoquine	Quinine	Artemisinin	ACT	Other antimalarial
All Ghana	4.4	8.7	2.2	1.7	1.3	21.6	4.4
Urban	5.6	6.1	1.8	3.2	1.1	30.1	6.3
Rural	3.8	10.2	2.8	0.8	1.4	16.8	3.4
Northern Region	5.7	7.5	0.0	3.4	1.4	17.8	4.4
Urban	13.2	3.0	0.0	7.0	0.0	28.9	6.3
Rural	1.8	10.0	0.0	1.5	2.1	9.9	0.0

Table 2: Type of antimalarial drugs, by type of residence and region

Ghana's malaria supply chain and case management: public and private

Supply chain

In its AMFm application, Ghana's CCM refers to the private sector as "vibrant" (*"Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009*). Elsewhere, it has been described as "fragmented, chaotic" (*McCabe et al. 2011*), opaque, and, more optimistically, as allowing "entrepreneurial freedom" (*Seiter et al. 2009*) (*Seiter and Gyansa-Luerodt 2009; McCabe et al. 2011*). In terms of ACT supply chains, both vibrancy and chaos are reflected in the 150 wholesalers, 1,400 private pharmacies, and more than 10,000 LCSs spread across Ghana, about which there are limited data. In much of SSA, including Ghana, a single firm may fulfill one or more of the following functions: importing, wholesaling, distributing, and retailing. This contrasts with Francophone countries in SSA, which often have more tightly regulated domestic pharmaceutical sectors, with curtailed numbers of importers, wholesalers, and distributors greatly curtailed, each with clear, separate roles (*African Union Commission 2007; McCabe et al. 2011*).

In Ghana, non-pharmacists are permitted by law to own pharmaceutical importation and distribution companies as long as they employ pharmacists to supervise the supply of medicines. At the time of the AMFm application, PMAG had 38 members, six of whom had the capability to manufacture ACTs (whether or not they were doing so at that time). Of the 38 firms, 11 also have an importation wing, of whom 4 could have potentially registered as FLBs to import under the AMFm (*Asante 2014*).

Public sector procurement is the purview of MoH, which places large orders once or twice a year and ships these to its Central and Regional Medical Stores. However, this ordering pattern makes these inventory warehouses, with limited storage capacity, prone to stock-outs (*"Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009*). Due to stock-outs, public facilities procure up to 80% of their supplies from private-sector supply channels, which can legally and practically fill the gaps between ordered and needed drugs — "as long as cash is available" (*Seiter and Gyansa-Luerodt 2009*) (*Seiter and*

Gyansa-Luerodt 2009; McCabe et al. 2011).[††††††††††] However, cash is not always available given delays in government funding and NHIS reimbursements (*Rockefeller Foundation, Results for Development Institute 2008*).

Care-seeking and case management

In this section, I briefly review research findings from studies focused on the time period relevant to the adoption of the AMFm. First, researchers analyzing two regions in southern Ghana in 1997 (and therefore prior to the NHIS) find that treatment and time-costs are major determinants of a household's preferred provider (*Dzator and Asafu-Adjaye 2004*). Another study, with data collected in 2004 and 2005, reflects a similar finding: the use of private or informal care increased as the distance to the nearest public health facility increased (*Ansah et al. 2009*). Ansah *et al*, who aimed to simulate aspects of free health care in their study, found that reducing the direct costs of health care led to a "modest but significant" shift from private and informal sources of care to public health facilities. The authors could not attribute a change in health outcomes (specifically, anemia) to these shifted treatment-seeking patterns (*Ansah et al. 2009*).

In a final study, conducted in southern Ghana and focused specifically on consumer preferences, researchers found that consumers felt that public sector health workers often had negative attitudes, though this factor was not significantly associated with the decision about whether to enroll in NHIS (*Jehu-Appiah et al. 2012*). This finding echoes concerns about attitudes in the public sector from pre-NHIS studies; the authors note that "the increased service utilization that has accompanied the removal of the financial barrier by the NHIS has not been matched by a commensurate increase in already inadequate human resources, infrastructure, equipment and supplies" (*Jehu-Appiah et al. 2012*). Frequent stock-outs in the public sector may require patients who seek care in the public sector to still go to the private sector to obtain treatment and may, therefore, influence where patients decide to seek care first.

[††††††††††] Public sector procurement from the private sector is allowed under the Procurement Act of 2003.

In Table 3, I provide existing data on a variety of public and private health and pharmaceutical facilities across Ghana to illustrate both the extent of the private sector's reach and the overall paucity of health facilities in Northern Region. If health facilities were divided evenly by Ghana's regions, 10% of facilities would be in Northern Region; if facilities were distributed by the population in each region, again, 10% of facilities would be in Northern Region. Thus, Northern Region seems to have more public and teaching hospitals than may be expected (mostly based in the capital of Tamale) but fewer private pharmacies or LCSs (*McCabe et al. 2011; Ghana Health Service 2012*). Unfortunately, Ghanaian health facility data are not always broken down by regions, so these comparisons cannot be made in all cases.

FACILITY	AUTHORITY	DESCRIPTION	NORTHERN	GHANA	NORTHERN / GHANA
Public hospitals (tertiary & secondary)	Ghana Health Service (GHS, public)	Secondary and tertiary facilities, including regional hospitals and polyclinics	10	116	*9%*
Public health centers	Ghana Health Service (GHS, public)	Primary facilities	122	1106	*11%*
Public teaching hospital	Ministry of Health	University-linked facilities	1	3	*33%*
Community-Based Health Planning and Services (CHPS zones)	Ghana Health Service (GHS, public)	Low-level facilities to extend basic package of services to under-served areas	95	379	*25%*
Mission Hospitals and Health Centers	(private not-for-profit)	Christian Health Association of Ghana (CHAG) and Muslim Ahmadiyya Movement (MAM)	44	336	*13%*
Private hospitals and clinics	Private Hospitals and Maternity Homes Board, public; Ghana Medical Association, professional	Private hospitals, health care centers, clinics, and maternity homes	28	1,277	*2%*
Wholesaler and wholesaler-retailer	Pharmacy Council	Some wholesalers position themselves as 'one-stop-shop,' buying from several other importer-wholesalers as well as directly from importers.	--	494	--
Private pharmacies	Pharmaceutical Society of Ghana (PSGH, professional); Pharmacy Council (PC, public)	Vendors licensed to carry prescription medications, including those that also wholesale	22	1,200	*<1%*
Licensed Chemical Sellers (LCS)	Pharmacy Council (PC, public)	Vendors licensed only to sell over-the-counter medicines. Formally, this is the lowest level at which ACTs can be sold. The "LCS" category was established in 1994	723	11,200	*6.5%*

Rough estimates based on:

McCabe, Ariane, Andreas Seiter, Aissatou Diack, Christopher H. Herbst, Sheila Dutta, and Karima Saleh. 2011. "Private Sector Pharmaceutical Supply and Distribution Channels in Africa."

Ghana Health Service. 2012. The Health Sector in Ghana: Facts and Figures 2010. Accra: Ghana Health Service.

Pharmacy Council, personal contact. Data from 2011.

Table 3: Comparison of health and pharmaceutical facilities in Ghana and Northern Region, suggesting uneven coverage in Northern Region

SECTION IV.2: NOVEMBER 2008 – JUNE 2009, GLOBAL ADOPTION AND IMPLEMENTATION OF THE AMFM, NATIONAL ELECTIONS AND NATIONAL ADOPTION OF THE AMFM

GLOBAL

GLOBAL ADOPTION OF THE AMFM

To adopt the AMFm's technical plan — to endorse it and allow implementation to begin — the initiative needed an organizational host at the global level. In November 2008, at its 18th Board Meeting, GF agreed to play this role (*Global Fund 2008a*). Mindful of the strong but divergent global views in the absence of evidence from scaled programs, GF required the initial roll-out to be an explicitly experimental pilot (*Global Fund 2008a*).

The Board further required an independent entity to evaluate the Phase I pilot. The Board planned to use the results from the IndE to inform the position of the AMFm in its portfolio beyond Phase I: "maintained, modified, scaled-up, or terminated" (*Global Fund 2008a; Schäferhoff and Yamey 2011*).[‡‡‡‡‡‡‡‡‡‡‡] That is, the evaluation of Phase I would, in, turn, potentially inform GF's (and the global) agenda on ACT access and malaria control (*Global Fund 2008a; Schäferhoff and Yamey 2011*).[§§§§§§§§§§]

[‡‡‡‡‡‡‡‡‡‡‡] In its set-up, then, GF's pilot- then-decide approach appeared a paragon of evidence-informed decision-making. Note, however, with reference to theory of change (Figure 10), that the outcomes of affordability (price), availability, and market share fall in the middle of the hypothesized causal pathway. Yet part of the global controversy about the AMFm, which the pilot was mean to inform, was whether it could achieve its intended impacts. From the beginning, then, it was unclear that the IndE would produce all the evidence needed to show whether or not the AMFm "works" but it could provide a proof-of-concept.

Note further that the benchmarks-of-success were set by on what was achievable in the allotted pilot period, rather than the pilot lasting to see effects that would address skeptics' concerns. Thus, the benchmark price-point for "successfully" achieving affordability came from an assessment of feasible prices in allotted time rather than of willingness or ability to pay (*personal conversations at* (*Schäferhoff and Yamey 2011; "Joint IOM/Center for Disease Dynamics, Economics & Policy Meeting 'Affordable Medicines Facility- malaria Review and the Financing of Febrile Illness Management'" 2012)*).

[§§§§§§§§§§] How the Board would use the IndE results in decision-making was unclear. The invitation to countries to apply to join the AMFm pilot, sent in March 2009, read: "t*he Board has clearly stated that the AMFm will only be terminated if clear failures are identified during Phase 1*" while the Phase I application announced on its cover that the results of the Phase I IndE "will be used by the Board to decide to proceed to a global roll-out of the AMFm" (*Churchill 2009; "Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009*).

Piloting was a large undertaking.[**********] Participating countries had to implement the AMFm at national-scale, because in the initiative's design ACTs flow through extant supply chains with minimal constraints. This required private sector participation as well as new public sector roles in coordination, monitoring, training, and marketing (*Churchill 2009*).

At GF's request, researchers at the Evidence to Policy Initiative (E2Pi) developed a set of access-related indicators to structure the IndE, which are shown in Table 4. These included three "outcome" criteria (availability, affordability, and market share against AMT) and one "impact" indicator (use) (*Schäferhoff and Yamey 2011; Independent Evaluation Team 2012*). Further, E2Pi estimated realistic progress on key goals within the planned 18 to 24 pilot months, which set the benchmark levels for the IndE "criteria of success" (*Schäferhoff and Yamey 2011*). As noted earlier, in 2010 GF opted not to fund measurement of ACT use via a household survey (*Global Fund 2010b*). Other studies have subsequently worked to fill this gap (*Morris et al. 2014*). The categories of availability, affordability, and awareness structure the findings presented in Chapters VII and VIII.

[**********] Given this scale and scope of work, not all observers agreed with GF's label of Phase I as a "pilot" (*Paulson 2012*). If pilot studies are small-scale and time-delimited runs of an intervention for proof-of-concept and feasibility checks, it is not clear Phase I of the AMFm meets this definition (*van Teijlingen and Hundley 2002*). While Phase I is thus potentially a pilot-in-name-only, for the sake of brevity and consistency with GF terms, I refer to Phase I as a pilot.

Table 4: Benchmarks of success for Phase I

BENCHMARK	DEFINITION	CRITERIA OF SUCCESS
AVAILABILITY		
Increased availability of QA.ACTs	Degree to which AMFm increases the proportion of all facilities with any anti-malarials in stock that have QA.ACTs	• 20%-point increase in QA.ACT availability
Decreased availability of non-QA.ACTs	Degree to which QA.ACTs crowd out non-QA.ACTs	• 10%-point increase in market share of QA.ACTs • Decrease in AMT market share
AFFORDABILITY		
Increased affordability	Degree to which subsidy lowers the consumer price of QA.ACTs for most patients, relative to the price of the most popular non-QA.ACT	• Ratio of median price of s-QA.ACTs to median price of the most popular non-QA.ACT on the local market is ≤3
USE		
Increased use of QA.ACTs	Degree of increase in QA.ACTs use for treatment of fever, especially by vulnerable SES groups	• 5%-point increase in children with fever in the two weeks prior to survey receiving ACT treatment
Adapted from: AMFm Task Force of the Roll Back Malaria Partnership. 2007. Affordable Medicines Facility - Malaria: Technical Design. Geneva: Roll Back Malaria Partnership. rbm.who.int. Schäferhoff, Marco, and Gavin Yamey. 2011. Estimating Benchmarks of Success in the Affordable Medicines Facility—malaria (AMFm) Phase 1. http://www.seekdevelopment.org/e2pi_estimating_benchmarks_in_amfm_report_en.pdf.		

GLOBAL INSTALLATION AND IMPLEMENTATION OF THE AMFM

Before moving toward implementation in pilot countries, Prongs I and II — the high-level negotiations, subsidies, and logos— needed to be installed at the global level. Global stakeholders negotiated with pre-qualified ACT manufacturers to sell to the private sector in the AMFm countries at the price-point at which they already sold to the public sector (*Global Fund 2010c; Independent Evaluation Team 2012*). Given that GF hosted the AMFm and has clear rules about quality-assurance, it was requisite that included manufacturers have received WHO pre-qualification for the production of ACTs (*Global Fund 2010d*). At the time, all of these companies were based in Europe and Asia. Note that the decision for WHO to make the effort to test a manufacturing site for pre-qualification is in part linked with whether that site produces at sufficient scale. Therefore, while some Ghanaian stakeholders wanted AMFm funds to facilitate the pre-qualification process, local prequalification was not as serious a consideration as part of the AMFm funding or design itself, given its urgent timeframe.

To pay for the Prong II subsidies, funds from DFID[††††††††††††], Gates[‡‡‡‡‡‡‡‡‡‡‡‡], and UNITAID went into an ear-marked (or ring-fenced) cache, from which GF applied the subsidy when pilot countries placed s-QA.ACT orders (*Frost et al. 2009*). GF also arranged that financing for Prong III, the *Supporting Interventions*, would come through its existing grants. In each pilot country with in-progress GF grants that included ACT procurement, the savings realized through the subsidy were "re-programed" to fund the AMFm's *Supporting Interventions* (represented by the ovals in Figure 10) (*"Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009*). Note that this has implications for how much new money a participating country would receive for piloting the AMFm[§§§§§§§§§§§], as discussed below in the subsection on putting together the proposal.

In February 2009, the RBM convened eleven potential invitees for a "consultative workshop" to discuss the Phase I application process with potential applicants and to "enable all countries to make an informed, evidence-based country decision on whether to apply to the AMFm" (*Global Fund 2009a*). The head of Ghana's NMCP went to this meeting to air her reservations about the AMFm (*R-1, n.d.*).

With these details of the AMFm in place, in March 2009 GF invited CCMs of ten selected SSA countries to apply for Phase I (*Churchill 2009; Global Fund 2012a*). The application required three main tasks: (1) describing national pharmaceutical regulations, tariffs, and quality monitoring systems; (2) calculating how much grant money could be saved through ACT subsidies and thus re-programed; and (3) detailing the planned Supporting Interventions (*Global Fund 2008a; Global Fund 2009b*).

[††††††††††††] The United Kingdom's bilateral aid agency, Department for International Development

[‡‡‡‡‡‡‡‡‡‡‡‡] The Bill and Melinda Gates Foundation

[§§§§§§§§§§§] In reflecting on the grant-writing process, members of NMCP note: "The AMFm grant was not entirely new, but part of an already existing grant — Ghana's Global Fund Malaria Grant Round 4. The new element of the grant was intended to reduce the unit cost of ACTs and to re-program the savings to undertake interventions including training, behavior change communications, monitoring, and regulatory activities in the country" (*K. L. Malm et al. 2013*).

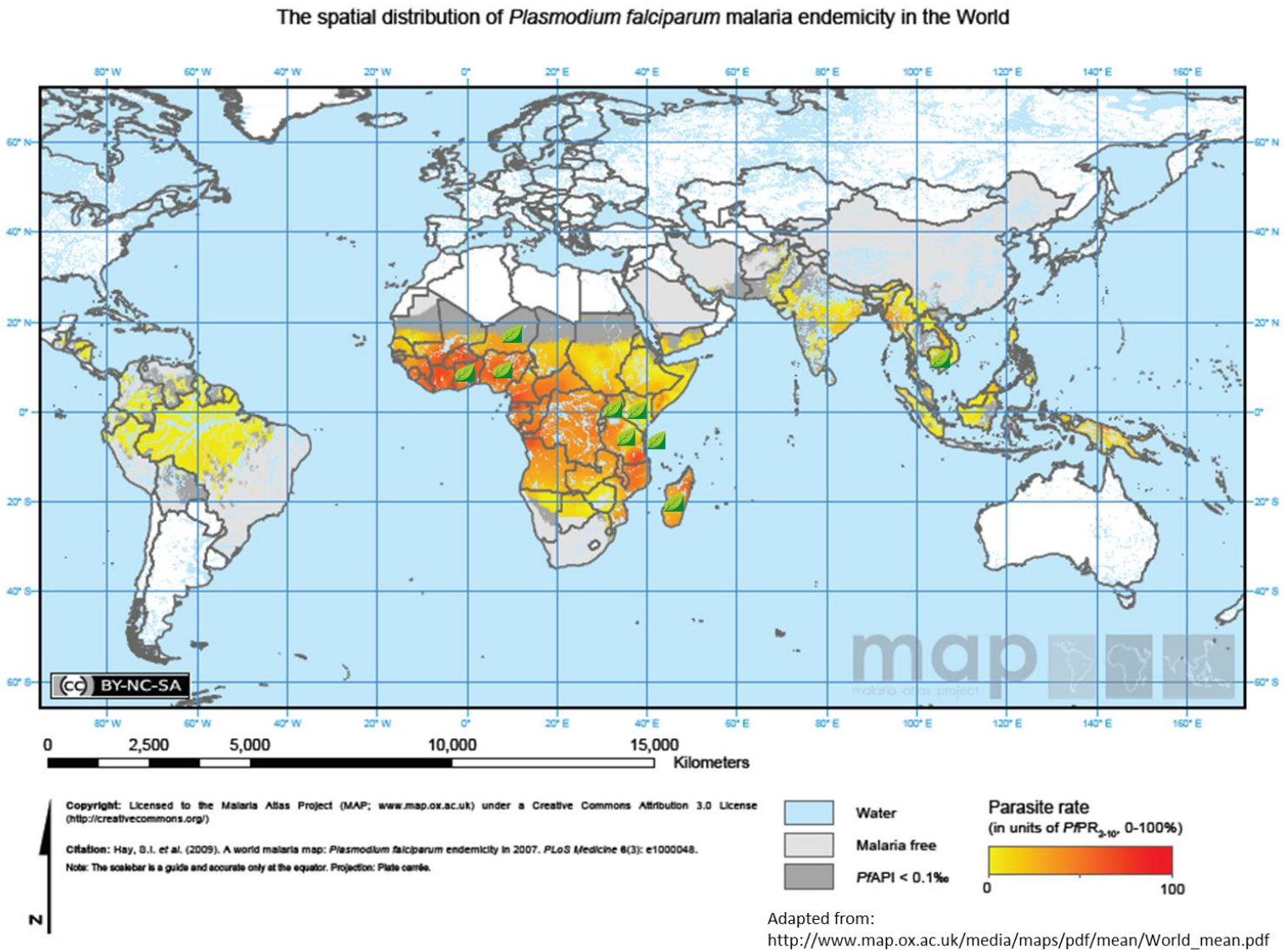
In mid-June 2009, RBM and GF convened a workshop on the AMFm monitoring and evaluation to address country questions, supported by global policy entrepreneurs including CHAI and Dr. Olusoji Adeyi who had also helped bring the AMFm idea onto the global agenda (*Adeyi and Atun 2009; Frost et al. 2009; O. J. Sabot et al. 2009; Adeyi and Atun 2010*). These included how the public sector could oversee private, for-profit entities and whether "weak AMFm implementation and progress [could] impact negatively upon" renewal of on-going GF grants (*Roll Back Malaria Partnership 2009b*). GF assured attendees that everyone understood Phase I "is a learning phase" and that the AMFm "will be globally rolled out unless serious design failures are identified during Phase I" (*Roll Back Malaria Partnership 2009b*). Potential failures, or *red flags*, corresponded to the AMFm's IndE benchmarks (*i.e.* serious price violations, serious lack of availability, or limited crowding out of AMTs) (*Roll Back Malaria Partnership 2009b*).

Given GF's discretion in inviting countries to apply and guidance as countries prepared applications, a CCM that submitted an application to Geneva had taken the critical step in joining Phase I.[**********] That is, a submitted application had a good chance of gaining approval from GF. But not all formally invited SSA countries, including Ghana, immediately decided to take the step of applying. Of the ten invitees, nine applied. Rwanda opted not to apply, citing budgetary shortfall (*Rwanda CCM 2010*).[††††††††††††] Seven joined Phase I, while two (Benin and Senegal) were not selected. In SSA, these seven selected countries formed regional clusters: Kenya, Tanzania (mainland and Zanzibar), and Uganda in the east; Ghana, Niger, and Nigeria in the west; and Madagascar in the south (see Figure 12).

[**********] The process of selecting invitees remains opaque. Considerations included, but probably were not limited to, the burden of malaria and the functionality or readiness of the country's malaria program (*Independent Evaluation Team 2012*). Even the letter inviting countries to apply to the AMFm only states, "*the Global Fund Board agreed that countries eligible to apply for the AMFm Phase 1 would be selected based on a set of criteria developed in partnership with WHO. I am very pleased to advise you that CCM Ghana was found eligible to apply*" with no further elaboration (*Churchill 2009*).

[††††††††††††] The Global Fund did not make publicly accessible any information about the decision of Rwanda not to participate or why GF did not choose Benin or Senegal for the pilot. I am appreciative to Rwanda's CCM for supplying this information. Though beyond the scope of the present work, it would be interesting to explore whether Rwanda's decision is in line with its 'development patrimonalist' stance, as has been contrasted with neopatrimonialism and 'competitive clientelism' in Ghana (*Booth 2012b*).

Figure 12: Map of global endemicity of *P. falciparum* malaria, with countries selected for Phase I of the AMFm marked with its green-leaf logo



Adapted from:
http://www.map.ox.ac.uk/media/maps/pdf/mean/World_mean.pdf

GHANA

POLITICS, ECONOMICS, AND THE HEALTH SYSTEM

The end of 2008 in Ghana marked a heated national election between the incumbent NPP (under Akufo-Addo), the NDC (under former Vice-President Atta-Mills), and smaller parties. Neither NPP nor NDC crossed 50% in the 8 December election, requiring a run-off on 28 December. NDC won by a thin margin.

NHIS featured in election debates, as both parties tried to claim credit for its intellectual and ideological origins. Alongside other social protection programs implemented under NPP (National Youth Employment Program, School Feeding Program), NHIS represented both the work each party had done and what they might do in the future (*Gyimah-Boadi 2009*).

Many news items mentioning NHIS during this period reported on party efforts to either soothe or stoke concerns that voting NPP out of office would be the end of NHIS (*Gyimah-Boadi 2009*). Leading to the election, I considered nearly 60% of the mentions of NHIS by Ghana News Agency as political (refer to Chapter III for information on coding).

NPP trumpeted the scheme as a "feather in their cap" (as per 27% of coded newspaper mentions, including (*Ghana News Agency 2008c*)) and explained plans to expand it further (5%). Meanwhile, opposition parties, especially NDC, claimed that NHIS was not NPP's idea (5%), that NPP had implemented NHIS poorly or corruptly (8%), and promised that, under their rule, the scheme would be maintained, expanded, and improved (13%) (*NDC 2008; Ghana News Agency 2008b*). These promises were echoed in NDC's manifesto.

Although one respondent said that NHIS was the "only politically sexy topic in health" (*R-7, n.d.*) in Ghana, both parties focused (in speeches and manifestoes) on prevention, environmental cleanliness, food and water safety, and personal responsibility for health (*NPP 2008; NDC 2008; Ghana News Agency 2009i*). Atta-Mills (and by extension the NDC) focused keenly on filth. He noted in his foreword to the NDC manifesto that Ghana had recently been declared the "fourth filthiest" country in Africa; he promised

"bold and comprehensive measures to deal with the appalling filth in our communities" as a key goal for his first 100 days in office (*NDC 2008*).‡‡‡‡‡‡‡‡‡‡‡‡‡

In their manifestos, both parties expressly linked the health of the populace and its productivity and strength to Ghana's ability to reach middle income status by 2020 (*NDC 2008; Ghana News Agency 2008a; NPP 2008*). In turn, they linked health to personal and community responsibility for taking preventative measures. Political leaders noted that if citizens undertook preventative measures, addressing many of the common diseases in Ghana, it would free funds for other development work, including education and employment (*e.g.* (*Ghana News Agency 2009n; Ghana News Agency 2009d*)). Political leaders also noted the idea of technology transfer and the need for Ghana to produce its own larvicides and treatments.

In line with this, NDC brushed up its business *bona fides* by declaring in its manifesto an intent to forge partnerships between government and the private sector, attending to pharmaceutical manufacturing§§§§§§§§§§§§ as a key industrial sector for investment and growth (*NDC 2008*). It cited the pharmaceutical sector as a key supporter of NDC during the election; however, through the member-checking process described in Chapter III, a PMAG representative notes it is inaccurate to say the organization has an association with politicians that helps them gain some form of favors from government (*Asante 2014; R-15, n.d.*).**********

Following the NDC's victory in the run-off election, malaria and the NHIS maintained places in speeches and news reports. In January and February, reports recounted clean-up initiatives around Ghana as part

‡‡‡‡‡‡‡‡‡‡‡‡‡ A commitment to environmental sanitation also allowed NDC to counter claims that it intended to dissolve its partnership with the waste management company ZoomLion©, a public-private partnership established by the NPP that the latter alleged would be dissolved if they were not re-elected (*Ghana News Agency 2008d*).

§§§§§§§§§§§§ Along with agro-processing, textiles, minerals, petro-chemicals, timber, and construction materials (*NDC 2008*).

********** To my knowledge, there is no way of verifying lobbying activities or campaign contributions in Ghana.

of Atta-Mill's promise to address filth. The President reiterated commitments to NHIS and to environmental cleanliness in his State of the Nation Address in February 2009 (*Atta-Mills 2009*).

Also in February 2009, President Atta-Mills appointed George Sipa-Yankey as the new Minister of Health. At his confirmation hearing, reported under the headline *Govt determined to eradicate malaria*, he explained it was his "dream to eliminate malaria" from Ghana (*Ghana News Agency 2009b*). He laid out a prevention-focused program of "environmental cleanliness" and insecticidal spraying (*Ghana News Agency 2009b; Ghana News Agency 2009c*).[††††††††††††††] Besides recognizing malaria as a leading cause of Ghana's morbidity, out-patient visits, and mortality, the new Minister said his motivation was the cost of malaria treatment to the Ghanaian economy — he cites these costs at US$ 760m — noting that this money could be better spent on other development efforts; he echoed this sentiment on other occasions (*Ghana News Agency 2009b; Ghana News Agency 2009d; Ghana News Agency 2009f*).[‡‡‡‡‡‡‡‡‡‡‡‡‡‡]

Minister Sipa-Yankey was outspoken about eliminating malaria from Ghana and West Africa, citing a goal of "zero cases" (*GNAh*) by 2010, the intention to form an "antimalaria brigade (*GNA 2009l*)." He also planned to encourage other West African nations to take up Ghana's Malaria Vector Control Plan, a preventative initiative that formally launched in mid-June 2009 (*Ghana News Agency 2009b; Ghana News Agency 2009g; Ghana News Agency 2009j; Ghana News Agency 2009l; Ghana News Agency 2009n; Ghana News Agency 2009o; K. Malm 2014*).

[††††††††††††††] Of the 320 news and opinion items between 1 November 2009 and 30 June 2009, one-quarter related to calls for prevention, with 60% of these noting the importance of maintaining a clean environment to prevent malaria and another quarter noting the importance of focusing on prevention rather than treatment of malaria.

[‡‡‡‡‡‡‡‡‡‡‡‡‡‡] On occasion, health officials used these and similar moments to point out the importance of treating malaria with ACTs. In June 2009, for example, a key speaker is reported as noting, "Artesunate Amodiaquine is still the best drug for the treatment of malaria. He said the drug was recommended by the United Nations and the World Health Organization and there are no records that the drug has caused deaths anywhere in the country" (*Ghana News Agency 2009m*). In another news item, a health official reassured listeners that ACTs did not cause abortions, "as it was often speculated" (*Ghana News Agency 2009k*).

Both Ghana's 2005 – 2009 Poverty Reduction Strategy as well as the RBM country strategy for 2000 – 2010 focused on malaria interventions, including improving prevention, case management (recognition of symptoms, appropriate and timely treatment), partnership, and focused research (*"Ghana: Poverty Reduction Strategy Paper" 2006*). The Ghanaian MoH released its seven-year strategic plan for malaria control in early 2009, addressing increased use of ACTs but making no mention of drug costs (*"Strategic Plan for Malaria Control in Ghana 2008 - 2015" 2009*). In 2008, roughly 4% of funding went to antimalarial medication, with a similar percentage going to bednets (*Global Malaria Programme, WHO 2008*). In contrast, in 2012, half of malaria funding in Ghana went to preventative and diagnostic efforts (*Global Malaria Programme, WHO 2012*). This reflects the heavy emphasis Ghana's NMCP placed on preventative measures (*USAID, President's Malaria Initiative 2012*).

NMCP focused on achieving universal access to prevention and treatment by 2015, with "considerable emphasis on LLIN coverage" (*USAID, President's Malaria Initiative 2008; "Strategic Plan for Malaria Control in Ghana 2008 - 2015" 2009*). In 2009, NMCP also started planning for a bednet "hang-up" campaign to reach universal coverage of bednets and encourage their use (*Paintain et al. 2014*). This drive ran from 2010 to 2012, followed by a plan for a Continuous Distribution Strategy for Long Lasting Insecticide Treated Nets (*"Celebrating the U.S.-Ghana Partnership to Fight Malaria" 2013*).

Malaria treatment, beyond its cost to the economy as a whole, received limited mention in speeches and news items. These costs were linked to the need to engage in preventative measures, to practice good environmental hygiene and sanitation, and to embark on a vector control and elimination strategy.

The only mention of drug subsidies from Sipa-Yankey — or from anyone else recorded by GNA between 1 January and 30 June 2009 — came on World Malaria Day in April. He noted, "in 2007, malaria deprived the economy of US$ 730m… [He] thanked the development [partners] for their support and appealed to

them to help subsidize prices of malaria drugs and to also help the local pharmaceutical industry to produce quality but cheaper drugs" (*Ghana News Agency 2009h*).[§§§§§§§§§§§§§]

Also on World Malaria Day, NMCP's Program Manager (PM) urged prevention and for "carpenters in the country to manufacture beds that were insecticide-treated net friendly (*Ghana News Agency 2009h*)." Perhaps oddly, then, at the April 2009 Health Summit[**********] between the Ministry of Health and key development partners, neither malaria prevention nor treatment received a reported mention (*"Joint Ministry of Health and Development Partners' Health Summit" 2009*).

At this Summit, however, development partners *did* note the need to "think about ways of improving health within the limits of existing resources" (*"Joint Ministry of Health and Development Partners' Health Summit" 2008; "Joint Ministry of Health and Development Partners' Health Summit" 2009*). The development partners note that NHIS was not "maintaining the actuarial balance between expenditure flows (*Health Summit*)," referring to what a Rockefeller Foundation report more boldly labeled "crippling levels of indebtedness (*Rockefeller*)" (*Rockefeller Foundation, Results for Development Institute 2008; "Joint Ministry of Health and Development Partners' Health Summit" 2009*).

The sustainability or financial troubles of NHIS do not appear in the news in the two months leading to the run-off election. The NPP likely did not want commentary on its performance problems relating to their "success" (*Seiter and Gyansa-Luerodt 2009*). Given their need to show that they would maintain and expand NHIS, it probably was not in NDC's interest, either, to highlight NHIS's sustainability problems.

[§§§§§§§§§§§§§] Other mentions of treatment by Minister Sipa-Yankey related to measures on un-approved and counterfeit drugs and the need for timely diagnosis and treatment.

[**********] More specifically, the 20-24 April 2009 "Joint Ministry of Health and Development Partners' Health Summit, Accra." In addition to Minister Sipa-Yankey, signatory attendees included the US, Dutch, Japanese, and British ambassadors, the Charge d'Affairs from the European Commission and representatives from the World Bank, UNICEF, and the World Health Organization (*"Joint Ministry of Health and Development Partners' Health Summit" 2009*).

Rumors about NDC's intentions toward NHIS continued after the election; about 20% of all reports on NHIS relate to the NDC's repetition that it would not scrap NHIS or "sack" NHIS workers hired under NPP (*Ghana News Agency 2009b*). Some concerns about financial management are reflected in 16% of comments, which relate to either appeals for claims to be paid to facilities on time or promises that claims would be paid on time in the future. Another 12% relate to the need for more human resources for health, staffing shortages in light of NHIS-driven attendance increases, and that staff salaries and quality of care suffered when payments did not come on time. However, all of these and the responses to them are generally framed as a concern about the financial situation of a given facility or as a technology problem with claims and reimbursements, rather than the lack of funds within the scheme itself.

Precise retail figures for ACT prices during 2008 and 2009 are not available but based on reporting from that time period, US$ 3.50 is a reasonable estimate.[††††††††††††††] While Ghana received ACTs at a reduced rate or for free, through pooled procurement (such as through PMI) or through donations (such as a 3-part donation from China),[‡‡‡‡‡‡‡‡‡‡‡‡‡‡] NHIS reimbursement rates were pegged to the private-sector *retail* price of the drug (*Seiter and Gyansa-Luerodt 2009*). To reiterate this important point: NHIS looked to private sector retail prices to set its reimbursement rates.

The incentives of *double-dipping* hindered the potential for donations to lower prices to consumers, as many public sector facilities made extra profit by receiving ACTs for free or at a lower rate but continuing to retail at the US$ 3.00 – US$ 4.00 price (though enrolling in NHIS allows the patient to receive antimalarial medication for free), plus the NHIS reimbursement based on the retail price (*Seiter and*

[††††††††††††††] In its the AMFm application, Ghana reports retail prices of ACTs ranging from US$ 3.00 to US$ 9.00, as reported in the AMFm application (*"Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009*). A study on Ghana's pharmaceutical sector compiled at the end of 2008 stated that NHIS reimbursed facilities for ACTs at between US$ 3.00 and US$ 4.00, which reflected NHIA's study of "median retail price as observed in the country" (*Seiter and Gyansa-Luerodt 2009*). ACTs are free to NHIS-enrolled patients.

[‡‡‡‡‡‡‡‡‡‡‡‡‡‡] While the Government of Ghana contributed little or no funds to the procurement of ACTs in 2007, 2008, or 2009, it was responsible for reimbursing ACTs dispensed at accredited health facilities to patients registered with the NHIS.

Gyansa-Luerodt 2009). As an extra obstacle in setting NHIA reimbursement rates, “cutting back reimbursement rates [would have priced] domestic suppliers out of the market” (*Seiter 2014*).

On malaria, Ghanaian political leaders seemed focused on prevention and eradication. Concern about the cost of ACTs *to consumers* was virtually absent in public comments. The precise reason for this is unclear, though cost coverage under NHIS is one obvious potential reason. Covering the costs of malaria medication for patients burdened an already constrained NHIS budget. This was particularly true in the context of NDC promises to simultaneously maintain and even expand NHIS while also limiting the premium to a one-time payment from patients, thereby reducing funds coming to the NHIA.

One respondent noted NHIS as a key “selling point” for the AMFm, as a means of beginning to address its funding gaps and constraints (*R-7, n.d.*). However, NHIA did not actively lobby for the AMFm. While a respondent noted that NHIA would always "welcome anything that can be done — legally — to reduce the price of medicines," he also noted that NHIA realized prices could be still lower if the drugs could be made locally, eliminating expenses from importation tariffs (*Acheampong 2014*). They did not want to openly support a program that did not lower prices as much as possible, which they believed assisting Ghanaian companies to become pre-qualified to manufacture ACTs could achieve (*Acheampong 2014*).

AMFm

Introduction to key, active stakeholders

I summarize the key, active national stakeholders in adopting the Phase I pilot in Ghana in Table 5. Besides the Ghanaian CCM (1), the active stakeholders identified as key in the adoption process through interviews, meeting minutes, and news reports included: (2) the National Malaria Control Program (NMCP), (3) the Ministry of Health (MoH) and Ghana Health Service (GHS), (4) the Pharmaceutical Society of Ghana (PSGH), and (5) the Pharmaceutical Manufacturers Association of Ghana (PMAG).

Table 5: Summary of characteristics and roles of identified key stakeholders in the AMFm adoption in Ghana

Organization	Acronym	Main purpose	Main role in AMFm
Ministry of Health	MoH	The Ministry of Health is the lead health agency in Ghana. The Minister is a political appointee while the rest of MoH is staffed by career bureaucrats, who can stay in place despite changes in administration.	MoH is in charge of public sector procurement of pharmaceuticals, including procurement under AMFm. One of MoH's agencies, the Pharmacy Council, was in charge of training for Licensed Chemical Sellers related to AMFm as well as for monitoring AMFm.
Ghana Health Service	GHS	GHS is the implementing body of MoH, charged with ensuring health delivery in the public sector	Under AMFm, s-QA.ACTs would be available at the range of public health centers under GHS.
National Malaria Control Program	NMCP	NMCP, under GHS, implements Ghana's strategy for malaria control. Career bureaucrats staff NMCP, who can stay put despite shifts in national political power. For example, the head (Program Manager, PM) had been in place for over 10 years when GFATM sent the pilot invitation.	Under AMFm, NMCP acted as the grant's Principal Recipient, overseeing implementation of Phase I, including overseeing the AMFm Coordinating Committee.
Country Coordinating Mechanism	CCM	GFATM requires grant-receiving countries to establish a Country Coordinating Mechanism (CCM). In CCMs, stakeholders come together to make project decisions and oversee implementation.	Decision-making body for adopting AMFm, overseeing implementation processes.
Pharmaceutical Society of Ghana	PSGH	The national professional association for all practicing pharmacists. Membership is mandatory for all registered pharmacists.	Pharmacists in public and private hospitals and stand-alone pharmacies could dispense and sell s-QA.ACTs under AMFm.
Pharmaceutical Manufacturers Association of Ghana	PMAG	A national professional association for businesspeople and/or pharmacists involved in pharmaceutical manufacturing. Membership is optional.	Manufacturers also often import and distribute pharmaceuticals , a role they could also play in AMFm.

The Ministry of Health is the lead health agency in Ghana, promoting a "healthy population for national development," as per MoH's five-year program laid out in early 2008, *Creating Wealth Through Health* (*"Republic of Ghana Ministry of Health: Role and Functions" 2014*). NMCP is a disease-specific program operating under GHS[§§§§§§§§§§§§§§§], responsible for implementing Ghana's strategy for malaria control.

[§§§§§§§§§§§§§§§] In Ghana, the MoH is the policy-making and regulatory body while GHS is the implementing body, with control over most government health facilities (except teaching hospitals).

Relative to other SSA NMCPs, Ghana's Program is noted as acting independently of MoH (*R-6, n.d.; R-8, n.d.*).[**********] Career bureaucrats staff NMCP, remaining despite shifts in national political power; for example, the Program Manager (PM) had been in place for over 10 years when GF sent the pilot invitation.

MoH oversees the entire health system in Ghana, including GHS, Teaching Hospitals, the NHIA, the Food and Drugs Board (FDB) and the Pharmacy Council. While MoH is the policy-making and regulatory body, GHS is the implementing body, charged with ensuring health delivery in the public sector – except at teaching hospitals. Overall, the public sector provides about 40% of the health *services* of Ghana, with the mission sector and the private, for-profit sector each serving 30%.

All registered pharmacists must join PSGH, which is the professional association of practicing pharmacists. PMAG's membership is optional and includes pharmacists as well as non-pharmacists who own pharmaceutical manufacturing industries. PSGH aims to promote adherence to professional standards; the mission of PMAG is to "improve business perspectives of local manufacturers" (*Seiter and Gyansa-Luerodt 2009*).

The AMFm invitation and CCM

In March 2009, when GF sent out invitations to country CCMs to join the pilot (*Churchill 2009*) , the make-up of Ghana's CCMs included representatives of 16 organizations spanning bi- and multi-lateral agencies[††††††††††††††††], relevant government bureaucracies[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡], business interests[§§§§§§§§§§§§§§§], and non-governmental organizations[**********] (*Country Coordinating Mechanism Secretariat 2009*). A

[**********] Note, for example, that NMCP, and not MoH, is the Principal Recipient for GF malaria grants.

[††††††††††††††††] WHO, UNAIDS, UNFPA, DfID, GIZ, USAID

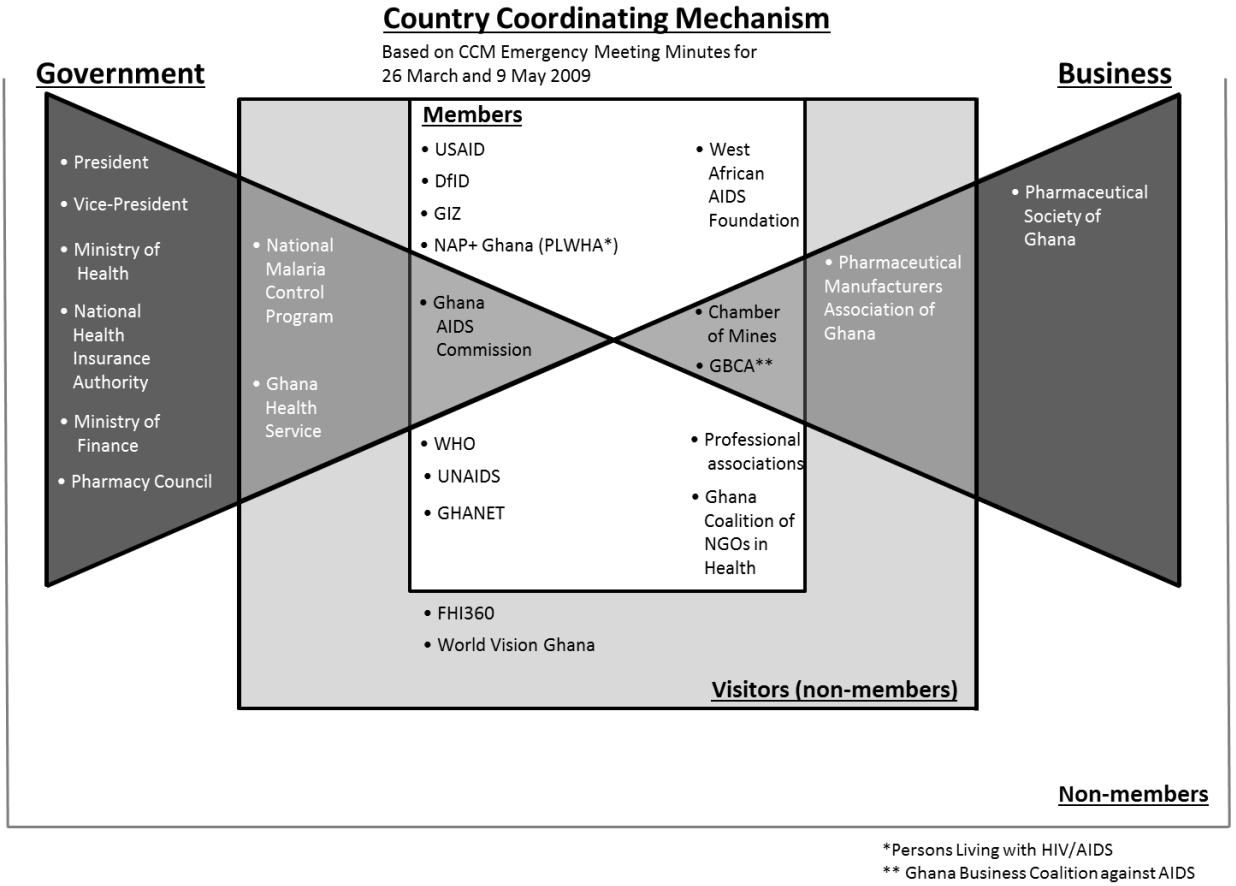
[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] Ghana AIDS Commission

[§§§§§§§§§§§§§§§] Ghanaian Chamber of Mines and the Ghana Business Coalition Against AIDS

[**********] Including GHANET, Ghana Coalition of NGOs in Health, Nap+ Ghana, "professional associations," Rural Watch, West African AIDS Foundation

consideration of this list and the active stakeholders outlined in Table 5 suggests limited overlap between CCM membership and the active stakeholders during the AMFm adoption. Figure 13 also reflects this, characterizing two sets of groups and showing their overlap. The first group is those actors who were members of CCM or visitors during the emergency meetings at the CCM on the AMFm (*Country Coordinating Mechanism Secretariat 2009*). The former are shown in the central square and the latter in the shaded surround. The second group is identified key stakeholders in the AMFm adoption decision in Ghana. These appear in the two triangles, with government stakeholders shown in the left triangle and business stakeholders in the right triangle. Members are those expected to be in attendance at all meetings and allowed to vote on CCM issues.

Figure 13: Members and non-members in Ghana's Country Coordinating Mechanism (CCM), indicating also which stakeholders are in the government or the business sector



In early 2009, the chair of Ghana's CCM was a pharmacist, private pharmacy owner, and previous PSGH President. Shortly after the invitation arrived, the CCM Chairman called an "emergency meeting" on the AMFm (*Country Coordinating Mechanism Secretariat 2009*). The make-up of CCM and other invited officials at this and a second emergency meeting are illustrated in Figure 13.

This meeting highlighted many aspects of stakeholder responses to the AMFm in Ghana. First, one prominent civil servant, NMCP's Program Manager (PM, the lead position), requested that "sector representatives [in CCM] give [written] assurance that [she] would not be held personally responsible for any fallout of the AMFm," recalling her "bitter experience" of introducing ACTs as first-line antimalarials in 2005 (*Country Coordinating Mechanism Secretariat 2009*).

In addition to the PM's personal reputation, NMCP worried that their reputation as a GF "star performer" would be at risk (*R-6, n.d.*). Implementation of the AMFm plan presented "big professional challenges" (*R-5*), including the volume and "rigidity of reporting" (*R-5*) requirements (*R-1, n.d.; R-2, n.d.; R-4, n.d.; R-5, n.d.; R-11, n.d.; R-14, n.d.*). The AMFm required working across sectors — but NMCP were uncertain that they could control businesses' compliance with s-QA.ACT pricing. They felt "blame and... reputation [for not achieving affordability] will come back to NMCP," diminishing donors' or development partners' perceptions of it as a capable implementer (*R-14, n.d.*). They also worried that supporting the AMFm would lead to "accus[ations] of letting foreigners take over the [pharmaceutical] market" (*R-13, n.d.*).

Then, near the session's close, PMAG leadership, who had not been invited, "stormed the meeting" to argue against the application (*Country Coordinating Mechanism Secretariat 2009*). They articulated that the initiative was a "short-term measure with no long-term plan" (*R-11*), which neither fit Ghana's politics nor addressed the problems it was meant to solve, dooming it to fail to save lives (*R-1, n.d.; R-11, n.d.*).

Instead, it would undermine local manufacturing capacity†††††††††††††††† and, by extension, Ghana's economic growth and move towards aid independence (*R-9, n.d.; R-10, n.d.; Dodoo 2011*).

Further, PMAG argued on this occasion and others, retailers, for whom antimalarials "represented a big part of business" (*R-5*), would suffer (*R-1, n.d.; R-5, n.d.*). Manufacturers would lose "brand awareness and goodwill" (*R-11*) once the AMFm green-leaf logo became "stuck in the minds of people" (*R-12*) as a marker of quality (*R-11, n.d.; R-12, n.d.*). Also, registering as a FLB required importers to agree to audits by GF, exposing them to possible threats to their business reputations (*Global Fund, n.d.*).

This intrusion into the CCM meeting "seemed to confuse the discussion since morning" (*Country Coordinating Mechanism Secretariat 2009*). After "calm was restored" and visitors (non-members, outside the central box in Figure 13) left, CCM members agreed "conditionally… to participate in [AMFm] *provided the government gave its unambiguous support and approval*" (emphasis added) (*Country Coordinating Mechanism Secretariat 2009*). They wanted this approval in the form of the Minister of Health's signature on the application. Such endorsement was not a measure Ghana's CCM had ever taken before. Between this request for the Minister to formally endorse, and PMAG's move to lobby at the MoH against the AMFm, much of the active debate over the AMFm shifted to the "corridors of power" (*R-15, n.d.*).

Putting together the proposal

In the meantime, a "writing team with diverse experience," under CCM, began the technical work of drafting a proposal, including details of Ghana's supply and monitoring systems, its available budget, and its planned Supporting Interventions (*K. L. Malm et al. 2013*). Preparation included attending workshops and meetings, such as the mid-June meeting organized by RBM in Nairobi (*Roll Back Malaria Partnership 2009a*). During a CCM meeting, the application team encouraged members to "further critic [*sic*] the proposal… [including] relevant organizations such as PMI" (*"CCM Meeting 28 May 2009" 2009*).

†††††††††††††††† At no point do I claim whether it makes economic sense for Ghana to pursue a local pharmaceutical manufacturing industry (as is difficult to assess given the lack of openness around private sector financies and production); I only note that various stakeholders saw this as a desireable goal.

As its first application task, CCM laid out details of Ghana's distribution channels and retail sector for ACTs. For distribution, CCM's application noted that "while Ghana has secured funding to procure a sufficient quantity of ACTs to meet the estimated need in the public sector, significant challenges with the public sector supply chain prevent these drugs from being efficiently distributed" (*"Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009*).

On monitoring quality, the application's drafters note that "the private sector is assumed to have a good system of quality assurance, but this has not been well-evaluated" (*"Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009*). Ghana's regulatory authorities imposed minimal price regulation on the pharmaceutical sector. The FDB did not have a system or budget for regulating pharmaceutical distribution. In addition, importers and others were able to 'dash off' (bribe, colloquially) FDB officials, a point echoed in Chapters VII and VIII (*McCabe et al. 2011*). The Pharmacy Council had 32 inspectors to cover private pharmacies and LCSs nationwide (*McCabe et al. 2011*).

After laying out the details of Ghana's drug distribution chains, CCM's second application task was to address the budget. The team estimated that switching to s-QA.ACTs in on-going grants would save US$ 25.4m given the lower cost of procuring subsidized QA.ACTs. They estimated their proposed *Supporting Interventions* at US$ 22.0m.[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] This left an unclaimed US$ 3.1m of identified re-programmable grant money in the budget, which they planned to use for home-based care activities among underserved populations (*"Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009*). Of course, much more money would be mobilized for Ghana under the AMFm if selected as a pilot country but the funds would go directly from GF's gated cache for the subsidy. As such, the AMFm represented about US$ 3.0 million of 'new' money for Ghana's NMCP that it could spend as it best saw fit.

[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] The amount Ghana ultimately spent on the *Supporting Interventions* was the highest per capita of all the AMFm pilot countries, at US$ 0.42 per capita; the next highest were Kenya and Uganda, spending about US$ 0.18 per capita and the lowest was Tanzania, at US$ 0.03 (*Willey et al. 2014*).

As the third application task, CCM described their proposed *Supporting Interventions*, budgeted at US$ 22.0m. *Supporting Intervention* activities included behavioral change campaigns, training and supervising public and private providers on malaria case management, strengthening surveillance of ACT quality, and increasing and strengthening monitoring of the private sector (*"Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009*). The later three components, especially interaction with the for-profit sector, were a new range of activities for NMCP.

Throughout this application drafting process, CCM's membership "vacillated in its support" on participating in the pilot, as indicated in interviews and through lack of members' opinions expressed in meeting minutes (*R-5, n.d.*) (see Figure 13 for a depiction of CCM membership present at the Emergency Meetings regarding the AMFm). With the exception of the CCM Chairman, it is groups without membership in CCM voicing strong opinions throughout the adoption process.

In addition to preparing the technical application, stakeholders (CCM members and non-members) supportive of the AMFm also worked to explain and sensitize the uninformed, uncertain, and sometimes hostile private sector on the AMFm and its potential to yield profit (*R-5, n.d.*). These efforts gained some acceptance "on the quiet" (*R-1, n.d.*). In its vocal resistance of the AMFm, PMAG's leadership did not speak for all pharmacists or manufacturers. Rather, there was "suspicion amongst the manufacturers because… individual companies have different facilities, merits, and capabilities" (*R-15*), with some "want[ing] to produce to global standards and [others wanting] to maintain local standards" (*R-7*) (*R-7, n.d.; R-15, n.d.*). Nevertheless, PMAG's leadership spoke loudly against the AMFm.

Outside PMAG, some respondents, including CCM members, viewed the private sector as motivated by narrow, profit-based self-interest, engaged in "a ploy to maintain prices" (*R-15, n.d.*). But others, even strong AMFm supporters, felt that "everyone was concerned about the issues raised by the manufacturers" (*R-14*) and, ideally, everyone "would have preferred to have local, quality drugs" used for the AMFm (*R-13*) (*R-7, n.d.; R-13, n.d.; R-14, n.d.; R-15, n.d.*).

As an additional concern, many national stakeholders keenly wanted assurance about the AMFm's continuation before they would agree to apply, setting up a point of opposing objectives about the ordering between gathering evidence and making decisions (*R-14, n.d.*). That is, GF wanted evidence before committing to continue beyond Phase I, while many stakeholders in Ghana wanted commitment on continuation before participating in this pilot to produce this evidence.

A variety of interviewed stakeholders (refer to Figure 5), including those beyond PMAG, called for Ghana to become more "nationalistic" (*R-11*) and "futuristic" in its malaria policies (*R-11*), rather than remain "dependent on Global Fund" (*R-9*) and, so, "vulnerable to global economies" (*R-11*) and "donor fatigue" (*R-9*) to treat such an important disease (*R-9, n.d.; R-11*). "There is more malaria in Africa," a respondent noted, so "the cure should be in Africa," where there is "moral stake" in addressing the disease (*R-11, n.d.*). These reflect dissatisfaction with the AMFm mechanism as it was designed – that is, without the involvement of local manufacturing. As previously mentioned, all GF money for health product procurement can only be applied to manufacturers pre-qualified for the production of those products. At the time of the decision to participate in Phase I, no Ghanaian manufacturers met this criterion.

In closing the meeting, CCM members took a unique step in their history: they decided they would submit the AMFm application only if the Minister of Health signed-off on it. This step is analyzed in Chapter VI.

The "corridors of power" (R-15)

Following the eventful March 2009 emergency CCM meeting, PMAG "sent strong representation" — from an already "strong lobby" — to the Minister (*R-5, n.d.; R-15, n.d.*). The CCM Chairman also went to the Minister to clarify how government would support the AMFm while also "mitigat[ing] local industry concerns" (*R-5, n.d.*). As the Chairman left CCM to meet the Minister, a member called on him — and the CCM — "not to meddle in politics" while another remarked that things were already "political" (*Country Coordinating Mechanism Secretariat 2009*). Later, the Chairman reflected that one of the most important lessons from the AMFm adoption experience was how much politics mattered (*R-5, n.d.*).

With appeals to the Minister from both sides, "the application became a fight" (*R-15*), involving arguments that can be labeled as symbolic, economic, and political (*Reich 1995a; R-7, n.d.; R-15, n.d.*). In later meetings, the Chairman was joined by GHS and PSGH representatives, who felt they risked "vilification" (*R-7*), "chastisement" (*R-5*), and being branded as a "sell-out" (*R-14*) for openly supporting the AMFm (*R-5, n.d.; R-7, n.d.; R-14, n.d.*).

The Minister found himself "in a corner," "need[ing the] policy to go through without his confirmation" (*R-5, n.d.; R-7, n.d.*). For example, if GF did not continue the AMFm after Phase I, "the public will blame termination on the government of the day… with electoral ramifications" (*Dodoo 2011*). No party-affiliated government stakeholders made public statements about the AMFm in 2008 or early 2009 (or until the early-2011 the AMFm launch). Instead, the Minister put off becoming responsible or visible vis-à-vis the AMFm, "drag[ging] his feet" and complaining to both sides about the other side's lobbying efforts (*R-5, n.d.; R-6, n.d.; R-7, n.d.*).

On one side, the leaders of PMAG, representing Ghana's pharmaceutical production firms, threatened to strike, arguing that the AMFm would undermine their local manufacturing sector and Ghana's broader economic development. On the other, the CCM Chairman, joined by leaders from PSGH and the Department of Public Health in GHS, argued in favor of the AMFm, as described below.

Both sides offered contrasting symbolic arguments over the consequences of the AMFm for Ghana. Those actively in favor of the AMFM argued that it would save lives among the poor by assuring the availability and affordability of quality medicine; those actively against believed subsidized imports would force industry lay-offs, leading to poverty, disease, and death among those same poor (*R-1, n.d.; R-11, n.d.; R-13, n.d.*). With this argument, one respondent suggested that PMAG also reminded the Minister of NDC's campaign promises and PMAG's support for them during the election (*R-1, n.d.*). As one respondent noted, PMAG was a strong interest group and it "would [have been] political suicide to openly support the AMFm" and "anger constituents," especially as "a new[ly elected] government" (*R-5, n.d.*). Some

respondents stated that if the government had been in office longer, they may not have felt such pressure from the pharmaceutical manufacturers (*R-5, n.d.; R-14, n.d.*).

In response to PMAG's dire predictions, the pro-AMFm lobby (with CCM, PSGH, and GHS representation) invited PMAG to quantify the volume of antimalarials they provided Ghana and their expected losses under the AMFm. The firms were unwilling or unable to offer hard numbers. In return, the PSGH President produced a number, using a back-of-the-envelope estimate to argue that the domestic industry was, at most, producing 10% of Ghana's ACT supply and, thus, that imports were necessary to meet Ghana's ACT needs (*R-7, n.d.*).§§§§§§§§§§§§§§§§ This knocked some of the wind out of PMAG's argument.

In turn, PMAG reached out to a higher level of power, sending a letter of opposition to Vice-President Mahama. On the other side, President Atta-Mills received a phone call from President Bill Clinton, highlighting the importance of Ghana joining the AMFm (*R-6, n.d.; R-7, n.d.*).********** The motivation for this call was Ghana's malaria burden, its wide use of the private sector in treating malaria, and the sense that NMCP might need a nudge in accepting the AMFm given agency risk-aversion and concerns about critiques from the private sector (*O. Sabot 2015*). Neither reaching out to the vice president or the president led to a public statement (*R-7, n.d.*).

Back in the CCM Secretariat, on 25 June 2009, CCM's members officially endorsed, by consensus, the AMFm proposal, as marked on the electronic application form pictured in Figure 14 (*Norgbedzie 2014*).

The Minister never did. Instead, just before the deadline of 1 July, he "went into hiding" (*R-1, n.d.*).

§§§§§§§§§§§§§§§§ Few data are available about the value of the pharmaceutical sector. The total market value of the pharmaceutical sector is estimated at US$ 300m, growing at 6-8% per year. Ghana's manufacturing sector has about 40 companies, with about 28% of these actively manufacturing and half of these at a nationally significant scale. Their products account for about 30% of the pharmaceutical products retailed in Ghana (*Seiter and Gyansa-Luerodt 2009*).

********** This call has not been confirmed with the former president himself but the majority of sources confirm it.

CCM submitted the application on 30 June, citing the assumption that a lack of Ministerial response meant that CCM "had [the Minister's] approval" (*R-5, n.d.*).

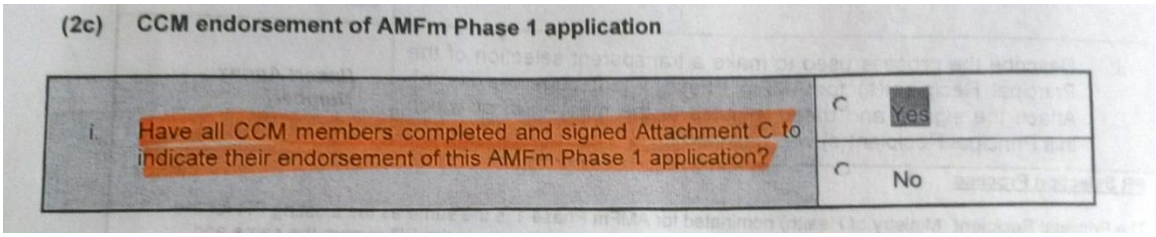


Figure 14: Ghanaian CCM's endorsement of the electronic AMFm Phase I application to GF

SECTION IV.3: SUMMARY

I began this descriptive chapter with a global turning point in Ghana's democracy and in global and national antimalarial treatment protocols, echoed also in Figure 3.

In 2001, NPP won Ghana's national election, marking the first transition of power in Ghana's Fourth Republic. Among other initiatives, the NPP enacted NHIS. NHIS was an issue in the 2008 election: NPP threatened that NDC would end NHIS and NDC countered that they would not only maintain but expand the program. NDC won the 2008 election and took power in early 2009. President Atta-Mills appointed Sipa-Yankey as Minister of Health. Dr. Sipa-Yankey had a stated commitment to eradicate malaria from Ghana, reducing its economic burden.

Also in 2001, WHO named ACTs as the first-line treatment for uncomplicated malaria; Ghana revised their treatment policy to reflect this in 2005. The initial launch of AA in Ghana proved problematic. Globally, a key concern was that ACTs were more expensive to consumers than previous treatment options. In response, IOM convened a group of experts, who, in *SLBT*, outlined a plan for a high-level subsidy for ACTs. This plan, elaborated with drug price negotiation and Supporting Interventions, became the AMFm. GF agreed to host the AMFm on the condition that there be a Phase I experimental period, which would later inform their decision to maintain, scale-up, modify, or terminate the AMFm in their portfolio.

GF invited Ghana to be an AMFm pilot country in March 2009. CCM coordinated the application process amid disagreement about joining. More stakeholders than CCM members entered this debate. In response to disagreement, CCM made submitting the application contingent on endorsement by Minister Sipa-Yankey. This began a process of lobbying the Minister, Vice President Mahama, and President Atta-Mills. None of these three took a public stand; CCM submitted the application without their endorsement.

Building on this description of the adoption process, in Chapter V, I review the stakeholders' stands toward the AMFm and analyze factors influencing those stands, focusing on stakeholder perceptions. In Chapter VI, I turn to the actions taken by different stakeholder during the national-level adoption process.

CHAPTER V: CASE ANALYSIS - PILOTING THE AMFM IN GHANA: A QUALITATIVE CASE ANALYSIS OF NATIONAL STAKEHOLDER RECEPTIVITY & RESISTANCE

SECTION V.1: INTRODUCTION

After receiving the AMFm invitation from GF in March 2009, many stakeholders in Ghana hesitated to accept, as detailed in the previous chapter. On first consideration, this hesitancy may seem misaligned with the Ghana's malaria burden, which exacts a heavy human and economic toll. For what reasons, then, did Ghanaian stakeholders question and resist participating in the pilot? Why did others in Ghana support participation in Phase I of the AMFm?

RESEARCH MOTIVATION AND QUESTIONS

The mixed and conflicted views among Ghanaian stakeholders presented a puzzle: *why would national stakeholders question — and even forgo — piloting a program intended to deliver high-quality treatment for a prevalent, expensive disease?* The process of answering this question involved an initial analysis by me, complemented by independent coding and consensus-building with two reviewers, Ashley M. Fox and Jesse B. Bump. Therefore, the pronoun "we" is used for analysis throughout this chapter, in contrast to the rest of the dissertation.

In solving this puzzle, we aim to highlight the interests of national stakeholders as critical to global policy decision-making and governance (*Allison and Halperin 1972; Putnam 1988; Dodgson, Lee, and Drager 2002*). A central contention of this thesis is that these national-level viewpoints are not always analyzed in relation to globally led policy (with key exceptions such as (*Okuonzi and Macrae 1995*)).

With this aim in mind, we approach the puzzle in two stages, focusing on the time period before Ghana decided to participate in the Phase I pilot. Our first research question is: *which Ghanaian stakeholders responded to the invitation to join the AMFm and how did they respond?* To answer, we conduct two analyses. The first is a descriptive stakeholder analysis, identifying and categorizing relevant stakeholders based on CCM meeting minutes and in-depth interviews. The second is a grounded thematic analysis of content.

To preview the results, in the first analysis, we reveal diversity, rather than similarity, of views (stands) within stakeholder organizations and decision-making roles. That is, our stakeholder categorizations lack explanatory power, including categorizing people by the organizations in which they "sit" (*Allison 1969*). Given this lack of systematic association between stakeholder characteristics and stands, as elaborated in Section V.2, for the second research question, we use an iterative, grounded and thematic qualitative analysis to ask: *how can we explain stakeholders' stands — both resistant and receptive — toward joining Phase I?* Through this process, we identify three thematic interests that encapsulate stakeholder reasons to support and resist the AMFm. To be clear from the outset, these themes draw on the range of reasons provided by respondents and therefore may only go part way towards *explaining* the full motivations that led stakeholders to take different stands. However, using the data and methods at hand, the findings represent a best-effort at explaining motivations. At best, we achieve a useful, partial explanation. At work, we offer a more grounded, nuanced way of categorizing of motivations.

First, in these categories of reasons, stakeholders considered the direct goals of the policy, in this case, those related to improving access to malaria treatment, and whether they believe these proposed policies

can further those goals. Second, stakeholders also considered how the policy in question may affect other policy or business goals of interest to them. In this case, stakeholders particularly considered how the AMFm might further or hinder policy goals related to national capacity to deliver on national health insurance promises as well as the capacity for domestic pharmaceutical production. The latter had implications for the economic goals of private sector firms. Third and finally, stakeholders considered how AMFm might boost or hurt their individual, their organizational, and/or Ghana's reputation or recognition.

From these analyses, we reach four key conclusions on drivers of stakeholders' views. First, stakeholders can occupy and move between several organizations, making the categorization of where they sit conceptually challenging. Second, the design and planned evaluation of the AMFm itself fostered both support and resistance. Third, stakeholders considered goals beyond the AMFm's direct, malaria-related objectives – specifically, those linked to other policies of interest and those linked to reputations. Fourth, GF's experimental pilot approach led to many national-level stakeholders resisting, attempting to ignore, or only passively supporting the AMFm. The donor's need for evidence to commit further to the AMFm, juxtaposed with the implementers' need for certainty about programmatic longevity before committing to generating evidence, created points of opposing objectives.

We believe our insights on explanatory themes and reactions to the experimental piloting approach can inform future theoretical and design work on global programs to be transferred to the national level for adoption and implementation. However, we do not offer a precise calculus about how these three factors interact in this case or how each stakeholder internally considered each in deciding what stand to take on the AMFm. Rather, these three themes are explanatory in that they encapsulate the reasons and motivations respondents gave for their own stand and the stands taken by others. They provide specific lines of inquiry that future program designers can follow to assist in laying out the smoothest path to adoption and implementation.

CHAPTER OVERVIEW

In Section 2 of this chapter, we introduce the approach of stakeholder analysis and outline the relevant concepts in such analysis used in this chapter. In Section 3, we address the first research question with a descriptive stakeholder analysis. In Section 4, we address the second research question with a thematic qualitative analysis. Section 5 concludes, drawing implications from these findings for future program design as well as analysis.

SECTION V.2: INTRODUCING STAKEHOLDER ANALYSIS AND ANALYTIC CONCEPTS

Stakeholders — their perceptions, conversations, and negotiations — are critical to decisions at different policy stages. Given stakeholder centrality in policy-making, analyses of their interests and actions have become more common among global health policy researchers. As a brief illustration of the rising frequency of stakeholder considerations, a keyword-search for "*stakeholder**" in health policy journals[††††††††††††††††] revealed increases of articles from 3- to 18-fold across journals, from 1993-2002 to 2003–2012.

Given that stakeholders play an important role in policy decision-making, it is useful to analyze the ways in which they make these decisions. Such analyses assist in tracing past — and shaping future — policy decisions (for one discussion of stakeholder analyses in global health policy, see (*Gilson et al. 2012*)). Tracing policy processes involves tracking a technical, "first-best" (*Rodrik 2008*) policy idea as it is transformed (or not) into a "feasible" (*Reich and Fox 2013*), "best-fit" (*Booth 2014*), or "good-enough" (*Grindle 2007*) form to endorse and roll-out in a given context *(Grindle 2007; Rodrik 2008; Copesteak and Williams 2012; Fox and Reich 2013; Booth 2014*). This happens amidst ongoing interpersonal, organizational, and national political-economic conversations (*Walt and Gilson 1994; Reich 1995b; Oliver 2006; Corduneanu-Huci, Hamilton, and Ferrer 2012*)**.** Analyzing such contexts, and stakeholders within them, can inform achievable policy design (*Rodrik 2010*).

[††††††††††††††††] *Health Affairs*; *Health Policy*; *Health Policy and Planning*; *Health Politics, Policy and Law*; *Social Science and Medicine*

Despite their public policy currency, stakeholder analyses are rooted in business and managerial theory. There, a re-focus on stakeholders represents a reconceptualization and expansion of a firm's obligations. In particular, it expands the firm's accountability beyond its *stock*holders (*Donaldson and Preston 1995; Brugha and Varvasovszky 2000; Freeman 2010*). In this widened view, a firm's obligations encompass the heterogeneous interests of all actors affecting and affected by the firm's decisions (*Freeman 2010*)**.** Analyzing stakeholders is a political-economic activity, which, by some accounts, *is defined by* the existence of a heterogeneity of interests (*Drazen 2001*).

Stakeholder analysis is an umbrella term covering a range of approaches to organizing and understanding heterogeneous interests. These interests represent stake: the possible gains and losses from a decision. Given the stakes faced by an actor, s/he takes a stand — a supportive, neutral, or resistant orientation — on a given decision-point. Stands are influenced by personal values and interests; by personal and professional relationships; and by the predicted losses or pay-offs from a decision (*Allison and Halperin 1972; Glassman et al. 1999; Polski and Ostrom 1999; Ganghof 2003; Corduneanu-Huci, Hamilton, and Ferrer 2012*). In the present analysis, stands are the key outcome of interest.[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡]

Stakeholders in similar categories might systematically take similar stands. Thus, a first cut at stakeholder analysis is to map key actors into defined categories. If stakeholders in similar categories take similar stands, categories can be taken to explain (though not cause) those viewpoints.

The criteria by which an analyst categorizes stakeholders affects the range of relationships that can be examined. In the next section, we review three possible sets of categorizing criteria that may have explanatory power for the stands taken by stakeholders. We review the potential justification and

[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] While power is often an element of stakeholder analyses, in this case, we focus on the perceptions of different stakeholders, rather than their power to act on those perceptions. Action is the subject of the next chapter.

theoretical inputs for each criteria-set below. These sets divide stakeholders by (1) their decision-making role, (2) their organizational home, and (3) their station.

Criteria for categorizing stakeholders

Institutional role in decision-making

Stakeholders from different organizations meet in decision-making arenas to consider, debate, and endorse ideas (*Ostrom et al. 2001*). Arenas have formal and normative rules and operating procedures — altogether, institutions — for who participates and how (*Immergut 1992; Ostrom et al. 2001*). Given these institutions, not all players with stake in a decision are automatically in the relevant arena. Institutional stakeholders must take part in a decision as per the arena's rules and norms – for instance, the US Congress or UK Parliament. In contrast, circumstantial stakeholders are invited, or invite themselves, into the arena for specific decisions (*Immergut 1992; Tsebelis 1995; Polski and Ostrom 1999; Ganghof 2003*). This can include lobbyists and activists. The categorization of specific stakeholders relevant to the case of adoption the AMFm in Ghana are shown in Table 6.

Stakeholders across these two categories may view and react in different ways to the same decision-point. For example, institutional stakeholders might be similarly driven to enact good policies. Circumstantial stakeholders may, instead, advocate for what Allison and Halperin call "messy" concerns — motives related to politicking, relationships, and experiences that some view as "gossip for journalists rather than a subject for serious investigation" (*Allison and Halperin 1972; Ferguson 1990*). Or, institutional stakeholders might take stands to protect and enhance their decision-making powers while specific policy causes drive circumstantial stakeholders. Thus, it is not clear from the outset what types of stakeholders will act in what ways.

ORGANIZATIONAL HOMES

Another way of categorizing stakeholders and possibly predicting their stands is by where they sit — that is, their organizational homes (*Allison 1969*).[§§§§§§§§§§§§§§§§§] This follows the reasoning of bureaucratic politics. Members of CCM and MoH are both required, institutional stakeholders for the AMFm; but they may have different organizational goals toward the program. Stakeholders employed in the same agency, business, or ministry may hold similar norms and views, leading to similar stands. This similarity may stem from *ex ante* attracting members with similar views or because, once joining, organizational precedence, culture, and strategy influence members' views *ex post* (*Steinmo 2008*). Members may also take similar stands if the organizational leadership constrains their choices (*Allison and Halperin 1972*).

STATIONS

Stakeholders with similar functions and sources of authority – stations – may work within the same organization. The term station separates bureaucrats from elected officials from businesspeople, even if they all work for the same organization. A government ministry, for example, may employ elected and appointed officials as well as career bureaucrats. Bureaucrats across ministries may act like one another, while leaders and members in the same ministry, additionally, may face different incentives and so take different stands.

Stations draw together several rational-actor models focused on different goals that stakeholders may (rationally) pursue. Individual models may focus on individual job titles, the holders of which face different incentive structures and so, different utility-functions. Rational actor models focused on elected officials, for example, consider re-electability, fundraising, and maintaining party discipline (*Mueller 1976; Strom 1990; López 2002*)**.** Bureaucrats might focus on maintaining agency autonomy, avoiding blame, and ensuring job security (*Allison and Halperin 1972; Hammond 1986; Weaver 1987; Strom 1990; Grindle and Thomas 1991*). Businesspeople might concentrate on profits, building public and brand recognition, and strengthening political influence. Bringing these ideas together: to the extent that stakeholders in a single

§§§§§§§§§§§§§§§§§ The precise quote from Allison, in turn based on Miles's Law, is that "where you stand depends on where you sit" (*Allison 1969*).

station (with a single job title) face similar incentive structures, one may expect them to behave alike and take similar stands.

Below, we consider and analyze whether each of the categories outlined above meaningfully correlate with stands taken.

SECTION V.3: ANALYTIC METHODS AND RESULTS I- POSITIONING STAKEHOLDERS AND THEIR STANDS

DATA ANALYSIS I

To begin, we identified important stakeholding organizations in the decision to pilot the AMFm in Ghana, as introduced in Chapter IV. To each, we assigned one of five stands: *actively resistant*, *passively resistant*, *passively receptive*, *actively receptive, or mixed/unstated.* The ideas of supportive (or receptive) and resistant stands to different policy ideas have featured in the literature (as one example, see (*Gómez 2009*)). We drew the nuance of considering active and passive forms of these stands from the key informant interviews done for this project, in which some interviewees identified themselves or others as having "passive" stands (*R-2*) (*R-1, n.d.; R-2, n.d.; R-6, n.d.*).

For this analysis, we based assignment on key informant responses to a direct interview question — "*What were the different positions that players took toward the AMFm*?" — as well as unprompted but relevant statements about their own and others' positions. We considered both what respondents said about themselves as well as the motivations they attributed to others. While some stakeholders' views may have evolved over the course of adoption, we report here on the stand most associated with a stakeholder in interviews and documents. That is, each stakeholder was given only one stand in this analysis.

The assignment of stands is complex and contestable (*Ganghof 2003*). To counter this threat-to-validity[**********], we triangulate in several ways. First, we consider statements from key informants

[**********] Specifically, construct validity, or the "fit between the construct supposedly measured [by an instrument] and the actual observations measured" (*Bernard 2006*).

in light of related, contemporary statements in the data. We use the respondents' own words when possible, in pursuit of authenticity (*Baker and Edwards 2012*). Second, two analysts and I assigned stands independently before comparing notes and finding consensus (*Miles and Huberman 1994*). Finally, we shared a draft manuscript with key informants, as described in Section III.2 (*Lincoln and Guba 1994*). Their feedback guided adjustments to stands as well as fixing factual errors. We report the results in Table 6, which is described in more detail in the next sub-section. The right-most column of the table shows the stand assigned to each stakeholder.

STAKEHOLDERS AND THE ARENA

When GF agreed to host the AMFm, each invited country's CCM became the national decision-making arena. In Ghana, CCM members became involved in the debate about whether to apply to join the pilot, such that CCM was both a forum and an active stakeholder. Compared to CCMs in other countries, Ghana's CCM during the period of this study is cited as relatively independent from MoH, though this has not always been the case (*Jansegers 2003; Global Fund 2008b; R-6, n.d.; R-8, n.d.*).

As introduced in Chapter IV, besides the Ghanaian CCM (1), stakeholders included: (2) the National Malaria Control Program (NMCP), (3) the Ministry of Health (MoH) and Ghana Health Service (GHS), (4) the Pharmaceutical Society of Ghana (PSGH), and (5) the Pharmaceutical Manufacturers Association of Ghana (PMAG) (as shown in the left-most columns in Table 6).

In trying to assign single stands to organizations, we find a variety of views within an organization, as mirrors the literature on bureaucratic politics (*Allison and Halperin 1972*). To accommodate this diversity, we expand our focus to both organizations and key individuals within them. In Table 6, we label each stakeholder with his or her organizational home, station, and relationship to the decision-arena. Below, we describe the evidence that guided our assignment of stands (refer back to Figure 13 for a review of stakeholders).

STANDS

Country Coordinating Mechanism (CCM): strongly supportive and mixed. As a whole, the heterogeneous membership of CCM "vacillate[d] in its support of the AMFm" (*R-5, n.d.*). However, the CCM Chairman — also a retail pharmacist and former president of PSGH — actively supported the AMFm, acting as its "real champion" (*R-2, n.d.*).

National Malaria Control Program (NMCP): mixed (passively supportive and passively resistant). In the view of several informants, NMCP's PM exemplified a passively resistant stand, "distanc[ing] herself from the AMFm" (*R-1*) (*R-1, n.d.; R-2, n.d.; R-6, n.d.*). She wanted limited association with the AMFm decision but told her subordinates they could work on it. In turn, they passively supported the idea, deciding "there wasn't much to lose by going for it" (*R-1*) and helped draft the proposal (*R-1, n.d.; R-2, n.d.; R-15, n.d.*). At the time of adoption, NMCP was most keen on pursuing universal bednet coverage (*Malm 2014*).

Ministry of Health (MoH) and Ghana Health Service (GHS): strongly supportive and unstated. Under the AMFm, MoH procured and distributed s-QA.ACTs through the public health care system. A high-level GHS bureaucrat, connected with Roll Back Malaria since the early global AMFm discussions, actively supported the program. In contrast, the appointed Minister Sipa-Yankey refused to reveal his stand.

Organization	Stakeholder	Stakeholder type	Stakeholder role	Ties to international health / dev orgs?	Stand				
					Receptive		Mixed or unstated	Resistant	
					Active	Passive		Passive	Active
Country Coordinating Mechanism (CCM)	1. Chairman	Institutional	Business	No	X				
	2. Committee (membership)	Institutional	Mixed	No			X		
National Malaria Control Program (NMCP)	3. Program Manager	Circumstantial	Civil servant	No				X	
	4. Immediate underlings of Program Manager	Circumstantial	Civil servant	No		X			
Ministry of Health (MoH) and Ghana Health Service (GHS)	5. Minister of Health	Circumstantial	Political appointee	No			X		
	6. High-level bureaucrat	Circumstantial	Civil servant	Yes	X				
Pharmaceutical Society of Ghana (PSGH)	7. President	Circumstantial	Business (and academic)	Yes	X				
	8. Membership	Circumstantial	Business	No			X		
Pharmaceutical Manufacturers of Ghana (PMAG)	9. President	Circumstantial	Business	No					X
	10. Membership	Circumstantial	Business	No			X		

Table 6: Summary of stakeholders and their stands, showing no clear relationship between stands and stakeholder characteristics

Pharmaceutical Society of Ghana (PSGH) and Pharmaceutical Manufacturers' Association of Ghana (PMAG): mixed (strongly supportive, strongly resistant, mixed). Under the AMFm, pharmaceutical companies owned by pharmacists and non-pharmacists could import and distribute s-QA.ACTs. Thus, members of PSGH, PMAG, as well as any registered pharmaceutical importer or distributer, could apply to import and distribute under the AMFm. Pharmacists and LCSs dispensed the s-QA.ACTs to patients.

According to different respondents, between two and six Ghanaian manufacturers could — and were — actively making ACTs prior to the AMFm (*R-5, n.d.; R-9, n.d.*). Within private business interests, "how people reacted to the AMFm depended on [their location in] the value-chain and supply-chain" (*R-10, n.d.*). One company could be at many locations in the supply chain – such as, manufacturers that also import or distributors that also retail – which meant their stands might be informed by several business perspectives.

The leadership of PGSH, representing all registered pharmacists, strongly and visibly supported the AMFm; but the membership held mixed opinions (*R-1, n.d.*). PSGH leadership also "play[ed] on the global [health] stage," active in global organizations including GF (*R-6, n.d.*). In contrast, the leadership of PMAG, representing businesspeople and pharmacists involved in pharmaceutical manufacturing, strongly resisted the AMFm while its membership, too, held mixed opinions (*R-1, n.d.*). In part, resistance at the member level may have stemmed from lack of information, despite some CCM attempts at outreach and sensitization. As noted below in Chapter VIII, after adoption, the limits of street-level understanding of the AMFm became more clear, necessitating one-on-one sensitization (*R-4, n.d.*).

Our analysis of stands, summarized in Table 6, reveals no clear pattern associating stands with stakeholder categories, as discussed further below.

The two key institutional stakeholders — CCM leadership and membership — took differing stands on the AMFm while circumstantial stakeholder views ranged from actively supportive to actively resistant. The three active supporters included players from CCM, PSGH, and GHS; the latter two also had ties with global-level health organizations. Across national organizations and agencies, leaders took differing stands from one another and from their respective memberships. Businesspeople ranged from actively supportive to actively resistant while bureaucrats stood passively (in both directions) or remained neutral. Resistance came both from bureaucrats and businesspeople. In sum, we do not find a clear pattern of stands according to our stakeholder categorization scheme.

Before moving on, I briefly note that there is some friction between institutional stakeholders — who seemed to have limited and vacillating opinions on the AMFM — and circumstantial stakeholders — who entered the arena with much at stake (see also Figure 13). Nevertheless, this thesis is not an exploration of the composition of the Ghanaian CCM at the time of the AMFm adoption decision, nor is it a critique of CCMs more generally. Rather, the CCM is a focal point for this study because when GF agreed to house the AMFm, the CCM became the decision-making arena.

Remaining puzzles and limitations of the descriptive stakeholder analysis

Given the independent coding and consensus-building around stands, as well as the member-checking with key informants (many of whom are also stakeholders represented in this analysis), we believe the above analysis provides an accurate representation of the relevant, active stakeholders and their stands on the AMFm. But the lack of associative pattern between categories of stakeholders and their stands leaves unsolved *why* different stakeholders held different views. This indicates two limitations of this analysis. These, in turn, may reflect general limitations of a descriptive, category-based approach to studying and explaining stakeholders.

First, though our stakeholder categories do not associate with stands, this is not necessarily a limitation of the general approach. Other researchers could develop differing categorization criteria and these may perform better than the ones employed here. Second, category-based analysis does not allow stakeholders to have agency or voice in taking a stand, nor allow them to grapple with complex and conflicting motivations and interests. Given the limitation of this first analysis, we decided to conduct an additional qualitative analysis that focuses more on themes revealed in the data on how stakeholders explained the process of adopting the AMFm, rather than using stakeholder types. That is, we try to *categorize the reasons behind* stakeholders' stands from their own perspectives, even when these perspectives internally conflict, as many informants noted that most stakeholders had reasons both to support and resist the decision to pilot the AMFm. Explicitly explaining the underlying motivations is beyond the scope of this thesis; rather, we try to make sense of the reasons provided to us during the interviews and through document and newspaper reviews.

SECTION V.4: Analytic methods and results II- Categorizing reasons for stands

Data analysis II

In this analysis, we aim to explore the reasoning behind stands, using informants' reasoning for why certain stakeholders (including themselves) took certain stands. Further, we aim to distil these reasons into a concise set of explanatory themes. To analyze the narrative data, one of us (HEL) first generated a set of open codes on views towards the AMFm. The "openness" of the codes indicates that they did not

come from a list set by existing theory or from prior empirical work. Instead, they emerged from the data as part of the analysis. This grounded (or open) qualitative analytic approach reflects that we did not have a clear theoretical frame when approaching these data but rather expected the key themes to emerge from them.

In practice, generating open codes to analyze data means reading the narrative several times and noting key phrases, words, topics, attitudes, or references to program components or specific events, then later consolidating repeated ideas. For example, "uncertainty" and "no clarity" around the AMFm refer to a similar underlying idea and so become combined as "uncertainty." The consolidated list contained 30 codes, shown in Table 7, Table 8, and Table 9.

Some sentences and thoughts, of course, refer to more than one topic or event. Specifically, a statement reflecting concern about the distribution of responsibility for the 2004 launch of Ghana's new ACT policy reflects both "responsibility" and "ACT policy." To account for this, HEL applied up to three codes to any unit of text. JBB and AMF, using the list of 30 codes, independently did the same. We then compared coding, adjusting and iterating until we reached consensus.

Although not central to the analysis, Figure 15 provides a descriptive sense of the data by displaying the codes, using font sizes proportionate to how often each code applied to the data (using Wordle©). This is only *suggestive* of respondents' full views, given that semi-structured interviews generated the data, which we then coded subjectively (*Anfara, Brown, and Mangione 2002*).

Figure 15: Open-codes applied key informant interviews, displayed in font sizes proportionate to their relative frequency

We combined and distilled the 30 codes into three encapsulating themes that, when linked with theory, have explanatory power. These themes represent the categories of reasons stakeholders provided for what they and others considered when taking a stand. Theory did not guide the creation of these themes: they were simply the neatest distillation of the codes that we agreed on. After pinpointing themes based on our empirical data, we linked them with existing theory, as shown in the next section. We show the open codes that fed each of these themes in the second column of each of the tables below (Table 7, Table 8, and Table 9). We show the linked theories in the third column of each of these three tables.

The themes are: (1) direct policy goals (related to the explicit goals of the AMFm (boxed-in, Figure 15), (2) indirect policy goals related to state and productive capacity (plain, Figure 15), and (3) reputational goals (underlined, Figure 15). Below, we relate each theme to relevant theoretical and empirical literature, and then present how each theme drove both receptive and resistant stands in this case (as narrated in Chapter IV).

THEME #1: DIRECT POLICY SEEKING - REDUCING THE BURDEN OF MALARIA

EXISTING THEORY

For many decision-makers, enacting policy to increase social welfare is a key goal (*Strom 1990*). Often, of course, such policies address market (or government) failures in distributing public goods. To assess a policy option, decision-makers may consider the severity or salience of the identified failure as well as whether the proposed policy option can, indeed, correct it (*Grindle and Thomas 1991*).

EMPIRICAL EVIDENCE

Many respondents acknowledged the severe burden malaria imposes on Ghana, making its alleviation an important social goal. Moreover, many felt expanded access to high-quality ACTs could lessen this burden, improving public and, especially, private welfare. No respondent contradicted that the AMFm had admirable goals and addressed a serious problem. Rather, contestation centered on the framing of those goals as well as the technical viability of the AMFm as a potential way of achieving them. Said another way, all stakeholders seemed to agree that malaria is a problem; disagreement is around whether the AMFm presented the best solution.

Receptive

Receptive stakeholders believed the AMFm will widely distribute the high-quality ACTs at low retail prices, which they emphasized as a public good. These stakeholders were also confident that GF will continue the AMFm beyond Phase I. As indicated in Table 7, references to "saving lives," "access," and "public goods" are, relatively, infrequent. We interpret this apparent omission further in the conclusion of this chapter.

Resistant

First, some resistant stakeholders did not think the AMFm's mechanism would increase ACT access, particularly because importers, distributors, and retailers might capture the subsidy in the supply chain. This mirrors aspects of the global debate that led GF to pilot the AMFm in the first place. Second, some stakeholders worried that even if the AMFm works in Phase I, if discontinued thereafter, it might hinder long-term ACT access. The AMFm's marketing distorts public

expectations about ACT prices. But AMFm-level prices cannot hold absent the AMFm or another subsidization plan, of which Ghana did not have one planned at the time (*R-7, n.d.*). Whether GF maintained the AMFm hinged on the pilot. To some stakeholders, this signaled a lack of commitment — and even a threat — to the initiative's stated goals. One summarized this as meaning that the AMFm was a "short-term measure with no long-term plan" (*R-11, n.d.*).

In sum, the technical aspects of the AMFm itself caused debate on whether s-QA.ACTs would arrive in the needed places and at the intended price. The possible discontinuation of the AMFm after Phase I created additional concerns related to health outcomes and also GF's commitment to those outcomes.

Interest category	Incorporated open codes	Theoretical links		Support	Resist
Direct policy goal (malaria burden)	• ACT policy • ACTs • Life-saving • Public good	• Public goods • Technical goals	National	• AMFm's potential to improve ACT access • AMFm's potential to save lives	• AMFm's ability to achieve its stated goals • Effects on access after the pilot period if discontinued • Long-term concerns about ACT access and health

Table 7: Direct policy goals in relation to open codes, theory and case evidence, showing national-level reasons for support and resistance for joining the AMFm pilot

THEME #2: INDIRECT POLICY SEEKING – GOALS AROUND STATE AND PRODUCTIVE CAPACITY

EXISTING THEORY

Stakeholders deciding on particular policies and programs may also attend to other policy goals, such as bolstering the state's capacity (see, *e.g.* (*Booth 2014*)). Any given policy or program will have explicit goals. These are the direct policy goals (in this case, relating to malaria medicines access and the burden of disease caused by malaria). However, stakeholders may also see how pursuing a given policy may threaten or allow them to make gains on goals not explicitly stated in the policy – that is, indirect policy goals. Here, I take state and productive capacity as a key indirect goal considered by stakeholders.

This capacity refers to a government's ability to do the work expected of a nation-state. Such work includes financing programs, enforcing laws, spurring economic growth, protecting welfare, and delivering

public goods (*Evans 1995; Besley and Persson 2009*). An expanded view of state "developmental" capacity includes work in synergistically engaging the private sector to build a productive domestic manufacturing and industrial base (*Evans 1995*). These efforts can bring direct economic benefit and self-sufficiency to the country. They can also enhance a nation's legitimacy and reputation, as viewed by global entities, as an economic power with a functional government (*Chirot and Hall 1982; Gereffi 1983; Toye and Toye 2003; Weyland 2005; Gómez 2009*).

EMPIRICAL EVIDENCE

In the past two decades, Ghana has achieved important progress in economic growth, democratization, and global prestige (as noted above in Section III.2) (*Gyimah-Boadi 2009*). This progress raises new expectations for the state – from within and outside Ghana – to move towards firm (meaning upper, rather than lower) middle-income status, continuing economic growth and diversification. The state also needs to address heightened expectations for the delivery of public goods and social protection (*Weyland 2005; Gyimah-Boadi 2009*).

Receptive

Some supporters felt the AMFm may help Ghana deliver on its social protection promises and noted NHIS as a "selling point" (*R-7, n.d.*). They believed that immediately lessening budgetary pressures on NHIS through the AMFm would enhance the scheme's financial viability and, in turn, capacity to deliver universal health insurance.[††††††††††††††††††]

Resistant

In contrast, resisters saw threats from the AMFm to Ghana's economic growth and national self-sufficiency. The AMFm would squeeze national pharmaceutical manufacturers out of the market

[††††††††††††††††††] It was not possible to get financial evidence on the projected (in 2009) impact of the AMFm on the NHIS's budget and sustainability. For the present analysis, the main point is that some stakeholders felt that it would be helpful to NHIS to have the retail price of ACTs lowered, as was expected to happen under the AMFm. In 2010, NHIA's Annual Report notes that savings that came from the AMFm but does not relate this finding to the overall financial situation of NHIA (*National Health Insurance Authority 2010*).

as they could not compete with the price of s-QA.ACTs (*R-1, n.d.; R-5, n.d.*). These local manufacturers would lose money sunk into manufacturing equipment, which they had done in response to Ghana's 2004 change in antimalarial policy.[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] There was not an explicit plan, directly through the AMFm or GF, to financially support the inclusion of local manufacturers in the long-run. UNIDO started working — once the AMFm was adopted — on the task of pursuing a longer-term plan to make the Ghanaian pharmaceutical manufacturing industry more competitive.

Stakeholders questioned whether the AMFm undercut national —even continental — manufacturing capacity (*R-9, n.d.; R-14, n.d.*). As noted in Chapter IV, a variety of stakeholders called for Ghana to become "more nationalistic and futuristic in [its] policies" (*R-11*), focusing on addressing malaria in Africa with African-made technologies (*R-9, n.d.; R-11, n.d.*). Concerns about manufacturing and state capacity thus extended beyond firm profits and to nationalism and a quest for self-sufficiency.

In sum, considerations of state developmental capacity and self-sufficiency influenced stakeholders' stands. For supporters, the AMFm might help NHIS increase financial viability, furthering an important government commitment to its citizens. Among resisters, the AMFm's potential to cut profits and manufacturing capacity represented a large concern in the contexts of a country trying to fight malaria and to grow its economy.

[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] Unfortunately for this analysis, because the majority of pharmaceutical manufacturers in Ghana are privately owned rather than publicly traded, financial information about how much they stood to lose or gain from the AMFm is unclear.

Interest category	Incorporated open codes	Theoretical links		Support	Resist
State capacity	• Equipment • Local drugs • Local industry • Manufacturing • Market • NHIS-savings • Pre-qualification • Prices • Private sector • Profit • Self-reliance • Support • Supply-chain • Sustainability	• Micro-economics / profit maximiation • Dependency theory • Embedded autonomy (state progression toward developmental stare)	National	• AMFm's potential to reduce costs for NHIS	• National capacity to address local diseases with local drugs • AMFm could have included improving national manufacturing capacity • AMFm could have supported partnerships between local government and local industry
			Organizational	• New international linkages for importers	• AMFm's potential to undercut the national manufacturing sector • Threats to identity of local anti-malaria brands • AMFm's potential effect on profits and viability of national manufacturers of malaria medications • Possibility of AMFm being a harbinger of more initiatives with similar industry implications

Table 8: State capacity as an indirect policy goal in relation to open codes, theory and case evidence, showing organizational- and national-level reasons for support and resistance to joining the AMFm pilot

THEME #3: REPUTATION AND INCENTIVES

EXISTING THEORY

Decision-makers and stakeholders consider how a decision enhances or puts at risk individual or national reputations. Professional reputation is often associated with maintaining or excelling in one's station, given its particular incentive structures (*Strom 1990; Ostrom 2007*). Station, as a category, did not have explanatory power. But the incentives set up by different stations might drive decision-making.

In addition, recent theoretical and empirical arguments have highlighted the importance of a nation's internal assessment of its reputation and prestige (*Aronow, Carnegie, and Samii 2014*). Conforming to globally set norms and reforms can enhance the international reputation, and in turn, the domestic legitimacy, of countries and the leaders that adopt them. This reputation can be deeply embedded in

national identity — and whether a nation is viewed from within (and without) as achieving developing or developed country status (*Levi 2003*).

EMPIRICAL EVIDENCE

What it means to perform well in a given station, and to pursue that goal, requires understanding how different types of jobs structure the distribution of reward and blame. A stakeholder trying to perform well in her position will work to maximize rewards and credit and/or to minimize blame (*Weaver 1987*). For some stations, performing well also benefits from certainty — that is, sticking to business as usual.

Receptive

AMFm offered stakeholders a chance to champion and successfully implement an innovative program. For NMCP and CCM stakeholders, joining the AMFm and executing it well could further their organizational reputation as a GF "star performer" (*R-6*) (*R-6, n.d., USAID, President's Malaria Initiative 2012*). For individual champions, supporting the AMFm's adoption could earn them national and global status. For businesspeople, the AMFm represented a chance to build public goodwill towards the sector, improving the image of pharmacists.

Resistant

Concerns about the AMFm stemmed from: deviations from business-as-usual, the need to forge new and cross-sector relationships, and uncertain distributions of accountability. All represented potential risks to reputation. Also, the future of the AMFm hinged on the pilot's outcomes, which were uncertain. If the AMFm did not continue in the long-run, this could pose risks to its champions, who might be blamed for its market-distorting effects.

For NMCP, the AMFm brought "big professional challenges" (*R-2*), with implementation requirements exceeding NMCP's regular processes and proven capacity (*R-2, n.d.; R-5, n.d.*). In addition, implementation required untested partnerships across sectors — most worryingly, with private businesses (*R-5, n.d.; R-6, n.d.*).

NMCP was also concerned about how GF would interpret the pilot results: as proof of concept or as proof of NMCP's implementation capabilities. There was a decided lack of clarity on how GF or the government would distribute responsibility for the pilot's outcomes. In addition, a variety of public officials worried that supporting the AMFm would lead to "accus[ations] of letting foreigners take over the [pharmaceutical] market" and thereby undermine local capacity (*R-2, n.d.; R-5, n.d.; R-7, n.d.; R-14, n.d.*), while manufacturers worried about losing their "local brand identities" (*R-12, n.d.*).

Overall, uncertainty about the accountability for and longevity of the AMFm presented major concerns – despite assurances provided at the stakeholder meeting in Dar es Salaam in 2009 (*Roll Back Malaria Partnership 2009b*). For practical planning as well as reputational reasons, many felt that "AMFm should have been an experiment for the next phase, not on whether to stop or continue the program" (*R-14, n.d.*).

The Minister of Health was in a difficult position. On one hand, the AMFm would quickly bring an important treatment into the country, facilitating access (*Arrow, Panosian, and Gelband 2004*). On the other, PMAG leadership opposed piloting the AMFm and threatened to strike or demonstrate against it. PMAG had supported the Minister's party in the recent election. Respondents acknowledged that the Minister would have risked "political suicide" (*R-5*) by openly supporting the AMFm (*R-1, n.d.; R-5, n.d.; R-7, n.d.*).

Individuals also felt threats to their personal reputations. For example, NMCP's Program Manager revealed her concern about avoiding blame if the AMFm did not achieve its targeted outcomes (*Country Coordinating Mechanism Secretariat 2009; R-14, n.d.*). Businesspeople who championed the AMFm, coaxing their professional allies to accept the program, faced risks of "vilification" if industry lost profits or if GF revoked the program after diminishing local manufacturing capacity

(*R-4, n.d.*). Note the distinction between the undermining of local manufacturing (an issue of national capacity) and being personally vilified for the same issue (a reputational issue).

Interest category	Incorporated open codes	Theoretical links		Support	Resist
Reputation	• Alliances • Complexity • Experiment • Image • Influence • Outsiders • Partnership • Responsibility • Sustainability • Transparency • Uncertainty	• Bureaucratic politics • Legislative politics and public choice • Politics of credit and blame	National	• Reputation as a "starter" country	• Nationalistic, developmental reputation
			Organizational	• Consideration of organizational mission • Show national pharmaceutical sector as concerned about public welfare • Continue reputation based on past "star" performances	• Maintaining political and financial support from the pharma sector (political party) • Electoral consequences (party) • Dilution of control, budgetary discretion by needing to work across sectors • Technical difficulty of implementing AMFm, including working across sectors (NMCP)
			Individual	• Professional reputation from championing AMFm (esp at global level) • Professional reputation if AMFm implemented well	• Professional reputation from championing AMFm (global) • Professional reputation if AMFm not implemented well (global, national) • Personal and professional reputation related to prioritizing global over national interests (national)

Table 9: Reputation in relation to open codes, theory and case evidence, showing individual-, organizational- and national-level reasons for support and resistance for joining the AMFm pilot

SECTION V.5: DISCUSSION AND CONCLUSION

For Phase I of the AMFm, global donors mobilized funds to pilot a mechanism intended to improve access to high-quality malaria treatment and, ultimately, lower malaria mortality. Using in-depth interviews and relevant meeting minutes, we ask: why *would national stakeholders question — and even forgo — piloting a program intended to deliver high-quality treatment for a prevalent and expensive disease*?

These interviews took place once national implementation of the AMFm had begun but GF Board decision on the AMFm's future beyond Phase I was still a year away. To explain positions and stands, we focused first on categories of key stakeholders. Second, we used stakeholder perspectives to distil key themes of interest, on which stakeholders drew both to support and to resist piloting the AMFm in Ghana.

Although our categorization scheme cannot explain stakeholder stands, we consolidated their heterogeneous reasons for support and resistance into three main themes: direct policy support, indirect policy support, and reputation. These have reassuring overlap with other researchers' categories, such as policy, ideological, and instrumental goals that drive support for a policy (*Blanchet and Fox 2013*). Our findings also align with Grindle and Thomas's assertion that "decision-makers act in a context of great uncertainty, risk, and vulnerability" (*Grindle and Thomas 1991*).

DISCUSSION

From our analysis, we reach four key takeaways, which may have broader implications for the analysis of why stakeholders in LMICs may resist aid in its varied forms.

TAKEAWAY 1: STAKEHOLDERS OCCUPY MORE THAN ONE SEAT

In our first analysis, we reveal that organizational home – or where a stakeholder "sits" – has no clear relationship with the stand s/he takes (*Allison 1969*). But it is also worth noting that stakeholders, formally or informally, often sit in more than one place. For example, the CCM Chairman is also a businessperson and an ACT manufacturer can also be a pharmaceutical importer. The PSGH president also has professional consulting links to GF. A leading advocate from in MoH was also involved in the initial AMFm talks given his role in RBM. A more nuanced view of where one sits would take into account these various affiliations at both the national and global levels.

TAKEAWAY 2: DIRECT POLICY GOALS LED TO BOTH RECEPTIVITY AND RESISTANCE

The stated public health goal of the AMFm's — increasing ACT access and, especially, saving lives — resonated with all stakeholders. Those who thought the mechanism could achieve these goals tended to support participation; those who had persistent doubts and less faith tended to resist. In taking stands,

stakeholders considered the pilot's design and whether it could bring about those goals, rather than considering the public health merits of the goals.

TAKEAWAY 3: INDIRECT POLICY GOALS AND CONCERNS FOR REPUTATION ALSO EXPLAIN RECEPTIVE OR RESISTANT STANDS

Indirect policy goals also motivated stakeholders in taking stands. Recall the records from the CCM Emergency Meeting Minutes in which one CCM member urged the CCM Chairman "not to meddle in politics" and another member retorted that the decision was already "political," relating to issues beyond the immediate goals laid out for the AMFm (*Country Coordinating Mechanism Secretariat 2009*). These issues also influenced the lenses through which different stakeholders saw the AMFm.

Some considered how the AMFm might affect state developmental capacity and their ability to move away from donor support – a concern reflected across the Ghanaian government (for one example, see (*Mensah 2011*). Note that we do *not* claim that the AMFm had a goal — explicit or implicit — of undermining Ghanaian state capacity to deliver on health insurance or to undermine the local pharmaceutical manufacturing industry. Rather, the claim we make here is that national stakeholders considered the ramifications of the AMFm on state productive capacity in ways that the global designers of the AMFm – focused on direct health goals — may not have done. This indirect policy goal influenced how different national stakeholders weighed the merits of the AMFm.[§§§§§§§§§§§§§§§§§§]

Several other authors have noted the importance of pursuing economic growth and creating jobs among citizens and politicians among low- and middle-income countries, often in contrast to donor priorities and processes (*Benjamin 2013; Fox 2015; Pritchett 2015*). In addition, stakeholders weighed whether

[§§§§§§§§§§§§§§§§§§] While street-level implementers are the focus of Chapters VII and VIII, it is worth briefly noting that a small number of drug retailers expressed an unprompted concern for supporting local production capacity during the PACT retailer follow-up interviews. This points was noted again by the surveyor team when reading this material and reflecting on what they remembered from intervews. For example, one said: "I think the local companies, especially in Ghana, should be equipped with the capacity to produce more and also subsidize their ACTs -- without that, the local companies will perish while there are also shortages and lapses in the system. Seriously scrutinize the supply chain and also help local companies like Ernest Pharmacy and KinaPharma to produce affordable ACTs" (*V-176 2011*).

supporting the AMFm and implementing the pilot posed an opportunity or a risk to their reputation (that is, whether it represented a "public relations concern" (*Heckman and Smith 1995; King et al. 2007*)) either personally or professionally, from an individual, organizational, or national point of view.

TAKEAWAY 4: EXPERIMENTAL PILOTS CREATE UNCERTAINTY, WHICH CAN BE THREATENING AND LEAD TO RESISTANCE

One key question emerging from the consideration of stakeholder stands on the AMFm Phase I pilot is the extent to which resistance stemmed from the idea of the AMFm itself versus the idea *of piloting* the AMFm. Some issues, such as threats to both direct and indirect policy goals related to the AMFm mechanism itself, including the focus on malaria prevention rather than treatment as well as broader goals related to national pride and the support of local businesses. The idea of the AMFm, as an immediate idea as well as it a harbinger of future approaches to global health, provoked both support and resistance.

But some sources of resistance stemmed more directly from the decision to pilot the AMFm. While many donor-driven projects have uncertain durations and commitments to long-term support, the approach to piloting the AMFm was exceptional in being explicitly experimental and non-committal. When agreeing to host the program, GF set-up a model of evidence-informed decision-making at the global level. By design, GF gave "no assurance to continue [AMFm] in the long-term," so that the evaluation of the pilot could inform their decision (R-1, n.d.). This presented limited risks to those in Geneva.[**********]

However, at the national level, this uncertainty proved troubling, as many Ghanaian stakeholders felt it posed national, organizational, and personal risks for policy goals and reputations. In a point of opposing objectives, some stakeholders may have supported the pilot if they felt they had a credible commitment that the program would not be terminated, while GF wanted the pilot to see if the evidence suggested the program should be terminated.

[**********] Note that a recent tongue-in-cheek definition of "donors" was "those most insulated from the consequences of their actions" (*Kleinman 2016*).

Pilot-specific concerns arose from uncertainties on the investment of time in setting up the needed systems and relationships as well as the uncertainty of returns on investments in reputation for supporting the AMFm. The reasons for which Ghanaian stakeholders support participation – such as saving lives and alleviating NHIS budgetary pressures — will only come to fruition if the AMFm continues beyond the Phase I pilot. Potential boosts to reputations from supporting the AMFm may also only come about if GF's Board decides to continue the AMFm after Phase I.

An additional set of stakeholder concerns relates to the consequences of initiating, and then terminating, an intervention like the AMFm. As a large-scale intervention, as well as an experiment, the AMFm could affect Ghana's malaria medicine production capacity, prices, and access expectations in ways that might be unpredictable and possibly negative – the kinds of changes that led Norman Daniels to suggest that health reforms and interventions themselves, not just research on them, should be subject to ethical review (*Daniels 2008*). National stakeholders worried about the AMFm's potential market distortions if the initiative was not continued – which led some of them to not want to start the pilot at all. National manufacturing capacity would attenuate, procurement patterns shift, and public expectations about QA.ACT availability and prices heighten.

A final key set of concerns about the pilot was what, precisely, would drive the decision to continue. National stakeholders lacked clarity on whether GF would interpret disappointing pilot results as a failure of the global community's idea, a failure of the global community's implementation ability, a failure of national implementation and managerial efforts and capacity, or a failure of individual efforts in Ghana. Some evidence from the distribution of political accountability for random shocks, including aid programs, suggests that absent other information, voters will tend to attribute the effects of these shocks to their political leaders (*Guiteras and Mobarak 2014*).

Uncertainty about the distribution of accountability and blame — professionally and politically — led stakeholders to resist or, at most, offer passive support to the pilot. To again paraphrase one respondent's

articulation of a common view, *Phase I of the AMFm should have been an experiment on* how *to continue, not* whether *to continue, the initiative* (*R-14, n.d*.).

LIMITATIONS OF THE STUDY AND MITIGATING STRATEGIES

Our approach to the analysis of stakeholders' stands entails two key constraints on making generalizable conclusions. First, the semi-structured interviews gravitated toward what was unusual and controversial about the AMFm compared to other health programming and, therefore, often concentrated on resistance rather than the obvious public health benefits.

One interpretation of the data is that some issues – like public health – are simply less important to stakeholders. Another, though not mutually exclusive, interpretation, is that the interview structure did not elicit positive statements about the AMFm's goals or design. Absent a direct question on malaria's burden, for example, some respondents may have felt the importance of lessening it was too obvious to mention, as indicated by its absence in the word cloud (Figure 15). Additionally, most interviews drifted to the differences between the AMFm and other GF processes, as well as towards uncertainties about the AMFm design and adoption process. Put more simply, "the normal does not make news" and may not always make conversation either (*Tuchman 1979*).

In addition, although I talked with many of the stakeholders identified as key for adoption, others were unreachable or unwilling to converse. Our analysis may, then, exclude some viewpoints. However, we do try to find other ways of representing these voices, including drawing on meeting minutes and contemporary news items. This helps to a certain extent. However, for those in attendance at CCM meetings that neither speak during those meetings nor come up in conversations about the AMFm adoption decision with key informants, it is unclear what motivated their silence and whether, in some cases, their silence actually spoke loudly.

A second constraint is that all single-setting, single-episode case studies present challenges to external validity, given the idiosyncrasies of the context and program under investigation (as discussed in Chapter

II). For example, Ghana has unique features such as a competitive, multi-party democracy with commitments to growing its economy, in part through expanding private-sector manufacturing, as well as commitments to social protection, such as the NHIS. Aspects of this setting overlapped with aspects of the AMFm, including its incorporation of some private sector entities.

We address and mitigate these two concerns in several ways. First, we acknowledge that, in analyzing a single case study, we generate rather than test hypotheses (*Bennett and George 1997; Strauss and Corbin 1997*). The explanatory power of the proposed themes — the role of seeking direct policy goals, of seeking indirect policy goals, and seeking to build or shield one's reputation — needs to be tested in other cases to see if they have merit outside piloting AMFm in Ghana. For now, they represent a potential useful set of constructs for future stakeholder analyses.

Second, we link our findings with existing theory, which may support future testing of the ideas we propose in other contexts (*Gerring 2004*). Third, we use independent coding and consensus as a check on idiosyncratic readings and interpretations of the data. Fourth, we attempt to transparently narrate our analytic process, moving from collected data to coded data to our consolidated results and interpretations. Fifth, we use respondents' own words as much as possible to describe their ideas. Finally, as described in Chapter III, we engage in member-checking or validation, allowing respondents to read the manuscript and suggest alternative interpretations (*Lincoln and Guba 1986*). Overall, respondents agreed with the themes presented in this analysis and agreed to have their names included in the acknowledgements section as contributors. A few factual tweaks were made, which I include in in this thesis.

An additional, potential critique of this analysis is the assumption that Ghana could have opted out of submitting to join the pilot. Different stakeholders made differing claims, ranging from the "definite" potential of Ghana to have turned down Phase I to a sense the initiative was never likely to be blocked (*R-13; O. Sabot 2015*). If the premise of opting out does not hold, the reader may question the value of the

analysis, especially if aware that Ghana adopted the AMFm, implemented the pilot, and will continue to pursue an AMFm-like mechanism in the future (as narrated in Chapter IV and analyzed in Chapter VI).

We cannot construct a counterfactual to say whether Ghana may have decided against piloting the AMFm; interview respondents had different opinions on the likelihood of this outcome.[††††††††††††††††††] However, we argue that studying the process of adopting the AMFm is important regardless of whether Ghana *could* have said 'no,' precisely because some stakeholders would have liked to do so or would have liked to have proceeded under different terms. By revealing points of contention, confusion, hesitation, and resistance, we highlight issues that may hinder policy transfer between the global and national level. It is important to note, however, that we have only explored these issues in relation to the AMFm in Ghana and have not cross-checked whether the same stakeholders hold consistent views towards other health products, including bednets and rapid diagnostic test kits for malaria.

These results align with studies of other health and development-related policy decisions, which find that stakeholders are motivated by issues outside direct policy goals — and outside policy goals altogether (*e.g.* (*Ferguson 1990; Onoka et al. 2013; Booth 2014*)). Motivations can be much more personal. This is not a new finding but it warrants repeated emphasis (*Reich 1996*).

MOVING FORWARD

In this chapter, we highlighted that national stakeholders held diverse opinions about the AMFm. Through a grounded qualitative analysis, using an iterative process of open-coding and consolidation, we put forward three key themes that explain the underpinnings of these diverse opinions in an effort to solve the puzzle central to this chapter: *why would national stakeholders question — and even forgo — piloting a program intended to deliver high-quality treatment for a prevalent, expensive disease?* Thematic interests include direct policy goals but also the desire to use policies to enhance state capacity as well as to enhance (or maintain) individual, organizational, and national reputations.

[††††††††††††††††††] Rwanda is suggestive that "no" was an option. However, both time and limited similarities prevent us from examining Rwanda as a comparator case.

This analysis has described how different stakeholders *viewed* the AMFm proposal and has offered an explanation of the complex of reasons underlying these stands. Sending off an application, not having been formally vetoed by the Minister, indicates that joining the AMFm had sufficient support to outweigh concerns within CCM. However, it is clear there was not a consensus opinion and joining the AMFm involved significant risks to political, governmental, business, and personal reputations.

The next step is to understand what they *did* in response. In the next chapter, I consider the actions of various stakeholders in Accra, using a common conceptual framework for considering policy decisions. While obvious, it still bears mentioning that stakeholders did indeed act, both to support and block the proposal to transfer the AMFm to Ghana. National stakeholders are active agents in prioritizing, adopting, and implementing global health initiatives and in achieving global health goals. As the preceding narrative shows — and the following analysis explores — individual national stakeholders are critical to the governance and practice of global health (*Buse and Walt 2002*).

CHAPTER VI: CASE ANALYSIS - ADOPTING THE AMFM IN GHANA: APPLICATION OF A MULTIPLE-STREAMS APPROACH TO A CASE OF POLICY TRANSFER

SECTION VI.1: INTRODUCTION

In the previous chapter, I analyzed the range of reasons why different stakeholders took particular stands on adopting the pilot of the AMFm. Three themes helped to explain what stakeholders considered in taking their stands, laying out the state of play for adoption. In the present chapter, I examine the play itself and how stakeholder actions facilitated the outcome of policy adoption.

This play included two events that interviewed stakeholders marked as unusual: the effort to involve a major politician in CCM decision-making and the subsequent refusal of that politician to announce a decision. By the modifier "major," I indicate past and present nationally-elected officials and their party-affiliated appointments, such as the Minister of Health. The effort to involve a major national political leader warrants further analysis. In this chapter, I aim to understand *how* — through which actions and actors — adoption of the AMFm pilot happened in the context of these events.

I consider the AMFm adoption decision within two broad conceptual frames, not intended to be mutually exclusive. The first is the Multiple Streams Approach (MSA) to understanding policy outcomes (*Kingdon 1995; Zahariadis 2007*). This commonly used policy framework posits a set of criteria that increase the likelihood of a policy phase being completed. The second is that of a vertical policy transfer: globally defined problems catalyzed and shaped the AMFm; policies were prioritized and formulated above the national-level. Then the initiative was introduced for national adoption. Part of my broad goal of this chapter is to understand the usefulness and limitations of MSA in cases of adopting a vertically transferred policy proposal. I also aim to understand what is missed when vertical origin of a policy is not considered in analyzing its adoption. That is, in this chapter, I both seek to test a framework (MSA) and then to propose a way to modify the framework, in seeking to explain specific aspects of the case of adopting the

AMFm pilot in Ghana. To begin, I justify my use of MSA as a guiding conceptual frame and then provide an overview of its key components.

MULTIPLE-STREAMS APPROACH (MSA)

Justification for using MSA

Studying US Congressional policy-making processes and drawing on the Cohen, March, and Olsen's garbage can model of organizational choice**,** John Kingdon delineated MSA to explain how certain issues are chosen for political attention (*Cohen, March, and Olsen 1972; Kingdon 1995; Zahariadis 2007*). His work on policy decisions focused on pre-adoption processes: prioritizing problems (agenda-setting) and specifying policy design options (*Durant and Diehl 1989*).

Kingdon thought extant literature explained subsequent policy stages — adoption and implementation (*Kingdon 1995*). But later researchers found existing approaches wanting. They suggested that the multiple-streams metaphor is useful for studying and interpreting these later processes and outcomes (*Lemieux 2002; Zahariadis 2007; Ridde 2009*). I follow their lead for this analysis.

MSA presents an appropriate framework for analyzing this case of adoption for six main reasons. First, researchers apply the framework across a wide range of policy sectors, with over 10,000 citations for Kingdon's book alone, linking this analysis with a broad public policy literature (*Kingdon 1995; Zahariadis 2007; Greer 2015*). This popularity and potential to link with the public policy and global health literature is appealing, though not sufficient justification in itself.

Second, decisions, often examined in retrospect, are the key unit of analysis, as is true in this chapter (*Zahariadis 2014*). MSA also offers flexibility about the time period over which a particular decision is studied. Other frameworks are less flexible, focusing only on long-run stakeholder actions, which does not apply in this delimited case of decision-making (*Sabatier 2007*).

Third, MSA incorporates the many moving parts of a policy narrative. Rather than focusing on a single explanatory variable, it requires interactions to explain a policy decision or non-decision (*Shroff, Roberts, and Reich 2015*).

Fourth, the framework has proved cosmopolitan, with researchers applying it outside the United States in supra-national (global), national, and sub-national contexts (*Exworthy, Berney, and Powell 2002; Zahariadis 2005; DeJaeghere, Chapman, and Mulkeen 2006; Tomlin, Hillmer, and Hampson 2008*).

Fifth, global health researchers have used MSA to study and affect priority-setting, adoption, and implementation and is the main framework used to look specifically at global health policy transfer (*Gordenker et al. 1995; Reich 1995a; Ogden, Walt, and Lush 2003; Lush, Walt, and Ogden 2003; Ridde 2009; Gagnon 2012*). Researchers have used MSA to examine priority-setting, adoption, and implementation at sub-national (*Atkins et al. 2012; Jat et al. 2013*), national (*Daniels and Lewin 2008; Ha et al. 2010; Burris et al. 2011; Shroff, Roberts, and Reich 2015; Kusi-Ampofo et al. 2015*), and global levels (*Reich 1995a; Hafner and Shiffman 2013; Gagnon and Labonté 2013; Allutis, Kraft, and Brand 2014*).

Sixth, the framework stems from empirical observations of decision-making under conditions of time-limitations, ambiguity, and unclear policy preferences (*Zahariadis 2007; Gagnon 2012*). These conditions do not appear in all decision-making models but hold in the case of piloting the AMFm in Ghana. For example, rational actor models (neorealism and neoinstitutionalism at the state level) presume near-perfect information and time to come to a clear decision – but this was not true of the AMFm adoption decision in Ghana. Similarly, two-table games include one government decision-maker simultaneously playing to domestic and international audiences, such "that domestic tactics clearly have foreign audiences in mind to explicitly pursue the extractions of concessions from the other side" (*Putnam 1988*) — but this was not true of the AMFm adoption decision in Ghana (*Putnam 1988; Zahariadis 2005*).

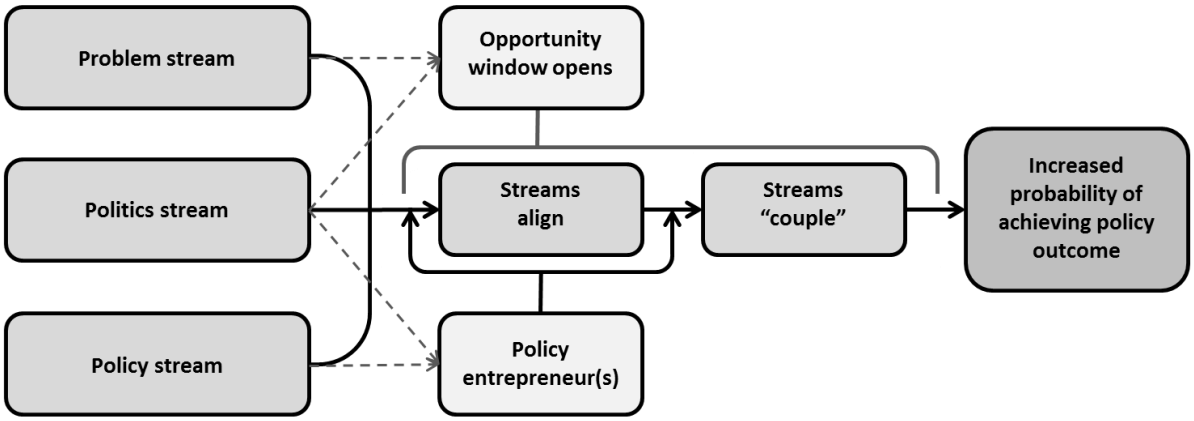
Basic framework

MSA proposes that the likelihood of an issue receiving attention as a defined, prioritized public problem increases when elements in three "largely unrelated" activity streams interact (*Zahariadis 2007*). These three streams include the activities and actors that (1) define, spotlight, and construct problems (the problem stream); (2) design and promote technical policies (the policy stream); and (3) inform and make political decisions (the politics stream) (*Kingdon 1995; Zahariadis 2007*). Each stream flows according to its own institutional currents and historical course, carrying its own stakeholders and ideas (*Zahariadis 2007*). However, elements in a stream can become — or make themselves become — buoyant, rising to the surface of the activity. When surfaced, these elements are more visible to the media and public and more available to interact with surfaced elements in other streams.

MSA's set-up of surfacing and subsequent interaction indicates that events must occur with a particular timing and sequence to achieve policy outcomes. When elements in all three streams surface at the same time, meaningful interaction can occur – coupling, in MSA parlance (*Kingdon 1995*). Such interaction occurs when political actors are willing and able to consider a particular problem, linked with and framed by a particular solution.

These moments for possible linking interaction — and, so, policy action — are windows of opportunity. Surfacing elements in either the problem or politics streams can open these windows at unpredictable moments (*e.g.* at a crisis) as well as predictable events (*e.g.* at an election). Within these windows, it becomes easier for related elements in each stream to surface, available for interaction. Even with surfaced elements, coupling of streams still requires active manipulation by policy entrepreneurs, who work to link a proposed solution to a surfaced problem and to critical surfaced decision-makers (*Price 1971; Weissert 1991; Kingdon 1995; Zahariadis 2014*). In Figure 16, I provide a schematic how the probability of coupling increases, showing the three streams, the windows of opportunity and timing of action by policy entrepreneurs.

MSA is, thus, premised on the intuitive — as well as empirically grounded — idea that the right people with the right decision-making powers need to be paying attention to a relevant problem at a time when a particular policy solution seems right to move forward. That is, the probability of achieving a policy outcome (coupling) increases when several independent variables co-occur: (1) an open opportunity window *and* (2) action by a policy entrepreneur, *and* (3) surfacing of elements in at least two activity streams. Without one of these, policy progress becomes less likely.



Citations
Gagnon, M. L. 2012. "Global Health Diplomacy: Understanding How and Why Health Is Integrated into Foreign Policy". University of Ottawa.
Zahariadis, Nikolaos. 2007. "The Multiple Streams Framework: Structure, Limitations, Prospects." In Theories of the Policy Process, edited by Paul A. Sabatier. Cambridge: Westview Press.Kingdon, JW. 1995. Agendas, Alternatives, and Public Policies. 2nd ed. New York: Harper Collins

Figure 16: Representation of the Multiple-Streams Approach (MSA), with independent problem, politics, and policy streams

Policy outcomes of interest: coupling as completion of policy stages

While coupling appears as the dependent variable in MSA literature, it is often defined only loosely, through synonyms (*e.g.* linking). However, researchers often (implicitly) equate coupling with progression in the policy process, such as setting the agenda or adopting a proposal (*deLeon 1999*). This suggests a way towards sharper definitions of coupling as the policy outcome of interest: specifying it as the completion of a policy stage. As well as being sharper, this definitional approach highlights the linkages between heuristic policy stages, as a series of couplings as a policy moves from an identified social problem to the adoption of a policy to implementation of its solution (*Matland 1995; Ridde 2009*). I define adoption, the key policy outcome in this analysis, below.

VERTICAL POLICY TRANSFER

In this chapter, I use MSA to examine a case of vertical policy transfer, in which a policy idea – with or without a fully articulated agenda – moved from one level to another. I consider the AMFm to be a policy transferred, vertically, from Geneva to the capitals of pilot countries, including Accra in Ghana.[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] The idea of vertical policy transfer recognizes that policy operates on various levels: at the global level (above the state), at the level of the nation-state, and sub-national levels below the state (*Reich 2002*). One conceptual interpretation of vertical policy transfer (*Stone 1999; Dolowitz and Marsh 2000*) is that once the idea is transferred, adoption and implementation processes occur at the national level, without global input. Whether there is or is not actually significant global input in a case of vertical policy transfer is an empirical question.

The conceptual possibility of a transfer from global to national level with no post-transfer input from the global level is illustrated in Figure 17. In this visualization, I show global implementation as preceding national adoption. Recall from Chapter IV that global implementation involved price negotiations, funding the ring-fenced cache, and only then inviting candidate countries to apply to join the pilot phase. Thus, the sequencing depicted in Figure 17 matches the present case but may need to be modified in other scenarios. Also, given the explicit intention to use the results of national implementation to inform global decision-making, I include a feedback loop that may not exist in all cases of vertical policy transfer.

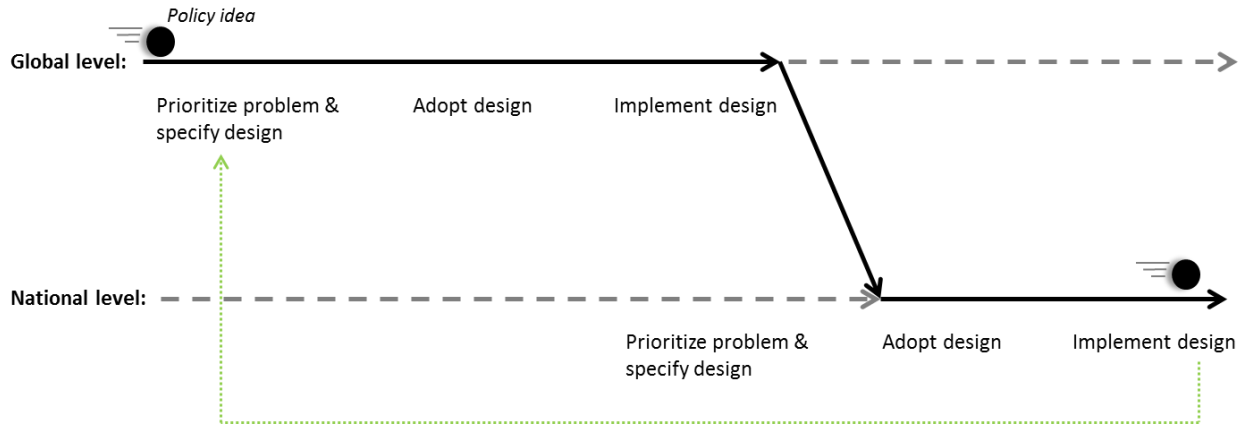


Figure 17: Visualization of a possible policy trajectory in a vertical policy transfer

[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] This is in contrast with horizontal policy transfer – or policy diffusion – when one country notices and takes up a policy idea tried in another country (*Rogers 1995; Stone 1999; Weyland 2005*).

This schematic makes vertical policy transfer look straightforward. Global health researchers suggest otherwise. As Ogden *et al* note, "*how* policies are transferred is important for [many] reasons, not least because transfer without 'ownership' might lead to deficits or failures in implementation" (emphasis added) (*Ogden, Walt, and Lush 2003*). To structure this examination of "how," I use a common public policy framework: MSA (*Kingdon 1995; Zahariadis 2007*).

Researchers who have used MSA to analyze policies transferred from the global level note linkages between (1) global agenda-setting and choosing policies to address prioritized problems and (2) the national adoption and implementation of these policies (*Lush, Walt, and Ogden 2003; Ogden, Walt, and Lush 2003; Ridde 2008*). They offer a picture of global solutions adopted in national capitals of low- and middle-income countries, sometimes with global agencies substituting for elected, national political actors – a concept I discuss further, below (*Ridde 2009*).

These researchers generally depict transfer either in the discussion of an analysis of global-level agenda-setting or in the introduction to an analysis of national implementation (*Lush, Walt, and Ogden 2003; Ogden, Walt, and Lush 2003; Ridde 2009*). That is, they do not apply MSA to analyze policy transfer and national adoption or whether we should expect national adoption to follow from policy transfer. Explicit analysis of policy transfer from the global level toward national-level adoption is important to understanding the adoption of the AMFm pilot.

RESEARCH GOALS AND OUTLINE

This chapter is driven by the specific, unusual events in the case of adopting the AMFm in Ghana. First, an institutional stakeholder (CCM) was uncertain how to proceed with the AMFm decision and, second, the same stakeholder tried to give its decision-making power to a circumstantial stakeholder (the Minister of Health). Third, Minister Sipa-Yankey did not take a stand on piloting the AMFm. These events lead to two questions, one conceptual and one theoretical. *Why did national stakeholders respond in this way to the*

vertically transferred AMFm? And, *to what extent can a multiple-streams approach to policy adoption help to explain these events and Ghana's decision to join the AMFm pilot*?

In comparing the MSA framework to the empirical data presented in Chapter IV, the answer at first appears to be no. Many elements of MSA cannot be found among national stakeholders and processes: there are voids where the framework predicts there should not be. Some of the actions of national stakeholders – such as the effort by CCM to pass decision-making power to a major political leader – could be interpreted as (failed) efforts to fill some of those voids.

Before proceeding with the analysis, I pause to note that readers of early drafts of this chapter felt my aim was to salvage MSA when it did not explain all aspects of the case. In fact, this is opposite to my line of thinking. My initial hunch in considering this case was that the logic underlying the MSA framework — and therefore what is required to move the policy process forward — provided an important intuition to explain CCM's decision to require approval from the Minister. Bringing in a political actor when this had not been done before required examination.

Further, that a policy window had opened, but not in the way predicted by MSA, warranted further research. If a policy idea transferred from the global level can itself open an opportunity window, this may provide a useful way of visualizing the opportunities and hazards of vertical policy transfers. This analysis emerged from an initial sense that, first, MSA makes sense and that, second, where the actual events of the policy process deviated from MSA, important global health governance lessons could be learned.

Ultimately, I argue in this chapter that MSA can make sense of the adoption events and outcome of the AMFm in Ghana. I also contend that MSA can be applied to a wider range of policy decisions that affect priority-setting. To proceed, I first describe the analytic methods of process-tracing and define the research hypotheses, considering the extent to which national policy and political processes can explain Ghana's adoption of the AMFm. This includes an effort to carefully operationalize the MSA constructs. I use MSA to analyze the actions of national stakeholders, then expand the analysis to include global

stakeholders and processes. I conclude with implications for vertical policy transfer in global health as well as the use of MSA in analyzing these transfers.

SECTION VI.2: ANALYTIC METHODS

To examine the extent to which MSA provides a suitable explanation of whether and how policy outcomes of interest are realized, I define and operationalize each of the key constructs in MSA. Then, in the analysis, I consider whether each of those needed constructs appears in the data on the AMFm in Ghana.

VARIABLE DEFINITIONS

DEPENDENT VARIABLE

Adoption (coupling)

Description: Adoption§§§§§§§§§§§§§§§§§§§§ formalizes or endorses a "capacity to act" (*Stehr 1992*) — implement — through two sequential decision steps or actions: presenting an idea for decision-making and then taking an authoritative decision in its favor (*Stehr 1992; Kingdon 1995*). In political settings, these are (1) deciding to bring a plan forward for endorsement, either as a bill on the floor of the legislature for a vote or a proposal on the desk of an executive for sign-off (getting something on the agenda) and, then, (2) the legislature or executive giving an authoritative endorsement (Haskins and Margolis 2014). Though it is a two-step process, adoption is often portrayed as the single binary outcome of the second decision step (*Berry and Berry 1990*). This can obscure the activity involved in achieving the first. For clarity, I present it as two steps.

Operationalization: CCM sits outside the legislative and executive processes described above. The relevant steps to consider for this case are: (1) a CCM decision to send a proposal to GF in Geneva and (2) the endorsement of the proposal as a funded, implementable design. The first of these steps receives more emphasis in this analysis. This is because, as noted in the case narrative (Chapter IV), once a country submitted an AMFm Phase I application to GF, that proposal had a

§§§§§§§§§§§§§§§§§§§§ Also termed endorsement, legislation, or legitimation in the policy literature.

good chance of approval. This may have been especially true for Ghana given its past performance on GF malaria grants.

INDEPENDENT VARIABLES

Independent variable: Surfaced issue in the policy stream

Description: Proposed policy solutions exist in what Kingdon calls the "primal soup" of the policy stream (*Kingdon 1995*).********** Proposed policy solutions are the product of policy actors' ideas and debates within think tanks, governmental, parastatal, and non-governmental bureaucracies, and academic and non-profit institutes (*Zahariadis 2007*). Policy proposals can come about in several ways, including reformulations of ideas already in the soup. As indicated by *vertical* policy transfer, policy ideas may also be dropped by global organizations into the national policy context.

Proposals-in-waiting sink or surface subject to context-specific selection processes (*Kingdon 1995*). Kingdon identifies proposal characteristics that assist an idea in staying afloat or re-surfacing — that is, that add buoyancy: technical feasibility, ideological value acceptability, and value-for-effort (*Kingdon 1995*). Buoyancy and surfacing are my terms, which, I believe, cogently describe what Kingdon lays out. Surfaced elements are those available for coupling; buoyancy makes surfacing more likely.

Operationalization: Evidence that a policy proposal had surfaced in Ghana would be that policy actors were engaged in assembling a proposal that they felt had the buoyant qualities of technical feasibility, ideological acceptability to elites, and public palatability.

********** This part of Kingdon's framework relies heavily on an analogy to natural selection, evolution, and the primordial origins of life (*Kingdon 1995*).

Independent variable: Surfaced issue in the problem stream

Description: Problems are surfaced issues that attract decision-makers' attention as problems requiring policy redress. Ridde suggests surfaced problems will tend to be (framed as) new and be public in nature, "recognized both by officials and the wider public as something governments should legitimately" address (*Ridde 2009*). Surfacing can be catalyzed by actors in the problem stream, such as the media, advocates and activists, moral authorities, watchdogs and whistle-blowers, as well as policy-makers and civil servants.

Operationalization: To identify whether the AMFm was framed in Ghana using the same problems that globally motivated the initiative, I look for discussions of the following as *new* (or re-framed) and *public*: (1) malaria drugs are too expensive or otherwise inaccessible to patients and consumers, leading to both (2) unacceptably high malaria mortality and (3) the potential for parasites to develop resistance to artemisinin, especially absent an effective alternative treatment.

Independent variable: Surfaced actors in the politics stream

Description: the politics stream contains political decision-making bodies and institutions, along with the actors (major party politicians, pressure groups) wielding decision-making power in and on them. Kingdon explicitly focused on the major political actors of Washington, D.C., who contend with electoral concerns, political party concerns, and concerns about campaign support (*Kingdon 1995*). In applying MSA to the global level, researchers broadened this definition, relying on the politician and financial connections of aid agencies to national governments as well as the pressure groups effectively formed by global non-governmental agencies that have the authority (and budget) to influence who gets what and when (*Lasswell 1958; Kingdon 1995*).††††††††††††††††††††

†††††††††††††††††††† "In the international setting, [the politics stream is composed of] officials of international organizations; politicians responsible for national aid agencies, and their officials; pressure groups; and international non-government organizations" (*Ogden, Walt, and Lush 200*3).

Operationalization: Given the national level of the present analysis, I take the narrower definition of national, major political actors put forward by Kingdon, to see if these actors were paying attention to the problems the AMFm was designed to address. I examine the actions of the President and his health-related appointees in the Ministry of Health and the National Health Insurance Authority as key political players. I exclude Ghana's Parliament, which is considered weak in comparison to the executive (*Whitfield 2011*). I look for evidence that these political figures had surfaced as paying attention to the problems the AMFm set out to address globally and open to the solution it proposed.

Independent variable: Opportunity windows

Description: Opportunity windows are specific, time-delimited ("fleeting" (*Kingdon 1995*)) periods that create a sense that decision-making and policy action are important — even urgent — and feasible (*Kingdon 1995; Zahariadis 2005*). Windows are opened by change, whether as "compelling problems" or political events – that is, surfacing in those streams (*Zahariadis 2007*).

In the problem stream, changes in feedback and information, whether routinely monitored or dramatic and unexpected, can cause perceptions of an issue to change. Such changes can raise

Similarly, as Ridde hypothesizes, "when agenda-setting and [policy design] are international in origin, international organizations play an essential role in the political stream of public policies" (*Ridde 2009*). The budgets wielded by these "policy-makers in international organizations and donors" may have political endorsement via receipt of governmental money (directly, through bilateral transfers or, indirectly, funneled through multilateral organizations) (*Ridde 2009*). They may further reflect more direct verbal endorsement from a global political leader. This conceptualization from Ridde and from Lush, Ogden, and Walt opens the door that CCM could be viewed as a political actor in Ghana in the present case. However, I keep this door closed.

CCM also kept this door closed. When faced with dissent, CCM sought "government['s] unambiguous support and approval," in the form of a signature from the Minister of Health (*Country Coordinating Mechanism Secretariat 2009*). When the CCM Chairman went to meet the Minister, a member called on him -- and the CCM -- "not to meddle in politics" (*Country Coordinating Mechanism Secretariat 2009*). When Ghana was mid-way through implementing Phase I, the Chairman reflected to me that an key lesson from adoption was that politics and political lobbying [are] important" (*R-5, n.d.*). This would not have been a new lesson to someone who spent time navigating political currents. Taking these together, it seems that CCM sits parallel to or 'below' the state, not in the political stream (*Booth 2010; Reich 2002*). I analyze it accordingly.

certain issues to the surface as newly compelling *problems*, and, therefore, as available for coupling with solutions and politicians (*Kingdon 1995; Ridde 2008*).

In the politics stream, important changes can include shifts in legislative or executive power and mandate, heightened pressure group campaigns, and a politician's sense that the public's mood and attention has drifted (*Allison and Halperin 1972; Kingdon 1995; Zahariadis 2007*). Note that the public mood, as Kingdon describes it, reflects politicians' sense of public opinion, rather than a direct measure of public opinion through polling or other means of assessing the pulse of the citizenry. Further, Kingdon considers one potential major conduit of public opinion, the media, to reflect *politician* priorities rather than public opinion (*Kingdon 1995*).

Operationalization: An opportunity window has two defining features. First, a window links with a change in either the problem stream and/or the politics stream that make an issue seem newly (or more) problematic and/or more feasible to address, logistically and politically. Second, it only opens for a short period.

Independent variable: Policy entrepreneur(s)

Description: Policy entrepreneurs are necessary but not sufficient agents who help usher a proposal through one or more policy stages by facilitating coupling between a policy, a problem, and political actors. They advocate and broker, soften-up and lobby, and reframe and manipulate information and symbols (*Price 1971; N. C. Roberts and King 1991; Weissert 1991; Kingdon 1995; Zahariadis 2005; Zahariadis 2007*).

These agents can swim in any stream but in all cases require (1) authority and reputation that give them "claim to a hearing" (*Kingdon 1995*), combined with (2) connections, access, and the skill to manipulate symbols and information (such as scientific or economic data) to bring people

together. In addition, an entrepreneur must have (3) persistence‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡ and willingness to invest and risk their time, energy, and reputation for a proposal in which they believe (*Kingdon 1995; Reich 1995a; Zahariadis 2005*). Bridging interests and assuming risk is constitutive of the Oxford English Dictionary definition of entrepreneurship, for policy as well as business (*Stevenson 2010*).

Operationalization: I looked for evidence of actors with the characteristics of an entrepreneur and who took the actions associated with this role, as laid out by Kingdon and Zahariadis (*Kingdon 1995; Zahariadis 2005*).

RESEARCH HYPOTHESES

With these definitions in place, I propose five specific research hypotheses for analysis. If each MSA component is identified in the data from the period preceding Ghana's adoption of the AMFm's Phase I, MSA is a good fit for explaining the case of adoption at hand.

1. Ghanaian policy actors (1) deemed the AMFm proposal viable (technically feasible, ideologically acceptable, and publically palatable) and (2) prepared it to submit it to GF for decision-making.
2. The three global issues addressed by the AMFm were considered new and public problems in the Ghanaian discourse. These three global issues were: patient access to ACTs, malaria mortality, and staving off the development of parasite resistance to ACTs.
3. Political actors in Ghana acknowledged the problems addressed by the AMFm and were receptive to the AMFm as the proposed solution.
4. Events or changes in the problem and/or political stream created an opportunity window — a time delimited space created by a change — in which policy action become possible.
5. One or more actors with the characteristics of policy entrepreneurs did entrepreneurial work to promote adoption of the AMFm proposal in Ghana.

Before examining each hypothesis in relation to the empirical data, I lay out my analytic approach.

‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡ For Kingdon, entrepreneurs also have longevity, preparing and building support for pet proposals over long periods, waiting for an opportunity window to open. However, Weissert also identifies actors who play the role of entrepreneur only a window seems likely to open as "policy opportunists" (*Weissert 1991*). I subsume such opportunists under the more common term of entrepreneur.

ANALYTIC APPROACH

Process-tracing is a qualitative technique to test hypotheses within a single case (*Bennett and George 1997; Mahoney 2010; Collier 2011*). Using careful, triangulated description of events and their sequence of unfolding, the process-tracing analyst makes a "systematic examination of diagnostic evidence selected and analyzed in light of research questions posed by the investigator… to draw descriptive and causal inference" (*Collier 2011*).

Collier likens process-tracing to the deductive work of Sherlock Holmes (*Collier 2011*). In a detective plotline, the outcome is already clear — a crime has been committed — and the research questions are straightforward — who did it and how? The task becomes unraveling these causes of the known outcome. Process-tracing can be either forward- or backward-looking. Here, I use backwards process-tracing to examine the causes of known effects. The outcome of interest — adoption of the AMFm in Ghana — has already been completed/committed.

When solving a crime, the detective uses clear categories of diagnostic evidence to work backwards from the outcome: a perpetrator with means, motive, and opportunity. Like standard detective clues, the constructs of MSA may provide the categories of diagnostic evidence to look for in the data, if MSA does indeed explain policy adoption (*Collier 2011*). To investigate, the first task is to see if evidence of each MSA component is present prior to adoption and second, if so, consider whether MSA is a useful guide to understanding *how* adoption happened. Investigating in this way this amounts to closed-coding of the case data, with MSA providing the codes (*Miles and Huberman 1994*).

There are at least two potential pitfalls with such analyses. First, the interview data used here may be subject to recall and self-importance biases (for one discussion of such biases, see (*White and Phillips 2012*)). Second, where constructs are not found in the data, I must try to show that this represents evidence of an absence — an event actually did not happen — rather than an absence of evidence.

I address both problems in similar ways, with triangulation as the central counter-balance. Where possible, contemporary evidence – in the form of meeting minutes, technical documents, and media statements – is marshaled to complement and buttress interview claims. Second, as described in Chapter III, I rely on member-checking, with different stakeholders reviewing and confirming statements made by others (as well as my interpretation of them).

To illustrate: identifying policy entrepreneurs may be subject to biases. To begin identifying entrepreneurs, I consider those stakeholders cited by informants as playing entrepreneurial roles, for example, as champions of the policy. But these informants have the advantage of hindsight and, therefore, this strategy runs the risk of *ex post* credit-claiming or blame-avoidance. To guard against this risk, I use meeting minutes and cross-checking across different respondent perspectives about who played active and entrepreneurial roles.

In addition, although adoption and early implementation had passed at the time of my interviews, it was not yet clear if the AMFm would be considered an overall success in Ghana or globally. This decision was still one year into the future (see Figure 3 for timeline). Therefore, at the time of the interviews, it was unclear to any given respondent whether claiming credit or avoiding blame would be the wiser strategy.

SECTION VI.3: ANALYTIC RESULTS

In the previous section, I laid out definitions of MSA components and the hypotheses stemming from their operationalization in the case of adopting the AMFm pilot in Ghana. Now, I examine whether empirical evidence of national-level processes and stakeholders fulfills each hypothesis. The details of this empirical evidence form the substance of Chapter IV. Overall, I find that the definitions of the policy stream and policy entrepreneurs are fulfilled while those relating to the problem stream, the politics stream, and opportunity windows are not.

HYPOTHESIS 1: ADOPTION AND THE POLICY STREAM

Policy actors (1) deemed the AMFm proposal viable (technically feasible, ideologically acceptable, and publically palatable) and (2) had prepared it to submit it to GF for decision-making.

In this case, the evidence for part (2) is clearer than part (1). A proposal was prepared by policy actors and submitted to Geneva, despite uncertainties in and outside CCM of its technical feasibility and ideological appropriateness. On balance, then, this component (a surfaced, viable proposal) of MSA was present.

Preparation for submission and adoption: GF asked CCM to draft its plan for implementing the AMFm (particularly those components relating to the *Supporting Interventions* in Prong III (refer back to Table 4 for an overview of the AMFm components).§§§§§§§§§§§§§§§§§§§§ This made CCM the deciding policy actor. CCM led the proposal preparation process and submitted a completed proposal to Geneva on 30 June 2009, having internally endorsed it as ready-to-send by consensus on 25 June 2009 (*"Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009; Norgbedzie 2014*). GF sent an approval letter to CCM dated 23 November 2009, completing Ghana's two-step adoption of the AMFm pilot (*Norgbedzie 2014*).

It is clear that CCM prepared a proposal for submission. What is less clear is whether relevant Ghanaian stakeholders — both policy actors and political actors — felt the proposal had the characteristics that enhance an idea's buoyancy, namely, technical feasibility and ideological acceptability. Public palatability seems to have been assumed in so far as people would prefer to pay less for a treatment for which they have relatively inelastic demand (*Dzator and Asafu-Adjaye 2004*).

Technical feasibility: From the narrative and analysis in Chapters IV and V, we know that several national policy stakeholders, including those in CCM and NMCP, were uncertain that the AMFm could meet its stated (direct) goals related to public health and pricing. While GF endorsed Ghana's proposed design as

§§§§§§§§§§§§§§§§§§§§ Though national actors assembled the proposal, global actors defined both the problem and solution, which largely structured Prongs I and II (*Matowe and K'omolo 2011*).

implementable, NMCP and others involved in the submission worried about their own ability to undertake the requisite tasks. The sustainability of the program, in the context of the Phase I experiment, was — by design — unknown. Moreover, Ghana had no back-up "sustainability program" (*R-7, n.d.*).

Ideological acceptability: One key ideological concern at the global level — using the private sector as a means to distribute antimalarial treatments — does not show up in Ghanaian conversations. ACTs are legally available over-the-counter and the private sector played an important role in keeping public health facilities stocked. However, favoring treatment over prevention and elimination may not have resonated with all political and policy elites, as indicated by NMCP's heavy focus on bednet coverage (*Malm 2014*). Further, to the extent that the AMFm's mechanisms put at risk other (indirect) policy goals, such as national pharmaceutical self-sufficiency, there were ideological qualms with the AMFm, as directly expressed by interviewees and as indirectly expressed through conversations about malaria in the media.

HYPOTHESIS 2: PROBLEM STREAM

The three global issues addressed by the AMFm were considered new and public problems in the Ghanaian discourse.

At the global level, the three motivating problems for the AMFm were: (1) malaria drugs are too expensive or otherwise inaccessible to patients, leading to both (2) unacceptably high malaria mortality and (3) the potential for parasites to develop resistance to artemisinin (especially in the absence of an effective alternative treatment). These problems do not seem to have surfaced in a meaningful way in the Ghanaian discourse about the AMFm.**********

********** It is interesting is that *both* global and national policy entrepreneurs reported privately advocating for the policy in this case – using the language of public goods, inaccessibility, and malaria mortality. Even anti-AMFm lobbyists in Ghana formed a large part of their arguments around the burden of malaria, while also trying to support the domestic manufacturing industry. On both sides, this seems odd, as the AMFm offered partial, if temporary, relief to a surfaced national political problem: financing the NHIS. Without drawing on this, for the most part, the 'problem' was framed in the terms borrowed from the global level.

Drug prices and drug resistance: Points (1) and (3) enter the Ghanaian discourse in only a very limited way – mainly in elite conversations led by policy entrepreneurs. In the public media, reflecting political priorities, there is no mention of either prices-to-patients or drug resistance prior to adoption. These concerns are not reflected in political manifestoes. Moreover, there is no indication of the FDB or another agency cracking down on artemisinin monotherapies (AMTs) in Ghana. Local manufacturers continued producing SP, CQ, and AMT and the public continued to use them. The issues of the need for diagnosis and completion of treatment courses did not come up during adoption and, indeed, did not play a role in later implementation of the AMFm in Ghana (as detailed in Chapter VII).

Burden of malaria: As to point (2), malaria mortality had fallen in Ghana in the years prior to the AMFm decision. Though the disease remained the top cause of child and adult deaths, this was not a *new* problem, nor did it receive much media attention. Health facility directors sometimes provide statistics on malaria cases as key drivers of outpatient visits, which are then picked up in news reports. But malaria itself is rarely discussed in the media. Again, however, malaria mortality is used by policy entrepreneurs in elite policy conversations, as discussed below.

On balance, it is not apparent that the three problems motivating the AMFm at the global level were viewed as either new or public *problems* in Ghana (though certainly, epidemiologically, they were extant *issues*). Therefore, according to this analysis, relevant issues did not surface in the national problem stream.

HYPOTHESIS 3: POLITICS STREAM

Political actors in Ghana acknowledged the problems addressed by the AMFm and were receptive to the AMFm as the proposed solution.

There is no evidence that key political figures in Ghana (visibly) paid attention to the problems motivating the AMFm at the global-level, or that they contemplated the AMFm as a proposed solution. We do not see political actors attending to the AMFm proposal itself. They also did not make more general public statements about the costs of malaria treatment to patients, the potential for drug resistance, or, even,

malaria mortality. The main malaria-related focus of the Minister of Health seems to have been the cost of treatment reimbursements to the NHIS and wanting to lower this cost by focusing on environmental measures.

During the adoption period, neither the Minister of Health nor the President mentioned the AMFm by name, as per my analysis of media content (see Appendix B) as well as the review report written on the AMFm Phase I process in Ghana (*Dodoo 2011*). Minister Sipa-Yankey refers to malaria medicine subsidies once between his confirmation in early 2009 and the AMFm adoption deadline at the end of June 2009; while calling for donor support for subsidies, he also calls for support of the local manufacturing industry (*Ghana News Agency 2009h*). Even in the more secluded setting of the health development partners' summit in April 2009, malaria, its treatment, and the AMFm, were not mentioned (*"Joint Ministry of Health and Development Partners' Health Summit" 2009*).

The Minister refused to take an explicit stand in either direction on the AMFm, suggestive of the political pressure accompanying the issue. Pressure on the vice-president and president from policy entrepreneurs and from PMAG also did not give rise to public statements about the AMFm. These are explicit refusals to engage by high-level politicians, even when asked to take a stand. Here again, then, at the national level, a primary component of MSA was not found.

HYPOTHESIS 4: AN OPPORTUNITY WINDOW OPENED

Events or changes in the problem and/or political stream created an opportunity window — a time delimited space created by a change — in which policy action become possible.

There is very limited evidence that surfaced issues in either the problem stream or the political stream in Ghana, such as focusing events or changes from the status quo, opened a policy window of opportunity to allow adoption of a policy like the AMFm.

Problem stream: At the global-level, the problems of prices to patients, malaria mortality, and drug resistance served as the motivators for the AMFm. In Ghana, there is no evidence of a focusing event or dramatic change related to any of these problems. As for prices, in the 2 to 3 years leading to the AMFm, the cost of an ACT to consumers was steady or falling in both the private and the public sectors. In the private sector, Chinese and Indian branded generics flooded the market. Moreover, as NHIS scaled-up, covering 100% of malaria treatment costs for enrolled patients, the cost of medicine to patients (as an out-of-pocket payment) in the public sector (and accredited private sector) fell to zero.

Regarding malaria mortality, no malaria outbreak occurred, nor was there a record of a well-publicized malaria death in the relevant period. Rather, most indicators related to malaria mortality were steady or improving. As noted when discussing the problem stream above, parasite resistance to artemisinin also does not receive action or mention during this time frame by key stakeholders (*Ghana News Agency 2009e*).

Politics stream: Given the context and timing of the AMFm adoption decision, it seems plausible at first glance that the political stream could have opened an opportunity window. Indeed, there was a change in political power in January 2009. However, there is no evidence that this provided an opening for Ghanaian stakeholders to push for the adoption of Phase I of the AMFm. Rather, given the image NPP had painted of them, NDC came into power needing to prove themselves as friendly to local businesses and as committed and able to maintain and improve NHIS. Beyond concerns about supporting local industry, the Minister and the President focused on the problem of environmental hygiene as a cause of high rates of malaria cases needing treatment, rather than the costs of treating a case of malaria.

In sum, neither the problem stream nor politics stream in Ghana opened a window of opportunity as defined in MSA.

HYPOTHESIS 5: POLICY ENTREPRENEURS

One or more actors with the characteristics of policy entrepreneurs worked to promote adoption of the AMFm proposal in Ghana.

We have clear evidence of Ghanaian stakeholders with the characteristics of policy entrepreneurs and doing entrepreneurial work in promoting the AMFm and supporting the proposal's submission.

Characteristics: Most respondents identified three key actors playing entrepreneurial roles in favor of the AMFm during the adoption phase and all meet the criteria of a policy entrepreneur (*Kingdon 1995*). All three actors (CCM Chairman, GHS official, PSGH President) were in high-level positions in their respective organizations, giving them a "claim to a hearing" not only in these organizations but externally, with other high-level officials (*Kingdon 1995*). Their high-level roles and connections in several communities allowed them to them to bridge several perspectives.

Two of the policy entrepreneurs were private pharmacists who also had public health positions; two also had links with the global health community involved in the AMFm (such as GF and RBM). The CCM Chairman — as a pharmacist, private pharmacy owner, and former president of PSGH — was particularly well-suited to an entrepreneurial role, communicating both the public health *and* business potential of the AMFm to his business peers.

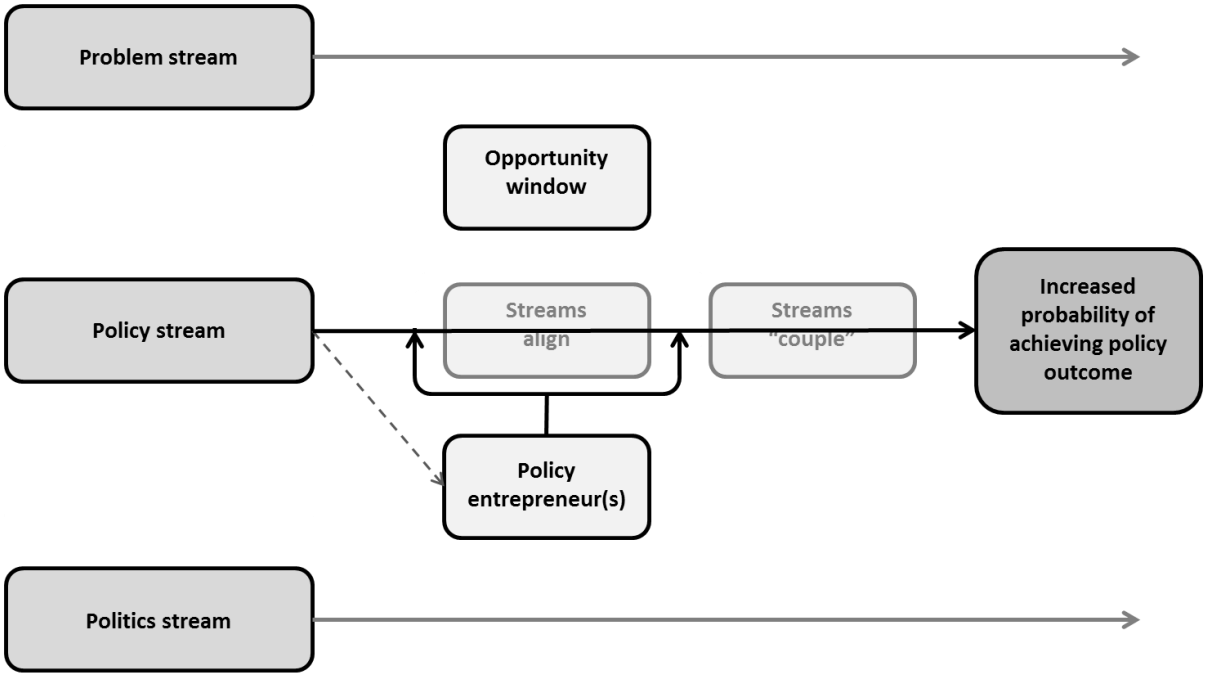
Entrepreneurial activities: Besides having the right characteristics, these stakeholders did entrepreneurial work. For example, in trying to meet with the Minister, they drew on and manipulated symbolic and economic arguments, highlighting malaria mortality — preventing a death — and undercutting PMAG's claims about how much of Ghana's ACT supply they could contribute and how much their businesses would suffer from the AMFm. Several stakeholders saw this back-of-the-envelope economic argument as being important in the process (*R-5, n.d.; R-7, n.d.; R-13, n.d.*).

All three invested resources, such as time and reputation, in promoting the AMFm. The GHS official and the PSGH President were not directly involved in the decision-making, and therefore were largely working

on their own time. Moreover, the two private sector entrepreneurs, in particular, were seen by informants as taking risks with their reputations in order to support the AMFm, as shown in Chapter V.

IN SUM

While MSA does not say all components *must* be in place for a coupling, the probability of successful adoption falls when pieces are missing (*Kingdon 1995; Zahariadis 2007*). Several of the MSA hypotheses tested above do not bear out. Hypotheses 1 and 5 were met: there was a viable policy proposal and there were policy entrepreneurs supporting it. However, Hypotheses 2, 3, and 4 were not. The globally motivating problems did not surface in the Ghanaian problem stream and major Ghanaian politicians were not paying attention to those problems or to the AMFm proposal (Hypothesis 2). Those actors in the political stream who were paying particular attention to the AMFm proposal – namely, the Pharmaceutical Manufacturers' Association of Ghana (PMAG, refer back to Table 5) – were against rather than for the proposal (Hypothesis 3). Finally, there is no evidence of an opportunity window opening from either the Ghanaian problem or politics streams (Hypothesis 4).



Citations
Gagnon, M. L. 2012. "Global Health Diplomacy: Understanding How and Why Health Is Integrated into Foreign Policy". University of Ottawa.
Zahariadis, Nikolaos. 2007. "The Multiple Streams Framework: Structure, Limitations, Prospects." In Theories of the Policy Process, edited by Paul A. Sabatier. Cambridge: Westview Press.Kingdon, JW. 1995. Agendas, Alternatives, and Public Policies. 2nd ed. New York: Harper Collins

Figure 18: Depiction of MSA if the problem and politics streams continue to flow independently of the policy stream

And yet, adoption occurred. These happened, not as shown in Figure 16 but more as depicted in Figure 18. In this scenario, the policy stream (a plausibly viable policy idea assembled by a local policy community) ran directly into the increased probability of adoption occurring, with some support from policy entrepreneurs. Actors and events in the politics and the problem streams did not acknowledge or raise relevant problems; no political actors showed interest in the AMFm or its motivations. As a result, these two streams did not offer a means of opening a policy window, nor do they align with each other and couple. Rather, the adoption of the policy, it seems, followed directly from the existence of the policy and the efforts of policy entrepreneurs.

What should we make of this? In the next section, I consider the implications, both for the framework and for the case in Ghana. Rather than rejecting the framework, or immediately concluding that the

framework fails to explain this case, I work through why the framework does not fit. I argue that the framework is tailored to single-level settings but this does not mean it cannot accommodate instances of vertical policy transfer, which inherently involves two levels. Rather, the framework can be expanded to consider two levels at the same time, that is, the global and national levels. I offer evidence that this extension is consistent with previous applications of MSA to global public health and conclude that with this modified framework, the basic premise of MSA – that policy change requires interaction between problems, policies, and politics in specific moments with help from specific actors – bears out.

SECTION VI.4: DISCUSSION AND EXTENSION

As noted in Section VI.1, global health researchers have used MSA to examine instances involving vertically transferred policies. However, in these cases, the transfer itself usually falls at the beginning or end of the analyzed example. When the transfer comes at the end of the analysis, the main action takes place almost entirely at the global level, to prioritize a problem and propose a solution that could then be transferred to the country level (*Lush, Walt, and Ogden 2003; Ogden, Walt, and Lush 2003*). When the transfer occurs at the beginning of the case, the analysis focuses on the national-level implementation of a policy received from the global-level (*Okuonzi and Macrae 1995; Ridde 2009*). In both instances, given the levels at which they apply MSA, these researchers implicitly accept that streams flow, windows open, and entrepreneurs work at several levels. That is, there is a global problem stream as well as a national one, global politics as well as national, and so on. This is intuitive, so it is not surprising MSA has been applied in this way. Whether ones believes that global health and development are or should be top-down or bottom-up, it is clear that it is a tiered enterprise, with actors above and below the state (*Reich 2002*).

Looking at national-level adoption of a global policy puts the analytic focus more squarely on the transfer itself. I suggest two specific modifications that can allow MSA to better serve as a framework for making sense of vertical policy transfer, such as the case of adopting the AMFm in Ghana.

A PROPOSED FRAMEWORK MODIFICATION

First, I include the global and national levels simultaneously. An overall strength of the MSA framework is that it "constantly forces us to return to… the big policy picture" (*Béland 2015*). I propose a slightly bigger one. Just as the problem, policy, and politics streams flow at one level with relative independence from one another, so too do the counterpart streams at different levels. A problem becoming salient at the global level, for instance, does not automatically alter the course of the national problem stream or make a globally buoyant problem rise to the surface of the national stream.

Second, I suggest that coupling be re-conceptualized in the context of several levels, between which actors and ideas can move. In most uses of MSA, which examine a single-level landscape (global, national, *or* sub-national), descriptions of coupling are *horizontal*: global entrepreneurs help bring together a global problem with global policy and global politics.

By considering more than one level at the same time, *vertical* coupling becomes a theoretical possibility. For example, the global political stream may couple with a national policy and national problem to move a policy idea forward at the national level. Gaps left by national stakeholders and processes are filled in by global-level processes and stakeholders (such as the "transnational managerial class" (*Lee and Goodman 2002*) and "epistemic communities" (*Adler and Haas 1992*) discussed in the global health and development literature (*Adler and Haas 1992; Lee and Goodman 2002*)). I refer to this filling-in as substitution.††††††††††††††††††††††

Why might this substitution occur? Perhaps because one level is keen to see particular policy outcome come about quickly. Policy processes often take time, with actors waiting to seize windows of opportunity or engaging in drawn-out entrepreneurial work. Rather than allowing national-level processes to take their course, a global organization on a deadline has two main means of trying to bring about a policy

†††††††††††††††††††††† In this case, I do not observe instances of displacement but clearly one level could displace even surfaced elements at another level, rather than just filling a gap left by a lack of surfaced elements in the counterpart stream.

outcome quickly. One is to force the movement of the stubborn national stream, for example, through conditionality. The other is to substitute a global MSA component for a national one to adopt without elements of national streams gaining buoyancy, aligning, and finally coupling (*Drazen 2001; Booth 2012a*). I explore the latter option below.

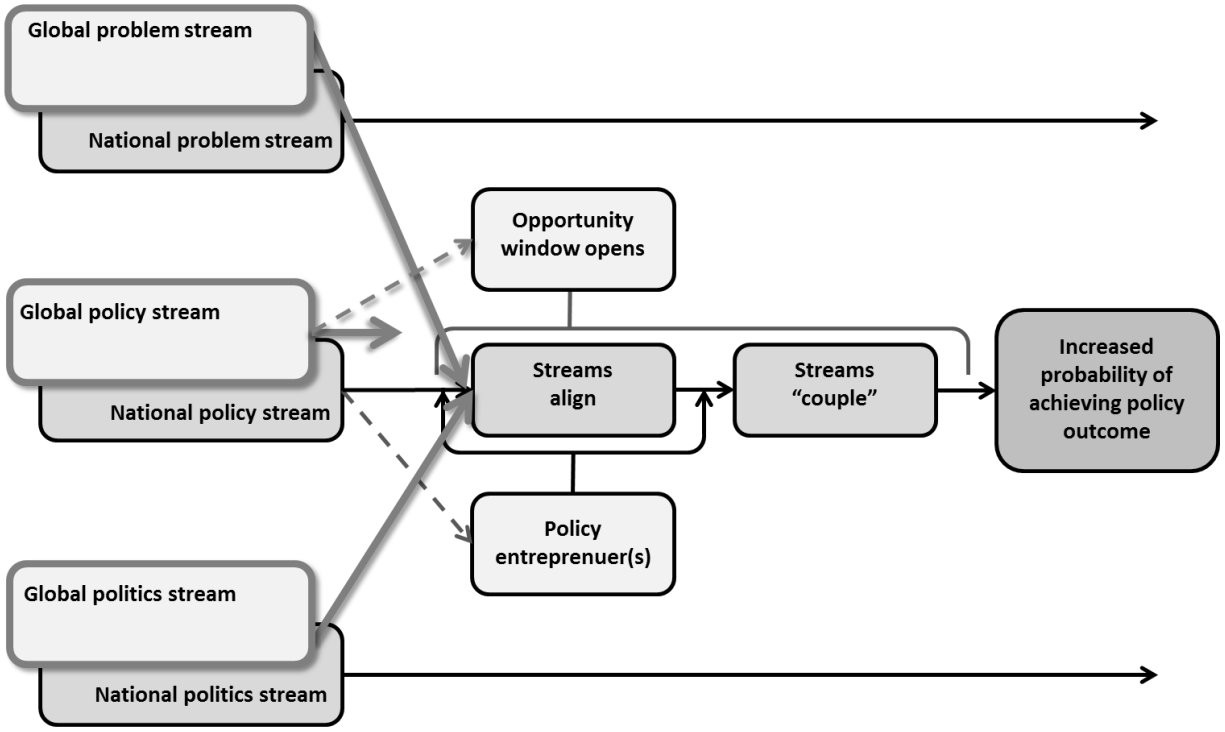
To be clear, I do not make the case that vertical policy transfer pre-sets the national agenda but rather that it ignores it. It does, however, restrict the room to maneuver that national actors have for adapting and amending policy they may adopt. It also restricts their ability to not adopt the policy. On the former point, in different cases of vertical policy transfer, the global agenda-setters, policy formulators, and policy entrepreneurs may allow more scope for national actors to adapt the policy proposal they hand down before adopting it nationally. On the latter point, the scope for non-adoption is inversely proportional to the strength of the global actors.

In this particular case, the scope was quite restricted, allowing national tailoring only within the *Supporting Interventions*. The strength of the global actors, and therefore the legitimate possibility of Ghana not joining Phase I of the AMFm is open to speculation.

SECTION VI.5: RE-EXAMINING THE CASE

This exploration maintains that MSA provides an accurate description of the categories of factors that need to be in place for adoption but broadens — or rather, heightens — the landscape in which we look for the relevant evidence and action. I depict this in Figure 19 and describe it in this section.

In Section VI.3, above, I argued that the presence of a viable policy and active policy entrepreneurs at the national-level were both in place. In this section, I address the elements that could not easily be accounted for at the national level: an opportunity window, the politics stream, and, finally, the politics stream.



Adapted from
Gagnon, M. L. 2012. "Global Health Diplomacy: Understanding How and Why Health Is Integrated into Foreign Policy". University of Ottawa.
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Figure 19: Depiction of MSA considering global and national levels, with the global problem and politics streams substituting for national-level ones and the global policy stream opening a national opportunity window

REVISITING THE HYPOTHESES

I begin by revisiting Hypothesis 4: that a window of opportunity opened. In the standard MSA framework, a change in the political or problem stream opens one of these time-delimited spaces in which policy action becomes possible. In this case, it seems that such a limited space was opened from the policy stream at the global level. The invitation to transfer the new policy, with its offer of money and strict submission deadline (four months after the receipt of the invitation), not only made a policy decision possible, it made it mandatory. PMAG recognized that GF invitation opened a space for action, since

PMAG "stormed the meeting" shortly after the invitation arrived (*Country Coordinating Mechanism Secretariat 2009*).

I am not making a novel argument that vying for budget allocations and funding offer an opening for decision-making (*Allison and Halperin 1972*). What may be novel is my suggestion that this moment can come from the policy stream rather than the politics stream. The appearance of a salient policy proposal can itself create a time-delimited opportunity in which action is possible and, given the money-linked-deadline, can certainly create a sense of urgency. This is shown in the dotted line between the global policy stream and a national opportunity window in Figure 19. But this seeming opportunity window did not move the national politics or problem stream towards coupling.

This leads us to reconsider Hypothesis 3: political actors acknowledged the problems addressed by the AMFm and were receptive to the AMFm as the proposed solution. When the interest group PMAG barged into CCM meeting — invited but late — this literally brought the political stream into the policy decision-arena. Reflecting on the meeting later, my informants agreed that this was a new phenomenon in CCM's history (*R-5, n.d.; R-15, n.d.*). Until then, CCM largely worked parallel to the government, making technical decisions on technical proposals. However, in this case, politics "stormed" the policy stream (*Country Coordinating Mechanism Secretariat 2009*). This was not, however, a step towards coupling the Ghanaian political stream with the policy idea of the AMFm.

In response, CCM took an unusual step, which I posit is consistent with the MSA intuition that successful adoption requires coupling with the political stream. CCM tried to achieve this coupling by giving a key player in the national political stream the decision-making power about joining the AMFm proposal. That they tried to do this drawing on the national political stream rather than going "above" it, to the global political stream, is notable (*Reich 2002*). However, this move did not lead to national-level coupling, since the Minister did not reveal his stand. To reveal a preference — to be surfaced and available for coupling with an idea — is to become visible and therefore susceptible to blame (*Weaver 1987*).

Following a similar intuition PMAG tried (unsuccessfully) to bring Vice-President Mahama into the debate. Recall that NDC named the domestic pharmaceutical sector in its manifesto as one it wanted to develop and, as key informants noted, in return this sector supported NDC during the campaign. The pharmaceutical manufacturers depicted the AMFm as job-killing and destructive to the local industry; this was not an opportune moment for NDC to support a policy depicted as having such effects. Further, NDC was not in a position to point out NHIS's financial troubles, as it was busy in the midst of assuring the public that NHIS was not going away. The budget books might have benefitted from the AMFm, at least in the short-term, but this was not a problem known to a public who was instead worried that NHIS might disappear during an election cycle.

In sum, there is evidence that actors and events in the politics stream actively worked against coupling with the AMFm idea. In its place, there is evidence of activity from the global political stream. We can take this as an attempt to stand in for the non-aligning national counterpart political stream. As noted above, other researchers consider global organizations (such as the World Bank) as political actors, bolstered by bilateral funding that presumably represents the preferences of donor governments (*Lush, Walt, and Ogden 2003; Ogden, Walt, and Lush 2003; Ridde 2009*). In this case, several of these policy/political actors involved themselves in the Ghanaian decision-making. Global political actors also put direct pressure on national political actors, including a high-level call to President Atta-Mills encouraging him to allow the AMFm decision to go through (*R-6, n.d.; R-7, n.d.*). The national political stream would not move towards coupling. In their place, global political players filled in to make sure that Ghanaian political actors did not block the globally desired policy outcome (*R-6, n.d.; R-7, n.d.; O. Sabot 2015*).

If the problems addressed by the AMFm were not sufficiently salient in the national-level problem stream, which were? The President and Minister Sipa-Yankey considered problems related to malaria but not those that globally motivated the AMFm. Rather, they focused on the cost of malaria treatment to the economy and to NHIS (rather than to patients). In their estimation, malaria treatment cost too much to the Government of Ghana and the reason there was too much malaria was because there was too much

"filth" and inadequate attention to vector control (*Ghana News Agency 2009a*). The national political stream identified with this problem and attached themselves to this solution).

I find no evidence of an effort to link the AMFm to the nationally salient problems related to malaria and the costs of treatment. As noted in Chapter IV, the NHIA stayed quiet about the AMFm before it was adopted, even though they were likely to save money (*Acheampong 2014*). The national-level policy entrepreneurs reportedly relied on the globally defined problems, not the nationally defined ones such as the NHIS.

IN SUM

In this section, consistent with accounting for the global and national levels simultaneously, I have argued that we see evidence that those MSA components not met at the national level – an opportunity window, a surfaced problem, and active and attentive actors in the political stream – are filled in from the global level. This includes an opportunity window not only opened from the global level but from the global *policy* stream, through the transfer and invitation itself. I consider the implications of this in the next section. Further, I argue that where the Ghanaian political stream was either not engaged with or against the AMFm proposal, the global political stream took steps to make sure the proposal moved forward, leading to a vertical coupling. Moreover, where the Ghanaian problem stream did not offer up salient problems that could be coupled with the AMFm proposal, the Ghanaian policy entrepreneurs (as well as visiting global policy entrepreneurs, such as those from GF and CHAI, relied on the globally motivating problems – again, representing a vertical coupling that helped move the proposal to join the AMFm pilot towards coupling and adoption.

In this expanded framework, the intuition of MSA seems to bear out. If we include both the global level and the national level, we see the policy (national), problem (global), and politics (global) stream aligning in the period prior to adoption and Ghanaian policy entrepreneurs made use of the opportunity window opened by the transfer of a policy idea from the global policy stream.

In the next section, I consider some implications of this means of achieving coupling before turning to three key conclusions and consideration of the limitations of this analysis.

SECTION VI.6: DISCUSSION AND CONCLUSION

As I show above, Ghana (through its CCM) was invited to apply to participate in the Phase I pilot of the AMFm, which allowed GF to transfer a global policy idea to the national level. In this chapter, I considered the actions that stakeholders took to achieve adoption of this proposal, which I defined as a two-step process of submitting the proposal and having it approved. I consider these actions within the MSA framework. The analytic work in this chapter builds on the considerations of perceptions and priorities among the Ghanaian stakeholders presented in Chapter V.

Combining the MSA framework with in-depth interviews and relevant meeting minutes, I ask: *What did national stakeholders do in response to this vertically transferred AMFm? To what extent did MSA help make sense of these events and the outcome of adoption of Phase I?* In asking these questions, I was motivated by two particular events that my informants marked as unusual: (1) CCM's attempt to get the Minister's endorsement to submit the AMFm application and (2) Minister's refusal to give (or not give) that endorsement.

To analyze this set of events, I used the main components of MSA through five hypotheses. In the initial analysis, I found that two or three of these five components were not present at the national level. Indeed, it seems that policy adoption happened with only a policy proposal and policy entrepreneurs in place at the national level. To address this puzzle, I proposed that in cases of vertical policy transfer, it is necessary to consider MSA simultaneously at the global and national levels and, moreover, to allow for vertical couplings between these two levels as a possible explanatory factor in how a policy idea moves forward or fails to do so.

Noting that simultaneous accounting for two levels with the potential for vertical coupling between them *can* explain what happened should not be taken as an endorsement that vertical transfer as the best way for the policy process to move forward. Rather, I only observe that that adoption of the AMFm in Ghana can be described in an expanded MSA framework and, further, that this analysis fits well into processes being explored by numerous investigators.

DISCUSSION

TAKEAWAY 1: MSA CAN BE EXPANDED TO ACCOUNT FOR AND ANALYZE CASES OF VERTICAL POLICY TRANSFER

One goal in this chapter was to assess whether MSA explains adoption of the AMFm in Ghana and the events leading to it. My initial hunch was that the decision to try to give decision-making power to a major political figure (the Minister of Health) fit with the logic of the MSA framework: the political stream plays an important role in achieving policy outcomes.

The initial analysis, focusing only at the national-level, depicted the gaps that informed my hunch. While Ghana indeed adopted the AMFm, only the policy stream and policy entrepreneurs were active in this process. This analysis challenged either the validity of MSA or the appropriateness of applying MSA to this case of policy transfer.

In thinking about the broader context in which the AMFm decision was made, however, it became clear that there were salient and surfaced problems – but they flowed from the global level. Similarly, there was something that looked like a policy window (the time-bound invitation) but it, too, had its source at the global level.

When the MSA framework is expanded to account for both levels in a policy transfer, we gain a new way of picturing what happened in Ghana, as the model better fits the type of adoption as well as the empirical evidence. A policy was not moving forward at the national level, as CCM "vacillated in its support," but was ultimately moved forward through a vertical coupling between global problems and politics and the national policy stream (*R-5, n.d.*). The window opened from the global level and was pursued by national

policy entrepreneurs (as well as global ones acting within Ghana). This presents a useful way of talking about the interaction between the global and national levels to explain what involvement helped adoption occur. It also indicates that MSA, revised to include formal, assertive vertical transfers, is a suitable framework for analyzing a wider range of policy transfers.

Takeaway 2: Leaving the national level out can create difficulties in the policy process

A key takeaway from this analysis should be that the national level matters in global health policy, including the need for national-level policy entrepreneurs to move a global program forward towards national adoption and implementation. The AMFm proposal decision stalled in Ghana, as CCM "vacillated" (*R-5, n.d.*). The MSA framework, by incorporating various levels of multiple streams, highlights the potential hurdles (here, the mismatch between the global and national problem and political issues) that had to be actively addressed by policy makers and entrepreneurs to try to ensure smooth transfer and adoption of policies.

As a specific example, even when national political figures attended to the issue of malaria, they problematized it as a matter of incidence, rather than one of treatment. Framed this way, the issue of malaria was not linked to the policy solution of the AMFm; in turn, major political leaders found it difficult to support the AMFm.

Similarly, national political priorities at the time relevant for adoption, just following the national election, reflected the need to take a pro-business stance, including toward the domestic manufacturing industry. This national-level concern only entered global design thinking about the AMFm in a curtailed way, especially when no Ghanaian manufacturer met the criteria for producing s-QA.ACTS. This led to a political mismatch between the globally designed policy and a policy that could be easily adopted and implemented at the national-level.

LIMITATIONS OF THE STUDY AND MITIGATING STRATEGIES

Some of the key methodological limitations of the analysis in this chapter echo those faced in Chapter V: parts of the underlying data are generated from semi-structured interviews with many, but not all, of the identified key national stakeholders. As before, in this chapter I triangulate responses, including absent voices, by drawing on meeting minutes and contemporary news items. Also, as described in Chapter III, this chapter was subject to member-checking, allowing respondents to read the manuscript to correct factual errors and suggest alternative interpretations (*Lincoln and Guba 1986*). These interpretations are represented in the analysis and discussion above and help to mitigate some concerns associated with using interview data.

In this chapter, I faced additional challenges as I applied a framework that is commonly used, though not always used with its component parts clearly defined. Researchers sometimes use MSA to structure narratives about the policy process, in which case precise definitions are less important; when researchers use MSA for analysis of the policy process, they may use more precise definitions but these are not always consistent across studies. The fact that (to my knowledge) MSA has not been used to explicitly look at national adoption of a globally designed policy offered limited precedent on which to draw. I have offered definitions in this analysis and proposed modifications to MSA based on empirical evidence — but cannot test these in a single case study (*Bennett and George 1997; Strauss and Corbin 1997*).

Another concern about the MSA conceptual framework is the extent to which it provides a falsifiable model with clear hypotheses that can, in turn, be tested. I set up the hypotheses to examine the presence or absence of each MSA component. However, MSA is a probabilistic rather than a deterministic framework: having all components in place increases the likelihood that a stage in the policy process is completed but does not guarantee this. I can claim that, given the expanded framework, all the components are in place, yet I have no grounds to claim that absent one national component, or without

global substitution, adoption *could not* have occurred. Future investigators may be able to evaluate couplings across many policy adoptions to determine whether a more quantitative model can be formulated.

MOVING FORWARD

As in Chapter V, in this chapter I offer a framework that helps to make sense of the case of adopting AMFm's Phase I in Ghana and may be useful in future cases. In this chapter, I employed a widely used framework, after comparing the framework with the empirical data, and then suggested modifications to the framework to better accommodate and understand policy adoption outcomes in vertical policy transfer.

In this chapter (VI), I showed that national stakeholders, both through their action and inaction, shape the way and circumstances under which transferred policies are adopted at the national level. Chapter X includes a further discussion of national stakeholder ownership of global health policy ideas transferred from the global level.

From the present analysis, it seems clear that much of adoption, and whether adoption translates to implementation, depends heavily on the work of policy entrepreneurs and managers (*Matland 1995; Zahariadis 2015*). Indeed, those within a decision-arena could plausibly adopt a policy that they do not think will actually be implemented. This could have possible implications for whether, how, and with what enthusiasm an adopted policy is implemented. In the case of adopting the AMFm in Ghana, the outcome of adopting the policy well was somewhat unknown: it may lead to the enhancement of personal reputations but whether it would lead to a continuation of the program was unclear, as discussed in Chapter V.

To consider implementation descriptively, I now turn to the process and outcomes of implementing the transferred initiative. In the next chapter, I resume the narrative from just after Ghana submitted its

application (30 June 2009) to the end of Phase I and the endline data collection of IndE (December 2011). This begins with installing the necessary architecture for implementation and ends with the pricing of s-QA.ACTs among private-sector retailers.

PART 3: HIGH-LEVEL INSTALLATION AND STREET-LEVEL IMPLEMENTATION

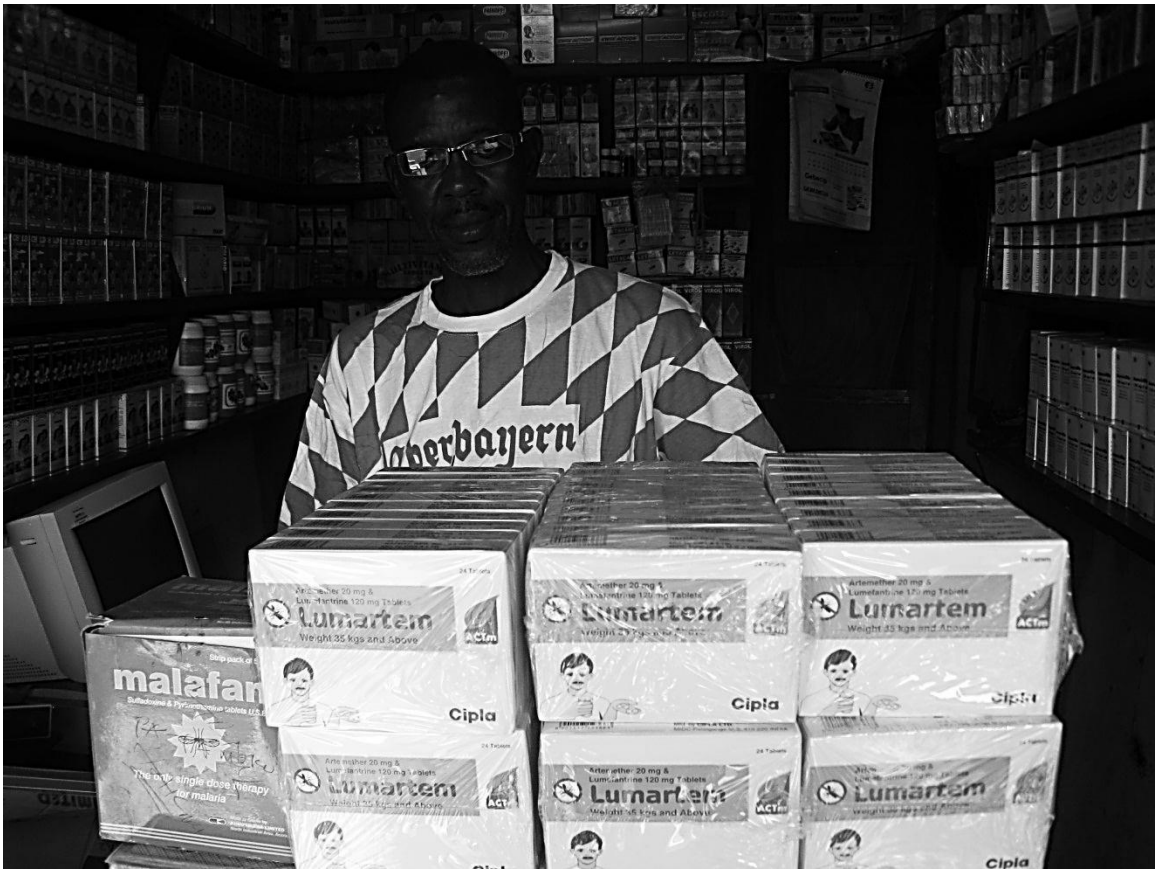


Figure 20: Licensed Chemical Seller in Tamale, Ghana with shipments of Malafan© (SP) and s-QA.ACT
[own image, taken with explicit permission for re-use]

CHAPTER VII: CASE NARRATIVE - HIGH-LEVEL INSTALLATION & STREET-LEVEL IMPLEMENTATION

In this chapter, I review the descriptive case evidence spanning the period from Ghana's adoption of the AMFm pilot at the end of June 2009 through late Phase I implementation at the end of 2012. As I have noted throughout this thesis, global and national stakeholders were uncertain whether the AMFm idea could work in practice. Global debates led GF to decide to pilot the AMFm, as Phase I, before deciding to implement the AMFm worldwide or in the long-term. In Chapters VII and VIII, I describe, then analyze how the AMFm rubber hit the (sometimes dirt) road: national-level implementation.

I have two objectives in this chapter. First, it serves to link the discussion of adoption with the tasks of implementation at the high-level and street-level, including relevant global and national events that influenced this process. The data for this comes primarily from the in-depth interviews conducted with national stakeholders as well as associated literature.

Second, I introduce the retail sector in Tamale in detail, drawing on the published literature and my own descriptive data. I also draw on the IndE findings for the AMFm outcomes in Ghana as a whole, to set the broader implementation context. Then, I turn to the quantitative and qualitative evidence gathered in Tamale, including the retailer questionnaires, the PACT household survey, and the PACT retailer follow-up interviews (introduced in Chapter III).

Like Chapter IV, Chapter VII is descriptive rather than analytic, detailing how implementation moved forward and how a specific component of Ghana's plan to enact the AMFm – setting and communicating an RRP – was executed. Moreover, as with the relationship between the narrative in Chapter IV and the analyses in Chapter V and VI, I aim to include in this chapter all the relevant descriptive data and then provide a more detailed analysis in Chapter VIII. In Chapter VIII, I introduce a model of influences on retail prices and analyze compliance with the RRP specifically in Tamale over five months at the end of 2011.

To begin, I review the events and actions from mid-2009 to August 2010 at the high-level in Accra that moved the AMFm forward from adoption to implementation: setting up a managing body, the AMFm Coordinating Committee (AMFm-CC), and enrolling public and private FLBs to import s-QA.ACTs.

In the second section, I consider events relating to implementation. The focus here, and in Chapter VIII, is on Tamale in Ghana's Northern Region. However, I also consider events at the global level that influenced implementation in Ghana, particularly GF's restricted approval of s-QA.ACTs orders. I also encourage the reader to revisit the timeline Figure 3 to track these events in relation to the thesis.

SECTION VII.1: JULY 2009 – AUGUST 2010, NATIONAL INSTALLATION

On 23 November 2009, Ghana received GF's conditional approval of its application to pilot the AMFm (*Norgbedzie 2014*). Final technical approval came in June 2010. In the interim, a lot of work was required by national stakeholders to implement the AMFm in Ghana. This hinged on efforts by NMCP — the grant's Principal Recipient — as well as the for-profit sector. Lack of full engagement from either could have impeded progress, as implementation required a high level of responsibility from both; both also expressed misgivings before

Yet, after the initiative was adopted, stakeholders moved beyond "decid[ing] if [they] were for or against it" and onto determining "how to live with it" (*R-1*) and even "how to exploit it" (*R-8*) (*R-1, n.d.; R-8, n.d.*). Living with the AMFm required two key actions to bridge the "big gap between policy[-design] and implementation," which would pave the way for national roll-out and, ideally, improve national access to s-QA.ACTs (*R-1, n.d.*). These were: establishing a body to coordinate in-country implementation activities and having importers register as FLBs under the AMFm.

GHANA: MALARIA AND THE AMFM

Following provisional approval by GF, Ghana formally had the "capacity to act" on implementing the AMFm (*Stehr 1992*). I term the first set of actions installation, in which stakeholders undertake requisite tasks "to do the work ahead" (*Fixsen et al. 2005*). Implementation is not a process that can be clearly

labeled complete or not, the way that, for example, a legislative vote can. However, to aid planning, monitoring, and analysis, it can be broken down into the components of exploration, installation, initial implementation, and full implementation. Installation is the stage during which stakeholders "acquire or repurpose the resources needed to move forward with implementation (*Fixsen et al. 2005*).

In Ghana, "the work ahead" to run the AMFm nationwide required two clear tasks. First, Ghana needed to establish a means of leading, launching, and coordinating national activities, including the Supporting Interventions (the third and national prong of the AMFm design, see Figure 9). Second, subsidized QA.ACTs needed to flow into the country, requiring the private sector to sign-up as importers and for both the public (MoH) and private sectors to place orders (*Global Fund*).

Coordinating the AMFm activities: Designing and implementing *Supporting Interventions*

All pilot countries needed to design and launch the activities under the umbrella of *Supporting Interventions* (*Global Fund 2009b*). This included training public and private street-level workers, planning a monitoring strategy, agreeing on an RRP (all pilot countries except Madagascar set an RRP (*Willey et al. 2014*)), and designing a marketing campaign that would advertise the green-leaf logo, indicating to the public its high quality and price (the RRP).

Because of its oversight mandate, Ghana's CCM could not orchestrate the *Supporting Interventions*, as it had done while assembling the application. Instead, CCM and NMCP led the creation of an entirely new body, the AMFm Coordinating Committee (AMFm-CC). The AMFm-CC worked "through NMCP by providing the advice needed to make sure the strategies driven by the implementing partners across sectors [were] optimal" (*Ghana Country Coordinating Mechanism 2010*). NMCP's PM demanded the AMFm-CC not be a "talking show forum" but rather that it "be prepared to work" as "an important implementing wing and partner to the success of the AMFm in Ghana" (*AMFm-CC 2010*). As one respondent noted, even though the PM had passively resisted adopting the AMFm, once it was adopted, she "did her duty" (*R-6, n.d.*). This switch between adoption and implementation was reflected throughout NMCP; the USAID-PMI advisor at the time of adoption noted: "ironically, Ghana's NMCP

leadership was not enthusiastic about the AMFm approach, but they implemented with their usual energy; and the AMFm pilot in Ghana wound up being one of the more successful in meeting its milestones" (*Psychas 2015*).

AMFm-CC leaders wanted wide government and private sector representation to tackle the AMFm's technical complexity, heavy and new work requirements without using additional human resources, and unclear distribution of responsibility and resources (*AMFm-CC 2010*). Among its many constituents, AMFm-CC included members from the Ministry of Health, governmental regulatory agencies, multi- and bi-lateral partners, research institutions, private FLBs, NGOs, civil society organizations, and pharmacist associations (*Dodoo 2011; Independent Evaluation Team 2012*).

AMFm-CC had three chairpersons, reflecting the partnerships required for the AMFm: one from an NGO, one from MoH, and one from the private, for-profit pharmacy sector (specifically, pharmaceutical manufacturing but not PMAG) (*AMFm Coordinating Committee 2010*). Note that none of these actors had been part of the formal decision-making process for adoption.

Those involved are proud of the AMFm-CC, viewing it as a "well-functioning national public-private partnership" providing an "open forum" for "positive engagement," with "equalize[d] power" that enhances transparency through "communication and shared accountability" (*AMFm-CC 2010; Dodoo 2011*). The AMFm-CC "improved… and increased internal communication and collaboration between MoH's agencies as well as NMCP's relationship with the private sector," which it had earlier regarded with suspicion (*Matowe and K'omolo 2011; R-5, n.d.; R-14, n.d.*).

As one of their first activities, in January 2010, the AMFm-CC organized a large private-sector stakeholders meeting, also including NHIA and other government agencies (*Acheampong 2014*). Key topics included setting up the Supporting Interventions, among them determining the "best channels for private distribution channels, marketing initiatives, and regulatory systems" for s-QA.ACTs (*Country Coordinating Mechanism Secretariat 2010*).

Ghanaian stakeholders determined that enacting up the Supporting Interventions in Ghana required setting a national RRP. They, including those from the private sector, set the RRP at a level to allow each link in the supply chain to earn profits deemed reasonable while still achieving a price no more than three-fold higher than the most popular antimalarial medication, as per the AMFm benchmarks (*Schäferhoff and Yamey 2011; K. L. Malm et al. 2013*). With these parameters in mind, Ghanaian stakeholders set the RRP per package at US$ 0.90 (a package contains a six-dose adult treatment course totaling between 6 and 24 pills, depending on the patient's weight or, as a proxy, age).[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] All prices in this thesis are presented in US$. An exchange rate of GH₵ 1.67 to US$ 1.00 is used throughout. US$ 0.90 is 1.50 Ghanaian cedi (GH₵), or, colloquially, *one-point-five Ghana*.[§§§§§§§§§§§§§§§§§§§§§]

To reiterate what is an important point regarding the RRP: while the global-level designers of the AMFm envisioned that the private sector would earn a profit on s-QA.ACTs and thus be induced to make it widely available and affordable, it was the country-level stakeholders who determined the specific Ghanaian RRP of US$ 0.90 (GH₵ 1.67, adjusted using a conversation rate of GH₵ 1.67 to US$ 1.00, as used consistently throughout this thesis). NMCP members, reflecting on the implementation process, write about meetings organized by the AMFm-CC with FLBs on s-QA.ACT pricing: "during [the consultative] meeting… the technical committee [of the AMFm-CC] demonstrated to FLBs and pharmaceutical retailers, with support from CHAI, that profit can be built into the pricing of s-QA.ACTs without the wholesaler or the retailer necessarily losing revenue" (*K. L. Malm et al. 2013*).

I show the relation between the RRP and the AMFm mechanism in Figure 21. The initial import price for a QA.ACT such as Coartem© in the private sector was about GH₵ 2.04 (US$ 3.40). Through Prong I of the

[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] Given the data used in this thesis, like the IndE, I focus on prices of the Adult Equivalent Treatment Dose (AETD) for full packages of malaria medications, rather than following the more nuanced approach taken by Fink et al, who have data on the precise number of tablets purchased for cases in which packages were split (*Fink et al. 2014*).

[§§§§§§§§§§§§§§§§§§§§§] The Ghanaian cedi was named for the cowry shells that were formerly used for trading in the area.

AMFm, participating pharmaceutical manufacturers agreed to sell to the private sector in the AMFm Phase I countries at the same price at which they already sold to the public sector in a given country (*Global Fund 2010c*). From this price, GF applied the subsidy from its AMFm-earmarked (ring-fenced) cache to further lower the price at which FLBs would import s-QA.ACTs: around US$ 0.17 (GH₵ 0.28). Several stakeholders note that through that pilot phase, a key struggle in Ghana was the application of the import tariff; and many maintain that without it, the RRP (as well as the NHIA reimbursement) could have been lower (*Independent Evaluation Team 2012; R-8, n.d.; Acheampong 2014*).

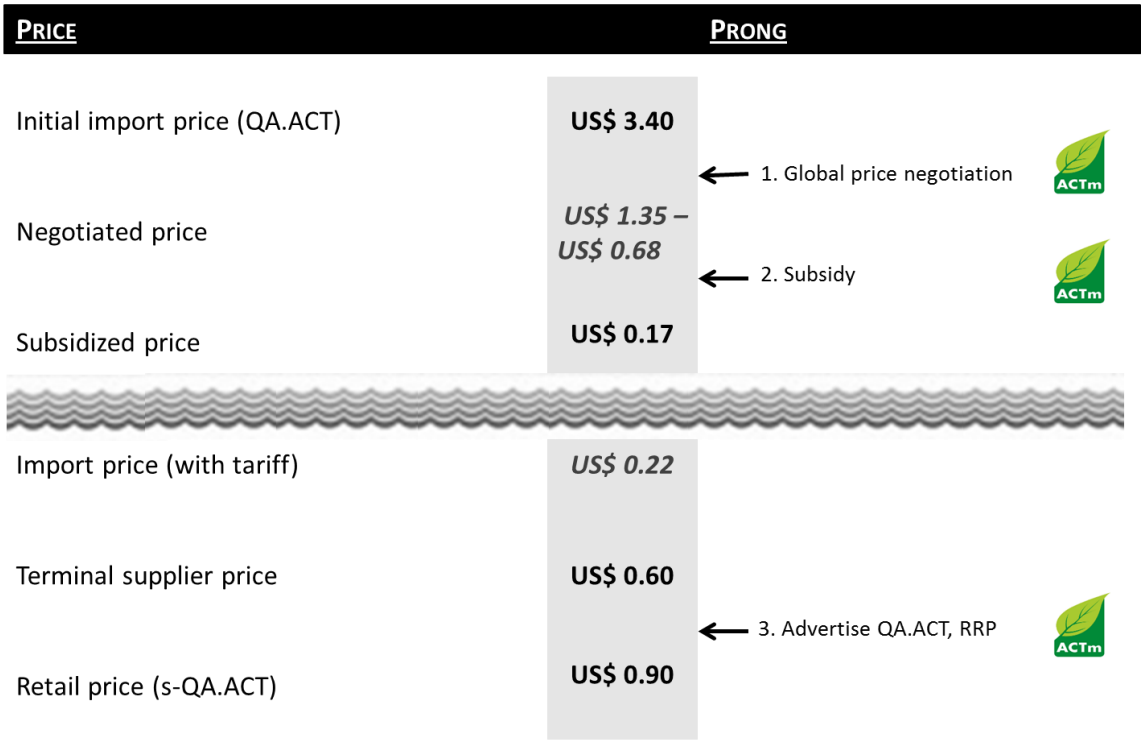


Figure 21: Estimate of QA.ACT prices along the Ghanaian pharmaceutical importation and distribution chain, including the montary influence of different prongs of the AMFm intervention

As per its 2009 application description of planned Supporting Interventions , Ghana budgeted US$ 6.7m for communication and marketing activities and US$5.0m for professional trainings (*"Application Form, Affordable Medicines Facility- malaria (AMFm): Ghana." 2009*). For communication and marketing activities, AMFm-CC hired an advertising firm to design a campaign to introduce the new drugs and their AMFm *green leaf* logo, indicating a quality-assured ACT. The adverts, featured on TV and radio,

emphasized that Ghanaians should act fast when fever strikes but pay no more than US$ 0.90 (GH₵ 1.50) — that is, the agreed-upon RRP — for adult doses. Media communication of the price was critical to getting information to consumers because the (nationally chosen) RRP was not printed on the (globally printed) s-QA.ACT packages.********** In Ghana, the communication campaign ran for 9 months, one of the two longest campaigns among all AMFm pilot countries (Kenya also had a 9-month campaign) (*Willey et al. 2014*).

Supporting Interventions also included professional trainings for both public and private sectors dispensers; these trainings also highlighted the RRP. In the public sector, training activities were carried out by NMCP; in the private pharmacy section by the PSGH; and among the LCSs by the Pharmacy Council. According to the results gathered for the IndE, ~45% of the interviewed providers received training on the AMFm, the highest proportion among all the AMFm pilots except for Zanzibar (*Willey et al. 2014*).

Signing-up private-sector First Line Buyers (FLBs)

Each of the 200-plus registered domestic importers in Ghana had the potential to serve as an FLB, connecting with global s-QA.ACT manufacturers (*Global Fund, n.d.*). An FLB was an importer specifically approved by GF to bring s-QA.ACTs into the country. To be eligible, candidates registered both with national authorities — and in a separate, non-negotiable agreement with GF — on purchase terms and obligation to pass on the subsidy to retailers (*Global Fund, n.d.*). Importers were the only national supply chains elements subject to such an agreement, a point about which they voiced frustration at early implementation meetings (*Global Fund 2010e; R-13, n.d.*).

Initial sign-up to be an FLB in the private, for-profit sector in Ghana was slow (*Matowe and K'omolo 2011; R-14, n.d.; R-15, n.d.*). This signing-up meant registering with GF to be eligible to import the s-QA.ACTs at the subsidized price from the global manufacturers. No additional reimbursement would flow to national-level importers or to any other link in the national supply-chain. As noted in Chapter IV, the price

********** This was a global-level decision, so participating global pharmaceutical manufacturers did not have to print different packaging with different pricing information for each pilot country.

negotiations and the subsidy application happened at the global rather than the national level under the AMFm (see Figure 21 and also refer back to Figure 9).

To increase participation, the CCM Chairman, PSGH leadership, and a CHAI consultant engaged one-on-one with businesspeople, including potential FLBs as well as retailers. In their pitch, they highlighted the public good and public image benefits of the AMFm, and helped importers understand how the AMFm might affect their profit (*R-2, n.d.; R-5, n.d.; R-6, n.d.*).

While the AMFm-CC set the RRP such that all participants in the supply chain could make a profit on each unit sold, no one knew *ex ante* what the market demand would be for ACTs (quality-assured or not) at this new price-point; and, therefore, what kinds of volumes an importer, wholesaler, or retailer could hope to move. If sales volumes were not high enough, FLBs could potentially lose money.

While this concern was real, there was also incomplete or incorrect understanding of the AMFm among the private sector following the adoption of the AMFm pilot. One stakeholder involved in these post-adoption pitches noted that the "one-on-one meetings played a big role because things were abstract to [the private sector]" (*R-4*) and that, for them, "this was not business as usual" (*R-13*) (*R-4, n.d.; R-13, n.d.*). These meetings first targeted importers with established links to global, pre-qualified manufacturers, as well as those with wide national distribution networks (*R-4, n.d.; R-5, n.d.; R-8, n.d.; R-13, n.d.*). The CCM chairman, PGSH leadership, and the CHAI consultant emphasized that "getting on board [would be] good for the image of pharmacists, showing that they are not only money conscious but also public health conscious" (*R-7, n.d.*).

Among potential FLBs, there was not "peer pressure [or a] ring leader" promoting signing-up (*R-7, n.d.*). Rather, once they understood the AMFm better through the one-on-one consultations, they — "including the ones who had been making noise" (*R-15*) during adoption — "fought with each other to get on board" (*R-7*) (*R-7, n.d.; R-15, n.d.*). Eventually, through their efforts, 32 private importers registered as FLBs and 14 ultimately placed orders (*R-15, n.d.; Independent Evaluation Team 2012*). For importers that also

manufactured, participation as an FLB — "their second choice, not their first" — could off-set lost manufacturing profits (*R-13, n.d.*). The Ghanaian manufacturers equipped to produce ACTs — between 4 and 6, as discussed in Chapter IV — ceased production as the AMFm imports came in (*R-5, n.d.; R-9, n.d.; R-11, n.d.; R-13, n.d.*).

Through regular monitoring, registration, and regulatory data, information does exist to help identify importers and, for the most part, retailers. But how drugs move from the former to the latter is less transparent. However, we do know that pharmaceutical distribution systems have less reach into Ghana's three Northern regions than the rest of the country, a fact reiterated in the IndE, whose authors specifically cite poor infrastructure and resultant elevated costs for transportation (*Rockefeller Foundation, Results for Development Institute 2008; Independent Evaluation Team 2012*). Below and in Figure 22, drawing on other sources studying pharmaceutical distribution in Ghana, I roughly illustrate how these distribution systems work (*Rockefeller Foundation, Results for Development Institute 2008; McCabe et al. 2011*). Later in the chapter, I flesh out this picture with descriptive data from Tamale.

Such distribution systems broadly worked in the following manner: to begin, an importer must bring in pharmaceutical products, almost always through Accra. Then, in the private sector, an importer-wholesaler (who may also be a national manufacturer) may sell to retailers or to individual salespeople, who may have motos or vans, or to distribution teams with vans. Individual salespeople may "buy enough products to fill their vans and travel around the countryside selling their products to rural pharmacists" and LCSs (*McCabe et al. 2011*). Teams, by comparison, have a driver and wholesaler-representative who sells various brands on credit or, colloquially, on a *cash-and-carry* basis (*McCabe et al. 2011*). These smaller, as-needed amounts, rather than bulk orders, often better matching the cash flow patterns and storage capacity of small retailers (*Seiter and Gyansa-Luerodt 2009*).

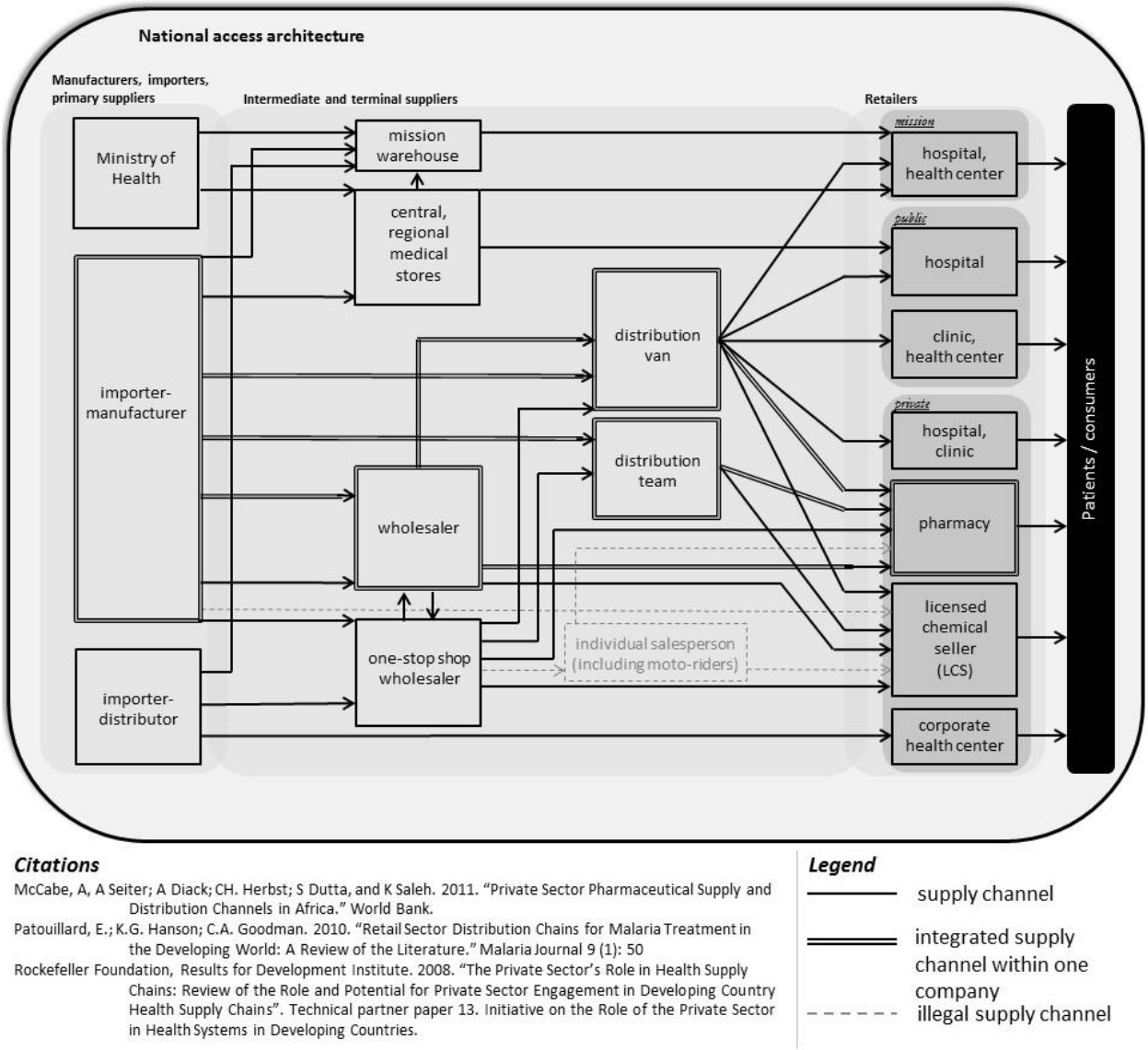


Figure 22: Flows of pharmaceutical products within Ghana

In August 2010, ready to make their way into the distribution system described above, the first doses of s-QA.ACTs arrived in Ghana via private FLBs (*Independent Evaluation Team 2012*).

SECTION VII.2: SEPTEMBER 2010 – DECEMBER 2011, NATIONAL IMPLEMENTATION

GLOBAL

Through July 2011, implementation from the global level, especially in Anglophone SSA countries, proceeded as planned, with s-QA.ACT orders made to GF, approved by GF, and delivered by global

manufacturers. Shipments included six brands of s-QA.ACT: two AA (Arsuamoon© and Winthrop©) and four AL (Ipca©, Artefan©, Coartem©, and Lumartem©). There was an average delay of two to three months between approving and delivering the order.

In July 2011, GF became alarmed that pilot countries' demand for s-QA.ACTs — particularly in Nigeria (accounting for ~30% of all AMFm orders) as well as Ghana, Kenya, Tanzania-mainland, and Uganda — would deplete the Phase I cache funding the subsidy for all pilot countries before the end of the Phase I. These concerns came from several sources, including that demand for s-QA.ACT was high relative to the AMFm funding cache, that there may be global artemisinin shortages, and that AMFm was making it difficult for other programs relying on QA.ACTs, such as PMI (*Independent Evaluation Team 2012; Maxmen 2012*).

In August 2011, GF's AMFm Secretariat began implementing a series of criteria†††††††††††††††††††††† collectively called "demand-shaping levers," which were used to determine how the approval rate for s-QA.QCT orders in pilot countries would be rationed (*Independent Evaluation Team 2012*). It has not been made public exactly how the criteria were applied but Ghana (as well as Nigeria) was substantially affected, with only a quarter of its overall orders approved after July 2011 (*Global Fund 2010e; Independent Evaluation Team 2012*). In a report from an implementation forum convened in December 2010, Ghanaian and other national FLBs complained about troubles doing business with the global manufacturers, including the partial-approval or non-approval of orders (*Global Fund 2010e*). Possible implications appear in the Tamale data, collected between August and December 2011. As discussed below and in Chapter VIII, retailers refer to supply chain issues, included shortages and the pricing reactions.

†††††††††††††††††††††† The IndE reads: "Since August 2011, each request for copayment received was evaluated on the basis of several criteria (for example, the ratio of cumulative approved orders to estimated demand, relative proportion of pediatric formulations/pack sizes, and sector) and approved within the constraint of US$ 8-10m per month" (*Independent Evaluation Team 2012*).

GHANA

With the first arrival of s-QA.ACTs in Ghana in August 2010, distribution began at the national level. At this point, as per the IndE, about 7.5% of surveyed ACT outlets were familiar with the AMFm logo (*Independent Evaluation Team 2012*).

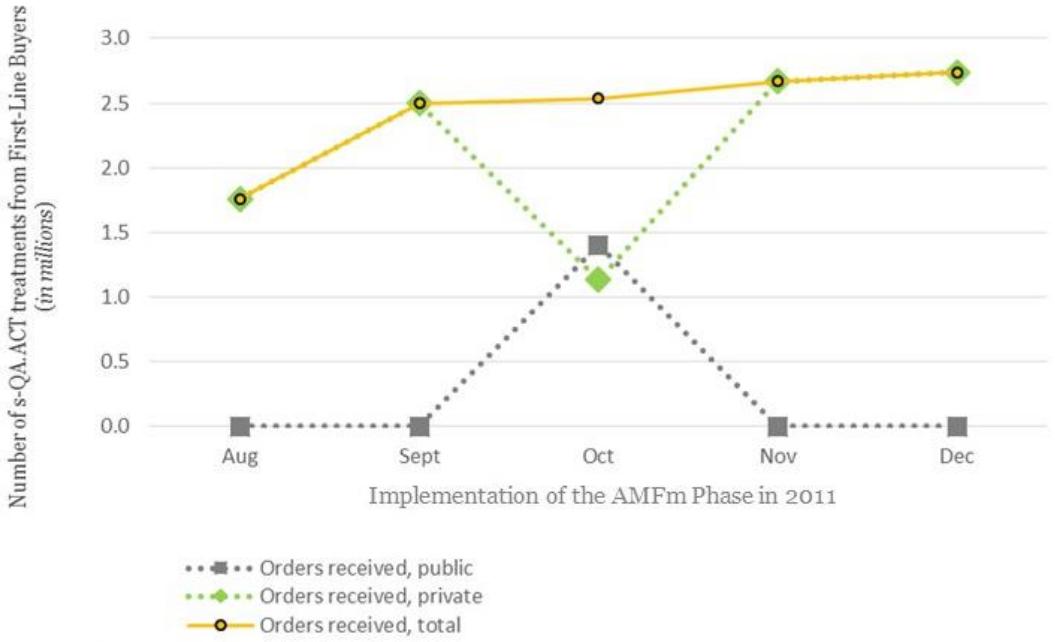
Between August 2010 and December 2012, Ghana received 24.7m s-QA.ACT doses, 94% of them through the private, for-profit sector (*Independent Evaluation Team 2012*). Public sector orders did not arrive until October 2011 due to delays in the national procurement process; in the interim, the government purchased from the private sector (*Independent Evaluation Team 2012*).

On 14 February 2011, with President Atta-Mills and his new Minister of Health (Chireh) in attendance, Ghana held the formal launch ceremony for the AMFm — though s-QA.ACTs had been flowing into Ghana for five months (*"Stakeholders Introduce New Mechanism for Malaria Treatment in Ghana" 2014*). Ghana's communication campaign about the use of ACTs and advertising the RRP ran from the formal February launch through December 2011; overall, researchers estimate that Ghana had the highest "intensity" (*Willey 2014*) of implementation of the AMFm Supporting Interventions among all the pilot countries (see Willey 2014 for the definition of intensity used) (*Independent Evaluation Team 2012; Willey et al. 2014*).

When GF applied the demand-shaping levers in August 2011, its approval rate of private sector orders from Ghana dropped from 100% to 27% for the duration of the pilot, covering the period described below and analyzed in Chapter VIII (refer back to Figure 3 to place this within the context of this thesis) (*Independent Evaluation Team 2012*). The fact that only one-quarter of Ghana's overall orders were approved needs closer examination to understand what occurred at this time as well as its implications on supply. First, the public sector in Ghana only placed orders beginning in August 2011 (1.4m in that month) and all public sector orders were approved for the duration of Phase I. That is, only private-sector

orders were rationed — subject to rejection — after July 2011. But, second, private sector orders also spike up dramatically at this time, so that the rationing is applied to elevated numbers. From July 2010 to June 2011, the private sector in Ghana placed an average of 1.9m orders each month. The private sector did not place any orders in July 2011. Then, between August 2011 and March 2012, the private sector placed an average of 25.8m orders each month and an average of 1.3m were approved by GF for each of these seven months.

Shifting from orders and approvals to reported deliveries, I show in Figure 23 the monthly pattern of all orders delivered to Ghanaian importers — whether via procurement by the MoH or by the private, for-profit FLBs — between August 2011 and December 2011 (as recorded by GF). This is the period of data collection among pharmacies and LCSs in Tamale. Overall supply to Ghanaian ports increased slightly over this time but with a drop in deliveries to private-sector importers. The actual size of the supply shortfall depends on the extent to which the volume of orders placed by the FLBs reflected true demand (separate from number of actual malaria cases).



Adapted from:
Global Fund Co-paid ACT Orders Database, data extracted 8 May 2012

Figure 23: s-QA.ACT orders delivered *to Ghana* in 2011 through the Ministry of Health (public) or for-profit First-Line Buyers (private), August to December

The changing retail price of ACTs under the AMFm had implications for NHIS reimbursements. After the RRP was set in January 2010, NHIA planned to lower its reimbursement rates from US$ 3.00 to US$ 0.90, the same as the RRP, when s-QA.ACTs arrived in Ghana (*Acheampong 2014*). Although the first s-QA.ACTs arrived in August 2010, the reimbursement rate was not lowered until November 2010, when an NHIA market survey found the new antimalarials to be widely available (*Acheampong 2014*). In its 2010 annual report, the insurance body noted that the AMFm had allowed NHIS to save up to 50% on antimalarials; in 2009, antimalarials represented one of the most expensive medicines on the reimbursement list and accounted for a quarter of the NHIS medicines budget, which in turn had accounted for about half of the NHIS budget in 2008 (*Blanchet and Roberts 2009; National Health Insurance Authority 2010*). In turn, the NHIS accounted for about 10% of overall government expenditure in 2010 (*Blanchet and Roberts 2009*).

Unfortunately, the necessary information to analyze the effect of the AMFm on the pharmaceutical sector in Ghana is not publicly accessible and, without a mandate to do so, private firms are not willing to provide it. Details on how much of the ACT market-share came from local manufacturers prior to the AMFm are not available. As Seiter and Gyansa-Luerodt state in their policy note on Ghana's pharmaceutical sector, "there are no good statistics on Ghana's pharmaceutical market" (*Seiter and Gyansa-Luerodt 2009*). While the AMFm likely had some effect on the market and composition of overall supply, it is not clear precisely how it affected Ghanaian manufacturers or altered the whole ACT market in Ghana.

Antimalarials and the AMFm in Tamale, Northern Region

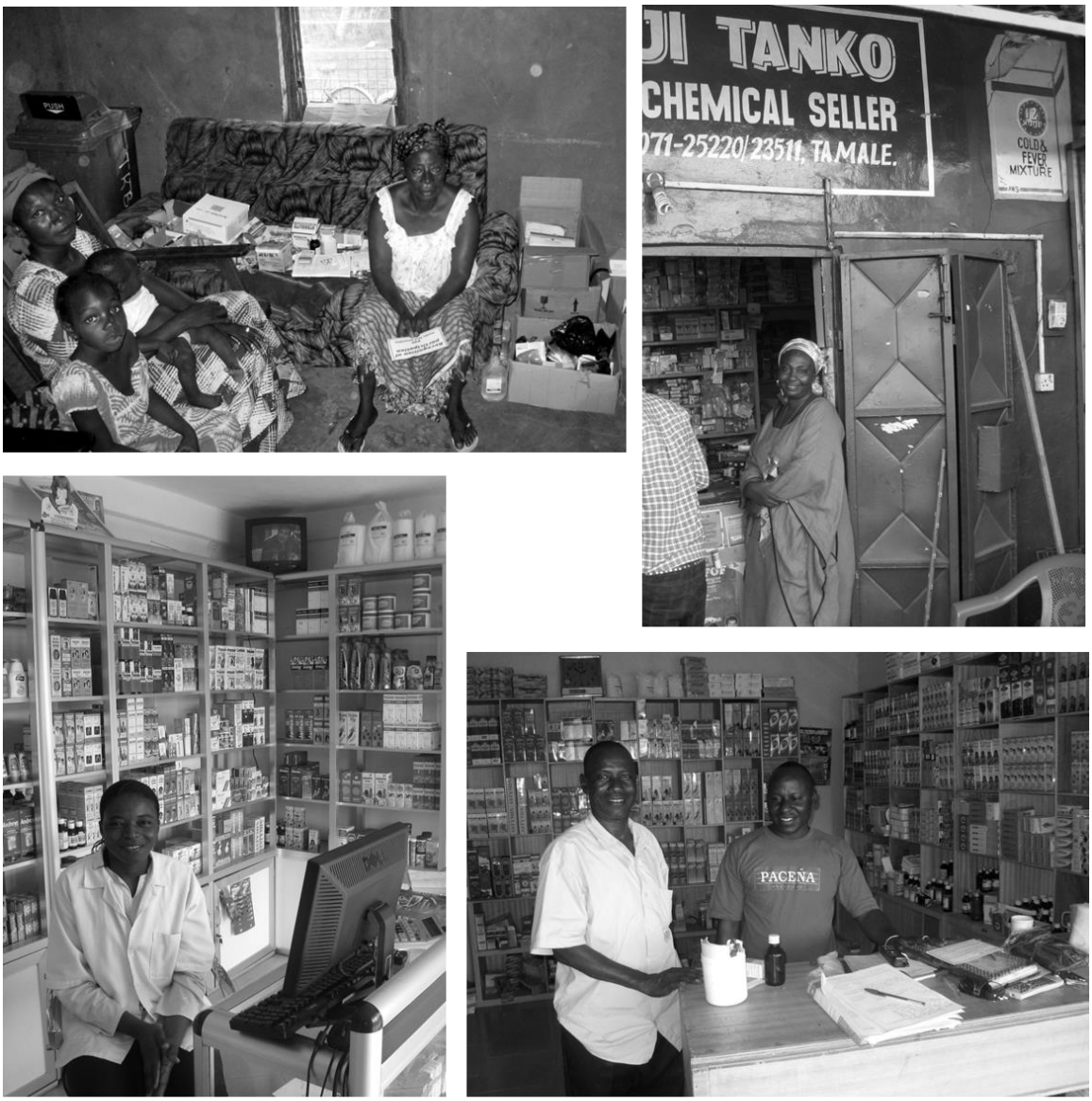
Overall, Ghana achieved a high level of availability in the private sector by the final data collection for the IndE in November 2011, with s-QA.ACTs available in 90% of formal private clinics and pharmacies and just under 80% of LCSs (in urban areas, stocking was 89.1% for private facilities and pharmacies and 82.1% for LCSs; in rural areas, stocking rises in pharmacies to 97% but fell in LCSs to 73%) (*Independent Evaluation Team 2012*). This accords with my findings in Tamale, where 98% of retailers – both LCSs and pharmacies – reporting having ever stocked s-QA.ACT.

Across the country, Ghana just met the goal of reducing the private sector retail price to less than three-fold the price of the next most popular antimalarial on the market. While in rural areas, the median price reported was the RRP, US$ 0.90, in urban areas and in Ghana overall, the median price crept up to US$ 1.20 in private clinics and pharmacies; LCSs reported selling at the RRP (*Independent Evaluation Team 2012*). This was similar to the results in my data from Tamale, where the median reported retail price in Tamale was US$ 0.90 for both pharmacies and LCSs.

In the IndE, both urban and rural pharmacies and LCSs had median mark-ups of 50%, with the exception of rural pharmacies, which added a median 33% mark-up to the terminal supply price. Specifically the data I collected in Tamale showed an overall median mark-up of 50% on the terminal supplier price — that is, whichever type of supplier sells to a retailer (*Patouillard, Hanson, and Goodman 2010*). I provide more

detailed tables of the IndE results as relevant for Ghana and converted to the currency exchange rate used in this thesis in Appendix I.

In Chapter VIII, I consider the non-compliance with the RRP that is behind the median price of US$ 0.90. To situate this analysis, in the remainder of this chapter, I take a granular look at retailers' specific experiences with the AMFm and their more general attributes and business practices: stocking and supply patterns, views on competition and collusion, and perceptions of regulatory agencies. I do this using the in-depth interviews with retailers between August and December 2011, supplementing them with the PACT follow-up interviews with retailers conducted in October 2011 (please refer back to Figure 3 for a complete timeline to situate this data collection and to Chapter III for details on data collection). Throughout, echoing the IndE, I compare pharmacies to LCSs. So the reader can better envision these retailers, in Figure 24, I present images of private providers, intended to depict the variety of private sector retailers in and around Tamale, including a private registered pharmacist, two LCSs, and one nurse who also sells medication out of her home during off-hours.



Pictures taken by HEL, with verbal permission from retailers to display.

Figure 24: Examples of private-sector implementers at street-level in and around Tamale, Ghana: Selected pharmacists and Licensed Chemical Sellers

Retailer experiences with the AMFm in Tamale

Awareness of the initiative

When asked about the goals of the AMFm, 69% of retailers (of n=226) included a goal of reducing or eliminating malaria, 33% of making (quality) malaria drugs available (to everyone or specifically to the

poor), and 12% to "promote the new drug."‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡ Overall, retailers felt positively about the program.§§§§§§§§§§§§§§§§§§§§§§ Many expressed sentiments that "the program is good because the drug they produce is good and affordable and the drug is helping cure malaria" and "it is good because the drug cures malaria, just like they said" (*V-1 2011; V-31 2011*). About fifty respondents (20%) specifically noted that the program should be maintained and that the price should not be increased.

Retailers learned about the program in various ways.********** About half (49.4% of n=247) reported first hearing about the program and drug from their supplier and another third (33.2%) from the media. Ten percent reported learning in a workshop and 5% from other retailers and providers (including health professional colleagues for retailers who also worked in public health facilities).††††††††††††††††††††††††

From the overall IndE findings, "AMFm-related training appeared to be linked to knowledge and awareness outcomes, with the two settings with the highest training coverage (Ghana and Zanzibar) performing best at endline [final data collection] on knowledge of the logo and RRP, and being in the top three for knowledge of the which antimalarial treatments are recommended as first-line therapy.

‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡ Only one respondent was recorded as specifically attributing goals beyond reducing malaria and promoting the drug: "to make malaria drugs affordable so that the government can be more popular" (*V-180 2011*). Three respondents said they didn't know the goals.

§§§§§§§§§§§§§§§§§§§§§§ The specific question asked was: "*overall, what do you think of the* green leaf *program?"*

********** The specific question asked was: "*how did you first hear about the* green leaf *program*?"

†††††††††††††††††††††††† Surveyors further asked whether respondents felt "*this was the proper way for you to learn about it*." Fewer respondents answer this question (n=107) but on the whole (85%) were satisfied with how they heard about it. For example, echoing a common sentiment, a respondent who learned from his/her supplier said "my supplier normally informs me about new development" (*V-187 2011*). Similarly, many who heard through the media acknowledged something like "it was the faster and cheaper means of spreading information" (*V-167 2011*).

Though the minority, some respondents specifically voiced that they should have heard through a government agency or professional association, including a "workshop to educate us more" (*V-1 2011; V-7 2011; V-67 2011; V-124 2011; V-133 2011; V-188 2011; V-196 2011; V-511 2011; V-517 2011; V-537 2011; V-542 2011*). Two specifically raised the issue of being stakeholders. One, who heard from his/her supplier, said "I think it wasn't fair because as major stakeholders, we should have been briefed before" (*V-507 2011*). Another, who heard first from the media, said "I felt this was wrong since we are a major stakeholder. We should have met as partners and been educated on the drug" (*V-535 2011*).

However, high levels of knowledge in some settings with relatively low training coverage indicate that providers also obtain information through other sources, such as communications targeted at the general public or through wholesale providers" (*Willey et al. 2014*). Unfortunately, in the present study, few respondents clearly answered the questions on general malaria and AMFm-specific training, so it is not possible to distinguish how many retailers attended an AMFm training, regardless of whether it was how they first learned of the program.

Stocking, suppliers, and pricing for s-QA.ACTs

s-QA.ACT stocking

Retailers reported stocking, on average, 1.36 brands of s-QA.ACT on the day(s) of the interview, with pharmacies stocking significantly more brands than LCSs, as shown in Table 10. Overall, 92% report stocking any s-QA.ACT of the AL formulation (Ipca©, Artefan©, Coartem©, Lumartem©), with no significant differences between retailers and with Lumartem© as the most commonly stocked brand. Thirteen percent of retailers reported stocking s-QA.ACT of the AA formulation (Arsuamoon© or Winthrop©), which does not differ significantly by retailer type.

	Pharmacy		Licensed Chemical Seller		*Difference in means between retailer types*	*Significance, at α=0.5 (two-tailed)*
	Mean	*Median*	*Mean*	*Median*		
Count of reported types of s-QA.ACT currently in stock *(n=255 shop observations)*	1.95	2.0	1.30	1.0	0.65	*0.02*
Current stock includes Arsuamoon (AA) *(n=255 shop observations)*	0.15	0.00	0.07	0.00	0.08	0.35
Current stock includes Withrop (AA) *(n=255 shop observations)*	0.21	0.00	0.06	0.00	0.15	0.14
Current stock includes Ipca (AL) *(n=255 shop observations)*	0.20	0.00	0.12	0.00	0.08	0.41
Current stock includes Artefan (AL) *(n=255 shop observations)*	0.30	0.00	0.12	0.00	0.18	0.10
Current stock includes Coartem (AL) *(n=255 shop observations)*	0.50	0.50	0.11	0.00	0.39	*0.00*
Current stock includes Lumartem (AL) *(n=255 shop observations)*	0.70	1.00	0.84	1.00	0.14	0.21
Response to whether the retailer currently has as much stock of s-QA.ACT as s/he would like ("yes" coded as "1") *(n=234 shop observations)*	0.83	1.00	0.64	1.00	0.19	0.06

Table 10: Stocking of s-QA.ACT in Tamale, Ghana, stratified by retailer type

Eighty-seven of retailers (of n=251) reported that s-QA.ACTs ranked among their three "most requested" antimalarial medications, with significantly more LCSs than pharmacies reporting this (89% versus 60%, significant at *p=0.02* in a two-sided t-test, analysis not shown). Eighty-three percent of retailers (n=251) also place s-QA.ACT as their "fastest moving" antimalarial, again with significantly more LCSs than pharmacies reporting this (84% versus 65%, significant at *p=0.10* in a two-sided t-test, analysis not shown).

At the time of the interview, 65% of respondents reported "yes," they had "*as much stock with the green leaf on the packets as [they] would like to have*." Pharmacies were more likely to report having sufficient stock than LCSs, as shown in Table 10. Not all retailers expanded on why they perceived their stock as inadequate but those that did gave two primary reasons: insufficient funds to replenish and difficulty finding supply. A small number also mentioned supply prices being a reason for depleted stock, which I return to under the "s-QA.ACT pricing" sub-section.

To explain insufficient stock, several retailers reported sentiments like, "financial constraints have limited my ability to obtain the drug the way I wished," speaking both s-QA.ACT stock and stock of specific brands

(*V-81 2011; V-123 2011; V-124 2011; V-138 2011; V-212 2011; V-507 2011; V-532 2011; V-534 2011; V-537 2011*). A small number pointed out the problem that "I currently do not have enough funds to buy it and I cannot buy it on credit" because suppliers were not offering credit (*V-114 2011*). A few received stock but not as much as desired, such as, "it is difficult because any time we request it, we are only given a small quantity" (*V-106 2011*).

Discussing the problem of finding adequately stocked suppliers, one retailer noted, "there are times that I request for the drug from my supplier and he tells me that it is finished and I should wait until he goes to Accra to bring back some supplies. We usually have to wait for them" (*V-135 2011*). In cases of such shortages, retailers may turn to fellow retailers in Tamale: "When I do not get it from [Supplier 3003], I will try [popular retailer in Tamale]. I also have an arrangement with [another retailer in Tamale who sources from Accra], who supplies me" (*V-153 2011*). This does not always work: "I buy [s-QA.ACT] from colleague retailers and when they do not have stock, I have few options" (*V-554 2011*). Others turned to the individual suppliers on moto bikes, even though it appears they do pay more in doing so, such as, "there are times when we resort to buying from the mobile suppliers, who sell at a higher price" (*V-101 2011*). These issues of alternative sources of — and constrained — supply are the subject of the next sub-section; please also refer back to Figure 22 for a depiction of the pharmaceutical supply chains in Ghana.

s-QA.ACT suppliers

Overall, compared to the access of regular antimalarials, the main supply sources for s-QA.ACTs shifted somewhat. In Table 11, I detail these differences, showing significant changes for four suppliers (coded as 3003, 3008, 3013, and 3014). Suppliers listed by only a few retailers, who registered as 0.00 percent of main suppliers, are excluded from the table.

Overall, just under a quarter (23%) of retailers reported having difficulties finding s-QA.ACT supply, with no significant difference between pharmacies and LCSs. Because difficulties with supply and pricing are

linked, I discuss them together in a sub-section, below. For now, note that a retailer's listing of "main" suppliers belies a slightly more complicated story about actual sources of supply.

	Main supplier for all antimalarials		Main supplier for s-QA.ACT		*Difference in means*	*Significance, at α=0.5 (two-tailed)*
	Mean	*Median*	*Mean*	*Median*		
Lists "Supplier 3002" as a main supplier *(n=250 shop observations)*	0.04	0.00	0.01	0.00	0.03	*0.05*
Lists "Supplier 3003" as a main supplier *(n=250 shop observations)*	0.53	1.00	0.65	1.00	0.12	*0.00*
Lists "Supplier 3004" as a main supplier *(n=250 shop observations)*	0.13	0.00	0.10	0.00	0.03	0.24
Lists "Supplier 3005" as a main supplier *(n=250 shop observations)*	0.02	0.00	0.03	0.00	0.01	0.57
Lists "Supplier 3006" as a main supplier *(n=250 shop observations)*	0.17	0.00	0.16	0.00	0.01	0.78
Lists "Supplier 3007" as a main supplier *(n=250 shop observations)*	0.02	0.00	0.02	0.00	0.00	0.77
Lists "Supplier 3008" as a main supplier *(n=250 shop observations)*	0.22	0.00	0.02	0.00	0.20	*0.00*
Lists "Supplier 3010" as a main supplier *(n=250 shop observations)*	0.01	0.00	0.01	0.01	0.00	0.99
Lists "Supplier 3013" as a main supplier *(n=250 shop observations)*	0.05	0.00	0.00	0.00	0.05	*0.00*
Lists "Supplier 3014" as a main supplier *(n=250 shop observations)*	0.63	1.00	0.15	0.00	0.48	*0.00*
Lists "Supplier 3016" as a main supplier *(n=250 shop observations)*	0.01	0.00	0.02	0.00	0.01	0.16
Lists "supplier in Accra or Kumasi" as a main supplier *(n=250 shop observations)*	0.09	0.00	0.09	0.00	0.00	0.85
Lists "retailer in Tamale" as a main supplier *(n=250 shop observations)*	0.06	0.00	0.06	0.00	0.00	0.88
Lists "mobile suppliers" as a main supplier *(n=250 shop observations)*	0.02	0.00	0.02	0.00	0.00	0.75

Table 11: Comparison of main antimalarial and s-QA.ACT suppliers in Tamale, Ghana

s-QA.ACT pricing

As noted, and accordant with the IndE findings, the median retail price of s-QA.ACT in Tamale during the study period is US$ 0.90. The median covers an overall (across facility types) mean retail price of US$ 0.97 with a bimodal distribution, as shown in the (green) histogram in Figure 25. Largely, retailers either charged US$ 0.90 (*1.50 Ghana*) or they charged US$ 1.20 (*2.00 Ghana*).

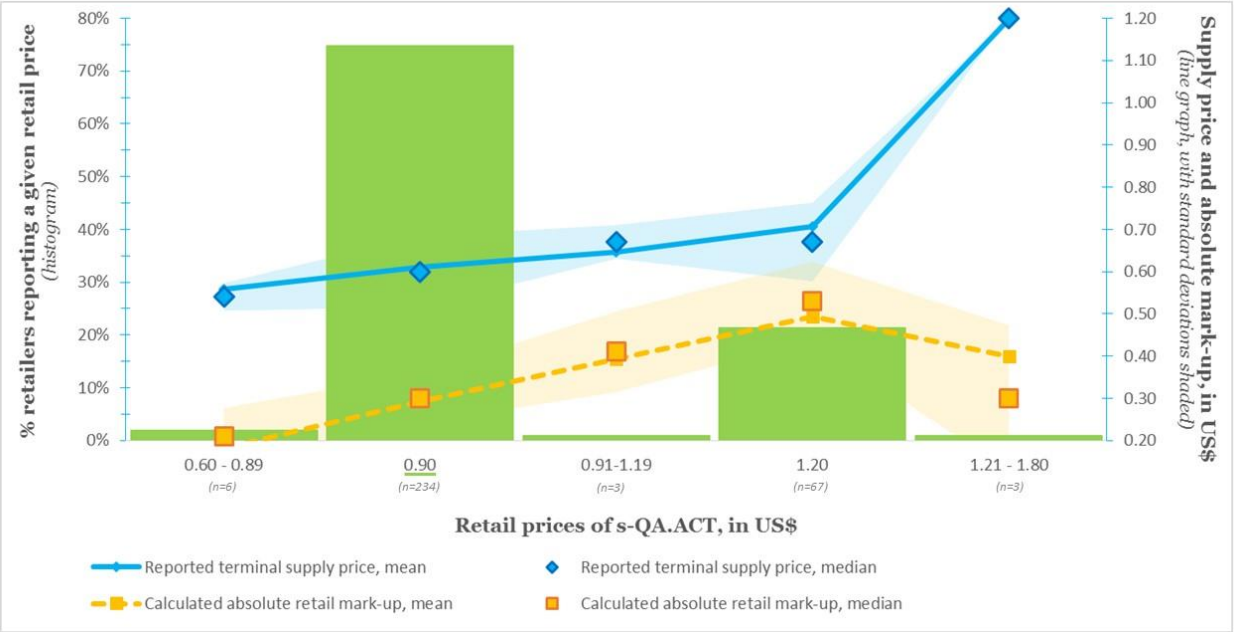


Figure 25: Distribution of reported retail prices with associated supply prices and absolute mark-ups:

Pharmacies more frequently charged US$ 1.20; as shown in Table 12, pharmacies also reported paying higher terminal supply prices for s-QA.ACTs than LCSs.

	Pharmacy		Licensed Chemical Seller		*Difference in means between retailer types*	*Significance, at α=0.5 (two-tailed)*
	Mean	*Median*	*Mean*	*Median*		
Reported retail prices of s-QA.ACT, in US$ *(n=313)*	1.02	0.90	0.96	0.90	0.06	0.07
Reported terminal supply prices of s-QA.ACT, in US$ *(n=300)*	0.70	0.67	0.63	0.60	0.07	*0.05*
Retail mark-up on s-QA.ACT, absolute, in US$ *(n=300)*	0.35	0.30	0.33	0.30	0.02	0.35
Retail mark-up on s-QA.ACT, percent *(n=300)*	52.5%	50.0%	55.1%	50.0%	2.6%-pts	0.54

Table 12: Retail prices, terminal supply prices, and retailer mark-ups on s-QA.ACT in Tamale Ghana, stratified by retailer type

One reason retailers might (report) selling at US$ 0.90 is if they thought there would be negative consequences to setting a price above the RRP.[ǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂ] However, 90% (of n=138) reported that nothing would happen, including citing their own higher retail prices or those of other retailers, for example, "I presently sell my drugs above US$ 0.90 and my customers do not complain much" (*V-39 2011*). One retailer explained that these higher terminal supply prices did not present a major problem because "even though sometimes the price is quite high but you can buy and also raise the [retail] price and people will buy" (*V-188 2011*). Of that small percentage who thought "something" negative might happen if they were to charge above the RRP, they either state that customers would complain or that the retailer "will lose market since many people are aware of the price and would not buy from such a person" (*V-167 2011*).

Another reason retailers might not charge the RRP was if they thought it was an unreasonable price-point. Three-quarters of respondents (73%) thought the RRP price was "good," "OK," or "affordable," reflected in statements like: "I think it is OK because more customers can afford it and the profit is good" (*V-180 2011*)). A few highlighted that the price point was a "driving force of demand" (*V-12 2011; V-37 2011; V-99 2011; V-110 2011; V-154 2011; V-503 2011*).[§§§§§§§§§§§§§§§§§§§§§§§§] Another 12% thought the price was good but unprofitable or infeasible given prevailing terminal supply prices: "I think the US$ 0.90 price is good for both business and many customers but the recent supply price is making it unattractive for business" (*V-515 2011*). A small number expressed "discomfort" that the retail price was advertised in the media, such as "I think the US$ 0.90 is OK. My problem is with the adverts on the price, which puts the retailers in a dilemma" (*V-24 2011; V-33 2011*). Two percent thought the RRP should be raised, generally to US$ 1.20.

[ǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂ] The specific question asked was: "*what, if anything, would happen if someone priced their* leaf *drugs higher than US$ 0.90?*" Only half (55%) respondents answered this question, partly because it was added to the questionnaire midway through the survey process. Accordingly, the answers should be interpreted with caution.

[§§§§§§§§§§§§§§§§§§§§§§§§] The specific question asked was: "*what do you think of the suggested retail price (US$ 0.90) of the malaria drugs with the green leaf on the packet?*" I coded the responses (n=235, 94% of those surveyed) such that each response only received one code.

And yet 12% thought the price should be lowered, usually to US$ 0.60 (*1.0 Ghana*), citing that this could stimulate further demand and/or that their clientele was predominantly rural and/or poor and could not afford the RRP.********** To illustrate: "If the price is reduced to US$ 0.60, it will be affordable to many more people. Most of the people still prefer [SP] because of the low price" (*V-129 2011*). The specific comparison with SP pricing (usually US$ 0.30 or US$ 0.36), to highlight that s-QA.ACT pricing was still unaffordable was echoed by seven others (*V-4 2011; V-79 2011; V-83 2011; V-155 2011; V-519 2011; V-523 2011; V-553 2011*). I provide the full responses with coding in Appendix E.

A third reason retailers might not charge the RRP is if they thought the market was trending in a different direction.†††††††††††††††††††††††††† Overall, 65% felt the price could settle at US$ 0.90. Another 17% thought the price might settle at US$ 0.90 and that the situation depended on whether the supply price could be controlled. The final 18% thought the price would settle at US$ 1.20 (*2.0 Ghana*) or higher.

Among those who thought the price would settle at US$ 0.90, their views are largely represented in the following: "it [the US$ 0.90 price] will come to stay because the drug is good and the clients see the price as affordable and we still sell at a profit" (*V-8 2011*); or, "I think the price will settle [at US$ 0.90] because customers are aware of the US$ 0.90 price and know when a retailer is selling at an abnormal price" (*V-28 2011*). Most who reported this view noted that they made a profit. A small number reported not

********** Later in the survey cycle, we added a specific question on "*what would you think if the suggested retail price was lowered to US$ 0.60?*" at the suggestion of a CHAI representative. Of those who answered (n=167, or 67% of the sample), nearly three-quarters indicated that as long as they still made a profit – that is, as long as the terminal supply price was also adjusted – that they would accept this change. Most of those who said they did not want to see the retail price lowered expressed concern about their ability to make a profit. Two respondents said that at a lower price, clients may not take the drug "seriously" or think it was of good quality (*V-54 2011; V-124 2011*).

†††††††††††††††††††††††††† The specific question asked was: "*the green leaf (AMFm / ACTm) program was tested in regions of some other countries, including Angola, Kenya, Tanzania and Uganda. In these countries, the retail price settled around the equivalent of US$ 0.90 and sometimes even lower. Do you think this will happen in Tamale? Across Ghana? Why or why not*?" Eighty-six percent (n=215) of respondents provided an answer to this question, which I then coded in mutually exclusive categories, so that each answer code only received one code. Full responses and coding are provided in Appendix E.

making a profit yet still thought the price would settle at the RRP: "the price will settle at US$ 0.90 because though the margin is not great, customer satisfaction also matters to us" (*V-526; V-526 2011*). I consider the views of those who thought the price would not settle or that supply prices and distribution needed to be controlled in the sub-section on "challenges," below.‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡

Recall that the above data collection and statements were collected in Tamale while, in the background, GF was applying the demand levers to Ghana's orders. Do we actually see suggestive time trends among retail prices, supply prices, and mark-ups over the last months of 2011? The values presented below, including in Figure 26, should be taken with caution, since they were not collected to create a time series and since the supply price a retailer reported on a given date reflects the price at which s/he bought it, not the market supply price on that date. With this large caveat in mind, there do appear to be significant differences across months of data collection. An ANOVA (not shown) reveals no significant differences in either retail or supply price across months but the absolute retailer mark-up is significant at $p=0.02$. If supply price is considered as a binary – US$ 0.60 and below versus US$ 0.61 and above – then it differs significantly over the five months of the study, at $p < 0.00$.

‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡ With further understanding about how retailers experienced the RRP, we reacted to passing comments from retailers and added the question: "*some retailers have suggested that some of their customers suspect that that low price of the drugs with the green leaf on the packet means that the drugs are low-quality or even counterfeit. Have you heard anything like this? What do you think about this?*" About 66% of retailers received and responded to this question (n=166). Of these, only about 7% had heard this concern and none seemed to hold this view themselves. For instance, one relayed a story that reflected the explanation that some "big men" and "big women" have this idea: "I have experienced this on several occasions but I usually try to explain to them and some take my education and some do not. There are some who even come for Coartem© and when you give them the one with the green leaf, they won't take it, they want the one that costs US$ 7.20 (*V-170 2011*)" (*V-131 2011; V-141 2011; V-509 2011; V-524 2011*). The rest attributed the idea to "ignorance" and noted that they tried to explain it to them, for instance "I have heard this but I think it is ignorance and I try to explain to them that it is a government subsidy that has made it cheap (*V-510 2011*)" (*V-54 2011; V-63 2011; V-84 2011; V-87 2011; V-114 2011; V-149 2011; V-188 2011; V-198 2011; V-510 2011; V-527 2011; V-531 2011; V-533 2011; V-570 2011*).

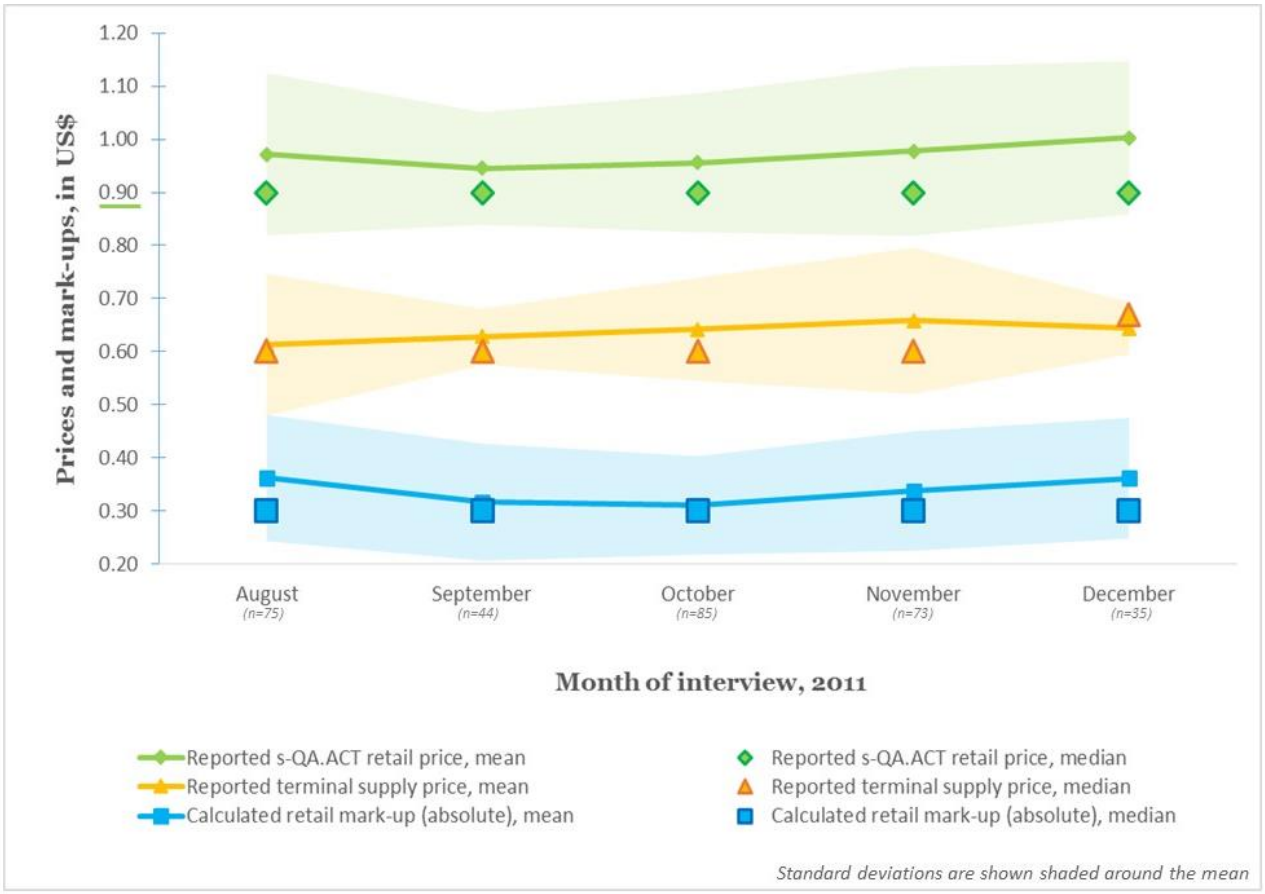


Figure 26: Retail prices, terminal supply prices, and absolute mark-ups on s-QA.ACTs, stratified by month of interview

Challenges of s-QA.ACT supply and pricing

As outlined above and illustrated in Figure 26, the median retail price of s-QA.ACT remained at US$ 0.90 (that is, the RRP) throughout the study period, the median supply price hovered between US$ 0.60 and US$ 0.67; three-quarters of respondents reported no difficulty finding s-QA.ACT supply. While noting this overall positive picture of the program, it is hard not to also infer, based on open-ended responses, that retailers faced difficulties locating a supply at a price they felt allowed them to sell the s-QA.ACTs at US$ 0.90. I cover these views in this section. Note that not all respondents answered all questions; the information presented below should be weighed accordingly.[§§§§§§§§§§§§§§§§§§§§§§§§]

[§§§§§§§§§§§§§§§§§§§§§§§§] Several different questions in the retailer interviews yielded the information presented below, including:

Supply: challenges and strategies

Retailers revealed a number of challenges obtaining s-QA.QCT stock — which "runs out easily because of the high demand" — as well as mitigating strategies (*V-65 2011*). Some mentioned minor inconveniences, such as receiving stock two to three days after making a request or getting a different brand of s-QA.ACT each time they purchased stock (*V-49 2011; V-547 2011*). Some retailers were only familiar with Supplier 3003, so if stock was out there, "there is nowhere else for me to look," and "I will have to come back and wait about a week before he goes to bring [more s-QA.ACT supply]" (*V-76 2011; V-212 2011; V-529 2011; V-552 2011*). Sometimes a retailer can switch to another major supplier but this may means using one that does not make deliveries (*V-14 2011; V-121 2011*).

Another challenge for some retailers is that Supplier 3003, the dominant supplier in of s-QA.ACT in Tamale (see Table 11), as well as other major suppliers, do not sell drugs on credit, limiting the ability of some retailers to replenish stock (*V-502 2011; V-506 2011; V-507 2011; V-517 2011*). Some retailers overcame this by purchasing from mobile suppliers, who often had "flexible payment" so that a retailer could "take the drug now and pay later" (*V-180 2011; V-517 2011*).

- "Is it more difficult to find a supplier for malaria drugs with the green leaf on the packet than for other antimalarial drugs? Explain;"
- "Some retailers have said that suppliers do not always have enough of the drugs with the green leaf on the packet. Have you had this experience? What happened?"
- "Some retailers are reporting that suppliers are raising their prices on the drugs with the green leaf on the packet. Have you heard and/or experienced this? What happened?;" and
- "The green leaf program was tested in regions of some other countries, including Angola, Kenya, Tanzania and Uganda. In these countries, the retail price settled around the equivalent of US$ 0.90 and sometimes even lower. Do you think this will happen in Tamale? Across Ghana? Why or why not?"

I also include relevant insights retailers gave in response to other questions; the full set of responses from the retailer in-depth interviews is available in Appendix E. In addition, the views of retailers who spontaneously raised issues of supply during the PACT retailer follow-up interviews in October 2011 (which did *not* include specific questions about the AMFm) are included below; the full responses are available in Appendix F.

Credit or no, the mobile suppliers almost always sold at higher prices (*V-84 2011; V-138 2011; V-537 2011*).

As noted before, an alternative strategy was to try "other retailers in Tamale if my major suppliers don't have it" (*V-570*) (V-65 2011; V-153 2011; V-162 2011; V-534 2011; V-570 2011). However, for those who "prefer to buy it from the major wholesalers," there were limited alternatives for finding stock when the major suppliers were out (*V-54 2011*).

Troubles with supply prices: charging more or getting squeezed

Several retailers detailed rising supply prices, generally reflecting a change from US$ 0.60 to either US$ 0.67 or US$ 0.72 per package, with the result that, for some, "the pricing makes it difficult to purchase" (*V-61 2011*) (*V-16 2011; V-61 2011; V-73 2011; V-87 2011; V-93 2011; V-98 2011; V-101 2011; V-109 2011; V-114 2011; V-119 2011; V-149 2011; V-155 2011; V-209 2011; V-211 2011; V-509 2011; V-512 2011; V-518 2011; V-524 2011; V-532 2011; V-535 2011; V-538 2011; V-542 2011; V-545 2011; V-547 2011; V-548 2011; V-549 2011; V-550 2011; V-551 2011; V-552 2011; V-553 2011; V-554 2011; V-556 2011; V-566 2011; V-570 2011*). As one retailer explained, "the price of the [s-QA.ACT] depends largely on the price for which you obtain it, which also largely depends on where you get it" (*V-506 2011*). The importance of supply price variations in determining retail price is in line with the cross-country finding from Palafox *et al* (*Palafox et al. 2015*).

An increase in the retail price above the RRP generally meant charging US$ 1.20 (*2.00 Ghana*) (see Figure 25 for the distribution of reported retail prices). For instance, one explained, "I sometimes sell [s-QA.ACT] at US$ 0.90 and sometimes at US$ 1.20, depending on the cost price" (*V-83 2011*). Several retailers echoed similar sentiments about their decision, including the implication that a US$ 0.07 or US$ 0.14 (10 or 20 Ghanaian *pesewa*; there are 100 pesewa in 1 Ghanaian cedi) increase in supply prices would — if they decided or were "compelled" or "forced" to increase their prices — raise them from US$ 0.90 to US$ 1.20 (50 *pesewa*) rather than an intermediate price. A recurrent explanation is summarized as: "we used to buy at US$ 0.67 and sell at US$ 0.90

but the current stock I bought at US$ 0.72. So I sell at US$ 1.20" (*V-153 2011*) (*V-4 2011; V-8 2011; V-17 2011; V-65 2011; V-73 2011; V-84 2011; V-123 2011; V-124 2011; V-134 2011; V-138 2011; V-209 2011; V-514 2011; V-545 2011; V-549 2011; V-550 2011; V-553 2011; V-554 2011*).

When supply prices went up, some retailers reported that it was "impossible to sell at the regulated price" (*V-155 2011*) even if they "would want to reduce the price" (*V-7 2011*) (*V-7 2011; V-155 2011*). One lamented, "the US$ 0.90 is giving us problems because we buy at a price that does not allow us to sell at US$ 0.90. So we have a lot of challenges with clients because they do not understand why we sell at US$ 1.20. And we cannot sell at US$ 0.90" (*V-517 2011*). Another explained that "once the wholesale price is less than US$ 0.60, it [the retail price of US$ 0.90] is good for business" (*V-98 2011*) but otherwise the retail price of US$ 0.90 is "unattractive for business" (*V-515 2011*) (*V-98 2011; V-515 2011*).

A small number of retailers explicitly discussed getting squeezed between the advertised RRP and the terminal supply price they paid: "sometimes we buy at US$ 0.78 and have to sell at US$ 0.90" (*V-14 2011*) and "suppliers raised their prices and are now making it difficult for we retailers to sell at US$ 0.90 but it is on ads everywhere that we can only sell at US$ 0.90 and that affects our business" (*V-24 2011*) (*V-14 2011; V-24 2011*). Others noted that the terminal supply price and the advertised retail price did not allow a sufficient profit (*V-63 2011; V-65 2011; V-206 2011; V-211 2011; V-515 2011*). One said, "the [retail] price was given but when they recently increased the buying price, they failed to increase the retail price and they keep telling the public in the media that the price is US$ 0.90, which is not fair" (*V-510 2011*). Another added, "I do not know how much I should pay for it but I pay US$ 0.72 and sometimes US$ 0.84.... They tell the retail price in the advert but fail to tell the supply price" (*V-517 2011*).

Two retailers reported ceasing selling s-QA.ACTs because they could not make a profit: "we buy from [Supplier 3003] and others who sell to us at a near-retail price, which makes it hard for us to sell it. Because of those challenges, we have stopped selling it" (*V-530 2011*) (*V-519 2011; V-530*

2011). This mirrors a sentiment from one of the suppliers (3004) interviewed in mid-December: "currently we do not have any [s-QA.ACT] stock. I think basically it is a result of the price increases, so I think for now the company is not buying because our clients complain that they do not make profits and we have to sell to them at more than the suggested price and no one knows what will happen yet… We have not been selling [s-QA.ACT] for slightly over a month now" (*S-3004 2011*).

Suggestions for improving supply and controlling supply and retail prices

Increase supply

Some retailers expressed concerns about inconsistent s-QA.ACT supply: "the supply chain is not going down well with the [s-QA.ACTs]. More effort should be made to make them available at all times and with regular supply" (*V-102 2011*). They encouraged ways of introducing "more and more of the [s-QA.ACTs] into the system" (*V-144 2011*) either by importing more s-QA.ACT, producing more s-QA.ACT, or otherwise making efforts "to make sure there are always [s-QA.ACTs] available without shortages and also [that it is] easy to find and purchase" (*V-95 2011*) and is "sufficient and stable" (*V-16 2011*) (*V-5 2011; V-16 2011; V-24 2011, -24; V-63 2011; V-66 2011; V-69 2011; V-92 2011; V-95 2011; V-107 2011; V-110 2011; V-121 2011; V-131 2011; V-144 2011; V-145 2011; V-155 2011; V-166 2011; V-202 2011; V-206 2011; V-570 2011; V-571 2011*). Others thought that "if they can increase the supply in the system so that the supply will force down the price, then the US$ 0.90 can be easily achieved" (*V-13 2011*). This aligns with the finding by Palafox *et al* that antimalarial retailers in low-income countries sometimes attribute rising supply prices to supply shortages, whether real or artificial (*Palafox et al. 2015*).

Ensure distribution, supply prices, and retail prices

Retailers offered different ideas about ensuring supply and prices but many focused on the idea that both supplier and retailer prices needed better monitoring and regulation, with "strong regulation," enforced – often explicitly at US$ 0.60 (*V-114 2011*). Several retailers agreed with the idea that "suppliers should be controlled so that they do not raise their prices" (*V-107 2011*) or that "the agencies responsible should try to maintain the buying prices so that everyone can sell

at the suggested US$ 0.90" (*V-63 2011*) (*V-15 2011; V-35 2011; V-61 2011; V-63 2011; V-93 2011; V-107 2011; V-118 2011; V-132 2011; V-134 2011; V-166 2011; V-188 2011; V-519 2011; V-523 2011; V-525 2011; V-547 2011; V-550 2011; V-566 2011*). One reflected another theme: the retail price of US$ 0.90 "could only come to stay if the supplier prices are controlled" (*V-551 2011*).

One retailer summed up "a big challenge in the supply" as: "there is no one supplier who is charged with the distribution of the drug, so many companies and individuals provide the drug on a piecemeal basis" (*V-84 2011*). Another added, "the fact that private individuals [mobile suppliers] go to Kumasi to bring it to Tamale to supply it does not help the program. A company should be charged with the responsibility of distributing the drugs" (*V-517 2011*).

A small number of respondents reiterated the (unprompted) idea that a central company or agency should be put in charge of distributing s-QA.ACTs and monitoring this distribution: "an agency should be tasked to regulate the distribution of the drug so that the price is not influenced by distribution chain complexities" (*V-506 2011*) or "if we can have a central agency tasked with the job of distributing the drug nationwide, this will limit the supply chain difficulties" (*V-138 2011*) (*V-16 2011; V-101 2011; V-138 2011; V-506 2011; V-517 2011; V-529 2011; V-566 2011*).

Rather than supply, some respondents focused on retail prices, suggesting that someone should "monitor the retail prices and try to enforce it. If this is not done, it will soon be out of reach of a lot of people since the price is steadily going up" (*V-114 2011*). Again, a few called for stronger regulation or government statements about retail prices, including "the program could be improved if regulatory bodies put policies to control the prices" (*V-209 2011*) (*V-31 2011; V-61 2011; V-202 2011; V-209 2011; V-508 2011; V-566 2011*). One made the strong recommendation that "the government [should] send out a task force to arrest and punish retailers that sell at high prices" (*V-107 2011*). Another thought the retail price was the purview of professional bodies,

saying "the US$ 0.90 price can only be sustained if the chemical sellers' association agrees for all its members to stay at the recommended retail price" (*V-15 2011*).**********

Basic attributes

Who are these retailers who, aware or not, served as the street-level implementers of the AMFm? As O'Meara and colleagues state in their analysis of antimalarial medicine markets in Kenya, "the retail market of antimalarials is a complicated landscape consisting of many different wholesale-to-retail pathways with varying numbers of links; different types of outlets, ranging from registered pharmacies to general stores; dozens of different types and brands of antimalarials; and widely varying prices" (*O'Meara et al. 2013*). This complicated landscape exists in Ghana, as shown in Figure 22. The behaviors and perceptions of the private-sector retailers within this landscape are generally interesting, given academic and programmatic attention to small- and medium-size firms as well as the role of the private sector in delivering health products, but also specifically interesting because of how they might shape firm behavior in response to the RRP.

A census of antimalarial retailers in and around Tamale located 21 private, for-profit pharmacies and 236 LCSs (as described in Chapter III). Nearly half (43%) of the pharmacies were NHIS-accredited for NHIS reimbursement, such that patients could receive listed medications for free. One LCS was listed as NHIS-accredited.

********** For other suggestions to improve the AMFm, a small number of respondents (n= 7) called for the media campaign and education to be intensified, with some specifically calling for more detailed descriptions of the drugs, the efficacy, the limited side effects, and the subsidy behind their price point, for instance: "I think more education should be done to make people realize that the effectiveness of the expensive drug and the green leaf are the same" (*V-49 2011; V-65 2011; V-201 2011; V-506 2011; V-535 2011; V-545 2011; V-550 2011*). Two respondents called for more workshops to be organized for retailers for further "education" and "motivation" about s-QA.ACT (*V-102 2011; V-535 2011*).

Several (n=11) respondents also said that the program — and specifically the s-QA.ACT pills — could be improved by making the drug more "user-friendly (*V-542 2011*)," reducing the number of pills a patient had to take each time and possibly the length of the treatment course, such as "making the doses 2 or even 1 would be very good for the program since a lot of people are complaining about the quantity (*V-13 2011*)" (*V-17 2011; V-129 2011; V-135 2011; V-138 2011; V-503 2011; V-508 2011; V-510 2011; V-536 2011; V-570 2011*). Two also called for s-QA.ACTs to be made available in suspension or syrup form (*V-167 2011; V-556 2011*).

In Figure 27, I map all of the censused retailers, along with major markets, government health facilities, and private hospitals located in Tamale. The center of Tamale is at the intersection of the five intersecting roads.

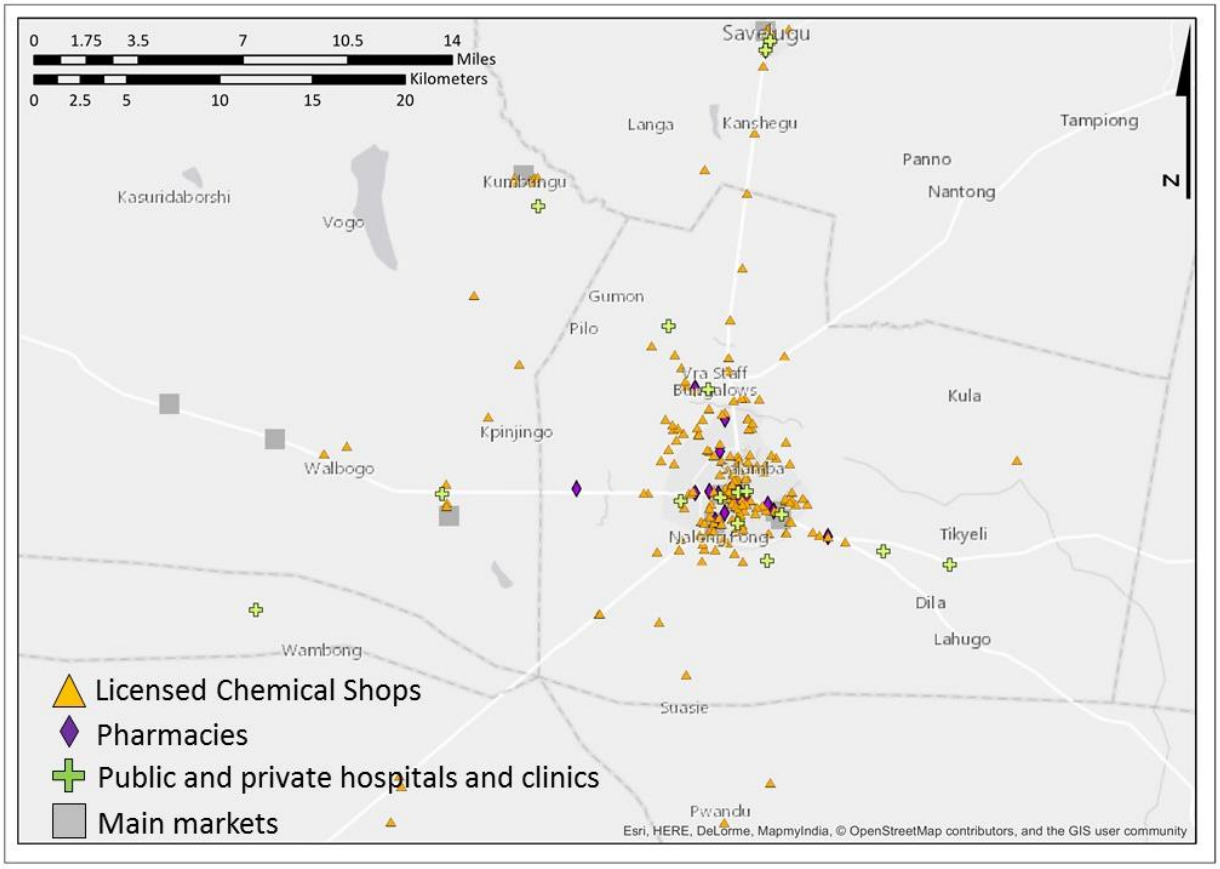


Figure 27: Map of antimalarial retailers and other key landmarks in and around Tamale, Ghana

How do retailers choose locations for their businesses?†††††††††††††††††††††††††† Thirty-seven percent described their location as being where there were no other retailers at the time and 14% pointed out that the location was convenient to (or actually in) their home. Others noted that the location was in some way accessible to customers (whether near to a road (34%), a market (11%), or to hospitals or clinics in hopes of gaining customers with prescriptions (2%)). When retailers were asked to list up to five other retailers – be they pharmacies, LCSs, clinics, or maternity homes – *in this community or area*, they list, on average, 1.72 other retailers. This is shown in Table 13.

One way retailers might choose their locations is through siting guidelines. According to a Pharmacy Council Guidelines and Applications for establishing a new LCS, LCSs are supposed to establish themselves at least 1 kilometer from another pharmacy or LCS (*Pharmacy Council, n.d.; Pharmacy Council 1994*). Figure 27 shows that this is not the case. Indeed, the number of other retailers within a 1-kilometer radius of any shop ranges from 0 to 49, with a mean of 14 and a median of 8 (shown for each shop type in Table 13; pharmacies have significantly more other shops within a 1-kilometer radius than do LCSs).

†††††††††††††††††††††††††† The surveyors asked retailers to describe how they selected the site for their business – an open-ended question that was then coded such that respondents provided up to two reasons for their location (n=159 retailers provided responses).

	Pharmacy		Licensed Chemical Seller		*Difference in means between retailer types*	*Significance, at α=0.5 (two-tailed)*
Characteristic	*Mean*	*Median*	*Mean*	*Median*		
Years in business *(n=252)*	7.7	6.0	8.6	8.0	0.9	0.55
Number of employees *(n=236)*	3.05	3.0	1.24	1.0	1.03	*0.00*
Reports keeping records of stock and/or sales, with "yes" coded as "1" *(n=246)*	0.90	1.0	0.43	0.0	0.47	*0.00*
Reports that "*revenue is usually enough to cover expenses*," with "yes" coded as "1" *(n=231)*	0.93	1.0	0.91	1.0	0.02	0.76
Owner/manager lives in same "*area or community*" as retail shop, with "yes" coded as "1" *(n=243)*	0.17	0.0	0.64	1.0	0.48	*0.00*
Views patrons more as "*clients*" than as "*neighbors*," with "*clients*" coded as "1" *(n=242)*	0.83	1.0	0.78	1.0	0.06	0.56
Distance to nearest retailer, in kilometers *(n=268)*	0.31	0.16	0.44	0.13	0.13	0.39
Number of other shops in within a 1.0-kilometer radius *(n=255)*	20.8	13.0	13.5	7.0	7.3	*0.05*
Number of other shops reported as also "*providing antimalarial drugs in this area/community*," excluding government facilities *(n=242)*	2.0	2.0	1.7	2.0	0.03	0.43
Distance from center of Tamale, in kilometers *(n=255)*	1.37	1.69	4.62	2.88	3.24	*0.00*
Is there a government health facility within 1.5 kilometers? *(n=267)*	0.87	1.0	0.70	1.0	0.16	*0.05*
Retailer considers a government health facility to be "in this area/community" *(n=246)*	0.32	0.0	0.26	0.0	0.06	0.60
Distance to nearest government health facility, in kilometers *(n=266)*	0.69	0.39	1.67	0.94	0.98	*0.00*

Table 13: Basic characteristics of antimalarial retailers in Tamale, Ghana, stratified by retailer type

The retailers had been in operation between 8 months and 35 years with an average of 8.5 years, as shown in Table 13. They ranged from having 0 to 7 employees (additional to the owner/manager), with an average of 1.4 employees; pharmacies had significantly more employees than LCSs.

Forty-six percent reported keeping some form of record of their stock and/or sales (see Table 13), though two specifically noted that these records were not accurate or consistent. The overall average is accordant with the survey of good business practices among small- and medium-sized firms in LMICs conducted by

McKenzie and Woodruff, who find that 49% of these businesses keep any written records (*McKenzie and Woodruff 2015*). Pharmacies were significantly more likely to keep records than LCSs.

Ninety-one percent of retailers answered "yes," their revenues exceeded their costs most months. One noted, "I have never taken the time to work that out; but since we are still in business, we are doing well" (*V-123 2011*).

Researchers of private pharmaceutical manufacturers have suggested that researchers of retailer performance consider more seriously the forces that shape pricing decisions, including social and professional obligations in addition to profit motives (*Van der Geest 1987; Kamat and Nichter 1998; Cross and MacGregor 2010; Kamat and Nyato 2010; Russo and McPake 2010*). These align with scholars' work — as compiled by Tripp — on localized and often small-scale economies in SSA, where markets are embedded in social life and where cooperation and neighborliness are valued equally with competition (*Tripp 2001*). Competition may be minimized or even avoided (*Tripp 2001*).

Considering the above, the survey team investigated how retailers viewed their customers. About 60% of retailers reported that the owner/manager lived in the same community as the shop, which was significantly more the case for LCSs owners than for pharmacy owners. Retailers were split on whether they viewed their patrons as clients or neighbors and how this changed their business practice. Eighty percent mostly viewed them as clients; 20% said "both," or as "neighbors," "friends," "relatives," " family," or, in one effusive case, "not just as my neighbors but as my people" (*V-101 2011*). There is no significant difference between pharmacies and LCSs on their views of patrons as clients or neighbors.

Most retailers (82% of the n=200 answering this question) did not think their view changed their business practice. For those who did think their views influenced practice, the key difference was summed up by one retailer, who viewed "some as neighbors and some as clients. I usually give credit to neighbors; but in the case of clients, you deal strictly with clients" (*V-517 2011*). Twenty retailers agreed that considering patrons as neighbors often meant offering drugs on credit or for free, which could complicate pursuing a

profit or "business principles" (*V-547 2011*). One respondent specifically noted "as a member of the community, sometimes the retailers will sell drugs on a credit basis as his way of a social response to the community" (*V-121 2011*).

This aligns with findings from Palafox *et al* across six countries, in which "retailers in most countries reported considering a consumer's ability to pay when deciding on a price. Several retail respondents even described giving antimalarials away for free of charge when they felt a patient could not afford to purchase treatment" (*Palafox et al. 2015*). A few expressed that this created acute business hardships: one respondent viewed customers "mostly as neighbors, since it was persistent pressure from the neighborhood that necessitated the establishment. I also treat people on credit and this has even accumulated to the tune of US$ 240.00. I usually treat customers on credit and some others don't pay; I currently have 30 people owing me" (*V-535 2011*).

But three others indicated that viewing patrons as neighbors could have positive business effects, some of them being: I view my patrons as being "mostly neighbors. Because of this customers prefer to buy from us and sometimes they leave the more renowned shops in town to buy our drugs due to the personal relations between us and customers" (*V-180 2011*). There are thus both benefits and drawbacks to viewing customers as clients or neighbors, and some retailers suggest that they view different clients in different ways, with possible implications for selling at different prices to different customers. Nevertheless, since retailers always reported a single price for any given antimalarial in stock, as shown below, it seems that they have a general price in mind, from which they might deviate in some cases.

Stocking and mark-ups on antimalarial medication

Antimalarial stock

Almost all the retailers interviewed (99%) considered antimalarial medications important to their business, noting that, for example, "malaria drugs represent 30% to 40% of my distribution. It is a very important part of the drugs I dispense and the most moving drugs among my stock" (*V-158 2011*). Some

retailers clarified that it was especially important during the rainy season, which overlapped with the data collection period for this study.

	Pharmacy		Licensed Chemical Seller		*Difference in means between retailer types*	*Significance, at α=0.5 (two-tailed)*
	Mean	*Median*	*Mean*	*Median*		
Types of antimalarials in stock, overall *(n=248 shop observations)*	4.6	4.0	6.2	5.0	1.5	*0.02*
Types of antimalarials in stock, ACTs (not s-QA.ACTs) *(n=248 shop observations)*	3.8	4.0	2.1	2.0	1.7	*0.00*
Types of antimalarials in stock, SP *(n=250 shop observations)*	1.0	0.0	2.2	2.0	1.2	*0.00*
Types of antimalarials in stock, AMT *(n=250 shops)*	0.61	0.0	0.22	0.0	0.38	0.08
Price of drugs in stock, overall (in US$) *(n=863 antimalarial observations across 185 shop observations)*	2.69	2.70	1.36	1.20	1.33	*0.00*
Mark-up; overall, absolute (in US$) *(n=753 antimalarial observations across 165 shop observations)*	0.59	0.30	0.33	0.30	0.26	*0.00*
Mark-up; overall, percentage *(n=753 antimalarial observations across 165 shop observations)*	37.4%	35.0%	49.3%	42.9%	11.9%-pts	*0.00*
Price of ACTs (not s-QA.ACT) in stock (in US$) *(n=410 ACT price observations across 185 shop observations)*	3.25	3.00	2.17	2.40	1.08	*0.00*
Mark-up; ACT (not s-QA.ACT), absolute (in US$) *(n=365 ACT observations across 165 shop observations)*	0.73	0.65	0.48	0.3	0.25	*0.01*
Mark-up; ACT (not s-QA.ACT), percentage *(n=365 ACT observations across 165 shop observations)*	31.6%	34.2%	32.9%	33.3%	1.3%-pts	0.65
Price of SP in stock (in US$) *(n=345 SP price observations across 185 shop observations)*	0.79	0.30	0.36	0.30	0.43	*0.03*
Mark-up; SP, absolute (in US$) *(n=310 SP observations across 165 shop observations)*	0.20	0.16	0.14	0.12	0.06	0.20
Mark-up; SP, percentage *(n=310 SP observations across 165 shop observations)*	63.2%	57.9%	68.7%	66.7%	5.5%-pts	0.59

Table 14: Antimalarial retailer stocking, prices, and mark-ups in Tamale, stratified by retailer type

I summarize the stocking and mark-up behavior of pharmacies and LCSs in Table 14. Excluding s-QA.ACTs (considered above), respondents reported stocking between zero and thirteen types of antimalarials, with an average of five types in stock. Pharmacies stocked significantly more types of antimalarials than LCSs, significantly more types of ACTs, and significantly less types of SP. Retailers' antimalarial stock included between zero and nine types of ACTs and between zero and eight types of SP, with an average of two types of each. Other types of drugs stocked and recorded as antimalarials included CQ and quinine, Artesunate-monotherapies (AMTs), monotherapies of ACT partner ingredients (such as amodiaquine or

lumefantrine), and herbal preparations. Painkillers and antibiotics were included in the antimalarial audit in a few instances. These data are available on request.

Prices and mark-ups

Prices for ACTs (excluding s-QA.ACTs) in LCSs ranged from an extremely low reported US$ 0.30 up to US$ 4.20; in pharmacies prices ranged from US$ 0.90 to US$ 10.20.[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] The average price charged for ACTs differs significantly across LCSs and pharmacies, with respective mean prices of US$ 2.17 and US$ 3.25. The average price charged for SP also differs significantly across LCSs and pharmacies, though the median prices are the same, at US$ 0.30. The median price for SP aligns with the findings of the IndE for Ghana, which their research team identifies as the "next most popular" antimalarial product on the market (*Independent Evaluation Team 2012*).[§§§§§§§§§§§§§§§§§§§§§§§§§§]

Overall absolute mark-ups on all drugs ranged from US$ 0.03 to US$ 1.20, with percentage mark-ups from 10% to 100%. The average absolute mark-up is US$ 0.33 and the average percentage mark-up is 49%. Percentage mark-ups are calculated as: *[retail price / supply price] – 100%*. That is, a drug retailed for exactly its terminal supply price — the price at which the last supplier sold to a retailer — would have a 0% mark-up (*Patouillard, Hanson, and Goodman 2010*). Note that average absolute mark-ups are higher and percentage mark-ups lower for ACT as compared to SP in both LCSs and pharmacies, with no significant differences across the two retailer types. The finding of differential mark-ups on ACTs versus SP is in line with findings across low-income countries, including in SSA (*Palafox et al. 2015*).

Customer demand

Surveyors asked retailers to list (up to) three drugs they considered to be their "most requested." This reflects the importance of consumer demand and expectations found by other researchers in retailer

[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] All instances of ACTs prices above US$ 4.50 are unsubsidized Coartem©.

[§§§§§§§§§§§§§§§§§§§§§§§§§§] All instances of SP priced above US$ 0.60 are the branded and imported Fansidar© or Metakelfin©. These are identified as "innovator brands" by Goodman *et al*, who finds this to be a significant predictor of price in rural Tanzania (*Goodman et al. 2009*). The authors of a study of consumer preferences in Tanzania (albeit a decade old) suggest that consumers view these brands as different in some way from other SP (*Tarimo and Manyilizu 2006*).

stocking and dispensing medication (*Okeke, Uzochukwu, and Okafor 2006*). Retailers provided n=644 total responses, which are dominated by ACTs (59.5%, inclusive of s-QA.ACTs) and SP (35.4%). The latter are sometimes referred to as the "three-in-one," "the one with the single dose," or "the one with three tablets" (*e.g.* see (*V-18 2011; V-107 2011*)). A small number (2.8%) reported AMTs requested.

Respondents also named their "fastest moving" antimalarial and explained why they thought it sold well. Eighty-eight percent reported an ACT (including s-QA.ACT), with the remainder naming an SP. Those listing an SP attributed its popularity to its low cost (76%), effectiveness (52%), and simple dosing (16%) (this was an open-ended question; respondents' answers could be coded for more than one explanation).********** Having explored what retailers stocked and some indications of why, I now turn to the factors they considered in making themselves competitive (or not) with other retailers.

Competition, collusion, and pricing strategies

Competition

Overall, retailers perceived very few competitors near to them, with a mean of 0.64 other retailers named as competitors.†††††††††††††††††††††††††† Adding in those government facilities considered as competitors‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡ raises the mean number of nearby competitors to 0.68, which differs significantly between pharmacies and LCSs (see Table 15). These findings are lower than in other contexts; in Tanzania, "89% of shops identified at least one competitor. 67% reported as least 2; 44% reported three" (*Larson et al. 2013*).

********** Of those listing an ACT that was *not* an s-QA.ACT (n=8), they attributed its popularity to its effectiveness (n=7) as well as its familiarity (n=2) and lack of side effects (n=2).

†††††††††††††††††††††††††† To arrive at this number, surveyors first asked retailers to name the other shops that are "nearby or in this area" and then for each to state whether it was a competitor. Of those retailers stating that are any shops nearby (n=201), they named 42% of their neighbors as competitors.

‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡ The survey team asked retailers whether they considered a government health facility to be "in this area," and, if so, if they considered it a competitor.

To understand price and non-price competitive strategies of retailers, the survey team asked "*Do you do anything to make yourself competitive with other retailers in this area? What things? Describe in detail.*" Overall, 30% mentioned offering "low," "affordable," or "moderate" prices as one of their strategies, with no significant differences between pharmacies and LCSs. Three LCSs specifically said that this strategy involved matching the prices in the center of town – in "Tamale Central" or selling at "Tamale prices" – such as, "I sell at the price sold in town so that clients don't have to go there to buy and rather buy from me" (*V-81 2011; V-106 2011; V-162 2011*).

	Pharmacy		Licensed Chemical Seller		*Difference in means between retailer types*	*Significance, at α=0.5 (two-tailed)*
	Mean	*Median*	*Mean*	*Median*		
Number of competitors "nearby," including named government health facilities *(n=262)*	0.95	0.5	0.64	0.00	0.31	0.26
If you consider a government health facility to be "nearby," do you consider it as a competitors (1="yes")? *(n=64)*	0.50	0.50	0.24	0.00	0.26	0.31
Compete by having "moderate" or "low" prices (1="yes") *(n=254)*	0.24	0.0	0.31	0.0	0.07	0.48
Compete by stocking "good quality" antimalarial drugs (1="yes") *(n=254)*	0.38	0.0	0.45	0.0	0.07	0.54
Compete by stocking a "wide selection" of antimalarial drugs (1="yes") *(n=254)*	0.10	0.00	0.10	0.00	0.00	0.96
Compete by offering "additional services" (1="yes") *(n=254)*	0.14	0.00	0.03	0.00	0.12	0.15
Compete by "offering drugs on credit" (1="yes") *(n=254)*	0.00	0.00	0.03	0.00	0.03	*0.00*
Compete by having shop "neatness" or "good appearance" (1="yes") *(n=254)*	0.24	0.00	0.02	0.00	0.22	*0.03*
Compete by having "good customer service" (1="yes) *(n=254)*	0.62	1.00	0.42	0.00	0.20	0.09
Compete by having "good relationships" with those around the shop / in the neighborhood (1="yes") *(n=254)*	0.00	0.00	0.04	0.00	0.04	*0.00*
Compete by offering "professional" or "technical" advice (1="yes") *(n=254)*	0.29	0.00	0.15	0.00	0.14	0.19
Compete by doing "nothing" or seeing no need to compete because there are "no other shops in this area" (1="yes") *(n=254)*	0.00	0.00	0.07	0.0	0.07	*0.00*
Report setting retail price based on supplier price (versus using any additional outside information, 1 = "supplier price") *(n=237)*	1.0	1.0	0.85	1.0	0.15	*0.00*
Aware of any price-setting agreements (1="yes") *(n=238)*	0.11	0.00	0.09	0.00	0.02	0.76

Table 15: Reported competitors, competition strategies, and pricing strategies by retailers in Tamale, Ghana, stratified by retailer type

In terms of non-price competition, respondents most commonly (44%) cited "good customer relations." This strategy included "being polite" and "welcoming," having "respect for customers," giving "time" to customers, "listening," "having empathy," putting clients "at ease," and "greeting with a smile" or "friendly faces." One respondent reported, "I am very nice to my clients and try to listen to them while giving them good reasons why they should stick to some drugs. I handle them extremely nicely and believe me, we get customers by that!" (*V-119 2011*). Another elaborated, "I interact with my clients and empathize with them so they get to trust me and always want to buy from me" (*V-532 2011*).

Forty-four percent of respondents also cited having "good," "quality" or "effective" drugs as a key business strategy. Very few elaborated on this strategy; two noted specifically that it meant, to them, not having expired drugs in stock (*V-101 2011; V-121 2011*).

Sixteen percent of respondents reported providing "professional" or "technical" advice; about half of those noted that they were (active or retired) health professionals who worked in at retail shops or dispensed drugs out of their home more informally (*V-9 2011; V-54 2011; V-93 2011; V-110 2011; V-145 2011; V-162 2011; V-210 2011; V-529 2011; V-530 2011; V-531 2011; V-535 2011; V-550 2011; V-556 2011; V-565 2011*). There is no significant difference between whether pharmacies or LCSs reported giving such advice, as shown in Table 15. For other "professional" practices, one mentioned, "we sometimes follow-up with our customers and we also have a medical doctor that we consult to give technical advice. This makes clients have confidence in our drugs" (*V-507 2011*). Another expanded that, "we take the time to investigate into the cause of the symptoms for dispensing, thereby ensuring that the patient attains recovery with a short time. This attracts more clients to us" (*V-209 2011*).

Other than these features, nearly 10% of respondents pointed out that they kept a large or wide stock of antimalarial drugs that met the demands and needs of clients. For instance, one stated "we try to meet their [client] demands by having much drugs in stock" (*V-74 2011*). Attentiveness to consumer demand is in line with other research on antimalarial medicine markets and practices that find that customer requests are a determinant of which drugs are dispensed (*Rusk et al. 2012; Wafula, Miriti, and Goodman 2012*).

About 7% said they did "nothing" to compete and some noted that they had no need to do anything because they were the only shop in the area. Another ~3% each noted that they kept the shop and environment neat ("I keep my shop clean, like not letting dust settle on the drugs" (*V-521 2011*)); that they built good rapport with the wider community ("I attend all the social functions in the community and try to integrate with people, which makes it easier for them to do business with me"(*V-14 2011*)); that

they offered extra services such as home visits and follow-ups, taking blood pressure readings or other vital statistics, performing malaria tests, or administering minor stitches: "most customers know I am a professional. This usually brings them. I also do free blood pressure checks for them" (*V-93 2011*). Others provide drugs at discount or on credit ("I have very good customer relations and sometimes I give discounts to regular customers" (*V-537 2011*)). This last point recalls the findings from Palafox *et al*., which included retailer "willingness to reduce mark-ups in order to offer discounts as a customer retention strategy" (*Palafox et al. 2015*).

Possible price setting

Beyond considering the above factors that retailers may use to be competitive, including in determining their prices, we investigated whether any collusion existed. In work on antimalarial medicine markets in rural Tanzania, Goodman and colleagues note that collusion may occur in the pricing strategies they see and that sub-markets displayed "several characteristics conducive to the maintenance of cartels" (*Goodman et al. 2009*). For the present study, surveyors asked retailers, "*are you aware of any agreements among local retailers about pricing levels? For example, an agreement in which some retailers agree to set the price of a certain drug at a certain level?*"§§§§§§§§§§§§§§§§§§§§§§§§§§§§

Overall, 9% of retailers reported being aware of such an agreement or discussions; this level does not vary significantly by retailer type, as shown in Table 15. A small number of retailers that expanded beyond a "no" answer suggested that such agreements would not exist because of the independence of businesses, such as, "I don't know of any such agreement. Everyone price his or her goods by his own formula" (*V-132 2011*). Others said, "all retailers are very independent when it comes to pricing" (*V-198 2011*) and "a colleague of mine spoke to me about fixing prices in the area, but I rejected the idea" (*V-537 2011*) (*V-198 2011; V-537 2011*).

§§§§§§§§§§§§§§§§§§§§§§§§§§§§ The responses to this question were mixed, which may hint that the wording of the question was off, focusing on "agreements" rather than "discussions" or "deliberations." The question may have also been too vague about the meaning of "local."

A different subset of respondents noted that such discussions and agreements did not happen in their community but "in town," while a few others pointed to quite localized agreements. As an example of the former, one noted, "I do know some retailers in Tamale Town meet to agree on common prices. However… it [is not] practiced in this community" (*V-145 2011*). On the latter, others noted, "yes, we are four retailers who come together to fix prices; we meet twice a month" (*V-14 2011*), that "retailers usually meet other retailers in the community to deliberate on prices" (*V-110 2011*) and that "sometimes we move to each other's stores to have informal discussions about setting the prices" (*V-502 2011*).

Ten respondents pointed out that the local association of chemical sellers play a role in discussing or setting prices: "as members of the Chemical Sellers' Association in Tamale, we sometimes agree on common prices at our meetings" (*V-154 2011*) or "I am not aware of any agreements but prices are commonly deliberated during meetings of chemical sellers" (V-173 2011). When asked about other retailers changing prices, one respondent said, "we have an association with executives so any time such a thing happens, we will complain and disciplinary action can be taken or precautions can be applied. So far people have been persuaded" (*V-167 2011*).**********

Pricing strategies

Eighty-seven percent reported basing their retail price on the supply price and, sometimes, their own particular mark-up formula, including "I add up some little coins on the wholesale price" (*V-4 2011*).†††††††††††††††††††††††††††† Further pricing cues included other retailers and competitors, town prices, the association, or the general market rate: "we generally know that a product is sold around that price

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********** Because questions around licensing and group membership were sensitive, we do not have data specifically on which retailers are members of these local associations.

†††††††††††††††††††††††††††† The question was: "*how do you determine the prices for which you sell your antimalarial drugs? For example, you might look at the prices used by nearby retailers or the distributor might suggest prices to you*."

in the market" (*V-525 2011*) or "we mostly consider the price of the drug in town" (*V-81 2011*).[ǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂ]

Most retailers (97%) reported learning about changes in retail prices in the market from their clients. Illustrating a frequent point, one noted, "most of this information is gotten from the clients. When you mention your price to them, they will draw some comparison" (*V-158 2011*). Few reported visiting other retailers or "pick[ing] our price changes from one another" (*V-211 2011*). This reliance on clients is different from the McKenzie and Woodruff finding (from surveys of good business practices firms in LMICs, including Ghana) that 41% of respondents "visited competitor's business to see prices" (*McKenzie and Woodruff 2015*). It also differs from findings among antimalarial retailers across the six countries considered by Palafox *et al*, including Benin and Nigeria in West Africa: "in most countries, competition was perceived to be intense… Respondents in several countries said they regularly surveyed competitors' prices by visiting other businesses and asking customers what competitors were charging for similar products" (*Palafox et al. 2015*).

One reason that retailers may not survey the market is that, in this sample, most seemed unconcerned about changing their own prices in response to another retailer.[§§§§§§§§§§§§§§§§§§§§§§§§§§§§] Only 11% said they would change their prices in response — since "price is very crucial in determining demand" — with some distinguishing that they would act differently depending if others' prices increased or decreased (*V-529 2011*). Among those who would maintain their prices and expanded on their reasoning, many would do "nothing; I don't know how much he buys for so I do not complain" or "I would not change my price because we may buy it at different prices from different suppliers" (*V-132 2011; V-547 2011*). One respondent stated this more extremely: "we don't care if these prices change, only if our suppliers'

ǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂǂ Surveyors also asked whether suppliers gave instructions or advice about retail pricing. Almost all (96%) respondents said they did not. Only a small number reported that they did, specifically stating, "yes and I take them and it helps" (*V-95 2011*), "yes, and I go strictly according to these prices" (*V-51 2011*), or that "it is usually a suggestion and applies to new drugs that are introduced into the market" (*V-114 2011*).

§§§§§§§§§§§§§§§§§§§§§§§§§§§§ The question was: "*in terms of your prices, what do you do if a neighbor or competitor changes his/her price?*"

change" (*V-61 2011*). Another retailer, expressing a less common sentiment, noted that s/he would not do anything because "we consider the purchasing power of our clients, not other retailers" (*V-91 2011*). Two reported they would report the price change to the association; one said s/he would speak to the other retailer and ask her/him to avoid price changes (*V-49 2011; V-83 2011; V-85 2011; V-167 2011*).

Mirroring the findings above, 91% said others retailers would not respond or that they did not know if retailers would respond.********** Some cited different sources of supply as a reason not to be concerned about the retail prices in other shops changing, saying "we all have our own source of supply and means of doing business" (*V-534 2011*). Those who said retailers might react noted that they might review their own prices, come and complain, or ask about source of supply. A small number said others might be angry because "it is a price we all agreed on" (*V-85 2011*) or that the issue was raised at an association meeting (*V-13 2011; V-14 2011; V-49 2011; V-56 2011; V-85 2011, -85; V-95 2011; V-167 2011; V-536 2011*).

Having considered how retailers think about pricing and competition — including an important role for terminal supply prices — I turn to the terminal sources of supply.

Getting supply

Retailers named up to three of their main suppliers of antimalarial medication; refer back to Figure 22 for the variety of supply options available in Ghana. On average, retailers listed 2.03 suppliers, with pharmacies citing significantly more suppliers than LCSs (Table 16). Almost all retailers (95.1%) included at least one supplier with an operation or outpost in Tamale. Another 9.3% reported also using a supplier or retailer based in Kumasi or Accra. Six percent include another retailer in Tamale as a main supplier, as did 1.6% for a "mobile" or "moto" supplier. Between pharmacies and LCSs, there are significant differences between all of these except for those receiving supply from Accra or Kumasi.

********** The question was: "*if you lowered your prices, would any nearby retailers respond or be angry with you? What would they do?*"

	Pharmacy		Licensed Chemical Seller		*Difference in means between retailer types*	*Significance, at α=0.5 (two-tailed)*
	Mean	*Median*	*Mean*	*Median*		
Count of reported main antimalarial suppliers (up to three listed) *(n=248)*	2.53	3.00	1.99	2.00	0.54	*0.00*
"Main antimalarial supplier" includes a supplier in Tamale *(n=248)*	1.00	1.00	0.95	1.00	0.05	*0.00*
"Main antimalarial supplier" includes a source in Accra or Kumasi *(n=248)*	0.05	0.00	0.10	0.00	0.05	0.47
"Main antimalarial supplier" includes a retailer in Tamale *(n=248)*	0.00	0.00	0.07	0.00	0.07	*0.00*
"Main antimalarial supplier" includes a "mobile supplier" *(n=248)*	0.00	0.00	0.02	0.00	0.02	*0.05*
Percent of "main antimalarial suppliers" that report delivering *(n=248)*	0.53	1.00	0.63	1.00	0.10	0.25

Table 16: Antimalarial supply sources among retailers in Tamale, Ghana, stratified by retailer type

On average, 62% of suppliers named as "main" delivered to retailers, with no significant differences between pharmacies and LCSs. Different retailers reported that suppliers came around daily, weekly, once in two weeks, or monthly and would also respond to specific calls. For instance, with regard to one supplier in Tamale, the retailer reports that they deliver "the very day you call on them or whenever they come on their usual rounds" while another says their supplier makes "right on time" delivery "any time I need supply" (*V-144 2011; V-15 2011*). This delivery and re-stocking was more frequent than reported in other locations, such as rural Tanzania (*Larson et al. 2013*).

Retailers can order before a supplier delivers, or on-demand at time of delivery. One retailer who bought from a Tamale-based supplier said, "I usually make my orders on demand. They come around once a day and each time they come I buy the drugs I require" (*V-14 2011*). Another, who bought from a supplier that delivers from Kumasi, noted, "they come every month to supply drugs and come back later the next month to take their money, so I usually make a list of the drugs I need before they come" (*V-506 2011*). A single supplier may deliver to only a subset of the retailers that makes up its customer base.

Retailers might go to suppliers to pick-up stock for several reasons. First, they might not order enough stock: "I do not have enough money so I only buy a small quantities of drugs" (*V-83 2011*)). Second, they

might purchase irregularly, such as when they have constrained capital to replenish their stock: "we make orders on demand because we don't have enough capital so we need to see in order to go back and buy" (*V-215 2011*). Or, third, they might be off the supply vans' regular routes (*V-145 2011*).

Some retailers bought from mobile suppliers or "moto sellers" – the individual salespeople without stationary shops shown in Figure 22 – who often delivered stock from the larger cities of Kumasi or Accra and might allow the retailer to take stock on credit and pay for it after s/he sold it. One retailer noted, "there are some people who move around [on motos] and supply the malaria drugs. I sometimes buy from them depending on the prices at which they are selling" (*V-138 2011*).

Another justified buying from these sellers saying, that the mobile seller "is easily accessible and does not have a lot of dogmatic procedures. That is why we prefer to take drugs from them. They also have flexible payment" (*V-13 2011*). "Flexible payment" implies allowing the retailer to take the drugs on credit and then repay the supplier after sales. Taking drugs on credit can be important to small retailers. One retailer noted, "I mostly make my orders on demand because they come around every month to make deliveries and take their money; with me, they usually give me drugs on credit" (*V-517 2011*). As already highlighted, credit also matters in stocking s-QA.ACTs. I now turn to retailer perceptions of monitoring and regulation of their businesses.

Regulation

Most retailers in and around Tamale reported that the Food and Drug Board and/or the Pharmacy Council monitored them (61% and 49%, respectively).[††††††††††††††††††††††††††††††] A small number mentioned PSGH or the Ghana Licensed Chemical Sellers Association; 3% said no agency checked them.

Retailers provided the following categories on which they were monitored (open-ended answers were coded for up to three categories, with 220 retailers providing at least one response for a total of n=417

[††††††††††††††††††††††††††††††] The question was: "*if any, which agency (agencies) is in charge of monitoring or regulating this vendor?*"

responses): “cleanliness,” “neatness,” or “hygiene” of the shop and its surroundings (24%); whether any of the drugs in stock were expired (23%); whether the drugs in stock were authorized for sale in Ghana by the specific type of outlet (particularly whether LCSs were selling antibiotics or other prescription-only medications) (18%); the “quality of the drugs” (18%); the presence and validity of the shop’s license (10%); the method of storing drugs (4%); and whether any of the drugs in stock were counterfeit or fake (3%).

Regardless of what a retailer said a monitoring agency looked for, s/he was asked to describe what would happen if a firm did not comply with these standards. Of respondents answering this question (n=214, for a total of n=295 coded responses), 64% felt the shop would be “shut down” or “locked” for “some time.” A few elaborated that “some time” ranged from one week to several months, depending on the nature of the offense or how long it took for the retailer to “agree to comply,” to “commit to standards,” or “convince the council that it has corrected its mistakes and won't repeat them” (*V-28 2011; V-208 2011; V-523 2011; V-547 2011; V-549 2011*). Three more cynical respondents said the duration depended on “connections” or “the ability of the owner to negotiate” (*V-56 2011; V-180 2011; V-552 2011*). One noted, “they [monitoring agencies] go off their regulation to take bribes” (*V-79 2011*).

In addition, 12% said offending drugs (whether expired, fake, “unwholesome,” or not licensed) would be seized and destroyed; 9% thought the shop’s license would be suspended. Another 6% said there would be a fine or penalty and 5% mentioned that the agency might issue a warning. Three percent thought legal action, prosecution, and even jail time may ensue. Whatever penalty/ies the respondent mentioned, one-quarter reported that s/he had seen it applied (including a few who admitted it had happened to them: “I have been a victim of their operation before” (*V-12 2011*)).

Respondents varied in how often, if at all, regulatory agents visited them and whether these visits were frequent enough. One respondent said a way to avoid inspection was to close on the day the agencies were in town and that word travelled quickly when they were (although several respondents pointed out that agencies made “unannounced” or “spontaneous” visits). This retailer lamented, “they are effective because they come twice yearly. Honestly, I wish they did never come around. Any time you see a lot of

drug stores closed for the day, then probably the Pharmacy Council is monitoring" (*V-517 2011*). Another said "when Pharmacy Council is conducting a routine monitoring exercise, word gets around and those who think they have fallen foul will lock their shop and vacate" (*V-527 2011*).

SECTION VII.3: SUMMARY

In this chapter, I reviewed the descriptive case evidence from Ghana's adoption of the AMFm pilot at the end of June 2009 to the end of Phase I at the end of 2011. Following provisional approval by GF in 2009, Ghana needed to design and launch the activities under the umbrella of *Supporting Interventions* (*Global Fund 2009b*). Ghana established the AMFm-CC to carry out these activities, incorporating the many high-level stakeholders involved in implementing the AMFm (*Ghana Country Coordinating Mechanism 2010*). One of AMFm-CC's key achievements was to set an RRP for s-QA.ACTs (US$ 0.90 / GH₵ 1.50), which was communicated through media campaigns and training workshops.

With the first arrival of s-QA.ACTs in Ghana in August 2010, distribution began through FLBs and then across the country, including Northern Region. One year later, GF's AMFm Secretariat began using the demand-shaping levers, cutting the approval of Ghana's orders while the demand (number of orders placed) sky-rocketed (*Independent Evaluation Team 2012*).

Overall, private-sector retailers in and around Tamale considered antimalarials as key to their business. They widely participated in the AMFm — by stocking and selling s-QA.ACTs — and thought highly of the goals of the AMFm. They reported that s-QA.ACTs were in "high demand" and often their "fastest moving" antimalarial. About three-quarters of retailers reported pricing their s-QA.ACTs at (or, in a few cases, below) the RRP. The next chapter, in which I focus on retailer compliance with the RRP, is set against the background of complicated local distribution systems and pricing cues described in this chapter, including shifting sources of supply and fluctuating terminal supplier prices.

CHAPTER VIII: CASE ANALYSIS - PRIVATE RETAILER COMPLIANCE WITH A RECOMMENDED RETAIL PRICE (RRP) IN GHANA'S NORTHERN REGION

SECTION VIII.1: INTRODUCTION

The AMFm in Ghana serves as a case to examine whether and under what conditions an advertised RRP leads to the targeted pricing of health products in the private sector. In this chapter, I assess retailer-reported prices on specific s-QA.ACTs – their performance in complying with the RRP – in relation to the operations and structure of retailers, suppliers, and the context in which both are embedded. This context ranges from local neighborhoods to the existing national-level access architecture as experienced in Tamale in late 2011. While earlier work, including the IndE, has focused on the median price levels for s-QA.ACTs achieved in each pilot country, less work has been done relating these specifically to the nationally decided RRP or examining deviations from it (*Independent Evaluation Team 2012*).

As described in Chapter VII, in Phase I of the AMFm in Ghana, the RRP was communicated through mass media and provider trainings but was not printed on s-QA.ACT packages (*Independent Evaluation Team 2012; Willey et al. 2014*). Among the AMFm pilot sites in SSA, Ghana and Zanzibar performed the best in terms of private-sector awareness of the RRP, reaching 80% at endline (*Willey et al. 2014*). According to the IndE, the median sales price achieved by the endline in Ghana was US$ 0.90, with a median of US$ 0.90 in LCSs and US$ 1.20 in registered pharmacies (adjusted as per the conversation rate of GH₵ 1.67 to US$ 1.00 used in this thesis) (*Independent Evaluation Team 2012; Tougher et al. 2012*). This achievement was just above the benchmark of success for affordability, broadly reflecting compliance with the RRP (*Independent Evaluation Team 2012*). As I described in Chapter VII, the outcomes in Tamale broadly reflect these patterns, with median retail prices at US$ 0.90 but average retail prices creeping towards US$ 1.00 and a subset of retailers (23% of adult-dose s-QA.ACT observations) selling higher than the RRP, usually at US$ 1.20. While this does not represent the massive price gouging that some feared from using the private sector to distribute s-QA.ACT, a US$ 0.30 increase might be a meaningful amount in this context given the retail prices of other antimalarials as well as household purchasing power (see Chapter II).

In this chapter, I use the cross-sectional dataset described in Chapter III, collected from retailers in and around Tamale. This follows on contextual details presented in Chapter VII, drawn from the same dataset. Here, using bivariate and multivariate logistic regression analyses, I explore the factors that correlated with RRP compliance in implementing the AMFm in Tamale, Ghana in late 2011. To begin, I provide a rationale for using RRPs as a way of influencing retail prices in low- and middle income settings. I then motivate this particular analysis and provide a framework to organize the analysis of those factors that may be associated with compliance with the RRP.

RATIONALE FOR THE ANALYSIS: RRPS AND THE AMFM

RATIONALE FOR RRPS

Different approaches exist for shaping and restraining market prices for public health products in the private sector to facilitate patient access.[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] For example, governments can intervene into markets with regulatory measures, using price controls and resale-price maintenance contracts (*e.g.*, maximum retail prices), which are, *de jure*, binding. However, many factors influence whether such government regulation actually binds, such as government failures around policy goals, policy design, and policy implementation (*Roberts and Reich 2011*). The latter can include such issues as whether regulatory legislation is usefully written and whether regulatory agencies have the authority and capacity to do enforce this legislation, insulated from lobbying and bribery while doing so (*Kumaranayake et al. 2003*).

Scholars have shown that regulatory infringements among antimalarial retails in SSA are common, including on the types of medicine stocked and the qualifications of staff (*Goodman, Kachur, et al. 2007*). Where enforcement capacity is weak or not enforced, price regulations may not lead to target retail

[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] International organizations and NGOs that consider the private sector to be important in delivering health products and pursuing public health goals have tested an additional suite of tools. On the supply side, these include social franchising models, supply-chain partnerships with multinational corporations, improved contracting capacity, and scheduled delivery; on the demand side, private sector efforts focus on social marketing and social norming (*Rockefeller Foundation, Results for Development Institute 2008; McCabe et al. 2011*).

prices, as shown explicitly regarding health and pharmaceutical markets in SSA (*Russo and McPake 2010; Palafox et al. 2015*).

As a supplement or complement to government price regulations, researchers have posited that giving consumers information on provider pricing can help to overcome regulatory failures (*Kumaranayake et al. 2003*). RRPs provide a non-binding, public recommendation on sales price, which partially corrects information asymmetry that exists when a retailer knows the true price and a patient/consumer does not (*Lubensky 2011*). RRPs can enable consumer and social oversight at the retailer level by providing true prices; RRPs were suggested early on as one way forward for the AMFm (*Goodman et al. 2009; Patouillard, Hanson, and Goodman 2010*). For RRPs to be most effective, both retailers and consumers must be aware of the price and consumers must be able to use either "voice" or "exit" to challenge non-compliant retailers (*Hirschman 1970*).[§§§§§§§§§§§§§§§§§§§§§§§§§§§§] Exit requires the availability of reasonable alternative sources of antimalarial medication, which may not exist if a retailer wields monopolistic or oligopolistic power.

RATIONALE FOR THE ANALYSIS AND KEY HYPOTHESES

In this analysis, I focus on compliance with the RRP and the factors that predict it.[**********]

The preliminary evidence from the AMFm is broadly positive as to whether the combination of lowered prices and Supporting Interventions increased use (*Cohen et al. 2013; Fink et al. 2014; Morris et al. 2014; Thomson et al. 2014*). This is encouraging but still requires exploration of why retailers may opt not to comply. The broad retailer awareness of the RRP in Ghana suggests that pricing at US$ 0.90 or US$ 1.20 is indeed an explicit decision by retailers. A decision in response *to what* is the subject of this chapter.

§§§§§§§§§§§§§§§§§§§§§§§§§§§§ RRPs may also inadvertently set a price floor above the one that market forces alone may have determined (*Patouillard, Hanson, and Goodman 2010*).

********** This sets aside the important questions of whether the RRP reflects a price-point that is affordable in the applied context and whether it stimulates broad, equitable, and appropriate use of ACTs.

To date, the existing evidence on more general compliance with RRPs for health products is limited and mixed, with variations across products and context. This has been the case with the social marketing work of the large international health NGO PSI, which uses RRPs (set by PSI in consultation with Ministries of Health) in efforts to increase access to health products such as condoms and soap in the private sector (*PSI 2008; PSI 2010b; PSI 2010a; PSI 2010c; Piot 2015*). In addition, researchers used RRPs in the small operational pilot programs of ACT subsidies in Senegal, Tanzania and Cambodia, again with varied compliance outcomes (*Patouillard, Hanson, and Goodman 2010*).

Given the potential, but also possible problems, of the private sector in delivering public health products, including the possibility for an RRP to shape market prices, it is important to explore whether and how the private sector complies with such recommendations and, more generally, achieve social welfare outcomes (*Conteh and Hanson 2003*). Understanding retailer compliance with the AMFm RRP is specifically important because of repeated concerns from global stakeholders that subsidies would be captured in the supply chain (as additional profit) rather than passed on to patient-consumers as lowered prices (*Tougher et al. 2014*). Such reasons were a key point of opposition to implementing the AMFm or using the private sector to deliver a public good, as described in Chapter IV. While pricing benchmarks were met in most Phase I countries, including Ghana, there is some evidence of subsidy capture (*Independent Evaluation Team 2012; Tougher et al. 2014*).

Beyond broadly trying to understand the factors associated with non-compliance given a well-advertised RRP, I explore two specific *ex ante* hypotheses, set prior to data collection. The first, related to horizontal competition, follows on the work by Catherine Goodman and colleagues on the effect of market structure on antimalarial medicine stocking and pricing outcomes in rural Tanzania (*Goodman 2004; Goodman et al. 2009*). Where retailers are distant from other drug sellers, researchers predict they have higher power to set their own prices and, therefore, are less likely to comply with the RRP. In this case, I focus on the number of perceived nearby competitors.

The second hypothesis relates to whether retailers react to their sense of regulatory enforcement, even though an RRP is, by definition, not enforced. One of the innovations of the AMFm mechanism was the "hands-off" approach taken supply, with no additional intervention into distribution, stocking, and pricing with existing public and private sector retail supply chains (*Fink et al. 2014*). There were not official sanctions if a retailer opted to sell above the RRP. Nevertheless, with plans for increased (quarterly) retail monitoring by the Pharmacy Council (contracted with NMCP to do this work) to provide data for the Global Fund on the AMFm, retailers might believe that retail prices were being watched more strictly than they actually were (*K. L. Malm et al. 2013*). If so, and if retailers have witnessed or experienced regulatory action in general, they may be more likely to comply with the RRP for the AMFm.

Considered in hindsight, this hypothesis could also go the other way: having seen regulation enforced, agents may decide the penalties are bearable (as in, *e.g.*, (*Gneezy and Rustichini 2000*)) or they may be aware of how to game the system. In both cases, retailers that had witnessed regulatory action may be more likely to price above the RRP. Also, recall from Chapter VII that no retailers reported thinking that regulatory sanctions could result from charging above the RRP. Nevertheless, my early expectation was — in line with a broad deterrence hypothesis about the influence of witnessing negative sanctions on subsequent behavior — that retailers reporting having seen regulation enforced would be more likely to comply with the RRP (*Bandura 1969; Tittle and Logan 1973*).

In the next section, I lay out an organizing framework for thinking about the effect of RRPs on retail prices, which guides the selection of variables for inclusion in the analysis. In Section VIII.3 I provide the analytic methods, including the coding of key variables. In Section VIII.4, I present the findings. In Section VIII.5, I discuss the findings and the limitations of the study and offer conclusions that may be relevant for future research and practice on achieving access for public health products.

SECTION VIII.2: ORGANIZING FRAMEWORK, EXISTING EVIDENCE, AND OPERATIONALIZATION

The basic research question addressed in this paper is: *what factors correlate with retailer non-compliance with the AMFm's RRP for a specific s-QA.ACT in Northern Region, Ghana*? I take compliance — the key outcome of interest in this analysis — to be any retail price equal to or below the RRP, that is, US$ 0.90 or GH₵ 1.50. The RRP is an absolute number set by Ghana's AMFm-CC.; the GF's success benchmarks used a relative value for the affordability target, with success defined as s-QA.ACTs retailing for a price equal to or less than three times the median price of the next-most popular antimalarial on the market; in Ghana's case, this is SP (*Schäferhoff and Yamey 2011; Independent Evaluation Team 2012*). Given that the reported median retail price of SP in Ghana was US$ 0.30 in both the IndE and in these Tamale data, the RRP of US$ 0.90 and the upper bound of success for affordability (three times US$ 0.30) are equal. GF did not have set target prices (relative or absolute) at any other points along the supply chain.

I draw specific explanatory and control factors I consider from an existing organizing framework that explains market performance outcomes — such as retail prices and, in this case, whether these prices match the RRP — using the structure of supplier and retailer markets as well as the conduct of retailers, suppliers, and consumers within their economic, regulatory (*de jure* and *perceived*), and social environments (*Goodman 2004; Frost and Reich 2008; Patouillard 2012*).

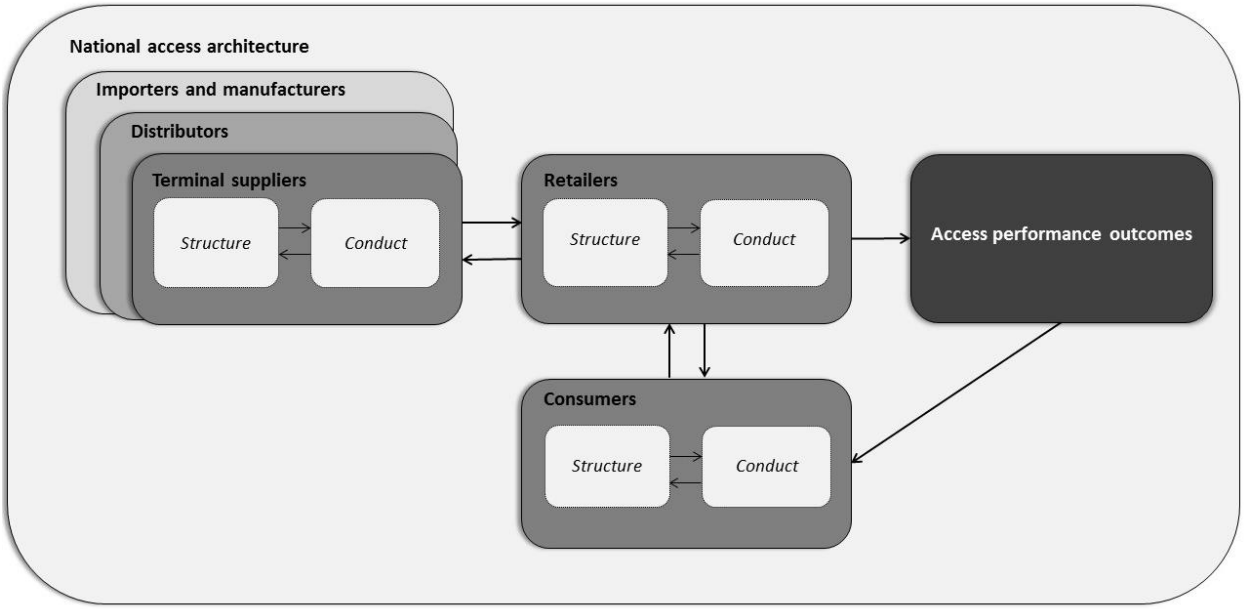

Figure 28: Structure and conduct factors shaping retailer performance with regard to health product access in the for-profit sector

A basic structure-conduct-performance (SCP) framework, as shown in Table 25, is derived from the industrial organization literature regarding how sector outcomes, such as price, are influenced by the structure of market power of that sector and the conduct of firms within the sector (*Tirole 1988*). The version used here suggests that structure and conduct mutually affect each other (*Scherer and Ross 1990*). A series of scholars have tailored an SCP framework to analyze the achievement of private-sector access for public health products, including for pharmaceuticals, in low- and middle-income countries (*Conteh and Hanson 2003; Goodman 2004; Russo and McPake 2010; Patouillard 2012; Palafox et al. 2015*). I build on this work and make two additional changes to the framework. First, I interpret structure more broadly than only market structure, accounting for epidemiological and social structures to better account for the social and public health context. Second, I give perceptions a role in conduct.

I provide, in Figure 29, a more detailed version of the framework, including the key constructs used in this analysis. Many of the key performance outcomes in the SCP framework, as the scholars mentioned above have shown, correspond with the success benchmarks designed for the AMFm; this analysis focuses on price, as considered in relation to the RRP (*Schäferhoff and Yamey 2011*). The two key explanatory

constructs are both underlined and in bold in Figure 29: perceived horizontal competition and seen enforcement. Constructs that are considered in the analysis as control variables are bolded, including the shop's license type and shop size, its location, the stock breadth and specific products type available, and the mark-up behavior of the retailer. Later in the analysis, I consider the terminal supply price (a supplier conduct variable as a stratifying variable, motivated by the framework and by the descriptive results from the data presented in Chapter VII. I operationalize these variables in the next section, on methods.

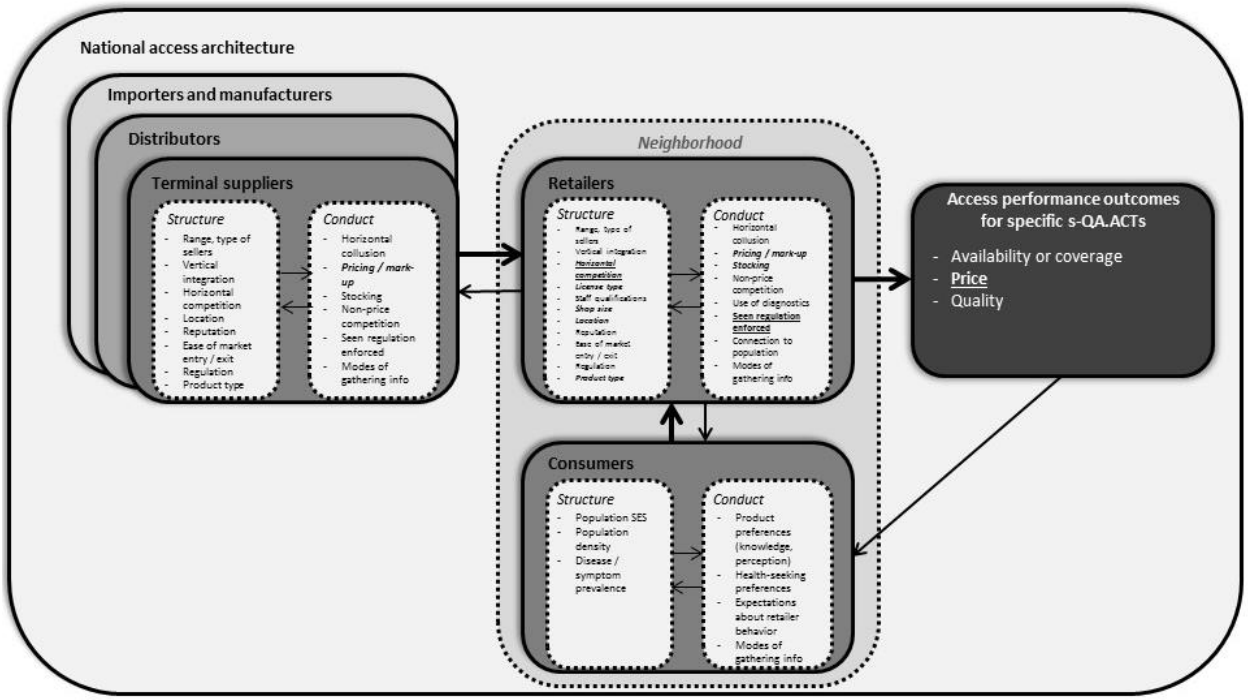

Figure 29: Expanded structure-conduct-performance framework, with specific regard to AMFm

This framework overlaps with a basic depiction of the relevant private-sector supply chain, shown in Figure 30. This is a simplified version of Figure 22 (in Chapter VII). Because the functions of importing, distributing, and retailing are not always separated into discrete businesses, the intermediate suppliers are depicted as sometimes overlapping with both First-Line Buyers and sometimes with terminal suppliers. They may overlap with retailers as well; this is not shown for the sake of the image's clarity.

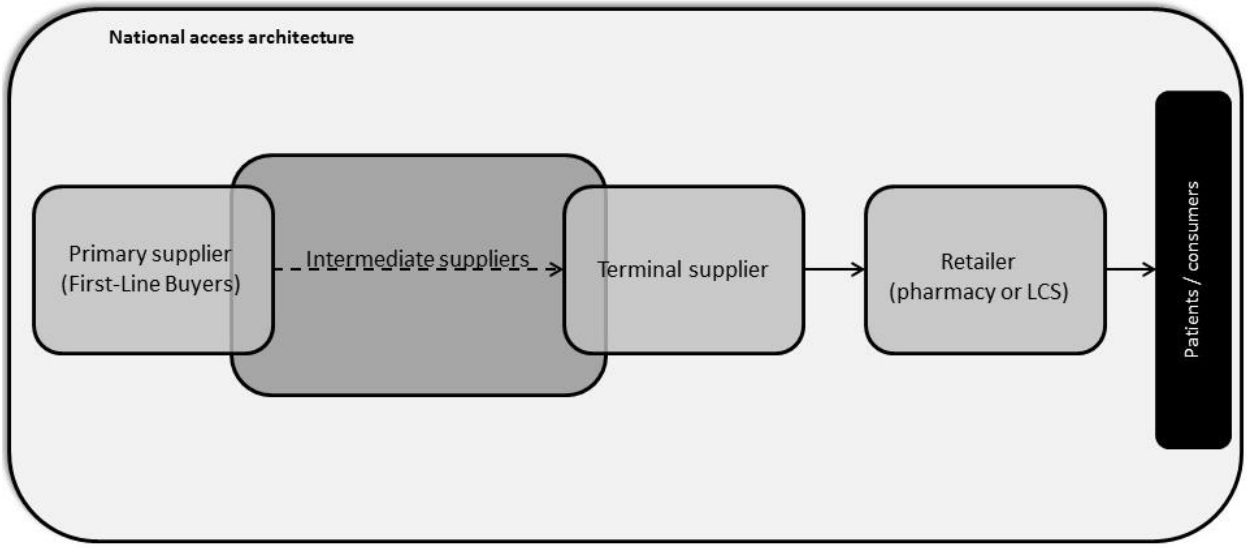

Figure 30: Simplified private-sector supply chain for the AMFm in Ghana

SECTION VIII.3: ANALYTIC METHODS

In this section, I outline the variables included in the analysis. I present the descriptive statistics for each of these in Table 17, explain their construction, and justify their inclusion below. The questionnaire that generated these data appears in Appendix D.

Variable N, shop-level = 170 N, drug-level = 242	**Mean or percent**	**Standard deviation**
Key outcome variable: drug level		
RRP non-compliance: Retailer does *not* comply with Ghana's RRP for a given s-QA.ACT ("not comply" coded as "1;" RRP is US$ 0.9 / GHC 1.5)	15.70%	0.37
Key explanatory variables: shop level		
Perceived competition: Number of listed private-sector retailers competitors "nearby or in this area"	0.58	0.95
Seen regulation enforcement ("seen disciplinary action before" coded as "1")	22.35%	0.42
Control variables: *retail structure* *(in S vector in equation)*		
Shop level		
License type: pharmacy or Licensed Chemical Seller ("pharmacy"" coded as "1")	6.47%	0.25
NHIS accreditation: Retailer is accredited by Ghana's National Health Insurance Scheme ("yes" coded as "1")	2.94%	0.17
Duration of firm: Number of years retailer has been in operation (in years)	9.2	6.24
Referrals: Five or more other retailers refer patients here ("yes" coded as "1")	5.29%	0.22
Shop size: Number of employees (staff additional to the owner)	1.52	1.08
Distance to town: Distance to the center Tamale's main market (in kilometers)	4.57	6.07
Drug level		
Product type: s-QA.ACT is AA formulation rather than AL ("AA" coded as "1")	9.92%	0.30
Control variables: *retail conduct* *(in C vector in equation)*		
Shop level		
Written records: Retail keeps written records of stock and/or sales ("yes" coded as "1")	53.25%	0.25
Cover expenses: Retailer reports that revenues "usually cover expenses" ("yes" coded as "1")	93.63%	0.50
Low prices: Retailer says that "offering moderate/low prices" is a competitive strategy ("yes" coded as "1")	37.06%	0.48
Antimalarial stock: Count of types of antimalarial drugs in stock on day of interview, exclusive of s-QA.ACTs	4.99	2.14
s-QA.ACT stock: Count of types of s-QA.ACT in stock on day of interview	1.46	0.88

Table 17: Descriptive statistics of key shop- and drug-level variables used in the main analysis

DEPENDENT VARIABLE

RRP non-compliance is measured as a self-reported retail price above the AMFm RRP in Ghana. The dependent variable is, therefore, a drug-level variable and different s-QA.ACTs within a single shop may be coded as compliant or non-compliant. For a specific s-QA.ACT in a specific shop, coding compliance is recorded as "0" and non-compliance as "1." For any given s-QA.ACT brand in stock, the retailer reported a single price, which is what is coded for this analysis. Limitations of this approach are considered at the end of the chapter.

The analysis is restricted to median reported retail prices of the upper two weight bands available for each brand of s-QA.ACT. Each brand included four different weight — meaning a strength depending on the weight of the patient — bands, except Arsuamoon© (an AA formulation), which had three. The decision to only examine the upper weight bands reflects both limited stocking of the lower two weight bands as well as surveyor uncertainty that all retailers clearly understood the differences between the different strengths of s-QA.ACTs available. Overall, only eleven s-QA.ACT observations for which retailers provided prices were strictly of the lower two weight bands and are, therefore, not included in the analysis.

KEY INDEPENDENT VARIABLES

Both of the key independent variables in this analysis are shop-level variables. The analytic sample is restricted so that there are no missing values for these variables, nor for the dependent variable. For control variables, I impute missing values using the mean value for the variable in the analytic sample. Logistic regression is used for all analyses; therefore, the key outcome of interest is an odds ratio associating the key explanatory variables with non-compliance with the RRP.

RETAILER STRUCTURE: PERCEIVED HORIZONTAL COMPETITION††††††††††††††††††††††††††††††

For this analysis, perceived competition is operationalized as the number of competitors a retailer reported as being "nearby" or "in this area." I constructed this variable from a two-part questionnaire item (also described in Table 13 and Table 15), which first asked retailers to list all the retailers they considered to be in the area and then, for each identified retailer, to clarify whether they were a competitor, another branch of the same shop, or not a competitor. I took the count of those named as competitors as the measure for this analysis.

†††††††††††††††††††††††††††††† As I was unable to carry out full retail audits and calculate sales volumes and market shares for this project, I refer to horizontal competition as the closeness or density of retailers within a market, rather than reflecting on the concentration of market power within a market, as has been done in other work (*Goodman et al. 2009*).

Broadly, the more retailers — or the number of competitors — in a given market, the lower and more consistent their prices for a given product should be equal. In this case, the hypothesis is that the greater the number of nearby competitors a retailer perceives him- or herself to have, the more likely that retailer will be to comply with the RRP. That is, with non-compliance coded as "1" and compliance as "0," the expected direction of the sign on the coefficient is negative.

Retailer conduct: Seen regulation enforcement

The survey team asked retailers a series of questions about monitoring and regulation, as also described in the sub-section of Chapter VII on "Regulation." This series of questions culminates in the binary variable used to operationalize seen regulation enforcement for this analysis. First, retailers identified the major agencies they felt monitored or regulated their business. Second, when retailers identified any agency, surveyors asked for a description of what the agency monitored and what penalty would be exacted if a retailer was found to have deviated from mandated practice. Finally, surveyors asked retailers whether or not they had ever seen their stated penalty enforced. This answer, having ever seen regulation enforced, is coded as a binary for this analysis, with "never seen" coded as "0" and "seen" coded as "1."

We expected that those who have seen enforcement exacted would have a higher sense of the consequences of enforcement and, as a result, be more likely to comply with the RRP. That is, given the coding of non-compliance, we expected the sign on the coefficient to be negative.

Additional control variables

Retailer structure

Seven structure variables are included in the analysis as basic controls (these are also shown in Table 17). To capture license type I include variables on, first, whether the shop is a pharmacy or an LCS and, second, whether the shop (a pharmacy in all cases but one) has NHIS accreditation to dispense medication and be reimbursed. Both of these variables were generated from the interviewer's assessment of the shop, including asking whether the shop was a pharmacy and looking for an identifying insignia or sign of NHIS accreditation. (Recall that in Ghana, both pharmacies and LCSs have legal permission to sell ACTs and,

therefore, s-QA.ACTs.) Because of some sensitivities around asking to see a license, it is likely that the "LCS" category in this analysis also contains some unlicensed chemical sellers, often — though not always — health professionals such as nurses who have a small shop or distribute medicines out of their home. In rural Tanzania, type of retail shop significantly predicted retail prices (*Goodman et al. 2009*).

Third, to capture a dimension of shop size, I include a count of the number of employees, as also used by O'Meara and colleagues to study predictors of stocking s-QA.ACTs in western Kenya (*O'Meara et al. 2013*). Fourth, to capture the duration of firm of a retailer, possibly linked to elements of reputation, I include the number of years that the shop has been in operation. Fifth, as an additional variable to capture dimensions of reputation, I include a dummy for referrals, representing whether or not five or more other retailers say that they would refer a customer to that retailer if they did not have the medicine the customer wanted.

Sixth, I include the distance to town (in kilometers) of a retailer from the Tamale main market, itself is at the center of the city. An on-going concern with the AMFm mechanism is that more remote shops — because of high transport costs, limited information access, limited competition, or limited oversight — are less likely to comply with an RRP. Though different measures of remoteness have not been shown to be associated with s-QA.ACT pricing in Ghana or other countries, the variable is included for thoroughness (*Independent Evaluation Team 2012; Yadav et al. 2012; Ye et al. 2015*).

Finally, seventh, as a drug-level control reflecting product type, I include a dummy for whether the s-QA.ACT in question is an AA (of which two brands were available) or AL (of which there four brands were available) formulation. Overall, AA s-QA.ACTs were less common on the market in Tamale — making up 13% of total s-QA.ACT market observations (see Table 14) — and some retailers expressed difficulty in finding them to sell (*V-114 2011; V-155 2011; V-531 2011*). In addition to this differential supply, there is suggestive evidence of differential demand, perhaps reflecting the initial early launch of AA as the first-line antimalarial treatment in Ghana, described in Chapter IV. For example, one retailer reported "clients do not like AA" while another called for "sensitization on the AA brands of [s-QA.ACT] because the

perception of side effects makes a lot of clients refuse to take it" (*V-73 2011; V-506 2011*). A preference for AL over AA is also reflected in other studies in SSA (*Sears et al. 2013; Ezenduka et al. 2014*).

RETAIL CONDUCT

Five conduct variables are also included as controls for this analysis; all are shop-level variables. First, as a reflection of basic good business practice, I include a binary variable for whether or not the retailer reports keeping written records of stock and/or sales (*McKenzie and Woodruff 2015*). Second, and again to capture basic business conduct, I include a binary variable on cover expenses, which reflects the answer to the questionnaire item "is *your revenue usually enough to cover your expenses?*"

Third, I construct a low prices variable reflecting "price and non-price competitive strategies" from the open-ended question "*what, if anything, do you do to make yourself competitive with other retailers in this area? What things? Describe in detail*," also described in Table 15. For this analysis, I use a binary variable created to represent price competitive strategies strategy, coding as "1" if the retailer included a statement about "low" or "affordable" prices and "0" otherwise. Note that this reflects a retailer's overall stated strategies and does not adjust for how a retailer might respond to any individual client.

The final two conduct variables relate to stocking. Fourth, I include a variable that reflects antimalarial stock: the number of different types of antimalarials a retailer had in stock in at the time of the interview – in addition to stocking behavior, this could also be taken a rough proxy of shop size. In the count used to construct the variable, different "types" reflects both brand and formulation such that, for example, the ACT Lonart© is represented twice if the retailer stocks both Lonart Forte© and Lonart DS©. The maximum number stocked by any retailer by this measure is thirteen. Fifth, to capture specific s-QA.ACT stock, I include a count of the number of the six possible brands of s-QA.ACT a retailer has at the time of the interview. This only reflects a count of brand, not of the different weight bands of each, and so ranges from one to six.

BASIC CONTROLS

In the analysis, I include an interviewer dummy to represent one of the five interviewers that could have conducted a given survey. Different surveyors may have inspired different amounts of rapport and trust in eliciting answers about regulation and about pricing. In addition, given the background trends of "demand-shaping levers" and potential time patterns described in Chapter VII, a month dummy is included for each month of the interview in the analysis.

MAIN EQUATION

The main estimating equation is a logistic regression to predict the binary outcome of non-compliance with the RRP, which is specific to the particular s-QA.ACT (*d*) price reported for a given shop (s) in a given month (*m*) in a specific interaction with an interviewer (*i*). The key independent variables are the number of perceived competitors for a retailer and whether that retailer reports ever seeing regulation enforced — that is, they are shop-level variables while the dependent variable is reported at the drug-level. The controls include a vector of variables related to retailer structure and another related to retailer conduct, as described above; for retailer structure, some variables are shop-level and some are drug-level. Dummies for both the month of the interview and the interviewer are also included. Standard errors are clustered at the shop level, as there can multiple s-QA.ACT-price observations per retail shop.

$$RRPnoncompliance_{dsmi} = \alpha + \beta_1 perceivedcompetition_s + \beta_2 seenenforcement_s + \boldsymbol{S}_{(d)(s)} + \boldsymbol{C}_{((s)} + month_m + interviewer_i + \varepsilon_{dsmi}$$

SECTION VIII.4: ANALYTIC FINDINGS

RESULTS: BASIC

A central finding of this analysis is the low level of RRP non-compliance —about 16% — the course of the study in this analytic sample, at about overall, ranging from a high of 24% non-compliance in August to a low of 8% non-compliance in November, shown on the secondary vertical axis in Figure 31. As in the IndE,

the median price stays steady at the RRP, US$ 0.90 (shown in large, stand-alone diamonds on the primary vertical access in Figure 31; means of the analytic sample are shown with shaded standard deviations).

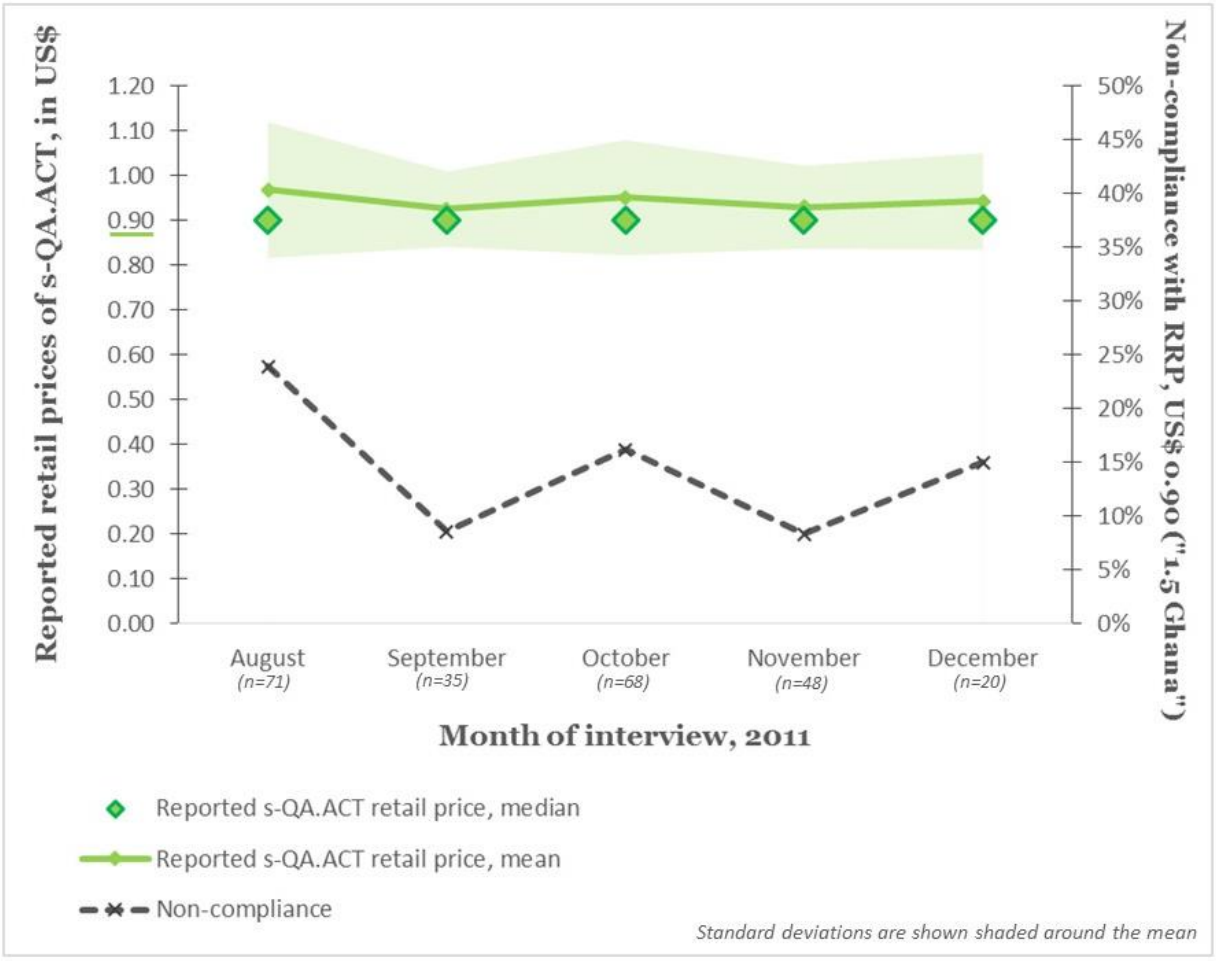

Figure 31: s.QA.ACTs price levels and non-compliance with RRP, by month of study (n=242)

RESULTS: BIVARIATE AND MULTIVARIATE LOGISTIC REGRESSION

In the basic bivariate relationships, shown in Table 18, there is no statistically significant association between perceived number of competitors and retailer non-compliance. There is a significant association between seen enforcement and retailer non-compliance, such that a retailer who has seen some regulation enforced has two times *lower* odds of complying than a retailer who does not report seeing such enforcement. This significant relationship holds in the full model; the dummies for December and one interviewer drop for collinearity.

Outcome: non-compliance with RRP (N=241) *All standard errors clustered at the shop-level, n=159*	Unadjusted ORs *(Confidence interval)*						Adjusted ORs *(Confidence interval)*		
Bivariate relationships									
Perceived competition	+	**0.31** *(-0.190 - 0.815)*							
Perceived regulatory threat			+	**2.07** *(1.09 - 3.058)*	***				
Simple model, *perceived competition + perceived regulatory threat*									
Perceived competition					+	**0.29** *(-0.118 - 0.699)*			
Perceived regulatory threat					+	**2.06** *(1.105 - 3.018)*	***		
Full model, *12 controls + dummies for interview month and interviewer*									
Perceived competition							-	**0.01** *(-0.593 - 0.582)*	
Perceived regulatory threat							+	2.91 *(1.374-4.489)*	***
****p ≤ 0.01* ***p ≤ 0.05* **p ≤ 0.10*									

Table 18: Association of retailer structure and conduct features with non-compliance with Ghana's RRP for s-QA.ACTs

RESULTS: CONSIDERATIONS BY TERMINAL SUPPLIER PRICE

Given the importance retailers themselves placed on terminal supply prices (as detailed in Chapter VII), and to further explore how we might explain retailer non-compliance, I repeat the above analysis, dividing the sample based on terminal supply price (US$ 0.60 and below, US$ 0.61 and above) and then by the calculated absolute mark-up (US$ 0.30 and below, US$ 0.31 and above).

When the terminal supply price is reported as US$ 0.60 or less (n=158), non-compliance with the RRP drops to 5%. At a terminal supply price of US$ 0.61 or above (n=84), non-compliance is 36%. In a t-test of means, these differences are significant at *p<0.000*.

In the multivariate model for terminal supply prices ≤ US$ 0.60, to retain observations and because of variables dropped due to collinearity, only the following controls are used: years of shop operation,

whether five or more other retailers refer to this shop, the number of employees, distance to Tamale town center, whether the drug is AA, and the count of both all antimalarial and s-QA.ACT stock. I present these results in Table 19. In the multivariate model for US$ > 0.60, the dummies for December and one of the interviewers are dropped for collinearity (see Table 19 below).

Outcome: non-compliance with RRP		Adjusted ORs (Confidence interval)	
Terminal supply price ≤ US$ 0.60 -- Full model, *7 controls (N=158; All standard errors clustered at the shop-level, n=113)*			
Perceived competition	+	0.012 (0.408 - 0.432)	
Seen regulation enforced	+	1.91 (0.459 - 3.367)	*
Terminal supply price > US$ 0.60 -- Full model, *12 controls + dummies for interview month and interviewer (N=84; All standard errors clustered at the shop-level, n=61)*			
Perceived competition	-	0.982 (-2.542 - 0.576)	
Seen regulation enforced	+	3.19 (-2.05 - 8.42)	
***p ≤ 0.01 **p ≤ 0.05 *p ≤ 0.10			

Table 19: Association of retailer structure and conduct features with non-compliance with Ghana's RRP for s-QA.ACTs, *split by terminal supply price*

SECTION VIII.5: DISCUSSION AND CONCLUSION

This analysis contributes to the small but growing literature rigorously relating features of retail market structure and conduct in poor countries to retailer decisions about stocking, pricing, mark-ups and, in this case, compliance with an RRP (*Goodman et al. 2009; Patouillard 2012*). This represents the first such study in Ghana (or in West Africa) and supplements s-QA.ACT availability and price findings from the AMFm IndE (*Independent Evaluation Team 2012*).

DISCUSSION

KEY TAKEAWAY I

Overall, compliance with the RRP is reasonably high – 16% in this analytic sample and 23% in the larger sample of shops stocking s-QA.ACTs and prices on them (the latter is reported in Chapter VII). This

confirms, in a localized census sample, the findings from the representative IndE across Ghana, given that the RRP also represented the retail price-point targeted by GF under its benchmarks of success.

KEY TAKEAWAY II

Retailers fail to comply with the RRP in a specific way: by charging US$ 1.20 rather than US$ 0.90. One the one hand, this is good news, as a US$ 0.30 increase does not represent the massive price gouging predicted for utilizing the private sector as a delivery mechanism. Nevertheless, US$ 0.30 is a meaningful amount in a low-income context like northern Ghana and represents a price that is four times, rather than three times, the price of commonly available SP formulations. In this sample, as in Chapter VII, retailers were largely aware of the RRP and had to make a conscious decision about their price-point knowing that consumers also knew the RRP. When they charged above the RRP, they usually jumped to a retail price of US$ 1.20 (*2.0 Ghana*) in response to a US$ 0.07 or US$ 0.14 increase in the terminal supply price. This lumpy pricing may be unsurprising intuitively to anyone faced with making change in Ghana — but it is also not fully predicted by retailers' pricing strategies for other antimalarials, as reported in Chapter VII (see Table 14 and the sub-section on prices and mark-ups). For example, retailers reported selling SP for both US$ 0.30 and US$ 0.36.

KEY TAKEAWAY III

When an RRP is in place and supply prices rise, it is the street-level implementers – the retailers – who have to decide to forfeit profit (get squeezed) or to fail to comply and charge above the RRP. While it is never made explicit in documentation, it is implied that the AMFm-CC, in setting the RRP at US$ 0.90, expected the terminal supply price to be US$ 0.60. It may not have been anticipated that there would be variation in the terminal supply price, to which retailers would have to respond.

KEY TAKEAWAY IV

Perceived competition does not influence compliance in this context of a widely advertised RRP. If anything, the result is not in the expected direction, with an increase in the number of listed competitors *increasing* the odds of non-compliance. This finding is robust to whether the number of perceived

competitors is increased to reflect whether the respondent identifies as government health facility as "nearby" and a competitor.

The finding is also robust to spatial considerations. There is no meaningful correlation found in these data between the number of a retailer's perceived competitors and the actual number of retailers within a given radius, including 3km (a commonly used distance in studies of antimalarial markets in SSA) and 1km (reflecting the Pharmacy Council's rules about distances between LCSs). There is also no correlation between the number of perceived "nearby" competitors and the distance to the nearest retailer which is, on average, 0.43 kilometers in this sample.

Moreover, there is no correlation between any of the spatial variables considered above these spatial variables and the outcome of non-compliance, as is also suggested by the maps in Figure 32 and Figure 33. In other studies, sited in rural East Africa, retailer density predicted s-QA.ACT stocking practices but pricing was not explored (*Larson et al. 2013; O'Meara et al. 2013*). When markets are constructed based on administrative units and customer shopping patterns, rather than fixed radii, and market power is assessed through sales volumes, it is predictive of antimalarial pricing patterns, in rural East Africa (*Goodman et al. 2009*).

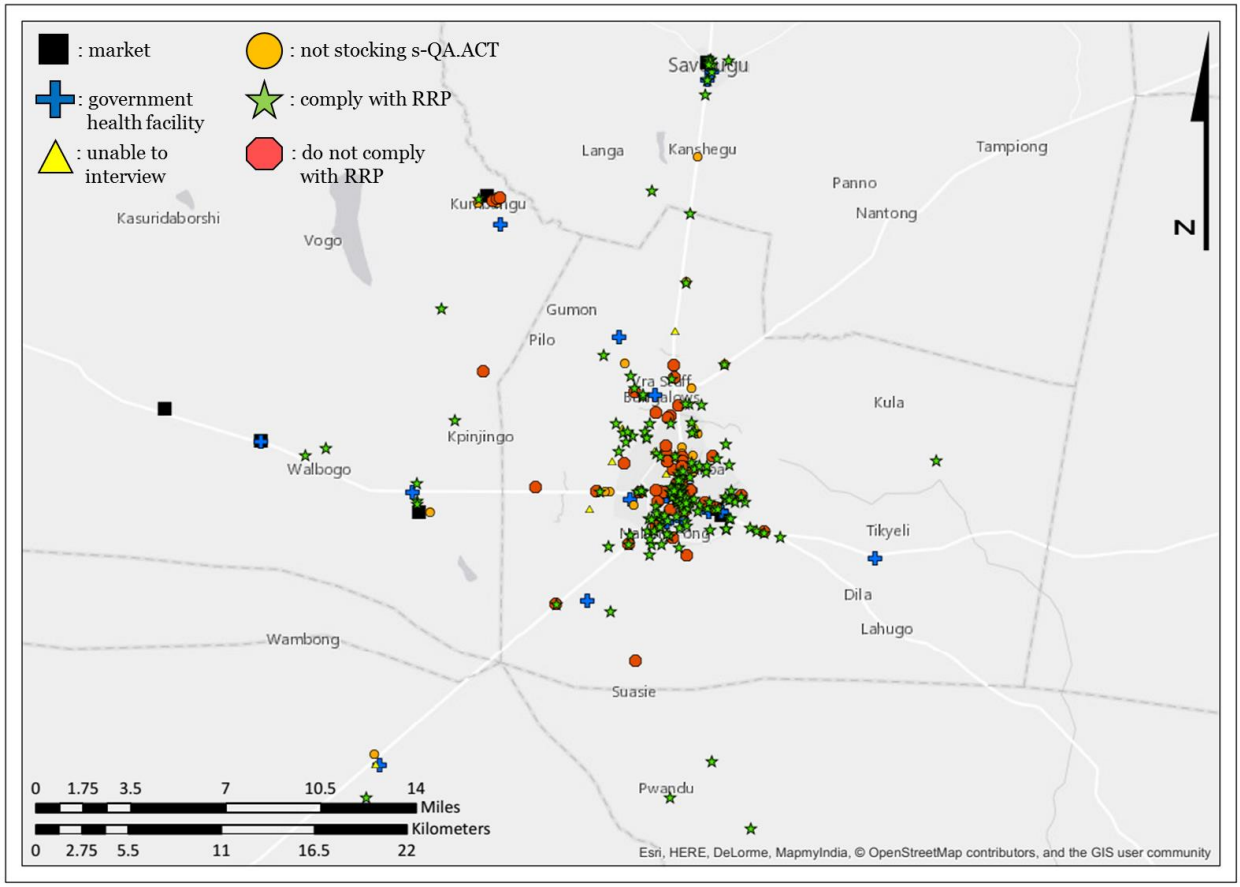

Figure 32: Map of retailers complying and not complying with the RRP for s-QA.ACTs in Tamale, Ghana, *full census*

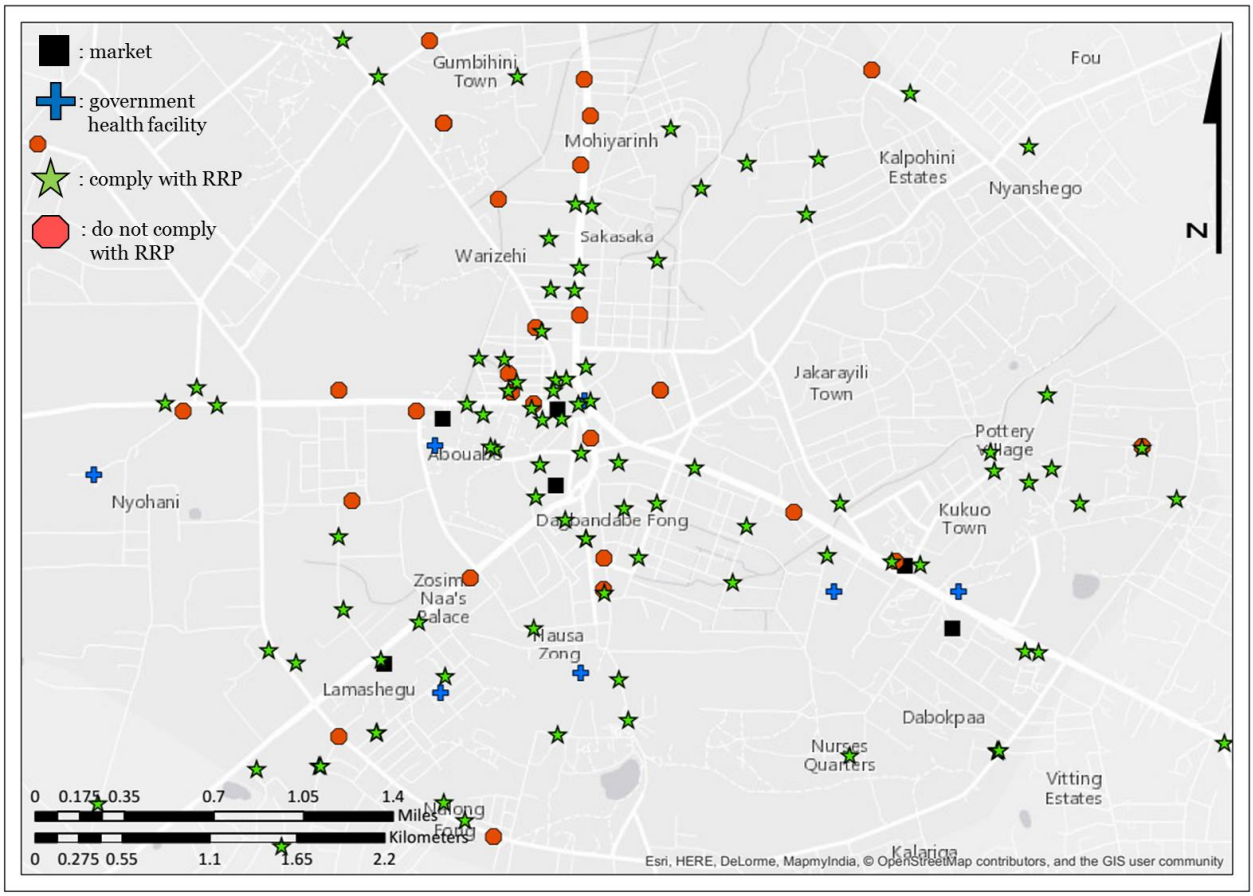

Figure 33: Map of retailers complying and not complying with the RRP for s-QA.ACTs in Tamale, Ghana, *town center*

KEY TAKEAWAY V

The variable for "seen enforcement" remains persistently significant throughout this analysis – though in the unexpected direction. This suggests that, if anything, seeing enforcement of general regulation on retailers makes a retailer *less likely* to comply with the RRP. I have limited data with which to try to explain this outcome. However, we can speculate that seeing any regulation enforced (reflecting the construction of this variable) is viewed as of minimal importance or that the respondent feels confident that they know how to get around such enforcement. There is low correlation (0.35) between the variable of having ever seen regulation and reporting that "something" might happen if a retailer opts to charge above the RRP.

CONCLUSION

LIMITATIONS AND MITIGATION STRATEGIES

The results of this analysis should be treated with some caution. First, the data analyzed are from a cross-sectional study of only private providers, collected over five months in a bounded and small geographic area, with the sample size constrained by the available retailers within that area. The length of time it took to complete this cross-sectional data collection adds an element of confusion, as prices and mark-ups appear to change, sometimes significantly, over time. But the interview questions address the price paid and charged for the current stock of medication, not the supply price of s-QA.ACT on the day of the interview. While the median pricing and compliance results are reassuringly similar to the national-level IndE, caution is still advised. In the present analysis, variations in time are accounted for using dummies for the month in which the interview took place in the main estimating equation.

Second, as with the IndE, a cross-sectional study with no comparable group or exogenous source of variation in the supply of or information about s-QA.ACTs under the AMFm, only associative rather than causal claims can be made.

Third, the pricing data presented here should be taken with several grains of salt. For one, they are generated via self-report by the retailer, which may be subject to reporting biases. These include those stemming from social desirability or from fear of oversight and regulation, despite measures taken to assure retailers that the interview team was not affiliated with the government or a professional body. They are, however, reassuringly in-line with the (also retailer self-reported) pricing data from the IndE. An additional bias arises if different interviewers differentially built rapport and trust; interviewer effects are therefore included in the analysis. Moreover, using a conversational approach to interviewing that allowed the interviewers the flexibility to ask questions in an order that made since for each situation hopefully helped to improve the accuracy of answers on potentially sensitive materials. Recall bias may be a final concern; relatively limited recall periods were employed related to ordering shipments and all other reported prices were of-the-moment.

For two, relating to concerns about the pricing data, pricing in this context is probably somewhat fluid. As in Chapter VII, retailers may adjust prices to extend concessions or credit to regular clients or those they know are unable to pay. An additional clue comes from a marginal comment from a surveyor who, in noting s-QA.ACTs prices, recorded the retailer as explaining: "a different retailer told me the prices have increased to US$ 1.20 but I had been selling at US$ 0.90. I haven't bought more since he told me this, so I raised the price on the old goods. But if you have US$ 0.90, I will sell to you at that price" (*V-52 2011*). In short, retailers may not have a single price for a dose of any given brand of s-QA.ACT and may adjust their price for a particular customer or by other factors, such as how long the drugs have been in stock. The analysis in this chapter is based strictly on the terminal supply price reported by the retailer for a particular in-stock s-QA.ACT brand on the date the s-QA.ACT audit was administered during the interview.

For three, and finally with regards to concerns about the pricing data, the prices reported are for full adult doses. However, if only partial packages are sold, as considered in Fink *et al*, then the prices reported overestimate how much a client actually pays to treat malaria with a s-QA.ACT (*Fink et al. 2014*). Given this, along with the more limited availability of pediatric formulation the survey team did not record the price paid in specific sales of s-QA.ACTs on other antimalarials, I rely on retailer reporting for the full package of treatment and therefore could not pro rate prices in cases in which only partial packages were sold, as has been done in other work (*Fink et al. 2014*).[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡]

Fourth, any of the constructs in Figure 29 but not considered in this analysis are potential limitations of this study and omitted variables in the analysis. Often, data related to these constructs were not collected due to limitations in personpower in the field. For example, we were unable to conduct full retail audits or to witness individual sales and sales volumes over the course of one or more days or to link sales with household use. Ezenduka *et al* do this while Fink *et al* could link in-store purchases from each retailer of interest with household characteristics and drug utilization, as did (*Ezenduka et al. 2014; Fink et al. 2014*).

[‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡] Surveyors did ask retailers whether, in cases when patients did not have enough money for a full package, partial doses were sold. Those that said that this "sometimes" happened (n=13) clarified that patients were always instructed to come back for the rest and almost always did so.

With full retail audits, researchers are able to better calculate market shares and horizontal market concentration – rather than proxies of horizontal competition – as measures of retail market structure, such as in the work of Goodman and colleagues (*Goodman 2004; Goodman et al. 2009*). Other researchers, by including data on population density and fever prevalence, have constructed variables on the structure of consumer need and demand but this was not possible in this analysis. Patouillard, using national-level data in Cambodia, find variations in transmission rates are associated with differences in retailer mark-up an antimalarials; however, O'Meara *et al* find household density and fever prevalence do not predict stocking AL in rural Kenya and Larson *et al* similarly find no relationship between household density and ACT stock in rural Tanzania, (*Patouillard 2012; Larson et al. 2013; O'Meara et al. 2013*).

Fifth, because of both sensitivities and some surveyor confusion about the questions, we did not collect information related to retailer conduct, such as membership in professional groups – *e.g.* the Ghana Licensed Chemical Sellers Association (GLCSA) – though this may have influenced staff quality and opened additional avenues for research about products and processes. Indeed, some respondents reported holding leadership roles in this organization. Others noted that GLCSA sometimes met to discuss prices. For this analysis, I could not assess the degree to which a particular retailer discussed and agreed on prices informally or through a formal association. This is a clear path for future research.

For similar reasons of sensitivity, we did not ask questions about the educational, professional, or training qualifications or experience of owners and attendants, though this would have enhanced our understanding of staff quality. While no studies could be found relating staff qualifications (separate from type of retailer) to pricing decisions, improved qualifications and experience have predicted the stocking, recommendation, and sale of ACTs in other studies (*Rusk et al. 2012; M. A. Briggs et al. 2014*).

Sixth, one interpretive problem is that, during our check-in sessions and in reviewing the analysis presented here, surveyors noted that many respondents did not seem to know the difference between *green leaf* ACTs (s-QA.ACTs) and other ACTs (the latter of which they generally did not refer to as ACTs but rather by brand name). The questionnaires were reviewed with the surveyors and the data used in

this analysis reflect their interpretation of whether the respondent was referring to the whole class of drugs or only those provided under the AMFm.

Seventh and finally, with regard to external validity even within Tamale, the sample analyzed here differs in significant ways from the full sample of those shops stocking s-QA.ACTs and reporting on prices (n=325 s-QA.ACT observations). The analytic sample is restricted by having observations for the two key explanatory variables, reporting the number of perceived competitions and reporting on whether the retailer had seen regulation enforced. Compliance differs significantly (*p=0.02*) between the two groups, with 23% non-compliance in the full sample and 16% in the analytic sample. Interviews in the analytic sample were also significantly more likely to have occurred in August (29% in restricted sample and 23% in the full sample, *p = 0.10*) and the s-QA.ACT observations more likely to be from shops that report keeping written records of sales and/or stock (58% in the restricted sample and 50% in the full sample, *p=0.06*). There are no significant differences on the other control variables included. Those excluded from the analysis include all eight shops in which the retailer cited that "no agency has come to monitor me" when asked to name the agency "*in charge of monitoring or regulating this retailer*."

SUMMATIVE COMMENTS

Taking into account the limitations of this study and analysis, the results presented here as well as the description in Chapter VII provide evidence suggesting that an overwhelming majority of retail outlets sold s-QA.ACTs at the recommended retail price of US$ 0.90. Recall that the RRP was set by the AMFm-CC with private sector input, reflecting a price that would allow for reasonable mark-ups along the supply chain. While this was done with affordability in mind, there is not a strict relationship between the RRP (or the benchmark for affordability) and actual consumer purchase or use. Assessing s-QA.ACT use is beyond the scope of this thesis.

Through this analysis, I provide suggestive evidence that competition – whether perceived or spatial – is not important in determining compliance with a well-advertised RRP. Rather, it seems more likely that variations in upstream mark-ups, as reflected in varied terminal supply prices, play a role in the retail

price, even when faced with a well-advertised price-point. This finding strengthen the call for both research and monitoring practice to move further up the supply chain (*Patouillard, Hanson, and Goodman 2010; Palafox et al. 2015*).

MOVING FORWARD

A conclusion from Chapters VII and VIII is that retailers largely comply with a well-advertised RRP and that almost all non-compliers opt to charge the same rate when charging above the RRP. This echoes the findings in the IndE, that Ghana met the AMFm success benchmark for "affordability." It also did so for availability and market share (*Independent Evaluation Team 2012*). Still, there was non-compliance, which measures of perceived and spatial competition do not explain. Having seen regulation enforced in the past is associated with non-compliance, which does not suggest that increasing regulation alongside an RRP — at least at the retailer level — is necessarily an effective way to improve compliance in the future. Though the significance of the seen enforcement variable away from compliance is unexpected, the general finding that current regulatory enforcement is ineffective is in line with other findings in SSA. Having considered the outcomes achieved by Ghana under the AMFm, I turn to the decision made by both the Global Fund and Ghana about the program after the data collection at the end of 2011.

PART 4: AFTER THE ENDLINE- LEARNING LESSONS AND RE-SETTING THE GLOBAL AGENDA

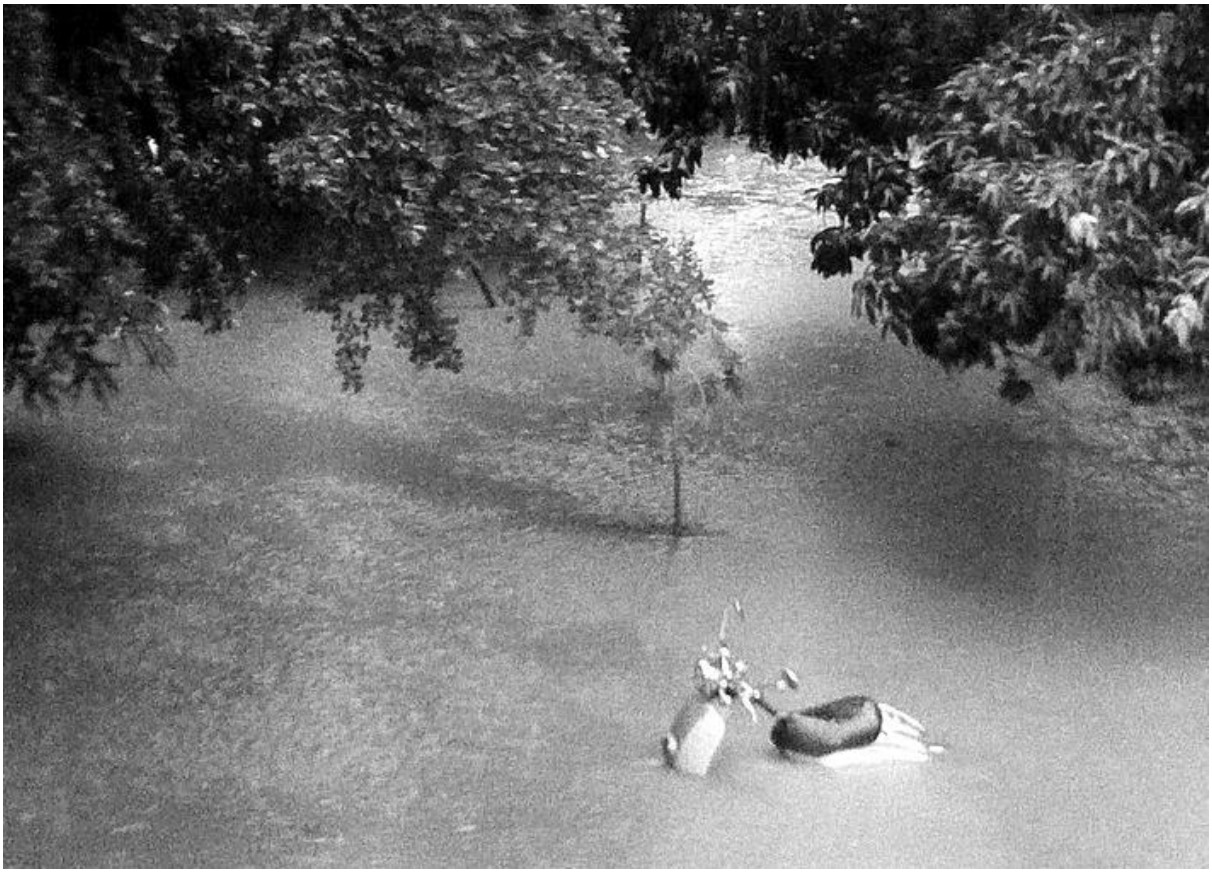

Figure 34: Image from rainy season in Tamale, Ghana
[image courtesy of Rachel Strohm]

CHAPTER IX: CASE NARRATIVE - AFTER THE INDEPENDENT EVALUATION

SECTION IX.1: DECEMBER 2011 – DECEMBER 2015, AFTER THE ENDLINE

GLOBAL

Preliminary IndE results were released in July 2012, followed by more complete results in November 2012 (*Global Fund 2012b*). The IndE outcomes focus on availability, market share, and affordability, falling about two-thirds of the way down the AMFm's theory of change (Figure 10). Many requisite steps lie between the Phase I benchmarks of success and the outcomes of first-order interest: appropriate sales and use of s-QA.ACTs and reduction of malaria morbidity and mortality. This left open room for interpretation about whether the AMFm truly worked.

In mid-2012, both global and, to a lesser extent, national stakeholders mobilized to shape or interpret the findings and the debate about whether the AMFm should continue *(Arrow et al. 2012; Fan 2012; Fan and Lanthorn 2012a; Fan and Lanthorn 2012b; Kamal-Yanni 2012; Maxmen 2012; Paulson 2012; Talisuna, Adibaku, et al. 2012; Tren et al. 2012*). Absent evidence further down the theory of change, the Independent Evaluation allowed supporters to declare a successful proof-of-concept while detractors claimed their initial concerns had not been cleared. There was a good deal of uncertainty, anxiety, and advocacy as the GF Board meeting approached (*Bump et al. 2012; Fan and Silverman 2014*).

Between 2004 and 2010, global malaria stakeholders held a variety of views on the AMFm, as described in Chapters IV and V. At the close of Phase I, most global malaria stakeholders maintained similar stands towards the AMFm (for examples, see (*Arrow et al. 2012; Kamal-Yanni 2012; Tren et al. 2012*)). In contrast, while elite stakeholders in Ghana had mixed opinions about the AMFm before it was adopted, by 2012, most§§§§§§§§§§§§§§§§§§§§§§§§§§§§§§§§ supported the AMFm's continuation (*Talisuna, Adibaku, et al. 2012*). To reflect this continued split, at a GF update meeting in December 2015 on the next iteration of the AMFm, a Global Fund procurement representative likened the AMFm to "marmite" as an example of something that people either love or hate. However, a WHO representative in the room took stock of meeting

§§§§§§§§§§§§§§§§§§§§§§§§§§§§§§§§ The key, vocal exceptions were elites in PMAG and UNIDO.

participants from participating countries (national malaria programs, CCMs, and first-line buyer representatives in the room) and no one contested his statement that "the role and value of case management in the private sector [is] not contested at this meeting" (*Global Fund 2015*).

Returning to 2012, despite calls for a transparent decision-making process, and given varying interpretations of the AMFm's outcomes, it is not precisely clear how GF made its decision on the AMFm, nor is it clear the role the IndE findings played in the decision (*Bump et al. 2012*). In late November 2012, the GF Board voted to fold the AMFm into its regular grant-making processes and to un-gate the funds that could be specifically applied for private-sector activities (*Hurst 2012*). The Board's decision allowed countries to decide whether to include private sector subsidies and mechanisms in proposals to GF to fund malaria work. At the time, many interpreted this as the AMFm's death knell. They doubted national malaria programs would coordinate, or share funding, with the private sector absent a specific mandate. This has echoes in the decisions at the end of GMEP for countries to incorporate malaria activities into regular primary care processes and the subsequent limited priority given to malaria activities.

However, an obituary was premature for the idea of the AMFm, which was partially reincarnated as the Global Fund's Private Sector Co-payment Mechanism (PSCM or CPM for co-payment mechanism) in late 2013 (*Global Fund 2013*). For part of 2012 and all of 2013, both the British and Canadian governments provided additional, transitional financing (*DfID 2012; CIDA 2013*). In early December 2013, representatives from CCM, NMCP, and private-sector FLBs of pilot countries met in Geneva to discuss future iterations of the AMFm. On 16 December 2013, GF approved an Operational Policy Note allowing countries to have GF apply a portion of their grant money directly to manufacturers to subsidize ACTs imported through the private (for-profit and not-for-profit) sector (*Global Fund 2013*). This co-payment money would continue to be housed at GF. The Global Fund's decision to focus the new mechanism entirely on the private sector reflects their understanding that an AMFm-like mechanism did not add value for affordability or availability in the public sector (*Global Fund 2013*). Otherwise, the three prongs of the AMFm remained intact in PCSM.

Coming full circle from antagonism toward adopting Phase I of the AMFm, Ghana was among the first three countries to join PSCM. Ultimately, six of the seven original pilot countries joined this new effort — all except Niger. To begin the PSCM in early 2014, GF hosted a competitive tender for manufacturers that wanted to provide under this mechanism, which resulted in a further 30% decrease in manufacturer prices (*Global Fund 2015*). However, because the GF Secretariat manages the relationship with the tendered manufacturers, countries have trouble "putting pressure" on manufacturers to deliver supplies in a timely manner, resulting in issues of drug availability in all PSCM-participating countries (*Global Fund 2015*).

In other ways, however, PSCM includes explicit efforts to enhance GF's vision of country ownership. For example, it now falls to countries to determine how much priority to give to private-sector case management activities in their overall portfolio of malaria activities (*Global Fund 2015*). In addition, countries also choose their own "demand-shaping levers" in setting the subsidy levels for adult and pediatric doses and, further, setting their own schedules and targets for monitoring activities. Finally, GF Principal Recipients, rather than GF, would sign agreements with selected FLBs, giving countries a greater oversight role than the GF Secretariat (*Global Fund 2015*). Representatives from Ghana report that this has allowed them to have a more transparent process of selecting FLBs and have brought FLBs into the decision-making process through the AMFm-CC (*Global Fund 2015*). Still, all countries reported that they had difficulty getting FLBs and other elements in private-sector supply chains to comply with their reporting requirements.

Concerns about the involvement of local manufacturers continue. Representatives from Nigeria emphasized the need to empower local manufacturers through WHO pre-qualification (*Global Fund 2015*). Representatives from Kenya noted that local manufacturers are asking them why they have been "locked out of the market for so long" (*Global Fund 2015*). A Global Fund representative said that there has been a shift towards recognizing that manufacturing can be done locally and as CPM has become more mature, along a five-year timeline, it makes sense to encourage African pharmaceutical manufacturers (*Global Fund 2015*).

GHANA

At the end of 2011, as I completed my interviews in Accra, elite stakeholders still had plenty to say about the AMFm, especially the issues of local manufacturing and self-sufficiency as well as ownership of the problem, aid dependence, and about the uncertainty of the AMFm's future. Regarding self-sufficiency and productive capacity, one respondent asked, "What if a tsunami hits Asia and no products can be exported? It would negate the objectives of the AMFm" because without the delivery of malaria drugs from outside, Africa would remain vulnerable to malaria (*R-9, n.d.; R-12, n.d.*). A member of PSGH leadership and a hospital pharmacist noted that Africa consumed most of the world's malaria drugs but itself had limited capacity to manufacture these drugs. For her, this showed that "our leaders have let us down; [they] haven't fought or haven't fought well for this" (*R-9, n.d.*).

Across sectors, respondents echoed the need for "Africans [to] solve Africa's problems" and that since "there is more malaria in Africa… [so] the cure should be in Africa [as] we have a moral stake in the disease" (*R-11*) (*R-11, n.d.; R-12, n.d.*). Regarding local ownership of the malaria problem, and therefore the ways of reducing the disease burden, one respondent asked that I "tell President Bill Clinton that local industry needs to take care of local problems" (*R-12, n.d.*).

On the issue of uncertainty, one respondent felt the approach of piloting the AMFm would "teach us to swim and then leave us in the middle of the sea" if the program did not continue (*R-9, n.d.*). Similarly, another said that if the global motivation for the AMFm was truly the "love of saving lives," GF should commit to "quality antimalarials tomorrow" as well as "today" (*R-12*) (*R-11, n.d.; R-12, n.d.*).

Despite these misgivings, many national stakeholders, having done the hard work of implementing the AMFm, are pleased with their achievements and do not want to see them undone. AMFm-CC members view the organization and their work with pride. They see it as a well-functioning national "public-private partnership" providing an "open forum" with "equalize[d] power" that enhances transparency through "communication and shared accountability" (*AMFm-CC 2010; Dodoo 2011*). The AMFm-CC "improved…

and increased internal communication and collaboration between MoH's agencies as well as NMCP's relationship with the private sector," which it had earlier regarded with suspicion (*Matowe and K'omolo 2011; R-5, n.d.; R-14, n.d.*). In the private sector, importers and retailers felt they had engaged in "good-quality CSR … enabl[ing] the private sector to work in public health [while] receiving little or no profit" (*Dodoo 2011; R-12, n.d.*).

In September 2012, private and public members of the AMFm-CC, as well as other AMFm supporters, traveled to Washington, D.C. to advocate for the continuation of the AMFm, though with some modifications, especially regarding local manufacturing (*"Joint IOM/Center for Disease Dynamics, Economics & Policy Meeting 'Affordable Medicines Facility- malaria Review and the Financing of Febrile Illness Management'" 2012*). Under PSCM, the AMFm-CC has morphed into the AMFm Taskforce, with similar membership to AMFm-CC.

It is beyond the scope of this dissertation to analyze Ghana's decision after the close of the Phase I pilot, making use of the stop-gap funds in 2013 and joining the PCSM in 2014. Nevertheless, in the remainder of this chapter, I provide a few relevant details on the steps Ghana has taken since the end of Phase I as denouement to the main analysis in this thesis and to highlight that the issues raised throughout and in the concluding Chapter X — specifically around ownership and risk — continue to resonate. Future work could explore the extent to which Ghana's decision was motivated by: (1) the actual evaluation results or (2) by a process of learning-by-doing, having implemented the AMFm with "their usual energy" (*Psychas 2015*), or (3) by a sunk-cost mindset that, having done so much work to set up the national-level AMFm architecture and relationships, it would be more difficult not to continue.

As noted by GF at the meeting convened at their Secretariat in Geneva in early December 2015, no "formal evaluation" has been undertaken following Phase I (*Global Fund 2015*). A rapid assessment was undertaken in each of the six countries by Health Action International (HAI) to provide a rough update on availability and pricing of s-QA.ACTs, using their approach to assessing medicine prices (*Health Action International 2013*). Relying on measurements from sixty outlets per country per year, HAI estimates that

s-QA.ACT availability has fallen to between 60% and 80%, with prices between US$ 1.20 and US$ 1.50 (*Global Fund 2015*). The recommended retail price as of December 2015 for s-QA.ACT is around US$ 1.12, reflecting a 95% subsidy. But neither this nor the green-leaf logo has been advertised while shipments of s-QA.ACT shipments to Ghana have been delayed by at least eight months (*Global Fund 2015*). This is despite GF's Operational Policy Note on PSCM, which requires mass communication campaigns, provider trainings, monitoring, and regulatory advocacy as a minimum bundle of Supporting Interventions (*Global Fund 2013*).

In this early-December meeting, Ghanaian representatives repeatedly pointed out variations on a key theme: the need for supplies. These included, "all we want are supplies," "supplies influence everything else," "the spine of the whole program is medicines," and "the key objective… is for medicines to arrive in-country on time" (*Global Fund 2015*). In the absence of s-QA.ACT supplies, four Ghanaian pharmaceutical manufacturers have begun producing ACTs again and have worked to flood the market, limiting FLB and retailed demand for quality-assured ACTs (*Global Fund 2015*).

At the same time as highlighting these concerns, the Ghanaian delegation also expressed confusion and frustration at having to prepare a plan for exiting from PSCM, which they were "praying" not to have to do (*Global Fund 2015*). Currently, Ghana's grant including PSCM will end in 2017 but it is likely that their co-payment funds will run out in 2016. A representative from Ghana noted, "although Ghana never opted out of the co-payment mechanism" and "although we have not been asked to exit [from the co-payment mechanism], we have been asked to present an exit strategy" (*Global Fund 2015*). One of the Ghanaians present said that "we will be committing suicide by ending the co-payment in 2017" (*Global Fund 2015*).

As a final point, at the early-December 2015 meeting on PSCM progress, the Chief Procurement Officer thanked countries for "showing courage" as the AMFm, and now the PSCM, have evolved (*Global Fund 2015*). This recognition of the need for courage resonates with the idea of risk I raise in the conclusion.

CHAPTER X: CONCLUSIONS

SECTION X.1: GOALS, APPROACH, AND KEY FINDINGS

In this dissertation, I have assessed a major effort to improve access to high-quality antimalarial treatment through adopting and implementation a specific initiative — the AMFm Phase I pilot — in a specific location — Ghana — between November 2008 and December 2011. Overall, from my research as well as the IndE, the AMFm was a success in Ghana relative to its own goals. Yet, many of the same issues that generated resistance during the adoption phase remain at the end of 2015, as reviewed in Chapter IX.

To consider both adoption and implementation processes, I have contextualized this thesis in global malaria control programs and Ghana's political-economy and national health efforts. My overall approach brought together rich description with both quantitative and qualitative data sources and analytic strategies to shed light on how national stakeholders and processes shaped the AMFm in Ghana.

This in-depth, contextualized description was a key motivator for pursing a book-length thesis and represents a key contribution of my work. Such "messy" process details and the cacophony of stakeholder voices often remain undocumented and outside the purview of academic research (*Allison and Halperin 1972; Ferguson 1990*). But they are important to our collective understanding of policies and programs that are practical and politically palatable. I have analyzed perspectives from high-level and street-level stakeholders in Ghana to voice their experiences and opinions of adopting and implementing the AMFm.

My approach carries the inherent limitations in valuing depth over breadth. This thesis represents a single case: a specific program with a particular decision-making arena in a single country at a particular political-economic moment. In Chapters II, IV, and VII, I provided details on the demographic, epidemiologic, political, and economic realities of Ghana in 2011, which should temper glib generalizations of my findings. The lack of comparative work within this thesis to either other countries or programs is a constraint; such breadth would have come at the expense of depth. That said, depth and detail are also critical in a sense of generative rather than counterfactual causality, as is relied on in process-tracing approaches (*Bennett*

and George 1997; Pawson and Tilley 1997). As noted in the introduction, thick description is necessary to determining the generalizability of lessons learned (*Lincoln and Guba 199*4).

In each analytic chapter, I reviewed specific methodological constraints related to self-reported data and the limitations of each theoretical framework and analytic strategy to address each research question.

While this thesis represents a single case viewed from multiple angles, it employs different theoretical frames and empirical strategies suited to the questions asked in each analytic chapter. For this thesis, the case — Phase I of the AMFm in Ghana — rather than theory has provided the red thread running throughout. The lack of a unifying theory may be a weakness of this thesis but it is also a weakness in public policy theory more generally (*Pritchett, Samji, and Hammer 2012; "Statement on Advancing Implementation Research and Delivery Science" 2014*). Most theories and frameworks focus explicitly on adoption or, to a lesser extent, implementation processes and achievement of outcomes. Matland has made the main effort (of which I know) to bring these two phases together (*Matland 1995*). The present case challenges his view of the link between adoption phases with conflict or ambiguity, such as about responsibility or accountability, and consequent challenges with implementation. This is an interesting subject for future exploration using this case material but is beyond the scope of the present thesis.

With these limitations in mind I review, below, the findings from each of the analytic chapters: V, VI, and VIII. I then turn to two undercurrents — risk and ownership — that wind throughout this thesis, though I have not explicitly analyzed them so far.

The experience of the AMFm (re-)highlights that the views of national stakeholders matter — and may be divided — on global health policies to be adopted and implemented at the national level. This motivated the attention to national stakeholder perspectives as the main material analyzed throughout this thesis. For both adoption and implementation, a wider array of stakeholders may be involved, and views sharpened, by the following three conditions: (1) the matter of policy involves the private sector as well as the public, (2) the policy is to be implemented on an experimental basis, and (3) when the policy

transferred from the global to the national level with little scope for national tailoring. National stakeholders face individual, organizational, and national risks in aligning with global health policy, which are not always acknowledged when viewing these processes as strictly technocratic. However, the thesis also shows that a conflicted adoption phase can be followed by a successful implementation phase — defined as meeting the goals set by the intervention itself — when incentives to implement as-planned are in place at both the high-level and street-level. This includes a case when the key implementers are in the private, for-profit sector.

In Chapter V, I — together with Ashley Fox and Jesse Bump — asked: why *would national stakeholders question — and even forgo — piloting a program intended to deliver high-quality treatment for a prevalent and expensive disease*? Although after reading Chapter IX, we know that Ghana successfully implemented the pilot and voluntarily continued with the GF's Private Sector Co-Payment Mechanism and would like to continue to do so, it is important to remember the mixed reactions the pilot initially caused.

Drawing on the grounded qualitative analysis based on high-level stakeholder interviews, meeting minutes and local newspaper reports, we developed three main categories to explain receptivity and resistance to piloting the AMFm. The direct public health goal of the AMFm – increasing ACT access and, especially, saving lives – resonated with all stakeholders. But even within considerations of the direct policy aims of the AMFm, some stakeholders questioned the pilot's design and what it could actually accomplish those goals. Stakeholders also considered policy outside the direct public health goals, such as not directly those of the AMFm, for example, state developmental capacity to fulfill insurance promises as well as to enhance national manufacturing capacity. I have called these indirect policy goals. Finally, stakeholders considered individual, organizational, and national reputations.

Relating to all of these, experimental pilots create uncertainty, which can foment resistance. Many Ghanaian stakeholders felt the uncertain future of the AMFm following the Phase I pilot posed risks for policy goals and reputations, which hinged on the GF Board's decision. This set up opposing objectives: some stakeholders may have supported the pilot if they knew the program would not be terminated,

while GF wanted a pilot to see if the evidence suggested the program should be terminated. Also, national stakeholders lacked clarity on how GF would interpret disappointing pilot results. Would they regard it as a failure of the idea, a failure of the global community's implementation ability, a failure of national efforts and capacity, or a failure due to individual efforts? Uncertainty about the distribution of accountability and blame led stakeholders to resist or only offer passive support to the pilot. To paraphrase one respondent's articulation of a common view, *Phase I of the AMFm should have been an experiment on how to continue, not whether to continue, the initiative* (*R-14, n.d.*).

In Chapter VI, I used the Multiple-Stream Approach (MSA) to close-code data from stakeholder interviews and meeting minutes to analyze the adoption of the AMFm. While MSA was developed to consider priority-setting, it also provides a lens through which to examine other phases of the policy process, including adoption (*Zahariadis 2007; Ridde 2009*). In my analysis, I consider the fit between the five key components of MSA (a policy stream, a politics stream, a problem stream, an opportunity window, and one or more policy entrepreneurs) and the empirical data to address the questions: *What did national stakeholders do in response to this vertically transferred AMFm? Can MSA help to make sense of these events and the outcome of adoption of Phase I?*

I found a poor fit between the framework and the empirical data on national stakeholders and events. Only two of the five hypothesized necessary MSA components — a policy proposal and policy entrepreneurs — were present at the national level at the moment of adoption. These gaps help explain the difficult and stalled adoption process in Ghana. When only some MSA framework's components are in place, a more contested, challenging, and circuitous process of policy change, if any, may follow. This aligns with the framework's contention: that absent components will not necessarily make a policy outcome impossible — but it will make it less probable (*Kingdon 1995*).

In my analysis in Chapter VI, I propose that in cases of vertical policy transfer, as occurred with the AMFm's Phase I, it is necessary to consider MSA simultaneously at the global and national levels. When this is

done, all five important MSA components are in place, some from the national level and some from the global level. The revised framework better fits the type of adoption as well as the empirical evidence.

In Chapter VIII, using data from in-depth interviews of private-sector antimalarial retailers and logistic regression, I assessed compliance with Ghana's widely advertised s-QA.ACT RRP of US$ 0.90. I considered two hypotheses set *ex ante* to the study: whether (1) perceived competition or (2) having seen regulation enforced influenced non-compliance. Though the AMFm rests on market forces to drive availability and affordability, perceived competition plays a limited role in whether a retailer decides to comply with the RRP. This finding is robust to the inclusion of several spatial operationalizations of market density.

I also did not find evidence that a retailer's report of having seen regulation enforced previously raises their compliance with the RRP. In fact, seeing prior enforcement of regulation is associated with persistently *lower* odds of complying. This suggests that retailers were not too impressed by the regulation or enforcement they had seen and, perhaps, felt they now knew how to get around it. As part of the AMFm programming, Ghana had no sanction for non-compliance with the RRP. Rather, the RRP can be viewed, given capacity constraints, as a substitute for regulation or formal sanctions in the AMFm mechanism (*Kumaranayake et al. 2003*). In line with the lack of formal sanctions, many retailers reported that "nothing" would happen if they priced their s-QA.ACT stock above the RRP. Indeed, a small number actually called for increased enforcement of the supply price and retailer pricing.

The most obvious factor associated with complying or not with the RRP seems to be the terminal supply price. This suggests that organizations introducing market-based mechanisms with an advertised target retail price should focus their monitoring and enforcement activities higher up in the supply chain, among intermediate and terminal suppliers.

SECTION X.2: OWNERSHIP

One undercurrent running throughout this thesis is the idea of ownership. This includes ownership over the definition of the problem related to ACT access, over the process of adopting the AMFm, and over the program details themselves and their implementation, set against a backdrop of questions about a developmental state's constructive relations with its individual citizens as well as its big and small private-sector firms (*Evans 1995*).

In relation to the program details of the AMFm, in Chapter IV, I introduced several stakeholder suggestions how the pilot might have "develop[ed], not negate[d], local production capacity," such as upgrading local manufacturers to meet WHO prequalification and bringing local government and industry into closer partnership (*R-8; R-9; R-10; R-11; Matowe and K'omolo 2011)*. Both those ultimately receptive and resistant to the AMFm acknowledged that all national stakeholders "would have preferred to have had quality, local drugs" (*R-13*). The very strength of the AMFm design — high-level negotiations and subsidization — precluded local, structural changes.

In Chapter V, I highlighted that several key stakeholders refused to take — that is, to own — a visible stand on whether Ghana should apply to Phase I. Moreover, the key, institutional decision-makers in the CCM vacillated on whether to send the application while a variety of circumstantial stakeholders felt they had stake in the decision and worked to influence the process. In Chapter VI, I analyze how global ideas and actors played a role in Ghana's adoption of Phase I. In Chapter VII, I describe the way the AMFm-CC was set up which, in composition and process, differs from the CCM (*AMFm-CC 2010*).

These examples relate to a broader concept of country ownership of development initiatives, as advocated in the Paris Declaration (*OECD 2005*). In particular, in Chapter VI, I demonstrated the absence of an aligned national politics stream and national problem stream during adoption. The MSA lens — and the failure to align national streams in this case — neatly dovetails with David Booth's efforts to clarify what *should* be meant by country ownership (*Booth 2012a*). He proposes that ownership includes an end to conditionality to "buy reform" and, more relevant here, an end to channeling aid funding through

"projects" as a way of by-passing country decision-making bodies, processes, and institutions (*Booth 2010*). A multi-level approach to MSA offers a way to analyze the idea of country ownership in the future.[*] MSA allows interest groups to enter the politics stream, which matches the high-level and street-level push for inclusion of local business, another facet of ownership to consider.

With this in mind, the CCM represents an interesting example with which to consider country ownership. The CCM's explicit *raison d'ĕtre* is to foster ownership and they do indeed bring together representatives of government bureaucracy, business, and civil society, "representing the views and interests of grant recipient countries" (*Nfor 2014*) (*Global Fund, n.d.; Nfor 2014*). Yet, in the specific case analyzed in this thesis, the CCM structure allowed for vacillation within and strong views without and, ultimately, an attempt to pass on responsibility for — and therefore ownership over — the decision about whether to adopt. We must at least question whether the CCM's composition when adopting Phase I allowed for sufficient ownership. Given the effort of CCM members to yield decision-making power to the Minister, it seems that CCM members did not feel so. This conclusion is further supported in juxtaposing the CCM with the AMFm-CC in terms of stakeholders represented, the capacity and legitimacy to make relevant decisions, and a sense of ownership of the work ahead. If the AMFm-CC represents a more locally owned body and therefore more locally owned programmatic decisions, what can we determine about whether the CCM served the purpose of fostering ownership?

However, it must be noted that the AMFm process was an inversion (or perversion) of the usual functioning of the CCM, which is to design proposals, not fill in details for a globally designed plan. Moreover, it is not fair to simply critique apparent limited ownership without three additional questions:

- Would Ghana have tried out the AMFm if political or bureaucratic actors had to take initial responsibility for the design?
- Did limited national ownership of the design and adoption decision allow national stakeholders to better, "energ[etically] (*Psychas*)" implement the initiative, maximizing credit-seeking after minimizing risk for blame during adoption (while recognizing that policy entrepreneurs and others still felt this risk keenly) (*Weaver 1987; Kang and Reich 2014; Psychas 2015*)?

[*] Including, perhaps, analyses of how GF decided on continuing, modifying, scaling-up, or terminating.

- How should we interpret Ghana's decision to continue with GF's PSCM, despite their original hesitancy or opposition?

These questions suggest important avenues for future analysis of ownership, given roles and relationships between donors and the state as well as the between the state, street-level workers, and the public.

Indeed, ownership is not only an issue for capital-based elites; Fox recently highlighted that "the current aid architecture deprives both African governments and African publics of agency" (*Fox 2015*). In Chapter VII, I introduced views of the citizens and businesspeople at the street-level of implementation. About 20%, during in-depth interviews, spontaneously said they wanted to see the AMFm continued — a view that seems to have had no route to enter debates about the future of the AMFm, given the limits of the data collected in the IndE and beyond and passed on to decision-makers at the Global Fund.

Though the minority, some respondents specifically voiced that they should have learned about the AMFm through a government agency or professional association (*V-1 2011; V-7 2011; V-67 2011; V-124 2011; V-133 2011; V-188 2011; V-196 2011; V-511 2011; V-517 2011; V-537 2011; V-542 2011*). Two raised their role as stakeholders. One, who heard from her supplier, said "I think it wasn't fair because as major stakeholders, we should have been briefed before" (*V-507 2011*). Another, who heard first from the media, said "I felt this was wrong since we are a major stakeholder. We should have met as partners" (*V-535 2011*). These concerns relate to relations between Ghana and the Global Fund as well as between Accra-based elites and Tamale-based retailers.

The events of both adoption and implementation of the AMFm suggest that ownership is important (in no way a novel claim). Note, though, that there may be certain amounts of freedom to innovate accorded by being 'just an implementer,' rather than having clear ownership of a new idea, decision-making power over adopting and implementing that idea, and, facing risks if the idea does not pan out.

Also, if we accept that ownership is indeed important, which seems a plausible lesson to draw from this thesis, we also learn that simply giving decision-making power to some national stakeholders is insufficient. The *right* national stakeholders and their existing decision-making structures need to be in play. We may glean something about relevant national stakeholders in this case through the composition of the AMFm-CC and the committee characteristics raised as important (transparency, collaboration). But, given the views of some street-level implementers, ownership may require further consideration.

SECTION X.3: RISK

A second major undercurrent running throughout this dissertation is the presence of risk, a flip side of innovation. Innovation is a common epithet in writing on the AMFm, but risk — especially at the national level — makes minimal appearance. This thesis serves as a partial counterbalance.

The idea of risk is explicit in Chapter V, to explain stakeholder stands. To begin, the very term stakeholder implies having sense of risk. More specifically, in assessing whether to join Phase I, stakeholders saw possible threats to their indirect policy goals and to personal, organizational, and national reputations. The GF approach to piloting the AMFm was exceptional in being explicitly experimental and non-committal, imposing risks to national — but not necessarily global — stakeholders. Businesspeople who championed the AMFm, coaxing professional allies to accept the program, faced risks of "vilification" if industry lost profits and capacity or if GF revoked the program after diminishing local manufacturing capacity and altering public demand for antimalarial medication (*R-7, n.d.*).

The assumption of risk is constitutive of being an entrepreneur, including for policy ideas (*Kingdon 1995*). The extent to which the AMFm structure was fixed beyond Supporting Inventions details heightened this risk (and, indeed, limited African government involvement in the formative stages of the AMFm raised suspicions about the AMFm and, therefore, the risk of supporting the initiative) (*Matowe and K'omolo 2011*). In the case of the AMFm Phase I pilot, uncertainty about the distribution of professional and

political accountability for achieving the benchmarks led some stakeholders to resist or, at most, offer passive support to the pilot.

The motivation for the analysis in Chapter VI was a series of actions that can be read as a response to perceived personal or organizational risk: the CCM tried to shift decision-making responsibility to a politician (the Minister of Health). In turn, that politician refused to take a public or even private stand on adopting the AMFm pilot. Recall that requiring the Minister's sign-off was an unprecedented move in the history of Ghana's CCM. It can be taken positively, as an attempt to claim country-ownership by bringing politics into the decision-making process. Or it can be taken negatively, as an attempt to shift the decisive (veto) power — and therefore the risk — to a different decision-maker. These are not mutually exclusive motivations. In the case of the AMFm, unease about making the final decision to adopt the pilot led to the entry of the global politics stream to help move adoption forward.

The AMFm imposed on different national stakeholders a variety of different risks. This included the reputational risks of both high-level decision-makers but also street-level businesspeople maintaining trusting relationships with their customers. In altering both prices and price expectations through a market-based mechanism in Ghana for antimalarial treatment, the AMFm brought business and financial risks as well. Private sector stakeholders had to decide to import, deliver, and stock a product with uncertain demand (*UNITAID 2014*). After they made these decisions and committed to the AMFm, GF intervened through its demand-shaping levers starting in August 2011, approving only a fraction of private-sector FLB orders. As supply fell short of demand, prices along the supply chain rose, forcing retailers either to charge the RRP — getting squeezed — or to charge above the RRP, risking losing customers. The experimental set-up of the Phase I pilot increased risks in both adoption and implementation, which were further compounded by no plan for scale-up or phase-out.

These risks to national stakeholders — of starting and potentially stopping a wide-reaching program — are often not discussed in literature on policy experiments. More broadly, we often focus the risks and ethical considerations inherent in introducing an intervention but far less so on the risks of ending that

intervention, whether based on evidence or whim. As noted in Chapter V, the AMFm affected Ghana's malaria medicine production capacity, prices, and access expectations. Many different players felt they had significant stake in decisions about adopting and implementing the AMFm yet a much smaller number had an active role in these decisions. Such features may suggest that health reforms and interventions themselves, not just research on them, should be subject to ethical review (*Daniels 2008*).

SECTION X.4: LOOKING BACK AND FORWARD

To close, I place my specific and broad findings back in context: in Ghana, malaria is the leading cause of under-5 child mortality, a top cause of all-age morbidity, and the top cause for out-patient visits in public facilities (*Global Malaria Programme, WHO 2013; Ghana News Agency 2014*). Limited availability and affordability of high-quality, first-line antimalarials at facilities where the public treats malaria partly perpetuates this situation.

The Phase I pilot of the AMFm was simultaneously "innovative" (*Adeyi and Atun 2010*) — even "radical" (*Maxmen 2012*) — in mechanism, scale, and commitment to an evidence-informed approach but also another in a series of malaria interventions in SSA (*Adeyi and Atun 2010; Maxmen 2012; J. L. A. Webb 2014a*). A lesson from Webb's history of malaria interventions — both those that have achieved their goals, like the AMFm, and those that have not — is also a warning about experimentation with malaria and with policy intervention in general (*J. L. A. Webb 2014a*).

Any reading of the history of malaria, of artemisinin, and of artemisinin-based treatment demand both a sense of history and a slight taste for irony. Malaria is one of the world's oldest diseases, coevolved with humans (*Packard 2010; Dalrymple 2013*). We are now fighting it with both futuristic sounding weapons and those drawn from ancient knowledge. While I was finalizing this conclusion in late autumn of 2015, there were simultaneous press releases about genetically engineering mosquitoes to combat malaria and about Dr. Youyou Tu's Nobel Prize in Medicine for harnessing *Artemisia annua* for present-day malaria treatment (*J. Webb 2015; NobelPrize.org 2015*).

Dr. Tu's work, and the 1970s Chinese research program (Project 523) in which she worked, examined ancient medical texts to find old treatments and package them in a new way to address a problem that, though now largely tropical and impoverished in provenance, remains am unsolved global threat (*Packard 2010; Dalrymple 2013*). By the time Dr. Tu's findings became the WHO-recommended first-line treatment for uncomplicated malaria, concerns about parasite resistance to artemisinin had already emerged (*Duffy and Sibley 2005; Vijaykadga et al. 2006*). Its sustainability as an efficacious treatment was threatened, in part, because of its widespread accessibility and presumptive use in monotherapy-form in Southeast Asia. These drug-resistant strains have made their way from Asia to Africa (*St. Laurent et al. 2015*).

The AMFm was developed precisely to make the drug more accessible in combination-forms while — through the use of drug combinations with artemisinin — delaying the emergence of resistance and sustaining its efficacy. And yet, ironically the mechanism itself seems unsustainable, either as the AMFm or as in its successor forms. In 2012, the AMFm technically ended as a stand-alone program but did not exactly end, since it was rolled into regular Global Fund granting processes. GF also launched the Private Sector Co-Payment Mechanism.

Throughout this, there has been limited space for reflection on collective learning — operational and political — from the AMFm (*Fan and Silverman 2014*). In some "epistemic communities," it has become difficult, even toxic, to discuss in a nuanced way what has been learned from Phase I, between 2010 and 2012 (*Adler and Haas 1992*). This thesis represents one effort to examine, analyze, and reflect openly on what happened and how, taking into account multiple, national perspectives, and examining in-depth the political-economic and social context of adoption and implementation. A failure to do this for such a massive experiment like the AMFm would only add to Webb's list of lessons ignored in malaria control. Despite its shortcomings, despite not being wanted by many key stakeholders at the outset, AMFm nevertheless succeeded in its stated goals in Ghana. The careful consideration of key stakeholder views points to how both the process and outcomes of a program like the AMFm can be improved in the future.

LITERATURE CITED

APPENDIX A. PASTICHE OF KEY INFORMANT INTERVIEWS & MEETING MINUTES

Table 20: Legend for key informant interviews, CCM meeting minutes, and AMFm-CC documents

Source	Font
My questions to respondents	Bradley's hand
[My clarifying add-ins and de-identifiers in typing up notes]	[Bradley's hand]
R-1	Poor Richard
R-2	Papyrus
R-3	**Franklin Gothic Medium**
R-4	Harrington
R-5	Modern No.20
R-6	**Britannic Bold**
R-7	Baskerville Old Face
R-8	*Monotype Corsiva*
R-9	Rockwell
R-10	**Bauhaus 93**
R-11	Colonna MT
R-12	***Harlow Solid Italic***
R-13	***Matura Script***
R-14	**Tw Cent MT Con**
R-15	*Informal Roman*
CCM meeting minutes	***Forte***
AMFm-CC technical documents	**Cooper Black**

Table 21: Pastiche from key informant interviews and meeting minutes

Item
The malaria control world is small and dominated by alliances and politics
Grants and grant money cause people to form sub-groups
Head of NMCP can be replaced when a new party comes in but that is not necessarily what happens
Head NMCP **has been in place for 10 years, through party transitions. NMCP is not highly politicized in terms of party politics**
[NMCP and PM] **were star performers on Global Fund grant management until last year** [2010], **when procurement shifted from WHO to MoH**
Head NMCP **has issues with other females, including the head of MoH procurement**
NMCP lacks managerial capacity; Deputy DG NMCP **bullies people all the time**
Head NMCP **&** Deputy DG NMCP**, 'the ladies', get along**
Deputy DG Public Health MoH **&** Head NMCP **are closely aligned**
Deputy DG Public Health MoH **likes the AMFm but** Head NMCP **does not – this created some tension**
MoH is the policy-making body but has less power than GHS; limited involvement in proposal writing

GHS is powerful because it controls most of the health facilities
[There seems to be some disagreement about whether NMCP is really under MoH or GHS; it is GHS]
MoH is highly decentralized
More so than in other countries? *Yes,* the agencies are *stronger and have more money. Its programs are run as agencies. This creates boundary tensions between MoH and agencies*
NMCP in Ghana is more removed from central MoH authority than in other countries; they can question and challenge the minister
The structure of MoH and its agencies is problematic
NMCP expected MoH to be in the driver's seat for the AMFm
NMCP expects MoH to do oversight work but gives us no money to MoH to do oversight
Deputy DG Public Health MoH **is not necessarily** equal to MoH [his vision and the larger MoH vision are not necessarily the same]
Ghana has a peculiar system because MoH does policy while GHS does technical and implementation work
When GF system was set up, we *did not say from the beginning that MoH- GHS was PR on GF grants*
Created a power play from the outset [confusion about who could be PR, who would spend the money]
CCM is meant to be independent of the government but, at many times, needs the government in order to move
It is not feasible for GF/ CCM to be independent because it has government representation
In the case of the AMFm *CCM may have already made several commitments before the government was brought on*
CCM put out advertisements for PRs [for the AMFm] *before* [talking to] *the government*
It is all [the within-government maneuvering] **about the money** [not malaria related goals]
For GF, **MoH signs documents but GHS/NMCP spends money**
Besides money, MoH had no other clear role in the AMFm
PC is the government association of pharmacists, involved in regulation of the practice of pharmacy
PC cannot speak for all pharmacists
PSGH is the private association of all pharmacists
PSGH has a mission to ensure that members engage in good practice to provide peer review and persuasion
Pharmacists automatically become part of PSGH
PSGH president is a board member of PC but not vice versa
PSGH president speaks for all pharmacists
PMAG members are not all pharmacists
For the AMFm PSGH train pharmacists; PC in charge of training LCS
PSGH champion the cause of pharmacists
Some local pharma companies have portfolios based largely on 'diseases of common occurrence'
Per capita, Ghana has more pharma industry than any other West African country [Nigeria has more actual manufacturers; most other West African countries have 2, 1, or none]
People are passionate about it [the pharmaceutical industry]

Registered manufacturers need a pharmacist to be able to operate. But they are not necessarily owned by pharmacists. Legally all you need to run a pharmaceutical company is to hire someone like a production pharmacists.
Most of the manufacturers are also wholesalers, importers, and retailers.
In French Africa they tend to have pure importers and pure retailers – I would call it a separation of roles. So people just are retailers or wholesalers. And there are few importers so the supply chain is much neater. In Ghana it is difficult to get very pure breeds; I mean the people are doing the same things.
Across the political parties, there is support for local industry but how to do it is ambiguous. Should they reduce standards or raise standards? [in order to grow the industry]
Government has never consciously tried to help the local industry
There hasn't been time when government has given them tangible, measureable support. There have been a lot of good words spoken, but only when the government says I am going to give you 10 million and you can manufacture, and then you know they are serious.
Somewhere in the early 90s – maybe late 1980s but I think early 90s - the manufacturers submitted a list to the government which was sent to the Minister of Finance and they were exempt first from being imported. You could search for "Ghana exemptions list of medicines," they call it exempt list. They could not import chloroquine as a finished product. And then we added amoxicillin, paracetamol, aspirin; I mean it is a form of protectionism but the thing too is that it meant the country had enough natural capacity to produce it so there was no need to import it. What has happened is that that list has grown and there are quite a few products, I think twenty or so products, that you cannot import but they can be locally manufactured. So what has happened is some of the manufacturers have bought the finished product and then repackaged them locally. So if you look into it, really there are violations of that code. The finished good should not have been allowed into the country but I suppose if they come with - I don't know what you call it, manufactured already or to be repackaged.
This is off the record, but there has been a bit of pampering of local manufacturers so you exempt them and then you don't have expectations of them, you are checking on them but not really cracking the whip, so they aren't going to raise their standards and they will still be where they are.
This is off the record, but there has been a bit of pampering of local manufacturers so you exempt them and then you don't have expectations of them, you are checking on them but not really cracking the whip, so they aren't going to raise their standards and they will still be where they are.
That's it with protectionism, if you are not going to meet quality standards. The whole problem is that people fall to the lowest denominator rather than right into the highest numerator.
PMAG is privately owned [not publically traded]
Most manufacturers are family- or privately-owned, so no capacity or information about them
Of 35 manufacturers in Ghana, only 2 are on the stock exchange. It is easier to get information about these
Otherwise, the ownership structure militates against outsiders gaining information
Ownership structure: Family-owned (i.e. man, wife, and children), so very conservative in running of the company
Everything [in the pharmaceutical industry] **is like a family duel**
Access to finance [business loans] **would entail going on the stock exchange; there is limited interest in this as it would limit the ownership structure and dilute control**
Current PMAG president had strategic plans to begin producing ACTs but then the AMFm came up so he never started

If you talk to the manufacturers association, there are clearly two types of manufacturers, there those…who want to move to the highest standard level possible…pushing for prequalification for products and…US FDA standards. There are those who believe that we've done this business all our lives, and we've made enough business, we've made enough money, so why change the model; leave us as we are. And they are unfortunately very loud. And then there are those who produce an occasional paracetamol and still call themselves manufacturers. So if you look at the Pharmaceutical Manufacturers Association of Ghana the list is about 53 or 54; only about 23 are producing and then another 23, maybe 10 or 11, are maybe more serious producers. So it is a gathering of different tribes, who speak in tongues.
There are no competition laws in Ghana
Several Ghanaian manufacturers active in the production of antimalarials (mostly monotherapies)
Chloroquine had [only?] been manufactured locally (SP also manufactured locally)
Nobody barred from importing and selling antimalarials (but could not import chloroquine [because meant to be manufactured locally]
You could not import chloroquine, you could not import chloroquine tablets, you could import the powder. Chloroquine is not banned; what has been said it is that it has been de-emphasized for the treatment of malaria but it can be used for other conditions.
[Actual documentation on this is much harder to find than one would like!]
In 2004, beginning of policy of [WHO] pre-qualification - GF funding started to seep in and GF money not applicable to locally manufactured drugs
For several respondents, the AMFm story starts at least as far back as 2004, which is when the new national drug policy was introduced that made ACTs – and specifically AA – the first-line drug of choice for uncomplicated malaria
At the time, no one was making AA locally [had local and imported artesunate monotherapy on the market]
When switching first-line drugs, there were two possible products [for the government to choose from]: AA or AL (Coartem©). They had chosen Coartem©, but at the last meeting they saw there was a possibility to produce AA locally, so went with that. There were no fines or tariffs on importation and tariffs were removed on importing raw materials
This national policy on moving to AA was made under the assumption it could be made locally
But the local industry was not properly evaluated. Manufacturers started just combining many pills into one, which led to reactions, which then led to the public starting to make noise. Initially, there were some issues with AA being prescribed according to weight and without proper education. A significant proportion of the population could not tolerate AA [at least when given improperly?]
Roll-out of the new malaria policy had challenges. Many stakeholders were not involved and the education was not too good. People were given doses stronger than their weight class [and got sick]. **The media hyped AA as the killer drugs (people call amodiaquine 'I-go-die-a-quick'). Some of this is hearsay and perception; but some people genuinely cannot tolerate AA.**
The government had to withdraw and reintroduce AA, ***and the public had to be reassured.*** The government also reviewed national policy and introduced AL as an option ***as well as DHAP.*** But AA is still the most recommended; in order to cure and prevent subsequent attacks, serve as long term prophylaxis

Six years later, some pharmacists are still not aware of the policy of ACTs being first-line drugs. There are also some practical problems of the policy, which requires patient counseling. For example, AL requires a fatty meal [and complicated dosing] and ACTs cannot be given in the first trimester. Many pharmacists are not abreast of current treatment guidelines for simple ailments; they don't read and don't upgrade.
When the first line of treatment moved from chloroquine to AA, the price went from 10p [US$ 0.05] **to GH₵ 15** [US$ 7.85] **with generics priced between GH₵ 4 and 6** [US$ ~2.10 to 3.10]**). Now have a new product** [ACT] **that is too expensive. If** [they] **announce the** [new first-line treatment] **policy but nothing is there** [no ACTs in stock], **there will be a vacuum (old one is gone but new one is not there)**
In all efforts [on antimalarials to date, they have been] **targeting the public sector, so could make it affordable there but not in the private sector.** [Without the private sector] **how can we win fight against malaria?**
In the chloroquine era, the drug was universally available -- public and private sectors, urban and rural areas – had a large reach. It was very cheap, even by Ghanaian standards. 30+ local firms were able to manufacture Chloroquine
What happens if we try to shift this [chloroquine] **model to ACTs? Why can't we return to the chloroquine era of pricing** [and availability]**?**
[Several meetings took place prior to needing to thing about the application. A 2008 meeting in Dar (Dakar? trouble with phone connection, so not clear where meeting held) dealt with the fact that ACTs were actually available] **in countries but the prices were high.** [They] **talked about what would happen if they subsidized the drugs at the manufacturer level and brought the drugs in through the normal supply chains**
A meeting in Kenya in 2009 [GF workshop] covered the issue of **crowding out local manufacturers. Local manufacturers petitioned before this meeting, raising this concern, especially as it became clear they would need pre-qualification** [to participate]
Several pharmaceutical manufacturing initiatives have been underway prior to and simultaneous with the AMFm – these were mentioned by various respondents
WAHO (West African Health Organization), MoTI , UNDP have on-going initiatives that manufacturers [?] **can join in order to build capacity.**
GTZ brought together pharma manufacturers in West Africa in Dakar in 2007. An issue that arose was upgrading the local pharma industry. GTZ involved as a "sponsor," through UNIDO (not directly involved) in "strengthening local production of essential generic drugs in least developed & developing countries)"
Dakar meeting followed by a 2008 visit to Ghana by the project manager and formed a partnership between UNIDO, PMAG, & MoTI.
In ECOWAS [Economic Community of West African States], **only Ghana and Nigeria have a sizable number of manufacturers**
After stakeholders meeting, they formed committees and came up with 5 pillars [of action]. The UNIDO project is set to continue until 2013
Development of a GMP roadmap to set timelines and minimum standards for the industry
GMP roadmap: Post-market surveillance (PMS)
GMP roadmap: Need to make sure demand will be there
GMP roadmap: Need to protect the market if asking them to upgrade (not crowded out by sub-standard or counterfeits)
GMP roadmap: Need to strengthen FDB

GMP roadmap: Access to capital
GMP roadmap: Need to invest in HR, machinery, equipment
GMP roadmap: Availability to get development finance; now borrowing from the commercial market at a crazy 30%; need alignment between this rate and a long-term plan (3+ years)
GMP roadmap: Provision of incentives [for upgrading]
GMP roadmap: Time-limited incentives, to be undertaken by government
GMP roadmap: HR development
GMP roadmap: Training to manage/handle equipment, meet new standards
GMP roadmap: Talking to tertiary training institutions
GMP roadmap: Improve pharma technologists; take over from the Indians currently running [these firms]
WAHO: **Around 2009 WAHO decided to promote local manufacture by patronizing the purchase of local products and they bought ARVs from** [a Ghanaian company] **and a company in Nigeria**
UNIDO (MoTI): **UNIDO has developed a conceptual strategy to upgrade local production to meet some of the international standards (i.e. pre-qualification, GMP). They also gave technical assistance to some of the local companies to help them map their route to attain the standards.**
UNDP: **UNDP is currently involved in marshaling all UN agencies to help** [one of the local companies] **attain the PQ standards.**
Do you know what measures were taken/offered (in Ghana or elsewhere) in terms of moving the local manufacturers towards WHO pre-qualification (for ACTs or otherwise)? My sense was that something was being offered by UNDP, which maybe no local manufacturer took up. Or, is this part of the pursuit of [the two local manufacturers going] for pre-qualification? Is there anywhere to learn more about the (written) details of this effort? **I am not aware of any such thing.**
Was there talk with (or any push-back from) UNCTAD or the ICTSD on issues around building up local manufacturing capacity? If so, is there any chance there are actually documents on the subject? **Not aware**
Some respondents were quite in favor of the public-good goal of everyone being able to access and afford the good meds
Some noted there was not much to lose much by going for it *or that it could be supported by taking* a purely experimental view
One respondent pointed out, **from the public perspective, we just want ACTs available and affordable everywhere, if people are making money that is a second order concern**
Another that, for each ACT that is stocked but could not be sold (because the drug was too expensive), someone dies
Further, NHIS as a selling point for the AMFm; [the cheaper drugs] will save them a lot of money
Everyone was concerned about the issues raised by the manufacturers [with regard to the AMFm]
Everyone is asking the same questions openly, from both the public and private sectors
Respondents were concerned about the potentially short-lived nature of the program and what would happen in its wake, as well as interpreting what the non-committal nature of the program meant

[One respondent was concerned about the] experimental nature of the program [and that the experiment would be carried out] at the national level. People knew the program would be 18-24 months, with no assurance to continue or assurance of implementation in the long-term. There was no commitment from GF on sustainability
It was **concerning to everyone to evaluate** [implementation progress and results] **after less than 2 years**
Despite these concerns, no one developed a clear economic sustainability program; everyone [acted as if] it would continue.
If the goal [of the AMFm] ***is saving lives, then it should be permanent. If GF is interested in saving lives and doing it for the love of people, then doing the AMFm for only 18 months is not saving lives. Therefore, I don't understand the objective of the program.***
[It doesn't make sense that] *GF is concerned about quality antimalarials today but not tomorrow. This is not sustainable.*
One concern among informants was about whether the cost-savings on antimalarials would artificially buoy the NHIS, which would then not put in place a back-up plan and would in the end bankrupt itself
NHIS welcomed the idea of the AMFm; they thought it would save them money
Prior to the AMFm, NHIS was paying GH₵ 3.5 or 3.6 [~US$ 1.85] to facilities and paid a lot more to teaching hospitals – from GH₵ 10 up to GH₵ 15 [US$ 5.25 - 7.85] -- for ACTs as well as costs like accompanying painkillers and vitamins
I am not sure whether NHIS looked at the long-term and what would happen if the AMFm was withdrawn
Savings made by the NHIA as a result of the AMFm [should] ***be invested to set up a fund that could ensure subsidization of ACTs***
PM was skeptical about sustainability; made many arguments but there were no clear answers [to her concerns]
No additional money [would be given to do the AMFm]; **some people thought it was unfair to take money from Round 4 GF grants because it had already budgeted for full-dose costs and to reprogram** [that savings] **as SJV**
Generally there is always this unhappiness about the fact that all the funds we obtained from the Global Fund or PMI are used for imported products rather than locally. It's a long abiding thing that we should move from using those funds externally to using them internally. That's not a Ghanaian issue but it is primarily an African issue.
The whole idea was that it doesn't make sense to spend all the grants we get from the Global Fund to import medicines. So by giving the local industry protection and assured the market to be able to raise again and meet quality standards including prequalifications, that's the whole idea.
[Funds for industry were] ***not going to come from not from the AMFm money, it was meant to come from what we call the funds which we reprogrammed. So the argument was if the government is going to save 10 million dollars because of the AMFm, why doesn't the government use the other monies that they received from the Global Fund or elsewhere to support the local industry to raise their standards.***
Some people had apprehension about Head NMCP 's own commitment
Concerns about private sector being used for the first time for a public good
Concerns about whether the industry would be compliant
What was the ability to keep prices down; how would price regulation work?
Anticipated challenges with private sector engagement

Deputy DG NMCP **does not trust the FLBs**
Many people were making a good profit on selling ACTs
Community pharmacists make a majority of their sales from antimalarials
For those manufacturing ACTs and other antimalarials, it represented a big part of their business. How would they fill in this profit if undermined?
Many companies had just started retooling to make ACTs, so [they were not happy about the AMFm]
Local producers lose money in machines and raw materials
Even those not manufacturing antimalarials had concerns that the AMFm idea could spread to other diseases and drugs
[The manufacturers] ***felt now it was starting with antimalarials, what's next. It was about the whole global model that could in the future be very destructive if it applied to more and more of the market.***
[Was the AMFm sort of the first time the Ghanaians manufacturers got to vocalize that displeasure or have there been other incidents?] ***No that was the main one.***
AFMm should be used to develop, not negate, local capacity
Local industries and manufacturers [wondered] who would buy their products [if the AMFm was in place]
Highest form of employment is from industries. Only need 1 person to do importing and wholesaling; need many more if manufacturing (more employment)
Local industry supports so many drugs locally but this one comes from outside; WHY? [this respondent is very dramatic]
Manufacturers say this [AMFm] is an attempt to destroy their business
AMFm has killed the initiative of the people in the local industries
AMFm has created unemployment [they can't cite how much]
There was genuine fear regarding a new thing coming that will upset the business environment
Now that the prices for ACTs are down, they cannot be brought back up
Then what [if the AMFm ends]? ***We would have a distorted market***
It is a problem for local manufacturers that the AMFm will run for 18 months, then could be renewed or not. In the meantime, the AMFm will have already taught people that ACT should be GHC 1.50. The Global Fund will have taught them to swim and then leave them in the middle of the sea
There was no plan for **what would happen at the end of 18 months** [after the pilot phase]. **Would local manufacturers take back over? Would they extend the AMFm?**
From the AMFm, the brand name of ACT [green leaf] ***has stuck in the minds of people. How can we shift them to new brands? Now we have lost the branding, goodwill toward the local industry,*** lost brand awareness
Manufacturers worried that the AMFm would kill the local markets; some local companies already had up to 2 billion [???] courses made, which would then expire
And now [with the AMFm the] capabilities of local manufacturers are diminished, and they ***are*** not importing ingredients [so what would happen if the AMFm ended?]
80% to 90% of antimalarials produced globally are consumed in Africa but [Africa has] no capacity to manufacture for ourselves. We haven't fought or haven't fought well for this; our leaders have let us down
There is more malaria in Africa, so the cure should be in Africa; [we] shouldn't need to rely on an outsider who has no moral stake in the disease

We are managing a local disease, so should have local drugs. Why not build local capacity? Why not foster international partnerships?
As a country, we shouldn't be dependent on GF for so long without contingencies [contingency plans] because of the possibility of donor fatigue
Besides Ghana and Nigeria, no one else in West Africa is producing seriously. Rather than buying from Asia, we should make [antimalarials] **in West Africa.** ***What if a tsunami hits Asia and no products can be exported? It would negate the objectives of the AMFm*** [because then no drugs would be available anyway]
If the government thinks pharma manufacturing is a strategic industry, then physical and policy incentives should be given. Maybe the government should repeal the AMFm
GF does not empower us; for how long will they give us fish before they teach us?
AMFm is a short-term measure with no long-term plan
Africa needs to get its house in order so that they have local capacity and are not vulnerable to global economies
Politically, across the African continent, in speaking to NEPAD and African Union, local production is what they want to do. There is no doubt about that.
Ultimately, the private sector proved unwilling or unable to provide numbers about their manufacturing capacity. Past-President PSGH estimated that they supplied about 10% of the country's ACTs [Past-President PSGH later pointed out that this was a back-of-the-envelope calculation that could not be verified with an official citation]. Therefore, one respondent suggested that *this resistance is mostly just a ploy to maintain price. Local manufacturers were not prepared to sacrifice business in the interest of the nation*
If you speak to UNIDO, the more you tried to know the exact amount of business loss the more you run into trouble because everyone wanted to deal with facts, not figures coming from space.
In addition, before the proposal was made, **WHO offered technical support but no one** [no manufacturer] **took it. They didn't want to invest** [their money in machinery, etc.]
Even those more on 'industry's side' [like UNIDO] had trouble getting figures, and were unable to **estimate ACT needs of the country, for example the % imported verses the % manufactured locally**
As a group, I think PMAG officially welcome the support of UNIDO. Officially they do.
Private businesses were cashing in on monotherapies but also on some ACTs. But, [we] don't actually know the ratio of manufactured to imported ACTs, relative to the national need
Originators of the AMFm talked to MoF and told them how much they would save under the AMFm.
MoF may have signed and committed before any other stakeholders were brought on
Are we sure the brands within the AMFm are really the same? The certification [WHO prequalification] is just on paper; how do we know we are getting good drugs?
GF looks at system-wide issues as an afterthought; funding support is linked to diseases
Rather, GF should leverage support across all diseases
AMFm should have been an experiment for the next phase, not on whether or not to stop or continue the program.
Local manufacturers and the FLBs felt the [business model] *could have been 'mixed' to allow participation by the local industry*
Everyone would have preferred to have quality, local drugs *(for the AMFm)*

AMFm [could have] **become a funding source for up-grading [local manufacturers for pre-qualification]**
AMFm should give specific support to building [local manufacturing] capacity. If Ipca© [global pharma manufacturer]***, etc., are pre-qualified, GF should try to partner them with a local manufacturer in order to build capacity*** [in Ghana]
[AMFm should help] ***Ghana pharma manufacturers…forge partnerships locally and internationally***
AMFm said it was going to deal with all stakeholders, but it gave no direct support for manufacturers
It is a major concern that no manufacturer in Ghana is WHO pre-qualified. Why [would the AMFm] not help us to get there? GF could identify key manufacturers to upgrade
Why couldn't GF support the local industry with WHO pre-qualification?
AMFm planners did not factor in that there is no substitute for local initiatives
We suspect that GF wants to take our food from our table to give to someone else. Who? ***We don't know.***
Tell Mr. Gates that his money is going nowhere; it's going to the pockets of Asia, not Africa
[I also felt, talking particularly to manufacturers, quite a bit of anti-Asia rhetoric.] The thinking is that anything bought from India and China is counterfeit. You could say that there is not a lot of love lost between us and them. Because we feel like that a big percent of all imports are from India and China.
Tell Bill Clinton that local industry needs to take care of local problems; Africans need to solve Africa's problems
Ghanaian companies have been producing ACTs for 7 years and are not killing our people, so we only need a little help but the AMFm did not consider this
The private sector resistance is based on the perceived impact of the AMFm on local manufacturers (those countries with a sizable manufacturing industry). They have been working to address this with partners: ALMA (African Leaders' Malaria Alliance) and UNIDO. They are working with the African Union to coordinate a response to challenges to African-based manufacturers
Ghana asked to apply to the call for proposals (11 countries) - like a normal GF application.
GF (RBM) wrote to Ghana CCM about a new initiative for malaria endemic countries to reduce the disease effects, through access to cost-effective medicines
Would be an opportunity for Ghana to access more funds
Why did the Global Fund want Ghana to join? GF encouraged [NMCP] to apply based on their previous record of progress.
Why did the Global Fund want Ghana to join? GF wanted Ghana because Ghana is often used to start things
Why did the Global Fund want Ghana to join? Head NMCP [and NMCP] **were star performers on Global Fund grant management until last year, when procurement shifted from WHO to MoH**
Why did the Global Fund want Ghana to join? Ghana was leading with GF for three disease areas - HIV, TB, malaria - and HSS, so we were receiving grants for malaria control activities
Why did the Global Fund want Ghana to join?**With another dispensation through RCC, Round IV malaria grant, we had done very well with innovative approaches and good implementation.**
The application would go through the CCM; CCM identified NMCP as principle recipient. The application written between March and June 2009 [up through September 2009]

The application included a plan for supporting interventions, marketing, monitoring, monitoring and evaluation training, and research
Initially they [NMCP, CCM] were not in favor [to the AMFm invitation] because they thought there would be a lot of resistance from local industry
CCM met to agree and respond to invitation. We indicated interest, said we would need further support in technical writing
Voted at CCM to prepare application; large majority supported preparing the application. Once CCM asked for the votes to submit, went almost immediately [the decision to prepare the application]
Decided it was in the public good
Took a decision based on the best interests of the nation; we gleefully accepted challenge [of putting together proposal]
In broad frame, CCM says 'let's submit,' so working on the application, but [meanwhile] other issues continue to drag the process
Head NMCP distanced herself from the AMFm; NMCP delayed the application. Head NMCP thought that monitoring would be very stressful, beyond their capacity and capabilities. She was worried about the difficulties of implementation, rigidity of reporting, etc.
Head NMCP **was passively against the AMFm. She had doubts but was open and frank and ultimately did her duty.**
PM still had issues, so just told Deputy DG NMCP and Officer NMCP they could put in an application and that they would have to run it. But, PM would always have some level of responsibility.
To submit the application, CCM put together an in-country proposal team: PC, FDB, GSMF, NMCP (Keziah & Officer NMCP), LCS *[Informant couldn't remember for sure]*, community practice pharmacists, and the Chair of CCM. Possibly a UNICEF consultant. MoH procurement only came once to the meetings. Technical assistance came from CHAI (Precious, Phillip). To write the application we agreed on a framework and then shared portions to write.
The private sector was not yet involved or consulted
By about 2009, active local manufacturing was down from 6 to 3 manufacturers still making ACTs
When talks started about the AMFm, 5 local manufacturers were producing AA
Some local manufacturers were producing ACTs. 5 were still producing at the time of the AMFm: now none of them are producing anymore
A 6th had invested heavily in equipment but wasn't yet producing at the time of the AMFm
(The local manufacturers] **scheduled to tail off production as the AMFm phased in because they cannot compete**
Do GF proposals usually get this much attention? No!
16 & 17 March 2009 – National Stakeholders Meeting (NSM) [supported by CHAI] took place at La Palm [fancy hotel in Accra]
CCM invited private sector to NSM
The meeting served as dissemination forum, with the AMFm and its implications brought to the fore
Private sectors' fears were met with good representation from GF (HQ) to answer questions
Deputy DG Public Health MoH ***delivered the report from*** NSM and an overview of the AMFm

Deputy DG Public Health MoH said the CCM should ensure strong presence of the public and private sectors in the AMFm proposal development team, should it decide [to go] for it
Deputy DG Public Health MoH said that despite assurances to local manufacturers of technical and financial support from organizations like UNIDO, WHO, and the government, the private sector was still not open to the concept
Deputy DG Public Health MoH said the [private] sector feared that the cost of pre-qualification status would be borne solely by individual manufacturers
Deputy DG Public Health MoH said not all the concerns of local manufacturers could be addressed in the [AMFm] proposal. He said some of the concerns relating to prequalification would be taken on board as a different package
Motion in support of the AMFm proposal
After exhaustive discussion of the agenda, three members took turns to call on CCM to approve of the AMFm proposal.
The report of the national stakeholders' meeting as well as the presentations and clarifications to the issues at the meeting showed that Ghana stands to benefit from the program.
The report of the national stakeholders' meeting as well as the presentations and clarifications to the issues at the meeting showed that Ghana stands to benefit from the program.
They argued that a decision to reject the AMFm could not be defended anywhere because its benefits outweigh the cost to the country
They advised the private sector to focus on the opportunities and challenges that the program offers to position itself rather than on the loss of jobs and collapse of market
A representative of the bilateral group said the [private] sector would support the AMFm proposal for Ghana. He recalled that the AMFm decision was preceded by a number of well-thought decisions
What was required of the CCM was to decide whether Ghana joins the AMFm pilot or wait until the outcome of this phase before taking a decision.
The member said there were issues about supply chain, diagnosis, and drug monitoring that must be critically examined in view of the fact that the NMCP had received approval for two huge grants to implement. He questioned the implications of going for the AMFm now or doing so after two or three years
In response, Deputy DG Public Health MoH explained that the AMFm would result in the reprogramming of the existing grant, leading to cost-savings for the country
In addition, it would provide an opportunity to strengthen Supporting Interventions that included training, supply and distribution chains, and drug monitoring.
Responding to calls on the CCM to accept the invitation to be part of the AMFm pilot, the NMCP (PM) [Head NMCP] said the CCM should request for a written statement from sector representatives [members] on the CCM giving assurance that she personally would not be held responsible for any fallout of the program.
She said her concern was borne out of the bitter experience with the change in drug policy from chloroquine to amodiaquin [in 2004], when the latter was perceived as dangerous and unacceptable by the public.

Submission by PMAG - the meeting took a different turn when 4 executives of PMAG came rather belatedly to petition the CCM on the AMFm proposal.
Representatives of PMAG storm the meeting and strongly protested that this would destroy the local industry (at least for some time)
Said the AMFm would affect profit margins and was a disincentive to industry
PMAG said their overhead costs would not go away; how could they cover costs if prices drop?
[The president of PMAG] ***said for the CCM position to be acceptable by all parties, it must be carefully balanced. He urged the CCM not to accept the AMFm in Ghana because it would lead to the collapse of the local pharmaceutical industry***
He said despite the good intention of the program, the AMFm would change the mindset of Ghanaian consumers through strong attachment to the international brands of ACTs, which would lead to the collapse of the local market and loss of jobs to its 5000 workers. PMAG said the country should wait for the outcome of the pilot phase
There were mixed reactions to the call from PMAG, which appeared to confuse the whole discussion since morning
The PM said she would repeat her call on the CCM to request for written statements from all sectors represented accepting responsibility for any decision of the CCM
There were also calls for clarification on the government as PR and calls to defer the decision of the CCM until further consultations are made with both government and private sectors
At this juncture, the Chairman excused all observers for about 10 minutes to allow only voting members to discuss the new development and to take a common stand on the way forward with the discussions.
When calm was restored the CCM took a critical view of the various statements, particularly that of PMAG and the PM.
After some deliberations on the matter, the CCM conditionally agreed by consensus to participate in the AMFm initiative provided government/MoH gave its unambiguous support and approval to lead the program as PR.
In addition, members mandated the Executive Committee to meet with the Honorable Minister of Health to seek this clarification and also put across some of the genuine concerns of the private sector.
The observers outside were called back and the decision was conveyed to them. A member agreed with the decision of the CCM…and reminded members of the 1 July 2009 deadline for submitting the AMFm proposal to the GF
At the last meeting, the CCM conditionally approved the submission of the AMFm proposal to the GF. He said the Exec Committee was mandated to seek audience with the Hon Minister on the following clarifications:
To seek further clarifications to the consent and commitment of government (MoH/PR)
To seek clarifications on how government intends to mitigate local industry concerns of the AMFm initiative aimed at providing unlimited access to ACT at affordable prices
The Chairman said the first meeting with the Minister on 6 April ended with a promise by the Minister to get back to the committee within three days after he had consulted His Excellency the Vice President.

He said as of the day of the meeting, the Honorable Minister [of Health] ***could still not be reached for any information as promised at the last meeting***
The Chairman said since the AMFm proposal submission had a deadline, he could not wait but [needed] ***to call an emergency meeting of the CCM to discuss the way forward***
He said information from the Minister would have provided important feedback for the meeting because of the need to understand how government intends to mitigate local industry concerns against the background of providing access to ACT at affordable prices
The Chairman informed the meeting of a phone call he had received from the Hon Minister in the course of the meeting, requesting to meet with him at 13:00 the same day. He invited views from the members on whether to continue with the meeting or wait for the outcome of the meeting with the Minister.
After some deliberations, the members agreed as follows: - To wait for the outcome of the meeting with the Minister since it was critical to any decision by the CCM and to draw up a plan based on two scenarios: a positive response from the Minister that the government is OK with the AMFm proposal and a 'no' response that government still needed time to take a decision.
In the case of the first plan, it was unanimously agreed to quickly assemble the task team to work on the proposal should the response be positive. However, in the case of a 'no' response, the reasons cited would inform that CCM's decision, which was likely to be a discontinuation of the proposal development for submission.
A member expressed the importance of the AMFm initiative in the control of malaria in Ghana. He said the CCM should be guided by its own mandate in taking a decision.
He said it was evident with the current stock of ACT in the public system that the AMFm could have problems with the existing distribution and supply chain management and suggested the identification of weaknesses [needing] ***to be strengthened to support the process.***
A member called on the CCM to be careful not to meddle in politics, but this was quickly rebutted by a member who said health issues were political
Two persons, Dr. Henry Nagai and Marius de Jong, were nominated to accompany the Chairman to meet with the Minister. The outcome of the meeting was to be conveyed to members.
Whose reputation is on the line with the AMFm? ***Minister of Health***
Whose reputation is on the line with the AMFm? [PSGH President] will be vilified if it doesn't work
Whose reputation is on the line with the AMFm? PMAG are still upset with [PSGH leadership] about this [supporting the AMFm]
Whose reputation is on the line with the AMFm? [CCM Chairman] chastised by colleagues for bringing the AMFm in
Whose reputation is on the line with the AMFm? [CCM Chairman] would be branded as a sell-out [by the private sector]
Whose reputation is on the line with the AMFm? [CCM Chairman] did a lot of work going to talk to people [in the private sector]
Whose reputation is on the line with the AMFm? ***NMCP and the public sector don't want to be accused of letting foreigners take over the market***
Whose reputation is on the line with the AMFm? [NMCP PM] thought [she] would bear the brunt

Whose reputation is on the line with the AMFm? Reputation will come back to NMCP, even though just implementing for MoH
What about [PSGH President]? He was involved in some high level meetings and made some genuine comments about whether the manufacturers could say that their businesses were really at stake
What about [PSGH President]? [He] **is playing on a global level**
What about [PSGH President]? **Not actively part of the process but similar to** [CCM Chairman]**; on the side, was able to meet with counterparts** [among pharmacists] **and talk to them about the AMFm**
What about [PSGH President]? What did he do? I don't know what [he] did. Pushed more work onto [CCM Chairman's] plate?
Who came forward as champions in this process? Deputy DG Public Health MoH [GHS]
Who came forward as champions in this process? Deputy DG NMCP
Who came forward as champions in this process? [CCM Chairman]- **very supportive and useful because he is a pharmacists and a retailer**
Who came forward as champions in this process? There is no champion for malaria in Ghana. Compare us with Tanzania, where the president was a champion for malaria.
Who came forward as champions in this process? In Ghana, besides the NHIS, health issues are not sexy for politics
Who will be blamed or vilified if this does not work? **The whole system** [GF secretariat] **and international credibility**
Who will be blamed or vilified if this does not work? **The global community's reputation is at stake and whether countries would buy into another pilot**
CCM was the main player in moving the application forward
CCM vacillated in its support
[PSGH President] spoke in favor about it regarding the public health benefits; this made it look like more pharmacists were in support of the program than really may have been
If PSGH goes one way, others will usually follow
PSGH was the first 'on board'
It was clear [to PSGH President] ***that local industry would not support, and PSGH was needed***
If PSGH had said 'no' to the AMFm, it might not have gone through
Getting on board is good for the image of pharmacists, showing that they are not only money-conscious but also public health conscious
Appeal to professionalization; saying it aligns with the mission of PSGH
In the end, the government [GHS bureaucrat] was begging PSGH for their help
What were the different positions toward the AMFm? **Manufacturers and pharmacists were actively against the AMFm**
What were the different positions toward the AMFm? Private sector was worried because sales could go from low volume/high margin to potentially high volume/low margin
What were the different positions toward the AMFm? There was disagreement between hospital and community pharmacists; community pharmacists resent hospital pharmacists [think they take business]
[CCM Chairman] understands the business side, which is very important; business people who really knew [about business] were the real champions [of the AMFm]

What were the different positions toward the AMFm? **Some suggested that local government and NMCP were playing it safe and being conservative about the AMFm because of economics and politics. The AMFm presented big professional challenges.**
What were the different positions toward the AMFm? Local manufacturing and pharmacist industry could not actually say (quantify) how much they stood to lose and provided only non-scientific arguments. But chloroquine was cheap; was it really a big part of their business?
The first argument the companies made was that the AMFm was going to destroy their business. So when I was involved with UNIDO, the question I asked was what was the size of the market which was going to be destroyed? So that we can make other arrangements to ensure that shortfall was met. And none of the manufacturers could give us a figure, whether in volume terms or in dollar terms of what the market is. For the size of the market that they claimed would be lost was not clear. If you don't know what is going to be lost, it is hard to determine what to give and it becomes very difficult... They could not quantify what they had lost and what needed to be replaced.
The problem has been that when the manufacturing sector does not know the volumes of its production; cannot tell you how much money is involved; cannot tell you if they their profits. With good manufacturing practices, good oversight, good regulatory controls then we could have said, OK, you are producing so much, say 20 tons or 200 million tablets or doses, now you know that it is how estimated that this is what we are supposed to give you.
The manufacturers thought if you make enough noise about the AMFm the government would invest in us. But government was not going to invest, at least in my discussions with government, until they knew what was going to be lost. And government would put that amount back in.
How people reacted to the AMFm depended on which part of the value-chain and supply-chain they were in. Importers are happy but manufacturers are not. Manufacturing also makes less profit than importing and has more problems [because more people are needed].
[The manufacturers] all claim it is cheaper to import than to manufacture because they don't get the tax breaks they need on their equipment or raw materials and package materials, so it is much cheaper to import rather than produce.
The malaria community was mostly on board and told the government that it needed to make the drugs affordable.
CCM had a lot of individual chats with manufacturers/importers
Many spoke as if they were against it but on the quiet, they were willing to go along [with the idea] **but wanted to show solidarity in public**
Biggest distributor of ACTs is an importer, Tobinco, not a manufacturer
Importers had no specific body but CCM had organized meetings with wholesalers, asking them to nominate representatives
Distributors were also against because it would bring down business (different margin for same fixed costs)
Make same public goods and CSR argument to them, saying that the AMFm is a sacrifice for everybody
Within the manufacturing sector, there are different interests
They tried to put out as a common goal/view that this will destroy our interests, but not all see it that way
Even within the manufacturers, how many are actually producing ACTs?
There is latent suspicion among the manufacturers because there is an attempt to get them all to come together as one unit, but the individual companies have different facilities, merits, and capacity
Those with limited manufacturing machines are much more against the AMFm
Diverging interests within their own fold for potential prequalification

How can CCM organize the different interests to achieve a common goal? There were some disagreements, power plays.
Was the AMFm rushed? To the private sector, the AMFm may seem like a rush; so they wanted to buy time and disrupt the process
Was the AMFm rushed? GF had made a timeline for the AMFm by accepting the intervention, CCM had bought into it
Was the AMFm rushed? If had been given more time for discussion, would have missed the deadline
Was the AMFm rushed? Took the AMFm decision based on wiping out monotherapies and price availability
Was the AMFm rushed? So, why waste time with profit-driven private sector?
Was the AMFm rushed? Overall, maybe experienced a one-month hold-up because of the manufacturers
Getting to the application became a fight
Opposition was toward going for the AMFm in general, not for the proposal writing
Opponents didn't block the writing but tried to lobby and advocate [against it]
PMAG does not completely frown on the idea of the AMFm but the process has not been rolled out well; we agree with idea of increasing quality and decreasing cost
Local manufacturers are not pre-qualified; if the industry is not competitive, how could they fulfill the process of pre-qualification?
PMAG presented ideas on how to partner with the project to empower the local industry to NMCP, CCM, MoH, MoF, MoTI, UNIDO but this was not very fruitful; GF/CCM not very interested in our ideas
UNIDO is not much in favor of the AMFm but can't do much to stop it
PMAG's arguments have some merit but we were really on their side the whole time
We tried to link them for pre-qualification, for example, with UNIDO
We don't know what type of offer UNIDO is making
Some manufacturers are not prepared to take the risk and make capital outlays [in order to pursue pre-qualification]; **they can still produce non pre-qualified drugs for market**
PMAG attended a few CCM meetings and made the point that Ghana needed to be more nationalistic and futuristic in our policies
For example, Sanofi and Aventis (two French companies) merged with each other rather than pursuing a merger with a German company
GF wants to have high-quality drugs -WHO pre-qualified - but this is a financially-, HR-, and technologically-intensive task; it is a long road that takes too long
Once have qualification, still no guarantee that people will buy your drugs
Need to have assistance with the upgrade because otherwise, how can we sell drugs for cheap?
Malaria will be with us for a while, we need to be futuristic in how we tackle it
There is a lack of interest among global bodies in supporting the private sector; there was no actual direct dealing with the private sector except for international pharma, so how can we see this as a PPP?
If we have to lay people off, it will drop them back into poverty, and their exposure to other diseases will increase
Minister (not the MoH) was non-committal
The Minister is an ass. He prolonged everything
The Minister had it in for [NMCP PM]
Minister delays the submission due to feet-dragging, leading us to come very close to the deadline

The private sector had foot soldiers hopping around the corridors of power
Government found it difficult to quickly say "yes" because of the implications; private sector threatened to go on strike or demonstrate and may well have done so -- not responsive to its own national need
Minister told manufacturers that CCM and GF "are trying to lobby me"
All manufacturers pay politicians
The manufacturers try to influence the government. Because they also are wholesalers and importers, they also participate in the tender process for almost everything. All the manufacturers have a hope that the government will support them more than the government does. So they try to create the enabling environment for government to support them. It makes a good business sense for them to be nice to all politicians because the government still buys, you know, whether through the hospitals, private hospitals and public hospitals, and public facilities, you know, you have to supply something. Maybe not ACTs, but something –like sutures, bandages, zinc, ORS… Most of them expect government to be giving them business loans so that they can move their business up. That is their eternal hope.
Politically, we are yet to get to the state where the politicians have a commitment to anything apart from getting reelected. Investment in the pharmaceutical industry is going to show in two or three years, it will take time.
Manufacturers have a strong lobby, so would be political suicide *[for the Minister]* to openly support the AMFm
Minister could not come out and say 'we are for this program'
Minister is a politician, so susceptible to lobbying
Industry felt they had the power to influence the government
Minister at the time facing pressures from the local manufacturers
PMAG has a strong lobby to vice-president
Some attempted to derail the process through political connections because of concerns about employment; threatened they would have no option except to lay off employees. Made presentations to the highest level *[doesn't know if or how high]*
The new government had just taken over in 2009
Their *[recently elected government]* campaign messages had assured local industries and manufacturers they would be supported and bolstered
PMAG tries to use this as trump card to oppose the AMFm
New government facing a new program that would anger constituents
PMAG lobbied the ministry a lot
Minister heavily lobbied by industry; he promised PMAG not to worry
When they left the table *[from the emergency CCM meeting]*, PMAG sent strong representation to the Minister
PMAG could have put more pressure on the government to do something to support pre-qualification but they did not do this
Did they really believe that the AMFm would broaden the scope of the uses of its money or whether they were hoping to induce government to invest in them or if they sort of had an end game or if they didn't really have an end game? ***There was no end game.***
The fight against the AMFm had a lot more to do with continuing the status quo rather than anything else.
CCM does not require the Minister's signature for the proposal to be submitted, but needed representation / signature from all CCM members to endorse the submission

AMFm needed consent and commitment of government for application and to mitigate concerns of the private sector
[CCM Chairman] needed the Minister to authorize the proposal
Is or was the CCM a lobbying group? It is to an extent because it has a cross-section of representation; individual members put in a word [to government officials] but there was no formal lobby
AMFm was political but was it party politics? ***Political fight had nothing to do with political parties***
AMFm was political but was it party politics? Difficult to say; indicators that some were trying to show political connotations
While tendering the AMFm deal (end-2010), GHS bought 3 million doses of local ACTs; they paid 3 or 4 times as much for these [as they would under the AMFm] **and possibly never paid the manufacturer**
Minister was in a corner; he needed a policy to go through without his confirmation
[Before application due] Minister went into hiding, then told the chief director that he could write the letter [to CCM] when he was going out of the country
Letter when the minister was going out of town (traveling)
On last day to submit, CCM had to submit a letter that CCM was going ahead since the Ministry had not said "no"
CCM sent letter saying "we take it we have your approval;" a passive yes
Minister never said anything in writing about supporting the AMFm but gave a verbal commitment to Past-President PSGH , Deputy DG Public Health MoH
PMAG unhappy because CCM went ahead
Did it come close to being blocked? Unable to say
Did it require a call from Bill Clinton? **Yes, Clinton did call the** Late, Former President of Ghana **to ask him to support the AMFm, just before the application was due**
How close was CCM to not submitting? ***I didn't have the impression that it would be blocked, it just required explanations, negotiations***
Did it require a call from Bill Clinton? ***Doubt that Bill Clinton called; there was not so much at stake to require that level of coaxing***
There was jostling and maneuvering based on access to President; either side could have won the day
Industry lobbied VP with a letter saying the AMFm would not take place
VP could have changed the course, but Clinton called the Late, Former President of Ghana
The Late, Former President of Ghana ***may have said something in his cabinet about supporting the AMFm but he never said anything in public***
NMCP had no choice when CCM said submitting
Once the application went in, NMCP was committed fully
November 2009 - receive board approval of Phase I
Was Ghana ready for the AMFm? What were lessons learned? **Cannot seriously predict outcomes over a short period of time**
Was Ghana ready for the AMFm? What were lessons learned**? Making room for uncertainties is important**
Was Ghana ready for the AMFm? What were lessons learned? **Moving along full supply chain can take time**
Was Ghana ready for the AMFm? What were lessons learned? ***Progress requires confronting the truth***

Was Ghana ready for the AMFm? What were lessons learned? Failure to plan leads to failure
Was Ghana ready for the AMFm? What were lessons learned? **This was complex in terms of dealing with the private sector (profit-oriented); if there are delays or loopholes in the system, they may try to go around and create problems**
Was Ghana ready for the AMFm? What were lessons learned? There is a big gap between policy-making and implementation
Was Ghana ready for the AMFm? What were lessons learned? **When the government is getting involved in policy, need to consult all stakeholders to get a holistic picture of what getting into**
Was Ghana ready for the AMFm? What were lessons learned? Politics are a struggle
Was Ghana ready for the AMFm? What were lessons learned? Had to deal with private sector participation
Was Ghana ready for the AMFm? What were lessons learned? Political lobbying very important [in health policy]
Was Ghana ready for the AMFm? What were lessons learned? **Confidence and trust, and openness to talking facilitates the initiative**
Was Ghana ready for the AMFm? What were lessons learned? **It is possible to have PPPs in developing settings; it requires trust and respect**
Was Ghana ready for the AMFm? What were lessons learned? *The relationships and contracts between the Global Fund, the manufacturers, the NMCP, and the FLBs should be made clear, transparent, and consistent*
Was Ghana ready for the AMFm? What were lessons learned? ***Should not roll out*** [something like the AMFm] ***until country on board***
Was Ghana ready for the AMFm? What were lessons learned? *Stakeholders in Ghana are unanimous that the AMFm should continue post-phase I with modifications, including a key role for local manufacturers and financial sustainability plans from the government of Ghana*
Was Ghana ready for the AMFm? What were lessons learned? *There was unanimous agreement that the AMFm should not and could not be terminated without undue and untoward consequences to all… Hence, the option favored in Ghana is to modify the AMFm*
Was Ghana ready for the AMFm? What were lessons learned? *The political ramifications of termination are dire – the public will blame termination on the government of the day and this will have severe electoral ramifications (Ghanaians are going to the polls to elect a new President and Parliament in December 2012)*
Approved in July 2010 – delay because of grant consolidation complications
Once had the green light, NMCP had to also do PR work to sell the AMFm
Between January and March 2010 starting to engage in sensitization
At the stage which we were at, we had already moved beyond needing to decide if we were for or against it, so the idea was 'how to live with it'
Because CCM is the oversight committee for the AMFm, it could not continue its implementation support. Therefore, it helped form the CC, though it continued to engage in implementation while this was being established. Previous GF grants have not required such an implementation committee.
Deputy DG Public Health MoH ***made the point that… the key to success to the AMFm is the decision to involve the private sector. In building a PPP, there are many issues and questions. There was the need for the private sector to propose how it can effectively restructure to create its winning opportunities; the public sector will be there to support. He also emphasized that building local capacity is an important concern for the entire pharmaceutical sector.***

The AMFm CC should be convened as soon as possible in order to begin coordinating important and time-sensitive work. The AMFm CC should:
Have a good representation from the private sector
Be housed under the NMCP but constituted by the CCM
Have broad representation: NGO, government, private, etc.
The proposed members of the AMFm CC are as follows:
Private sector stakeholder representation: § PSGH, § ICS, § PMAG, § Society of Medical Practitioners, § Community Practice Pharmacists, § Pharmacy Business Executives
Public sector stakeholder representation: PC, FDB, NMCP PM, CCM, § Representative of the Policy, Planning, Monitoring & Evaluation Unit, MoH, § Rep of the Coalition of NGOs in Malaria (local NGOs)
There were concerns about implementation ***transparency and solutions***
Only NMCP was PR for the grant; how would we get transparency?
Form CC as the governance structure for the AMFm, to help bring transparency
CCM shifted responsibility to the CC after application approved
CC is representative of all stakeholders with an elected chairman
CC has three (elected) co-chairs (Sam Boateng (Director In MoH), Collins Agyarko Nti (head of coalition of NGOs in health), Doris Attafuah (at Vigdoris, previously vice-chair of PSGH)
Retailers on the CC but not CCM
[CCM Chairman] ***said the CC must be guided by its TOR, to ensure strong private sector buy-in, adopt open and transparent process for discussions, and to engage all relevant stakeholders for effective decision making***
Dr. Bart-Plange said the CC must not just be a talking show forum but members must consider themselves as an important implementing wing and partner to the success of the AMFm in Ghana
Deputy DG NMCP ***said the purpose of the CC is to provide implementation advice across sectors and intends to meet regularly***
MoH representative ***said the representation on the committee was skewed toward the private sector in order to ensure effective collaboration and also to overcome barriers promptly***
It is expected that the committee works through NMCP by providing the advice needed to make sure the strategies that are being driven by the PR and other implementing partners across sectors are optimal
Working out prices; working out how the pricing would work
Retailers reluctantly agreed but manufacturers still against
Possible strategies: Allow some manufacturers to import directly from the global manufacturers and renegotiate with the principle supplier. This was either Ghana-specific or at least started here
Some said UNDP would help with getting local facilities up to (pre-qualification) standards; but most took this 'promise' with a grain of salt
Ask potential FLBs 'if brought in a similar product, how would you price it?'
Ghana has no price controls, so couldn't come out with a suggested price
Supply-chain irregularities could skew price, so need a maximum retail price that would be publicly known (because simple monitoring)
CHAI **and** AMFm CC co-Chair **against having a maximum price but the rest wanted it**

Discussed how pricing should look: make a suggested retail price (evolved as roll-out gained traction)
Kenya the first country with a recommended retail price
Ghana hesitant because no price control in the market
This process was country-led and country-driven
Awareness creation and marketing started late and without wide consultation
The PM reminded members of the committee's role, stressing that the committee must be prepared to really work and not become a mere talk show
Membership of the CC: Dr. Bart-Plange called for consistent participation on the part of the members and suggested that all representatives should have alternates to stand in for them in the event of not being able to attend a meeting. She added that the alternates must be well-informed to keep continuity in the issues being discussed by the CC
AMFm CC co-Chair ***raised the issue of the representation of NHIA on the CC since they are key buyers of drugs and service in the health sector in Ghana… the house agreed to invite NHIA as members of the CC***
A representative of the importers and wholesalers association was also to be invited once the group was properly organized
The house agreed that the CC should report directly to the CCM. The decision overturned the first decision of the committee to report through the NMCP
AMFm CC co-Chair ***suggested the establishment of sub-committees to handle the tasks. He said this was necessary in view of the volume of tasks needing to be accomplished before the next meeting***
All CC members were to act as liaisons between the committee and the sectors that its members represent
Administrative/Monitoring subcommittee - § Convener: Deputy DG NMCP; ***§ Responsibilities: Oversee the preparations for the launch of the AMFm Phase I, Review reports submitted to the AMFm-CC, Provide guidance to the PR on implementation, Advise the PR on critical strategic and policy matters related to the AMFm Phase I, Provide direction on resolving any bottlenecks during implementation, Advise on the activities for monitoring the AMFm***
Technical subcommittee - Convener: (AMFm CC co-Chair. ***MoH); Responsibilities: Advise on strategies for key the AMFm activities such as information collection, drug forecasting, pricing, regulatory issues, and supply chain optimization, Explore and implement a range of private sector interventions to maximize reach of ACTs throughout Ghana***
Advocacy subcommittee - Convener: Dr. Priscilla Nortey (Academia); Responsibilities: IEC/BCC and advocacy, Advise on key strategies to improve adherence of partners to agreed-upon strategies, Provide direction on resolving any emerging bottlenecks during implementation of the AMFm
The AMFm in Ghana is seen as having built strong PPPs and collaboration. It brought on board all players including the local pharmaceutical industry, some of whom are FLBs.
NMCP has an improved relationship with the local private sector (importers)
Public sector stakeholders said that the AMFm had improved not just collaboration externally with the private sector but has increased internal communication and collaboration between agencies of the MoH (NMCP, PC, FDB, NHIA)

The AMFm has built up a strong PPP between MoH, its ministries and departments, and the government of Ghana on one side and the pharmaceutical manufacturers, FLBs, private pharmacies, private doctors, and LCSs on the other side
Not always easy to get everyone to talk together; as a PPP, CC definitely doing very well in providing an open forum
CC provided an open-forum discussion, equalizing power across all stakeholders, bringing all into the decision-making process
CC engagement has been positive; transparency and accountability have been achieved
Balance of power in CC equally distributed around the table; met 'in the open'
Openness and transparency; all peoples' views are valued, all sit together if an issue comes up
After application, begin sensitization (explaining what the AMFm is)
No other sensitization occurred until got final approval on application
Several stakeholders meetings to try to convince them to become FLBs
CCM advertises for FLB; tries to get as many as possible by painting it as a 'public good'
Sell to retail by 'public good argument', and that the ACTs were highest quality (quality-assured)
It was hard to find a financial argument because demand depends on sickness, so there will be some peak to demand
Particularly in Anglophone countries, where there are more liberal policies regarding the number of wholesalers, there are a lot of relationships to manage. (Francophone countries tend to have more control and restrict the number of wholesalers to 4 or 5)
CCM engaged with PMAG and kept hammering the issue of CSR and public goods; gained gradual acceptance
CHAI made a pricing tool meant to help build the business case for manufacturers
Encouraged those importers with a good network to become FLBs
[Stakeholders meeting] End January 2010 – first stakeholders meeting with the private sector; describe details of the application and talk about details of implementation
[Stakeholders meeting] ***Objective: gather input from key private sector stakeholders and resolve key private sector distribution strategy issues***
[Stakeholders meeting] Overview presentation of how implementation would go – channels, pricing in the public and private sector
[Stakeholders meeting] Ask the big in-country pharma distributors to propose pricing strategies, for example, the best channels for private distribution, and what marketing initiatives were needed, and what regulatory systems
GF Secretariat on-hand to respond to concerns
Outcomes: Sensitize participants on the AMFm
Outcomes: Document recommended strategy for distribution of ACTs in the private sector
Outcomes: Agreement on a pricing system to ensure the end user gets ACTs at an affordable price
Outcomes: Agreement on the mode of ensuring information flow for the success of the AMFm
Outcomes: One major concern was what will happen to the stock of antimalarials that retailers had with the arrival of co-paid ACTs. The potential for a buy-back was raised and GF indicated that if this becomes a legitimate alternative, countries will be notified.
Outcomes: they should operate under the assumption that it is not an alternative for the time being

Outcomes: the President of PSGH reiterated the fact that the AMFm was coming and the private sector needs to position itself to determine how to respond to give the AMFm the greatest possible chance of success, and to give the business sector the greatest possible opportunity to participate
Also one-on-one discussions with importers, led by CCM Chairman
Tell importers and distributors if decide not to get involved, you will be priced out of the market
CHAI and Chair of CCM **engaged with the private sector, using** Chair of CCM's **connections with importers and PMAG**
Communication to private sector took time to help them understand: this was not business as usual
Late night meetings with CHAI, going around to do one-on-ones
Assumptions about selling in volume were based on promises of publicity [for the new drugs]; there were questions/concerns about whether this volume would be enough to make-up for lower cost
The one-on-one meetings played a big role because things were abstract to them, so had to explain the details to them
In July/August, PSGH did pharmacist training on the AMFm and most of the noise died down
Importers/wholesalers – 200 registered in 2009
30+ manufacturers in Ghana, though some were never making antimalarials
200 importers dealing with cheap pharmaceuticals; all were potential the AMFm FLBs (GF put no restriction on number of importers for the AMFm)
GF was happy to let manufacturers become FLBs, (i.e. They would not have a single FLB for Novartis)
CCM involved in FLB selection process, documentation
All of them who were making noise came in to register
If you look at the AMFm there was a lot of resistance from local manufacturers but if you look at the data those same local manufacturers were actually the first line buyers.
Once the application had been approved, importers came in for form
From all the noise, they came back to the table. They did not have genuine concerns / interests / reasons (only surface, not genuine, reasons to condemn the AMFm)
Many local manufacturers agree to be importers
They are part of the importers because it is their second choice, not the first
Need to compromise on some issues and move forward
Initial uptake was slow, with weeks in-between: 4 signed up in 2 months; after 3-4 months, 10-20 signed up
Didn't sign on all at once; one after the other
They came in one-by-one [not in groups]; some were inquiring about who else came for the form
CCM's prior "engagement" with private sector was maybe not so good; it was clear the engagement didn't have much meaning because the details were still vague
Gradual sign-ups to become FLBs
Quite a lot of FLBs came quite quickly because they had already been through all the arguments
Within the manufacturers, there was no peer pressure, no ring leader; once it was coming, just fought with each other to 'get on board'
Early sign-ups to serve as champion

Limited unity among the local manufacturers; there is a gap between those that want to produce to global standards and those that want to maintain local standards
Apart from having a united stand against the AMFm, the manufacturers in Africa have not presented a united front.
Even as a group [manufacturers], no one wants to discuss what they import, or what they have in stock
Manufacturers and importers don't want to discuss business interests with each other
They switched from thinking about how to stop the AMFm to thinking about how to exploit it
Started pushing for sign-ups with big suppliers that already had supply chains in place, have big distribution networks and already have relationships with the pre-qualified manufacturers
Most that signed up first already had a relationship and supply chain with a pre-qualified manufacturer
FLBs tried to set a maximum wholesale price; acting as a cartel and killing market forces
One who opted out of being an importer thought he could do more on his own to seek pre-qualification, build on his own capacity
Local manufacturers don't want to be pre-qualified for ACTs now but once pre-qualified for one drug, becomes easier to go over the bar for the others
At the end of the day, the private sector has really lived up to and supported the program; private FLBs had much faster procurement than the government
Public sector has trouble importing
Procurement challenges, especially public sector procurement, takes longer
Government took some time dealing with procurement, other malaria drugs in system
Because private sector did not need to go through the public sector for procurement, get much faster than private sector
Stakeholders, especially FLBs, very frustrated with stock-outs and the fact that only portions of the requested products were supplied
By December 2010, held an "early lessons learned" meeting
Some manufacturers not ready to do business with all the FLBs that had signed up
International manufacturers wanted to select certain distributors through a 'second-stage clearance' but this is not what GF agreement says
AMFm not fulfilling/honoring all orders of the FLBs [32] leading to heated meeting
Local manufacturers realized they could get on board as FLBs; now they are angry that they are not getting enough drugs – some are not getting the drugs at all
More FLBs could sign on but no one else may want to
there should have been more rules and guidelines from GF
It looks like we have been exonerated [for resisting the AMFm]
GF has been cancelled because of lack of funds; they have done more harm than good
Planning to "go public" [about failings of the AMFm]; ***we have been disappointed, will tell people to only buy local from now on***
Even now, if the local industry gets an opportunity, they will speak against the AMFm
Local manufacturers have ceased production
The manufacturers are businessmen and know how to compete
Most local manufacturers have stopped producing ACTs unless they have a contract with the government for SP IPT

If it can be manufactured in-country, this makes things easier but quality has been an issue in the past
[Food and Drug Board] **is a big joke**
Our regulatory process has been so politicized that the regulators are chosen not based on ability but based on political patronage. All the regulators in this administration and the previous one belong to the government of the day and they were chosen purely because of politics.
Need systematic enforcement of regulation for what comes in and how it is treated; but at FDB, you can just dash off [bribe] **anyone**
FDB CEO is letting it slide that monotherapies are being brought into Ghana [under the AMFm]
Why are we seeing shortages of supply?
Major stock-outs among FLBs, so then what happens? It has not been managed properly.
If there are stock-outs, people are costed out of buying ACTs, so still revert to chloroquine. So has the purpose been achieved?
Shortage is really about AL; many people don't like AA, some practitioners won't prescribe it; we have had many doses expiring in the hospital
Even though AA is the 'drug of choice,' everyone wants AL
AMFm is building Pharmacy Council's capacity as researchers
MoTI may have problems because of limited guarantee of sustainability
Needed to involve various stakeholders - MoTI and Ministry of Finance
Did not stop import of other ACTs
The fact that taxes and tariffs on the AMFm ACTs have not been waived is a challenge whose successful resolution will enhance the image of government and demonstrate high level political commitment in a tangible way
The private sector providers and FLBs see their participation in the AMFm as CSR in view of the low prices. They, however, claim the fact that the AMFm ACTs are being used widely by all including the poor and vulnerable shows their concern for the poor since they distribute these products far and wide regardless of the transportation and logistics challenges
FLBs called for mechanisms to give prominent recognition to FLBs either during (AMFm) adverts or on websites and prominent places
AMFm has enabled the private sector to work in public health receiving little or no profits but receiving an opportunity to get involved in what they call 'good quality CSR'
Ghana has a peculiar system because MoH does policy while GHS does technical and implementation work

APPENDIX B. CONTENT ANALYSIS

Table 22: News items containing reference to "malaria"

Code	Description	Example	% of mentions, Nov–Dec 2008 (n=57)	% of mentions, Jan–Jun 2009 (n=270)
Report of distribution or donation of malaria funds, supplies or services	This includes reports of distributions and/or donations of: funds, bednets, insecticide spraying and vector control, diagnostics, education and screening camps, human resources, health worker supplies and transportation, facilities for malaria treatment and/or research.	*"Mothers of three players of Ghana's Black Stars have donated 300 treated mosquito nets to pregnant women at Agogo in the Ashanti Region."* 19 November 2008	26%	14%
Call for engaging in prevention of malaria	This includes calls for: using bednets, seeking antenatal care, spraying to prevent malaria, maintaining a clean environment to prevent malaria, or the need for more education about malaria prevention. It also includes specific calls about preventing malaria rather than treating it.	*"Mr. Tagoe appealed to opinion leads and traditional authorities to mobile their communities regularly for clean-up exercises, emphasizing that most of the disease epidemics, including malaria, cholera, and typhoid could be avoided if people adhered to good sanitation... The Regional Police Commander explained that the duties and responsibilities of the Police were not only to prevent crime and protect lives and property, but also to ensure that the practice of good sanitation was maintained. He enjoined the public to practice good sanitation and indicated that a huge amount of monies being spent on the health sector could have been used to invest in other sectors to generate employment."* 9 February 2009	21%	23%
Report on malaria prevalence, volume of out-patient visits from malaria, or progress on MDGs	This includes reporting of how widespread malaria is in Ghana, including references comparing this to the Millennium Development Goals, of changes in incidence in a particular district, or of OPD visits at a facility.	*"Malaria cases continue to rise in the New Juaben Municipality despite interventions such as the use of treated bed nets. OPD's malaria figures in the municipality, for instance, rose from 30,550 cases in 2006 to 82,192 by the third quarter of 2008... Mr. Boateng was speaking with journalists from the African Media and Malaria Research Network (AMMREN) at a day's seminar on the linkages between malaria and HIV and AIDS... He mentioned the lack of access to health care, life-saving drugs, treated bed-nets as some reasons for the ascendancy in illnesses and deaths associated with malaria. He said malaria was responsible for spontaneous abortion in pregnant women and reduced foetal growth among others. He said severe and complicated malaria could lead to neurological problems in children."* 15 December 08 *"Miss Bagina spoke during the 2008 Annual Performance Review Meeting of the Bolgatanga Municipal Health Directorate... 'The dose of Intermittent Preventive Treatment (IPT) of malaria in pregnancy also saw a notable increase from 36 per cent in 2007 to 40.7 per cent in 2008", she said. Out-patient attendance has increased from 1.23 in 2007 to 1.63 in 2008 and she attributed this to the NHIS that has covered 53 per cent of the population in the Municipality. Miss Bagina said among the 10 top diseases at the Out Patient Department (OPD) in the Municipality, malaria continued to rank first as in previous years."* 6 February 2009	14%	14%

Code	Description	Example	% of mentions, Nov–Dec 2008 (n=57)	% of mentions, Jan–Jun 2009 (n=270)
Description of links between malaria and national development	This includes comments relating to malaria hurting Ghana's economy, preventing it's ability to reach middle-income status and/or noting the links between health and wealth.	*"Government in collaboration with ZoomLion… launched a fumigation exercise against flies and mosquitoes… MP Dr Mustapha Ahmed said the exercise was part of government's commitment to ensuring good sanitation practices, including ridding the country of filth within the first 100 days of its rule. He said government had set aside budget for residual spraying of insects, and bio-larvicidal treatment of insects to protect communities from flies and mosquitoes, which may cause, diseases like malaria, typhoid, cholera and other communicable diseases. Dr Ahmed appealed to the people to support government, in solving the sanitation problem and to avert any recurrence. He said 'Flies and mosquoitoes can cause discomfort, contaminate our food and cause epidemic and we should discourage it at this when we are looking for money for development.'"* 15 March 2009 *"A five-day public educational campaign against malaria has ended at Jema… for six endemic areas. The exercise [was] aimed at sensitizing the people living in remote areas in the district on dangers associated with malaria… Mr. Daniel Kanyage described the disease as 'a major headache facing the government'"and therefore appealed to health workers to exhibit a high sense of professionalism in the management of the disease, saying "eradication or reduction of malaria cases in the district would enhance the socio-economic development of the area."* 25 March 2009 *"Dr. Yankey said 45 per cent of the disease burden was malaria, which he noted was affecting the country's per capita income and GDP."* 6 April 2009	9%	11%
Use of malaria as a symbol of common man, humanity	This includes the use of malaria in one of two ways: (1) as a symbol of the common man, as contrasted with political opulence or (2) as a symbol of common humanity	*"In addition to his 200 days travel out of365 days reported, raising the per diem allowance limits… he created awards with our money and hangs million-dollar silly 24k gold chains around his neck with our money. What makes anyone believe these are sane actions when human beings, taxpayers in Accra and the nation do not have water through pipes, 55,000 people die of preventable malaria, and 78.5% live under $2 per day!"* 27 January 2009 *"Mosquitoes do not know National Democratic Congress or New Patriotic Party, man or woman," Dr. Yankey stressed. He said it should be the collective efforts of the people to keep the environment clean and prevent stagnant waters from breeding mosquitoes. Dr. Yankey asked the people to put their political affiliations to the background and work together as a team to develop the Western Region and the country as a whole."* 27 June 2009	9%	5%

Code	Description	Example	% of mentions, Nov–Dec 2008 (n=57)	% of mentions, Jan–Jun 2009 (n=270)
Report on malaria treatment	This includes appeals for people to seek timely and appropriate treatment for malaria, reassurance that ACTs re safe to use, reports on unapproved or counterfeit drugs, and reports on the costs of treatment to health facilities and to Ghana.	*"The Eastern Regional Minister, Mr. Samuel Ofosu Ampofo, who is the National Organiser of the NDC party, yesterday caused a political stir at the launch of Nationwide Malaria Control Programme at Koforidua in the Eastern region when he pleaded with Zoomlion Company Limited to wage a relentless war on mosquitoes in the country but spare the 'life' of one big 'mosquito', 'General Mosquito' who is an asset to the party. Mr. Ofosu Ampofo said mosquitoes are the main cause of malaria in the country and 'we shall kill all of them except our party general secretary, Asiedu Nketia, popularly called 'General mosquito''. 'I will plead with Zoomlion people to spare the life of our general secretary, otherwise they will weaken the administration of our party,' he said, generating intense laughter from his audience. According to the regional minister, considering the huge sum of money which is pegged at over GH¢700 million that the government spends annually on malaria treatment and prevention, it is crucial that everyone, no matter the political leanings, to put their hands on deck to ensure the success of the programme… Dr. George Sipa-Yankey, told the gathering that as a result of the importance the NDC government attaches to the elimination of malaria which will consequently lead to improved living conditions, the government will form an anti-malaria brigade soon… The Okyenhene, who chaired the launch, asked Ghanaians to change their attitudes when it comes to keeping themselves and the environment clean. He said the huge amount of money spent on treatment of malaria and its prevention could be channeled into other areas like building factories and schools which will eventually help reduce poverty in the country."* 20 June 2009	4%	7%
Call for malaria eradication	This includes reports on needing to pursue eradication or progress towards this goal.	*"Dr. Yankey has called for a shake-up in the country's malaria control policy. Speaking to delegates at the Commemoration of World Malaria Day in Accra… the Minister called for the creation of a 'Malaria Elimination Project' by June 2009 and described the existing chain phases for malaria eradication as 'too long.'"* 2 May 2009	4%	6%

Code	Description	Example	% of mentions, Nov–Dec 2008 (n=57)	% of mentions, Jan–Jun 2009 (n=270)
Call for domestic manufacturing (pharmaceuticals, larvicides) and research innovation	This includes calls for the improvement of the education system and research facilities to study such diseases as malaria as well as commentary on Ghana wanting or needing to produce its own larvicides and generic treatments.	*"The Economic Commission of West African States is adopting Ghana's Integrated Malaria Vector Control Project, as part of efforts to uproot the disease in the sub-region. [This] initiative would be facilitate by the proposed establishment of a plant in Ghana for the production of larvicides for the country and the sub-region."* 29 March 2009 *"China on Thursday donated anti-malaria drugs worth $280,000 to the Ministry of Health to assist Ghana overcome the scourge of malaria… Dr. Sory, Director-Geneal of the Ghana Health Service, who received the drugs… added that whilst Ghana appreciated the donation of the third consignment of Artemisinin-based antimalarial drugs, the country was prepared to partner with a strategic investor or donor to derive its own generic brands of the drug."* 4 June 2009	2%	3%
Report of environmental clean-up activities related to malaria prevention	This includes reports of a community or ZoomLion © clean-up activity that has taken place or is on-going.	*"To ensure the fulfillment of President John Atta-Mills's initiative of keeping Ghana clean within the first 100 days of his rule, MPs in the Accra/Tema area have undertaken a clean-up exercise to get rid of the filth in their various constituencies. The clean-up exercise, undertaken in collaboration with ZoomLion© Ghana, was code-named "Keep Ghana Clean."… Being a community noted for malaria, cholera, and typhoid fever, there was the need to rid the community of filth to ensure good health for the people."* 25 January 2009	2%	3%
Call for additional resources or supplies for malaria	The includes reports of the need for training and human resources for malaria or the need for provision of supplies to health facilities.	*"While treating malaria lacks the glamour of a triple by-pass heart surgery, I have come to appreciate the difference that professionals on the ground and prompt attention can make it reducing morbidity and mortality."* 3 February 2009	0%	2%
Miscellaneous mentions of malaria	This includes a variety of topics, including a comparison of another disease to malaria in terms of magnitude or funding, a reference to someone having malaria that was not central to the story, and use of malaria as a metaphor.	*"Rev Kyenkyenhene expressed worry that, although asthma was comparable with HIV/AIDs, diabetes, or malaria, it had not received national attention and its prevalence had been de-emphasized."* 5 May 2009 *"Mr. Yaw Darko committed suicide by hanging himself in his bedroom… he had been ill for the past two weeks with malaria."* 25 November 2008	16%	11%

Table 23: News items containing reference to "national health insurance"

Code	Description	Example	% of mentions, Nov–Dec 2008 (n=132)	% of mentions, Jan–Jun 2009 (n=204)
Coverage, Call to expand benefit package	This includes statements and appeals from advocacy groups to expand the list of conditions and medications covered under NHIS, frequently with reference to the needs of women, family planning, and/or persons living with HIV/AIDS.	*"The Ghana Coalition of NGOs in Health has urged government to demonstrate political will in providing resources to address issues of maternal and neo-natal mortalities, which were beyond cases of health institutions… It called on government to consider the option of covering the cost of transportation in the instance of referrals of Persons Living with HIV and AIDS and include Anti Retroviral Therapy in the list of drugs under the National Health Insurance Scheme."* 14 January 2009	3%	9%
Enrollment, Call to enroll in NHIS	This includes reports of appeals for citizens to register with or renew NHIS. It also includes events such as enrollment drives.	*"The NHIA, in collaboration with the 145 District Mutual Health Insurance schemes (DMHIS), would embark on an awareness walk throughout the country from December 1. The programme aimed at stepping up education on the NHIS and informing the public about steps being taken to address the concerns of subscribers… The schemes would step up registration of pregnant women and others at the end of the walk."* 1 December 2008 *"Pregnant women were advised to attend antenatal clinics to know their health condition rather than visiting prayer camps…The Health Director debunked the notion that visiting* ante *and* post natal *clinics were costly, saying that the NHIS was in operation for people to access free medical treatment at all government hospitals and designated private hospitals in the country. She therefore entreated those who have not heeded the call to register their names to benefit from the exercise."* 27 January 2009	12%	12%
Enrollment, Reports of increase in enrollment	This includes reports from health facilities about the increases in enrollment that they attribute to NHIS.	*"The Manager of the Bolgatanga Municipal Mutual Health Insurance Scheme, at the NHIA Week celebration, in Bolgatanga on Wednesday. He said the scheme registered 126,445 clients by the end of October this year representing 53 per cent of the population in the municipality."* 4 December 2008	7%	2%

Code	Description	Example	% of mentions, Nov–Dec 2008 (n=132)	% of mentions, Jan–Jun 2009 (n=204)
Enrollment, Reports of increase in attendance	This includes references to an increase in attendance attributed to NHIS enrollment, usually made by facility leadership. Though often just a reporting on the numbers, occasionally directors suggest that attendance is outstripping their infrastructural, human, and financial resources.	*"There has been a high rate of attendance at health facilities in the Tolon/Kumbungu District since the introduction of NHIS and the situation has become a matter of concern and if not addressed could become a major challenge to the Scheme in the near future. Mr. Sulemana said the Scheme exceeded its target as at the end of October this year and that the registered membership rose from 52 percent to 82 percent of the district population… Mrs. Denisig Kaara said since the inception of the Scheme, health facilities in the district had received more clients as well as an increase in revenue. She said Out of Patience Attendance (OPD)* [sic] *increased from 24,859 in 2005 to 32,156 in 2007."* 27 November 2008 *"The implementation of the National Health Insurance Scheme (NHIS) has led to an increase in the utilization of health services in the Western Region. Mr. David Yaro said out-patient department (OPD) attendance in the region increased by 66 percent from 1,724,606 in 2007 to 2,599,045 in 2008. He said insured clients represented 63 percent of all cases at the OPD and 50 percent of all admissions in the region during 2008." He said the overall NHIS coverage in the region increased from 40 Per cent in 2007 to 58 per cent in 2008.* " 21 February 2009	2%	3%
Enrollment, Report of NHIS providing revenue to a health facility	This includes statements about funds that facilities have been able to generate internally as per NHIS.	*"The Senior Medical Officer in-charge of the Ghana Consolidated Diamonds Limited (GCD) Hospital at Akwatia in the Eastern Region, Dr. Bello has made an urgent appeal to GHS to expedite action on absorbing the facility in the public system… He said but for NHIS, the hospital would have closed down by now due to financial constraints, describing [the Scheme] as the facility's 'saviour'."* 26 February 2009	0%	1%

Code	Description	Example	% of mentions, Nov–Dec 2008 (n=132)	% of mentions, Jan–Jun 2009 (n=204)
NHIS as NPP's success	This mostly includes campaign statements by NPP officials, candidates, and supporters recounting NPP legislation but also includes some more balanced views of the past achievements of both parties. After the election, statements are mostly from NPP supporters bemoaning the election result and how their legacy was being shaped.	*"Dr. Kwame Addo-Kufuor, Minister of the Interior, has said that the eight-year rule of the New Patriotic Party (NPP) has chalked impressive successes in the country's democratic dispensation which would catapult the party to victory to continue its development agenda… He the National Health Insurance Scheme was a feather in the cap of the NPP."* 5 December 2008 *"After introducing the Capitation grant, National Health Insurance, free Maternity care, School feeding programme and other pro poor policy interventions, former President Kufuor is obviously not happy with the 'Thank you' treatment being meted out to him by the NDC government… [As a result of Kufuor's efforts] , a health sector, which was then running on the deadly wheels of a 'cash and carry' system in the year 2000, had been replaced by Mr. Kufuor's government with a more humane NHIS."* 17 March 2009	27%	5%
NPP promises to improve NHIS	This includes statements from NPP officials, candidates, and supporters that NPP would continue to improve NHIS. (Over the course of the election, NPP has been accused of taking people's vote for granted and depending on past achievements to win the election.)	*"President Kufuor, at a durbar held to round off NHIS awareness week, urged Managers of the NHIS to cut out bureaucracy in the issuance of Members' Cards, a common complaint against the scheme… He announced that the National Health Insurance Council was preparing to register every child under the age of 18 for free healthcare… He noted with satisfaction the tremendous success the Free Maternal and Childcare Programme introduced by the Government in July 2008, was also making… He gave the assurance that their operations would be run on a robust technology platform integrating schemes and providers and thus allow timely submission, processing and payment of claims."* 5 December 2008	5%	0%

Code	Description	Example	% of mentions, Nov–Dec 2008 (n=132)	% of mentions, Jan–Jun 2009 (n=204)
NHIS not NPP's idea	This includes mostly political statements about the intellectual and ideological origins of NHIS.	*"Prof John Atta Mills, presidential candidate of the National Democratic Party (NDC) said… it was NDC government that began the National Health Insurance Scheme on a pilot basis in 1998, 'therefore the NPP cannot claim that they initiated it.'"* 9 November 2008 *"The Navrongo Central Constituency Executive of the PNC has thrown its weight behind the Opposition NDC in the Presidential run-off scheduled for December 28. A statement signed by the Constituency Chairman… explained that the current NDC was a new centre left party and… that Professor Atta Mills is an Nkrumaist and that the implementation of the National Health Insurance Scheme (NHIS), School Feeding Programme, the Capitation Grants, Free Medicare for Pregnant Women, among others, by the NPP were all policy positions of the Nkrumah-Liman Tradition which they had failed to acknowledge."* 19 December 2008	5%	0%
NPP poorly implemented	This includes pre- and post-election observations about how NPP managed NHIS, including that the roll-out was not nationwide, that there was corruption (and no investigation after these accusations came to light), that people had mis-led into thinking all services were free.	*"Dr. Mahama, flag bearer of the PNC indicated that as a medical doctor by profession, he would ensure the provision of quality and affordable healthcare to all Ghanaians and would make sure that the NHIS covered everyone in society. He added that he would make the NHIS nationalistic in character to enable everybody access healthcare in every part of the country without any problem."* 28 November 2008 *"A pressure group… called on the new NDC)government to deal with issues of corruption and maladministration as part of the promises it made to Ghanaians… The group cited various corrupt practices at the NHIS, Ministry of Foreign Affairs, Regional Integration and NEPAD and the Ministry of Water Resources, Works and Housing."* 20 January 2009	8%	3%

Code	Description	Example	% of mentions, Nov–Dec 2008 (n=132)	% of mentions, Jan–Jun 2009 (n=204)
NDC promises to maintain NHIS	This includes statements responding to accusations before and after the election that NDC will or has scrapped NHIS. In addition, it includes NDC laying out it's vision for NHIS, including scale-up, compression of the premium to one-time, reducing corruption and democracy, and improving health infrastructure.	*"The Eastern Regional Chairman of the NDC has said that the current campaign of the NPP was an admission that it had mismanaged the destiny of Ghanaians hence its plea for forgiveness… The National Organizer of the Party denied that the future government of NDC would sell the government shares of the Produce Buying Company (PBC), to a private company or abandoned the NHIS… He assured that the government of the NDC would rather ensure that the NHIS was made national and improve upon the National Youth Employment Programme."* 17 December 2008 *"The NHIA CEO gave the assurance that government would not sack staff of the NHIS as being rumoured in parts of the country. He, however, said the authorities would not hesitate to get rid of people who were liabilities and could not make any meaningful contribution towards the growth and development of the scheme… He warned that government would not tolerate incompetence and mismanagement to the detriment of patients, and people found culpable of such offences would have to make way for the more serious ones to take over their responsibilities."* 26 June 2009	13%	15%
NPP critiques NDC's implementation	This includes statements from NPP officials and supporters about NHIS under the new NDC leadership.	*"The President and his inner circle seem to be concentrating their energies on vilifying former President Kufuor and some of his former officials… These side issues should not be allowed to take our focus away from important issues affecting the lives of Ghanaians. The President should be addressing the concerns of newly qualified teachers, doctors and nurses, but he is not… The President should be working to secure the healthcare legacy of the Kufuor administration in the form of the National Health Insurance Scheme by improving the delivery of services in our hospitals, but he is not. Increasingly, NHIS patients are having to buy even standard drugs. The salary difficulties with doctors are systematically eroding the viability of the NHIS. The failure to clarify or to lay down a programme for implementing the "one-premium pledge" is leaving the public confused and undermining confidence in the Scheme."* 27 May 2009 (Akuffo-Addo press conference)	0%	2%

Code	Description	Example	% of mentions, Nov–Dec 2008 (n=132)	% of mentions, Jan–Jun 2009 (n=204)
NHIS not political	This includes statements from before the election calling for NHIS not to be politicized as well as statements following the election to counter rumors that NDC would politicize the scheme.	*"Mr. Agyemang stated that management of the [NHIS] was about to embark on an intensive education on the need for members to renew their membership and to get at least 50 per cent of the total population of the municipality to register by the end of the year. He noted that the abuse of the system by members and delays in the payment to service providers by the NHIA were major challenges confronting the scheme. He urged the public not to politicise the scheme and called on traditional authorities, heads of institutions, NGOs and individuals to assist in the awareness creation and campaigning towards the sustainability of the scheme.... He condemned rumours circulating in the municipality that the scheme was no longer operating, and described it as 'false'. "The scheme is still operational and there is the need for everybody to register in order to benefit from the service", he said. Mr. Agyemang asked members who would be denied medical care to report to the office."* 20 January 2009	1%	4%
NHIS requires (polite) human resources	This includes statements about staffing shortages, the need to develop more health professionals, and also comments about health provider rudeness towards and intimidation of patients, including giving mis-information about NHIS.	*"The acting Upper West Regional Director of Health Services has observed that even though the NHIS's ultimate goal is to make people healthy, it is not a panacea for the promotion of quality healthcare delivery in the country... He said the NHIS only helped to move the financial barriers of patients, but that needed to be complemented with the provision of improved equipment, efficient transport system, quality training of health personnel, and good management of health facilities as well as the changing of behaviour of health personnel towards patients... He said that because of the NHIS there was workload on the nurses and doctors, especially those in the Upper West Region where a doctor-patient ratio stood at 127,000 while that of a nurse was 1,000."* 13 November 2008 *"The National Health Insurance Scheme (NHIS) owes service providers in the Upper East Region 2.8 million Ghana Cedis. The Regional Director of Health Services... said if the situation was not reversed the operation of the NHIS would come under threat, thereby affecting health delivery services. He also mentioned the delay in submission of claims by service providers, long hours spent by clients to receive services, delay in reimbursement of claims by scheme to providers, staff work overload due to critical shortage of staff, poor management of patients records, and frivolous consumption of services by the insured as some of the challenges of the scheme in the Region... Inadequate infrastructure due to large number of patients, poor staff attitudes and poor reception of clients by some staff have also on many instances brought the corporate image of the Ghana Health Service into dispute," the Regional Director said... He noted that despite the challenges, the scheme in the Region had performed creditably and said service providers' financial situation had generally improved with the NHIS... The Regional Health Director also indicated that the implementation of the scheme had led to continuous increase in the utilization of health services in the region's outpatients' attendance."* 27 February 2009	3%	12%

Code	Description	Example	% of mentions, Nov–Dec 2008 (n=132)	% of mentions, Jan–Jun 2009 (n=204)
Premiums too expensive	This includes statements about people who are unable to afford the NHIS premium.	*"The Livelihood Empowerment Programme Against Poverty (LEAP) introduced by the Government is making great impact on the lives of the people… Under the programme administered as cash transfer by the Ghana Post… Some beneficiaries said they had invested their monies in petty trading including soap making and shea butter extraction as well as animal rearing, while others used part of the money to register for the National Health Insurance Scheme (NHIS). Some of the beneficiaries indicated that they would not have been able to register for the NHIS if the LEAP programme was not initiated."* 27 November 2008	4%	1%
Premiums sponsored	This includes statements on individuals, NGOs, or the government covering the premium fee for someone to enroll in NHIS.	*"Newmont Gold Ghana Limited has registered over 424 household members onto the NHIS to make good its policy of medically empowering households impacted by its mining activities."* 16 February 2009	3%	5%
Miscellaneous	Before the election, this consists of a case of fraud After the election, this mainly includes reports about university students protesting the premium they were forced to pay to enroll and an attach on an NHIS office.	The fraudster *"was fined for defrauding a businesswoman… He pretended he could secure her a "mobile to mobile" job at the health centre and also told her he could offer her appointment at the National Health Insurance Scheme's Secretariat in Accra as a Ward Assistant and showed her some documents to buttress his claims."* 21 November 2008 *"Thugs suspected to be sympathizers of the ruling NDC aided the offices of the National Health Insurance Authority and the National Youth Employment Programme in Tamale. They allegedly assaulted the workers of the two offices, threw them out and locked the office premises… Regional NDC party executives have described the act as unfortunate… and [are] surprised such an act will be attributed to the NDC."* 2 June 2009	1%	7%

Code	Description	Example	% of mentions, Nov–Dec 2008 (n=132)	% of mentions, Jan–Jun 2009 (n=204)
Claims, Appeal for prompt reimbursement	This includes commentary or appeals from health facilities relating to delayed payments from NHIS and, at times, detailing the problems this causes.	*"The National Health Insurance Scheme (NHIS) is expected to reimburse a total of GH¢1.98 million to the Kumasi Metropolitan Health Directorate as outstanding debts as at December 2008. The total claims stood at GH¢4.27 million during the year under review out of which they had reimbursed GH¢2.28 million. Dr Kwasi Awudzi-Yeboah, Kumasi Metropolitan Director of Health... bemoaned the culture of late reimbursement of claims to the health directorate, saying it was a key challenge which needed to be addressed to avoid the scheme's collapse."* 5 February 2009	0%	10%
Claims, Promise of prompt reimbursement	This includes statements from government officials or bureaucrats that delays and claims would be solved soon, often noting the development of a new, computerized system for claims management.	*"With regard to the delay in the payment of the NHIS claims by health providers, Dr Yankey said plans were underway to develop a common Information Communication Technology (ICT) platform to enable health providers and the NHIS office to summit their claims."* 4 March 2009 *"The NHIA said it has released a total of 128,578,851.00 Ghana cedis to the various health insurance schemes in the country for payment of claims between January and May 2009... The NHIA had to ensure that the existing financial management structures were adhered to, to protect the taxpayers' money. It said as far as the Authority was concerned, it had been proactive in the release of funds to districts schemes for the payment of claims... The Authority assured stakeholders of its commitment to the sustainability of the NHIS and will do all within its power to ensure schemes are paid moneys that they were entitled to."* 20 May 2009	0%	6%
Coverage, Report on coverage	This includes statements about the treatments that are covered by NHIS and a reminder of populations, such as pregnant women, for whom the enrollment premium is waived.	*"T Board Chairman of the Kwaebibirem District Mutual Health Insurance Scheme (KDMHIS), hinted that after the government introduced the free [medical care] for pregnant women under the National Health Insurance Authority (NHIA), the district has so far registered 1, 744 pregnant women who are accessing healthcare with their ID cards, adding that children up to three months are also accessing healthcare with their parents ID cards under this policy."* 5 December 2008	7%	1%

APPENDIX C. ETHICAL APPROVAL

GHANA HEALTH SERVICE ETHICAL REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

My Ref. :GHS-ERC: 3
Your Ref. No.

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra

Tel: +233-0302-681109
Fax + 233-0302-685424
Email: Cynthia.Bannerman@ghsmail.org

March 14, 2011

JULIA R. GOLDBERG- Principal Investigator

ETHICAL CLEARANCE - ID NO: GHS-ERC: 15/11/10

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol titled:

"Preserving Artemisinin-based Combination Therapies"

This approval requires that you submit periodic review of the protocol to the Committee and a final full review to the Ethical Review Committee (ERC) on completion of the study. The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Please note that any modification of the project must be submitted to the ERC for review and approval before its implementation.

You are also required to report all serious adverse events related to this study to the ERC within seven days verbally and fourteen days in writing.

You are requested to submit a final report on the study to assure the ERC that the project was implemented as per approved protocol. You are also to inform the ERC and your mother organization before any publication of the research findings.

Please always quote the protocol identification number in all future correspondence in relation to this protocol

SIGNED.....
DR. CYNTHIA BANNERMAN
(GHS-ERC VICE CHAIRMAN)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra

APPENDIX D. RETAILER QUESTIONNAIRE

Vendor ID: [___ | ___ | ___ | ___]

PACT: VENDOR QUESTIONNAIRE

☐ Check R ☐ Enter R
☐ Check Q ☐ Enter Q

INTERVIEW INFORMATION [to be filled in by surveyor from observation]		
Type of vendor **Tick the number**	Pharmacy	1
	Licensed Chemical Seller	2
	Private clinic	3
	Private hospital	4
	Public clinic	5
	Public hospital	6
	Health post	7
	CHPs zone	8
	House of health professional	9
	Other, _____	-777
Interview dates (DD/MM/YYYY)	START: [____ | ____] day/ [____ | ____] month/ [_2__ | _0__ | __1__ | __1__] END: [____ | ____] day/ [____ | ____] month/ [_2__ | _0__ | __1__ | __1__]	
Community code	[____ | ____ | ____ | ____ | ____]	
Vendor code	[____ | ____ | ____ | ____]	
Interviewer code	[____ |____]	
Is this vendor NHIS accredited?	Yes	1
	No	2
	Don't know	-888
Is an AMFm poster visible at the shop?	Yes	1
	No	2
	Don't know	-888
Is an AMFm dangler visible at the shop?	Yes	1
	No	2
	Don't know	-888

Vendor ID: [___ | ___ | ___ | ___]

	VENDOR DETAILS		**Instructions**
	How long has [THIS VENDOR] been in operation?		Please write neatly.
	Has this vendor always been in this location? If not, when did it begin operation in its original location? **How was this location chosen?** **If "good for business," please explain further what this means.**		
	Does [VENDOR OWNER/MANAGER] live in this community?		
	To what extent does [VENDOR OWNER/MANAGER] consider the people that come to [THIS VENDOR] as neighbors and to what extent as clients? Does this view change any aspects of this vendor's business strategy?		
	Does [VENDOR OWNER/MANAGER] belong to any business- or health-related associations or organizations? If so, which ones?		
	How many staff work here (at this vendor), including yourself?		

Vendor ID: [___ | ___ | ___ | ___]

VENDOR DETAILS **SURVEYOR SAY:** Beside this vendor, who else provides antimalarial drugs in this community/area? **(List all, INCLUDING GOVERNMENT FACILITIES)**	**Tick all answers that apply**
Name (both formal and popular)	**Major competitor?**
	Yes…… 1 No…… 2 Branch of this vendor…. 3 Family relation…… 4 Don't know…… -888 Refuse…… -999
	Yes…… 1 No…… 2 Branch of this vendor…. 3 Family relation…… 4 Don't know…… -888 Refuse…… -999
	Yes…… 1 No…… 2 Branch of this vendor…. 3 Family relation…… 4 Don't know…… -888 Refuse…… -999
	Yes…… 1 No…… 2 Branch of this vendor…. 3 Family relation…… 4 Don't know…… -888 Refuse…… -999
	Yes…… 1 No…… 2 Branch of this vendor…. 3 Family relation…… 4 Don't know…… -888 Refuse…… -999

[*For businesses only*]: If there is a government facility nearby, do you consider them to be a competitor for your business? Explain.

Vendor ID: [___ | ___ | ___ | ___]

CUSTOMER RELATIONS **SURVEYOR SAY**: When a person comes into your shop, there are many different ways that s/he can choose which malaria drugs to get. In what ways and how often do people request malaria drugs from you?						**Instructions**
	Often	Sometimes	Never	Don't know	Refuse	Do NOT prompt with answer choices at first. **Then prompt for all except prescription.**
Have a prescription	1	2	3	-888	-999	
Ask by generic name	1	2	3	-888	-999	
Ask by branded name or brand	1	2	3	-888	-999	
Bring an old pack or strip	1	2	3	-888	-999	
Ask for advice based on symptoms	1	2	3	-888	-999	
Ask for the one that is cheapest	1	2	3	-888	-999	
Ask for the one that is the strongest	1	2	3	-888	-999	
Ask for the one "with the leaf"	1	2	3	-888	-999	
Other, explain:	-777	X	X	X	X	

SURVEYOR SAY: I would now like to ask you some questions about the drugs that people request from you and the ones you recommend.		**Instructions**
When people request drugs from your, which malaria drugs do people *request* most often from you? **If "ACTs," try to get more clarity around what this refers to.**	1. _____ 2. _____ 3. _____	Please write neatly. This can be brand or generic names, or some other description of the drugs.
Why do you think people request these drugs? What are the main characteristics a person considers when they are requesting a drug? **OR, if people rarely request drugs and usually ask for your recommendation, why do you think they do not make requests?**		
If people request a certain drug and you do not have it in stock, what do you do? *If you refer* to a different vendor, which one(s)? **Why do you refer to this particular vendor?** *If you suggest a different drug*, does the client usually accept your recommendation? Why do you think this is? About how many accept your referral? What happens when they do not?		

Vendor ID: [___ | ___ | ___ | ___]

CUSTOMER RELATIONS		**Instructions**
What types of malaria drugs do you *recommend* most often?	1. _____ 2. _____ 3. _____	Please write neatly. This can be brand or generic names, or some other description of the drugs.
Why do you recommend these drugs?		
What do you consider to be your fastest moving antimalarial drug and why?		

SURVEYOR SAY: It is sometimes the case that a client does not have enough money to pay for a particular malaria drug. In these cases, which of the following do you do and how often?						**Instructions**
	Often	*Sometimes*	*Never*	*Don't know*	*Refuse*	Read answer choices **out loudly**
Suggest a different drug	1	2	3	-888	-999	
Give a partial dose of the drug	1	2	3	-888	-999	
Allow the client to take the drug on credit and pay later	1	2	3	-888	-999	
Allow the client to pay with goods instead of money	1	2	3	-888	-999	
Give the drugs for free	1	2	3	-888	-999	
Refer them to a different vendor **(Note the vendor)**	1	2	3	-888	-999	
Other, explain:	-777	X	X	X	X	

*****CLARIFY WITH VENDOR IF THESE ANSWERS ARE INCONSISTENT WITH PREVIOUS ANSWERS**

Vendor ID: [___ | ___ | ___ | ___]

Drug	Buy (GHC)					Sell (GHC)			
	35+ kg weight band	*25-35 kg weight band*	*15-24kg weight band*	*5–14 kg weight band*		*35+ kg weight band*	*25-35 kg weight band*	*15-24kg weight band*	*5–14 kg weight band*
Artesunate Amodiaquin									
Arsuamoon AA – Guillin *(co-blister)*	12+12 tablets/strip [__ | __ . __|__] ☐ Don't have ☐ Refuse	6+6 tablets/strip [__ | __ . __|__] ☐ Don't have ☐ Refuse		3+3 tablets/strip [__ | __ . __|__] ☐ Don't have ☐ Refuse		12+12 tablets/strip [__ | __ . __|__] ☐ Don't have ☐ Refuse	6+6 tablets/strip [__ | __ . __|__] ☐ Don't have ☐ Refuse		3+3 tablets/strip [__ | __ . __|__] ☐ Don't have ☐ Refuse
Winthrop AA –Sanofi Aventis *(fixed dose)*	1x6 tablets/strip [__ | __ . __|__] ☐ Don't have ☐ Refuse	1x3 tablets/strip [__ | __ . __|__] ☐ Don't have ☐ Refuse	1x3 tablets/strip [__ | __ . __|__] ☐ Don't have Refuse	1x3 tablets/strip [__ | __ . __|__]		1x6 tablets/strip [__ | __ . __|__]	1x3 tablets/strip [__ | __ . __|__]	1x3 tablets/strip [__ | __ . __|__]	1x3 tablets/strip [__ | __ . __|__]
Arthemether Lumefantrine									
AL – Ipca *(co-blister)*	6+4 tablets/strip [__ | __ . __|__]	6+3 tablets/strip [__ | __ . __|__]	6+2 tablets/strip [__ | __ . __|__]	6+1 tablets/strip [__ | __ . __|__]		6+4 tablets/strip [__ | __ . __|__]	6+3 tablets/strip [__ | __ . __|__]	6+2 tablets/strip [__ | __ . __|__]	6+1 tablets/strip [__ | __ . __|__]
Artefan – Ajanta *(fixed dose)*	1x24 tablets/strip [__ | __ . __|__]	1x18 tablets/strip [__ | __ . __|__]	1x12 tablets/strip [__ | __ . __|__]	1x6 tablets/strip [__ | __ . __|__]		1x24 tablets/strip [__ | __ . __|__]	1x18 tablets/strip [__ | __ . __|__]	1x12 tablets/strip [__ | __ . __|__]	1x6 tablets/strip [__ | __ . __|__]
Coartem – Novartis *(fixed dose)*	1x24 tablets/strip [__ | __ . __|__]	1x18 tablets/strip [__ | __ . __|__]	1x12 tablets/strip [__ | __ . __|__]	1x6 tablets/strip [__ | __ . __|__]		1x24 tablets/strip [__ | __ . __|__]	1x18 tablets/strip [__ | __ . __|__]	1x12 tablets/strip [__ | __ . __|__]	1x6 tablets/strip [__ | __ . __|__]
Lumartem AL - Cipla *(fixed dose)*	1x24 tablets/strip [__ | __ . __|__]	1x18 tablets/strip [__ | __ . __|__]	1x12 tablets/strip [__ | __ . __|__]	1x6 tablets/strip [__ | __ . __|__]		1x24 tablets/strip [__ | __ . __|__]	1x18 tablets/strip [__ | __ . __|__]	1x12 tablets/strip [__ | __ . __|__]	1x6 tablets/strip [__ | __ . __|__]

Vendor ID: [___ | ___ | ___ | ___]

Monitoring: antimalarial stock *(not just ACTs!)*

<table>
<tr><th rowspan="2">Drug</th><th rowspan="2">Have now?</th><th rowspan="2">Quantity have</th><th rowspan="2">Supplied by</th><th colspan="4">Form</th><th rowspan="2">Usually have?
(not counting current stock-out)</th><th colspan="4">**B**uy *(from supplier)* & **S**ell *(retail)* price (GHC) for 1 full dose</th></tr>
<tr><th>*Tablet/ Sachet*</th><th>*Syrup*</th><th>*Suppository*</th><th>*Injectable*</th><th>*35+ kg wt band*</th><th>*25–35 kg wt band*</th><th>*15-24kg wt band*</th><th>*5–14 kg wt band*</th></tr>
<tr><td></td><td>Yes **1**
No **2**
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	COMPETITION & PRICING		Instructions
	Do you do anything to make yourself competitive with other vendors in this area? What things? Describe in detail. **If "good customer care" or "good customer relations," ask for more detail.**		Please write neatly.
	How do you learn whether any other vendors in the area have changed their prices?		Please write neatly.
	Are you aware of any agreements among local vendors about pricing levels? For example, an agreement in which some vendors agree to set the price of a certain drug at a certain level?		Please write neatly.
	In terms of your prices, what do you do if a competitor changes their prices? Does it matter whether competitors raise or lower their prices?		Please write neatly.
	If you lowered your prices, would any nearby vendors be angry with you? What would they do? Please explain in detail.		Please write neatly.

SUPPLIERS **SURVEYOR SAY:** I would like to continue with some questions about your suppliers			**Instructions**
	Please give names of your main three suppliers of your ACT stock (in terms of stock of volume provided), including big suppliers as well as people on motos, or friends, etc.	1. _____ 2. _____ 3. _____	Please write neatly.
	SUPPLIER 1:		
	What kind of supplier is this?	☐ Wholesaler ☐ Second-line buyer ☐ Wholesaler or second-line buyer ☐ Pharmacy ☐ Don't know ☐ Refuse ☐ Other, *explain*:	
	How long have you worked with this supplier?		
	Where is this supplier located?		For example, in the same town, in another town (provide name) or in another region (provide details).
	Do you mostly make your orders in advance (pre-sales), with regular deliveries, or on-demand with this supplier for antimalarial drugs? How much of your stock comes from forecasted orders? If in advance, how do you forecast your demand for antimalarial drugs? ***Do you usually forecast well or do you have to try to get a top-up? Is it possible to do so?*** If on-demand, how quickly does the order come?		Please write neatly.
	Does this supplier deliver or do you have to go pick up the order? How often does this happen? (For example, weekly, monthly).		
	Are you able to return unsold drugs within a given time window for a refund?	☐ Yes ☐ No ☐ Don't know	
	Does this provider usually provide instructions about retail prices? How do you respond to these suggestions?		
	How did you choose to work with this supplier?		

	SUPPLIER 2:		Instructions
	What kind of supplier is this?	☐ Wholesaler ☐ Second-line buyer ☐ Wholesaler or second-line buyer ☐ Pharmacy ☐ Don't know ☐ Refuse ☐ Other, explain:	
	Where is this supplier located?		For example, in the same town, in another town (provide name) or in another region (provide details).
	How long have you worked with this suppliers?		
	Do you mostly make your orders in advance (pre-sales), with regular deliveries, or on-demand with this supplier for antimalarial drugs? How much of your stock comes from forecasted orders? If in advance, how do you forecast your demand for antimalarial drugs? **Do you usually forecast well or do you have to try to get a top-up? Is it possible to do so?** If on-demand, how quickly does the order come?		Please write neatly.
	Does this supplier deliver or do you have to go pick up the order? How often does this happen? (For example, weekly, monthly).		
	Are you able to return unsold drugs within a given time window for a refund?	☐ Yes ☐ No ☐ Don't know	
	Does this provider usually give instructions about retail prices? How do you respond to these suggestions?		
	How did you choose to work with this supplier?		

	SUPPLIER 3:		Instructions
	What kind of supplier is this?	☐ Wholesaler ☐ Second-line buyer ☐ Wholesaler or second-line buyer ☐ Pharmacy ☐ Don't know ☐ Refuse ☐ Other, explain:	
	Where is this supplier located?		For example, in the same town, in another town (provide name) or in another region (provide details)
	How long have you worked with this suppliers?		
	Do you mostly make your orders in advance (pre-sales), with regular deliveries, or on-demand with this supplier for antimalarial drugs? How much of your stock comes from forecasted orders? If in advance, how do you forecast your demand for antimalarial drugs? **Do you usually forecast well or do you have to try to get a top-up? Is it possible to do so? Do you have to go and pick up?** If on-demand, how quickly does the order come?		Please write neatly.
	Does this supplier deliver or do you have to go pick up the order? How often does this happen? (For example, weekly, monthly).		
	Are you able to return unsold drugs within a given time window for a refund?	☐ Yes ☐ No ☐ Don't know	
	Does this provider usually give instructions about retail prices? How do you respond to these suggestions?		
	How did you choose to work with this supplier?		

ANTIMALARIAL STOCK **SURVEYOR SAY:** I would like to ask some questions about stocking decisions.			**Instructions**
	As a dispenser/vendor, what is the main reason for you to stock a certain brand of antimalarial?	☐ Prescriptions often have this brand on it ☐ High demand ☐ Price of drug relative to customers' budget ☐ Readily available ☐ Supplied by a wholesaler or second-line buyer with whom we have a good relationship ☐ Familiarity with brand ☐ Don't know ☐ Refuse ☐ Other, *specify*:	Do NOT prompt with answer choices. Tick all that apply.
	Can you provide an estimate of the percentage of your distribution of drugs that are antimalarial drugs? Would you consider malaria drugs to be an important part of the volume of drugs you dispense? [If at a business, please ask the extent to which malaria drugs are important to the business – **that is, what percent of total sales are sales of malaria drugs?**].		Please write neatly.
	Do you keep records (logs) of your distribution (sales) of malaria drugs? How do you keep these records? For example, in a logbook, on a computer, etc. What information do you record? For example, quantity, price, sales date, drug expiration date, etc.		

AMFm			**Instructions**
	How did you first hear about the green leaf (AMFm / ACTm) program? **Do you think this was the proper way for you to learn about it?**	☐ Have not heard of it	Please write neatly.
	Have you *ever* had stock of malaria drugs with the green leaf on the packet?	☐ Yes ☐ No ☐ Don't know ☐ Refuse	
	In your opinion, how great is the local demand for malaria drugs with the green leaf on the packet?		
	Do you *currently* have any malaria drugs "with the green leaf on the packet?"	☐ Yes ☐ No ☐ Don't know ☐ Refuse	
	If no, what is the *main* reason for this?	☐ Not available ☐ No consumer demand ☐ Not aware of AMFm or cheap supply ☐ Don't know where to buy drugs ☐ Haven't had time to buy drugs ☐ Too expensive ☐ Don't agree with AMFm program ☐ No particular reason ☐ Don't know ☐ Refuse ☐ Other, *explain*:	Tick all that apply. **DO NOT PROMPT.**
	If yes, *what* is the main reason for this?	☐ High quality ☐ Price is good ☐ High quality drug for good price ☐ High demand from clients ☐ Supplier brings this one ☐ Supporting the AMFm program ☐ Don't know ☐ Refuse ☐ Other, *explain*:	Tick all that apply. **DO NOT PROMPT.**

AMFM			**Instructions**
	Please provide names of your top three providers of antimalarial drugs with the green leaf on the packet. If these are different from your main suppliers, please explain further about why you work with this provider for "green leaf" drugs?	1. _____ 2. _____ 3. _____	Please write neatly.
	Is it more difficult to find a supplier for malaria drugs with the green leaf on the packet than for other antimalarial drugs? Explain.		
	Some vendors have said that suppliers do not always have enough of the drugs with the green leaf on the packet. Have you had this experience? **Specifically, what about with pediatric doses?** **What about with the green leaf AA drugs (Arsuamoon & AA Winthrop)? Why are these no longer so common on the market?**		
	Some vendors are reporting that supplies are raising their prices on the drugs with the green leaf on the packet. Have you heard and/or experience this?		
	When you first received stock of malaria drugs with the green leaf on the packet, how did you come to have it?	☐ Requested from the supplier ☐ Supplier/provider asked if [THIS VENDOR] wanted to begin receiving these drugs ☐ Arrived automatically, *with* prior knowledge ☐ Arrived automatically, *without* prior knowledge ☐ Don't know ☐ Refuse ☐ Other, explain:	**Can read answer choices out loud to prompt.**
	If you *currently* have stock of the malaria drugs with the green leaf on the packet, how did you come to have it?	☐ Requested it from the supplier ☐ Supplier delivered it without [THIS VENDOR] requesting it **Explain further:**	Please write neatly.

AMFm			**Instructions**
	Do you currently have as much stock with the green leaf on the packets as you would like to have?	☐ Yes ☐ No ☐ Don't know ☐ Refuse	
	Can you tell me how/where to order more stock with the green leaf on the packet?	☐ Yes ☐ No ☐ Don't know ☐ Refuse	Please write neatly.
	Did you ever consider switching providers in order to receive (or not receive) drugs with the green leaf on the packet? **What do you do if your normal supplier does not have the green leaf drugs – for just temporary switching?** **What are your options when your normal supplier is out of drugs?**	☐ Yes, to receive ☐ Yes, to not receive ☐ No ☐ Don't know ☐ Refuse	
	Have any of your customers asked for antimalarials with the green leaf on the packet?	☐ Yes, regularly ☐ Yes, occasionally ☐ Not at all ☐ Don't know ☐ Refuse	
	How do you think your customers come to be familiar with the malaria drugs with the green leaf on the packet?	☐ Don't know ☐ Refuse **Explain:**	
	How do you think your customers view the green leaf symbol? For example, do they see it as a brand, a mark from the government or something else? If "as a brand," explain further whether clients distinguish between the different types of drugs with the green leaf on the packet.	☐ Don't know ☐ Refuse **Explain:**	

AMFm			**Instructions**
	Have you recommended antimalarials "with the green leaf on the packet to your customers?	☐ Yes, regularly ☐ Yes, occasionally ☐ Not at all ☐ Don't know ☐ Refuse	Please write neatly.
	Some vendors and customers have suggested to us that the green leaf drugs require two full doses to give a complete cure. **That is, they get one dose, finish, do not feel better and come back for a second packet for complete cure.** Have you heard anything about this? What do you think about this?	☐ Don't know ☐ Refuse **Explain:**	
	Some vendors have suggested that some of their customers suspect that that low price of the drugs with the green leaf on the packet means that the drugs are low-quality or even counterfeit. Have you heard anything like this? What do you think about it?	☐ Don't know ☐ Refuse **Explain:**	
	What do you think are the goals of the green leaf (AMFm / ACTm) program?	☐ Don't know ☐ Refuse **Explain:**	
	What agency is in charge of the AMFm program in Ghana?	☐ Don't know ☐ Refuse **Explain:**	

AMFm			**Instructions**
	Overall, what do you think of the green leaf (AMFm / ACTm) program? Why do you think this? Do you have any thoughts on how it could be improved? **If "good," please provide more detail.**	☐ Don't know ☐ Refuse **Explain:**	
	What do you think of the suggested retail price (GHC 1.5) of the malaria drugs with the green leaf on the packet? **What would you think if the suggested price was lowered to GHC 1.0?** Do you think it would be possible to still make a profit?	☐ Don't know ☐ Refuse **Explain:**	
	How did you learn that GHC 1.5 was the suggested retail price for these drugs? **What would happen if someone priced their "leaf" drugs higher than GHC 1.5?**	☐ Don't know ☐ Refuse **Explain:**	
	At what price do you think the drugs with the green leaf on the packet are brought into port and sold to the first-line buyers?	☐ Don't know ☐ Refuse GHC [___ | ___] . [___ | ___]	
	Do you know how many distributors or suppliers the green leaf drugs pass through between leaving port and arriving at your shop?	☐ Don't know ☐ Refuse	
	What is the difference between what you were making on sales before and after AMFm?	☐ Don't know ☐ Refuse **Explain:**	

AMFm			**Instructions**
	The "green leaf" (AMFm / ACTm) program was tested in regions of some other countries, including Angola, Kenya, Tanzania and Uganda. In these countries, the retail price settled around the equivalent of GHC 1.5 and sometimes even lower. Do you think this will happen in Tamale? Across Ghana? Why or why not? **Given the current prevailing circumstances with some supply difficulties, do you still think it will settle at GHC 1.5? What needs to be done?** Consider both a business perspective and a customer perspective on why this will or will not happen. **If they mention that supply prices are rising, probe further to see how high. At what price to they think it will settle?**	☐ Don't know ☐ Refuse **Explain:**	
	Right now, no Ghanaian pharmaceutical company has been approved to use the green leaf logo. Some vendors with whom we have spoken have been angry about this. What do you think of this? Does it change the way you see the "green leaf" program?	☐ Don't know ☐ Refuse **Explain:**	

PRICING			Instructions
	How do you determine the prices for which you sell your antimalarial drugs? For example, you might look at the prices used by nearby vendors or the distributor might suggest prices to you. When you determine prices, do you use a fixed mark-up or a percentage mark-up? Does the mark-up depend on whether the drug is more or less expensive? **Explain how this is so.**	☐ Don't know ☐ Refuse **Explain:**	Please write neatly.
	What do you think is a fair mark-up on the price at which the distributor sells antimalarial drugs to you? Why is this?	☐ Don't know ☐ Refuse **Explain:**	
	Do you use the same process to determine the price at which you distribute your malaria drugs with the green leaf on the packet as you do for your other antimalarial drugs? If yes, explain why. If no, explain this process.	☐ Don't know ☐ Refuse **Explain:**	
	In terms of your prices, what do you do if a distributor/supplier changes their prices? Does your decision depend on whether the supplier raises or lowers their prices? **In what way?**	☐ Don't know ☐ Refuse **Explain:**	
	What is the total [WEEKLY OR MONTHLY] revenue from anti-malarial sales?	☐ Don't know ☐ Refuse GHC [___ | ___] . [___ | ___]	Would rather have "refuse to tell" than a made-up amount!!
	What is the total [WEEKLY OR MONTHLY] revenue from all sales? **Specify whether giving weekly or monthly.**	☐ Don't know ☐ Refuse GHC [___ | ___] . [___ | ___]	Would rather have "refuse to tell" than a made-up amount!!
	Is your revenue usually enough to cover your expenses?	☐ Yes ☐ No ☐ Don't know ☐ Refuse **Explain:**	

MONITORING & REGULATION			**Instructions**
	Has anyone in this shop received training specifically on malaria?	☐ Yes ☐ No ☐ Don't know ☐ Refuse	
	If yes, **who** at [THIS VENDOR] has ***received*** training? ***Who provided*** this training and when?	☐ Don't know ☐ Refuse **Explain:**	
	If any, which agency (agencies?) is in charge of monitoring/ regulating this vendor?	☐ Don't know ☐ Refuse **Explain:**	
	What types of activities do these agencies monitor?	☐ Don't know ☐ Refuse **Explain:**	
	How effectively do you think these agencies monitor these activities? Why do you feel this way? **Be sure to have the vendor explain to you why s/he thinks the agencies are "effective" or "good" (or not) at monitoring, given the frequency of visits? What do they do when here?** How often does a vendor in this area get caught out of compliance with agency regulations?	☐ Don't know ☐ Refuse **Explain:**	
	If a vendor is found to not be complying with agency regulations, what penalty will be imposed? Have you ever seen this happen?	☐ Don't know ☐ Refuse **Explain:**	

APPENDIX E. RETAILER INTERVIEWS: FULL ANSWERS FOR SELECT QUESTIONNAIRE ITEMS

APPENDIX F. RETAILER FOLLOW-UP INTERVIEWS FROM PACT

VENDOR CODE	1	2
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	Follow-up that was done was very helpful and something that made me like your program, as well as the text system reported to me by patients who came back later. Follow-up is a plus for me and the text system	The flyers helped in creating awareness on health issues. Personally, I think there could have been nothing better.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The vendor should have been given a whole preview of the program before the project commenced that could create an in-depth understanding of the program	x
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	On the vendor's part, he understands that the "green leaf" related to ACTs is basically different from what PACT was doing. For example, the "green leaf" program is about pricing while the PACT program was targeting different issues	Both programs seem aimed at helping patients
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	The surveyor presence and the SMS made clients (patients) complete their dosage and when the ACTs actually worked, they were motivated to share their experience with friends. who are encouraged to purchasing ACTs, thereby increasing sales	Business-wise, I did not realize any more profit during the week of the study. But the talks shared with the few clients proved really to encourage people to finish their ACT dosage and when the drugs worked, our business credibility was also at a high. But basically, I think the fasting period was also responsible for low sales.
Did you feel that our program led to focus more on ACTs and ACT clients?	Other drugs were equally important, but I was encouraged to keep more ACT drugs because of the increase in sales due to the study	The focus was at the beginning of the study but as the study went on, the tension calmed as a result clearing doubts about what the research is about. After some time, it was just like any other business, so things were fine.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	It is helpful to both my clients and my business.	Nationally, the drugs are to be promoted and also from experience the drugs are good, so scaling up will only increase awareness, which I think is much welcomed
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	It will be very easy to explain the program to a client. The barrier is if we have more than 1 client at a time -- you might need two or three staff to tackle this barrier	Vendor staff like me should be given the requisite training necessary to undertake the program. But if clients are many, if will be difficult to singly handle all the clients.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	The flyers were small; if they could have been enlarged and also made in a variety of colors to make them more attractive and catch client attention	The flyers were small could be bigger next time.
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Rubber bangles or key-holders could be added to attract people and to sustain interest	The flyers are associated to ACTs, and because the drugs were many, the people did not want to get more because they knew nothing of the whole program. And also, because it was the first time to get the flyers at drug stores. With time, people would become more used to the flyers if the program is continued
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	x	I cannot give any better idea. But I think that people with low battery or credits should be encouraged that if they come back to enroll in the system, they should be given a souvenir like a key holder
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	Explanation of the program was clear and straightforward.	Surveyors had the listening patience to answer questions concerning the project and also not to interfere in our business. But the study can be improved by giving vendors t-shirts or some stickers to catch people's attention about the new program, which would also make it more official.

VENDOR CODE	3	4
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	People were encouraged to complete the dosage and this was achieved through the messaging. That is what I liked most.	The research did not make room for patients who are not educated. That is the aspect of the program I did not like but overall the program was for the better, in my opinion
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The program could have been explained in more detail to us.	To me, all was aimed at a better way to encourage full dosage completion, so I do not see the distinction
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	This intervention was aimed directly at patients, without pricing issues. Also, the intervention creates more awareness on dosage completion, which other related ACT programs do not.	The "green leaf" program related to ACTs in related to prices and the green logo. But the intervention was specific to encouraging dosage completion, which also helped raise health awareness, so the program was better than other ACT-related programs, and so it is a clear distinction
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	The text messages patients got promoted them to tell others, which increased my sales in ACT drugs. People are now more confident in the ACT drugs.	The messaging and the end result of good health due to proper adherence to completing the dosage resulted in better ACT results for patients, who in turn spread news about the effectiveness of the drug, thereby encouraging people to rely on ACTs. There were no big changes in sales, but the awareness of ACTs has increased a small percentage the peoples' belief in ACTs
Did you feel that our program led to focus more on ACTs and ACT clients?	This rise in market and demand promoted me to be sure that I always had a stock of ACT drugs.	Peoples' belief for the ACTs have been made, and so they have purchased more ACT drugs, but that did not change much our focus.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	People could be educated more on the need to adhere to dosage completion	To me, people who have used ACTs have testified the effectiveness. Your study and intervention have certainly increased awareness and to put the program on the national scale would be a big plus.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. In your opinion, would it be possible to run an intervention such as ours without a surveyor present?	If vendor staff are given proper training with proper logistics, as well as incentives, then the program can be executed without problems.	I do not foresee and hindrance or barriers.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	The flyer was easy to understand and yellow is my favorite color, so I cannot think of any modifications
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Patients, when sick, have the feeling that they don't want to be bothered and more, so this is the first time for them, or even me as a vendor, to see these kind of flyers, and program. In the future, we need the program explained better.	People saw it to be some kind of disturbance to them because they feel there is going to be another long process. But proper education will considerably reduce this perception.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. Do you have any thoughts about how we might overcome this barrier in the future?	Emphasis should be given to the importance of the program and, generally, people will enroll later even if there is a problem at the time of drug purchase.	To people who do not have formal education, it is difficult to deal with this issue. But other people would find a way to enroll, since I believe that there should be at least someone near who can have a phone that the patient can use. People should also be encouraged to come back to enroll.
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	The message is simple and the message used is very simple and straightforward, so I cannot think of any other ideas.
What did you think of your overall interaction with the PACT team?	PACT did well. There were no communication barriers. As a vendor, I was given all due respect, like introductions and the patience to explain issues and resolve them accordingly. But the questionnaires were very long.	The intervention was good. The bad aspect is that the vendors should have received some kind of incentive, be it in material form, like posters or anything physical, and on a larger scale, vendors should stand to benefit so that there can be effective operation of the program.

VENDOR CODE	5	6
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	What I like most was the text messaging system, which I believe made people to complete their dosages as well as increase people's awareness of the importance of completing dosages. People generally felt well after completing the ACTs, but most were those that completed the dosage	People used to not come back to give complaints of possible side effects of drugs but with the SMS system, people now have the perception that there is some importance is attached to the drugs, so they come back and report side effects that they experience
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The questions to me had a different focus as compared to the intervention, so it was clear that all were geared toward a different agenda.	I was not so particular about the questionnaires but to me I believe the SMS was to create peoples' awareness of their health while the questionnaires was meant probably for feedback
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Other ACT-related programs were not one-on-one. With those programs, they are normally focused on pricing. But your intervention was more comprehensive and focused on a personal, one-on-one basis.	People now ask more of ACTs because of the TV adverts but the distinction lies in the fact that people do not get education on usage or encouragement to complete dosage
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	People became more convinced about the text that you sent to them, making the patients believe that our stress is on completing dosages. This increases our credibility and patients to stick to these advice we give as a health service provider. The only negative stuff in my opinion was that the process was lengthy, which made some of our clients a little worried.	I must mention that people felt it was a waste of time. Basically, I think it was because people wait until the malaria is serious, so when they come here, they will like to leave early. But quite apart from those complaints, I think it was just normal
Did you feel that our program led to focus more on ACTs and ACT clients?	People who testified on the good aspects of the drugs as a result of completing the dosage made us to keep more ACTs in stock.	We had to make sure we were not out of stock
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	I feel the program did best to help educate people on the need to adhere to prescriptions as well as completing dosages as well as respecting the advice given to patients by vendors.	Many people do not complete their dosage, and the SMS helped people do this, so to me personally, this attitude of completing dosage by patients is encouraged and sustained, Ghana can be healthier, so the program should be expanded
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	The barrier I foresee is when you have about 3 to 4 patients at the same time, this will be difficult to talk to all of them because other patients will complain and that could mar my business. And, all the required logistics should be made available.	I think with the proper training and logistics, the vendor staff are enough to undertake this program.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	The leaflet used was smaller and could be enlarged; also, the color should have been green.	I feel that on the back of the flyers, some little information should be added to make self-explanatory, such that people understand the concept of the program, if they can read, and this would help people to partake in the program.
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	This was the first time people were getting used to the flyers, as well as this program. So, with time, people will be used to this.	People generally did not really know what was going on, so that was why they hesitated, but with time people would become used to it
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	Your surveyors did well to follow people to houses that were not far to receive phone numbers, which also helped, so I feel you could do more of that in the future.	This is a natural occurrence but if you could take down the number of the patient and later enroll the person, that would have been great
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	You could pick up the patient's number and enroll them instead of flashing because some people might not be educated. So, when their phone is not present, they will only take the flyers and dump them at their house.	Your surveyors can take the patients' contact information, so that you visit the house and by that, you could get their phone numbers and enroll them
What did you think of your overall interaction with the PACT team?	Generally everything was smooth but the questionnaires were lengthy	To me, the program should have t-shirts, caps, and some bangles to make people know your surveyors and also for we vendors, so that anyone seeing it would know something is going on.

VENDOR CODE	7	8
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	The SMS was remarkable in the sense that you, from our observations, people do abuse drugs by not completing dosages. But, the SMS at least is another reminder, which can help out a lot for people to complete the dosage. I also believe it is also a reason why people may testify many good things on the effectiveness of ACTs.	The SMS signified a lot of concern to patients. My first was enrolled and it was great to be reminded by this system without even paying for the services. The SMS is just great
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	To me, the questionnaires were to help you track patients and also have feedback but the intervention was basically to create awareness	To me, all aimed at encouraging people to complete the dosage but I only felt that you were doing that by different methods
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Other programs have been based more on price and also the signs that one can use to identify affordable ACTs but your intervention was more of an awareness program to help people get well and better by taking their drugs as prescribed	I really got more information on your study. We have another shop at [another site], so that we also started having stock. I do not know of any related ACT programs
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	It was just normal business but with a little spice that the surveyors were talking to the patients and that the SMS was great	The presence of your surveyor and introduction and SMS encourages people to complete drugs and when the message was passed to others in their vicinity, people started to patronize the ACTs and that was good business for me
Did you feel that our program led to focus more on ACTs and ACT clients?	x	I now to have to keep ACT drugs in stock and I was able to discover now that ACTs are a wide range and I also passed on that information as well to educate others
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	Most people, especially from villages, believe that ACTs, because they have more tablets, means that they can just take some portions. But the program will give and create awareness and also help people to really stick to prescriptions	It should be scaled up so that at least I know my family that does not reside here in Tamale would also benefit from this great experience and education
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	We receive many clients here with different needs, so I would not have too much time to take this task.	I am the only person here to serve clients, so the barrier for me would be if I am the only person [but there are many clients]. With a helper, we vendor staff could be equivalent to this task. But we should be given training.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	Many of the words on the flyers usually faded, so the only improvement would be that the words and numbers should not fade.	I would prefer the color to be green or any other more visible color, as your letters were fading on the yellow flyers
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	x	It was a first experience, so that was why, especially in the community where my shop is located, as people are not much educated
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	I think you should follow those people to their homes to see how best they can be enrolled. But with people that do not have phones, there is nothing really you can do.	x
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	I think your idea is excellent for now.	x
What did you think of your overall interaction with the PACT team?	Everything about the program was OK. Only the questionnaires were too long and also your surveyors work a lot and should not be made to work on Saturdays.	Please continue with this SMS program. But we vendors would love to have the program's t-shirts

VENDOR CODE	9	10
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	What I disliked is that no education was done but generally the idea was good, since it was the first of its kind.	What I like is that I had many patients come back to me to inform me of the SMS they received, and the calls and follow-ups made them excited and happy. People now saw the importance of the ACTs; it was great as an experience to me and the patients generally
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	x	The questionnaires were not much previewed to me by the interviewers but the interactions made the study different. While the questionnaires seemed boring, the interviewers seemed to be a great excitement
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Both of you promoted the sales of ACTs. But your intervention was more aimed at awareness and how to complete the dosage, which other programs did not care about	The "green leaf" programs don't have any sort of attachment to the patient but your intervention seemed to involve and appreciate the patients more, so they felt respected and began to place some emphasis on their health. The "green leaf" programs do not help because they cannot listen like PACT listens with the interviewers.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	I felt we were all doing our best to help the nation but I cannot think of anything bad or so positive about. Only that people began to take me serious, as compared to other competitors that did not have your surveyors.	Our credibility increased as well as sales because people believed we were more caring to our clients, because your program called them to remind them of the drugs and also they had good conversation with the surveyors
Did you feel that our program led to focus more on ACTs and ACT clients?	x	I now keep more stock of ACTs. But now I have to explain to my clients that I cannot send SMS to remind them now, which is sort of sad
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	The extension nationwide would promote trust in the drug, since patients have testified to the effectiveness of the ACTs.	The program will definitely increase awareness on health issues, and that would not be bad for the nation
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	The barriers I see are if there is no proper training or logistics to vendors, it could be a problem but if these issues are dealt with, I will be ready to work	The barriers I foresee are the logistics and necessary incentives. But proper training can be done and proper logistics could be worked out.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	The flyers should have been bigger	The flyers are alright
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Because it was the first of its kind. With time, people would be used to the flyers	The first time for everything around here in my community is like that, more especially when it has to do with literacy, but with them, it will become usual
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	People should be educated well, especially the area that I sell my drugs, many are not educated. So, if that is done, people will be encouraged to come back even if they had no battery or no phone at time of enrollment.	I think you should take directions to the patients' locations and have personal visits to try to enroll them
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	I can take patients' numbers and send via SMS to your office so that you enroll them
What did you think of your overall interaction with the PACT team?	The surveyor never interrupted with my business and was very calm and respectful to my clients. What you could improve is to have some incentives like t-shirts or caps of the project that can be carried out.	For all the profits are I made through PACT, your surveyor also helped me track a thief that came to steal from me. I had company with him too, for which I was grateful. But feel vendors like me should be given PACT t-shirts or caps. I hear ACT drugs reduction for only a year. I feel that if this is true, steps should be taken to maintain ACTs as it has proven better for me in my observations and from my patients reports of its effectiveness.

VENDOR CODE	11	12
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	There was nothing bad about the SMS program that I can note. I was very fine with the method employed.	With the SMS, patients felt that at least someone cared about their health, which served as encouragement for more people.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The interviews and questionnaires to me all targeted at a certain objective and more related to the study	I was not in particular (aware) of the questionnaires, so I cannot best tell you but the intervention to me was somehow (somewhat) unique
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	To me, all programs and interventions are the same, to make people health and informed	You seemed precise and there was some kind of feedback on both ways. But the "green leaf" related programs do not have any feedback. They are just interested in making money without any personal concern.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	It felt normal and sales were not all that good, so it was just normal business	My ACT drug sales increased and some patients still ask me if they will get the SMS. Other patients somehow know about the program elsewhere, so sales are good.
Did you feel that our program led to focus more on ACTs and ACT clients?	x	I now get people recommending ACTs, so I am now confident to prescribe ACTs and not to run out of stock of ACTs
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	This would be very helpful, especially during the "malaria season," to combat malaria or reduce is it	The SMS is very helpful. I am not native of Tamale, but I feel like my hometown people have missed a lot and hope that your program is expanded for every Ghanaian to kick malaria out of Ghana.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	The ACTs are difficult to come by, so that is my problem. With the proper materials, I could perform the duties of the surveyors	During your surveyor, when your surveyor goes for a break, at those times, that is when the patients come in. So for me, the vendor staff are the best for this program because they are always present. It would not be any problem as long as I receive proper training and logistics.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	The flyers were OK	I love yellow color so it was perfect for me.
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	People were tired and looked very sick, so I think that why. I think we only need patience and more convincing.	Because it was their first time.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	People who qualify but have low batteries can be followed to their home to enroll them	When people get better education on the program, they will definitely enroll later. Proper education is best for the next time, for patients to realize the importance
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I was encouraged by the respect and patience of your surveyors. I have to emphasize again that the supply chain is not going down well with the ACTs. More effort should be made to make the available at all times and with regular supply.	The study was well-managed and all people who come from PACT were very friendly. An example is a lengthy questionnaire your surveyors put me through yesterday but he was very convincing

VENDOR CODE	13	14
Vendor type	Licensed Chemical Seller	Pharmacy
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	Some people complain that the ACT pills are just too many. But the SMS has helped to encourage people to complete the dosage	Many patients forget to take their drugs after leaving the vendor shop. When they feel a little better, the interaction with you and the SMS made them more serious about the drugs. The SMS was something unique and fantastic.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The intervention seemed to stick better with the patients than the questionnaires	I did not have time to observe the questionnaires
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Other "green leaf" programs related to ACTs basically advertise their products, while your intervention, to me, did not seem like an advertisement	The intervention had a way that people could get back to you. But other programs do not take the concern or feedback of the patients.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	Business was normal except for a few people who got interested in the SMS	x
Did you feel that our program led to focus more on ACTs and ACT clients?	People seemed convinced with ACTs, so I keep more stock of different types now.	We now make sure we have ACTs in stock because of the new demand
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	It will help people create awareness to their health and also make people respect the advice that I give to my clients to take the drugs as I have directed	People would now be health-conscious if the program is expanded. And to me, patients would now scrutinize the drugs as well as complete the dosage, while avoiding fake drugs. Personally, I think you should not truncate the program, and rather let it continue.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. In your opinion, would it be possible to run an intervention such as ours without a surveyor present?	The barrier would be that when the clients are many, I cannot have the luxury of time to talk to all of them or to tell them to wait. So, two people would be enough, with proper education and training.	Convincing people would be very difficult, because we are always very busy. If the clients are too many, then explaining the whole concept would be very difficult to carry out. Aside from that, we can take over the duties of your surveyors.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	x
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	The flyers are something new. Also, when someone is sick, his/her attitude changes.	Individuals are different in attitude. So some will generally exhibit this behavior but others would not. So for me, it is just a matter of approach and patience with the clients or potential respondents.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. Do you have any thoughts about how we might overcome this barrier in the future?	To me, if clients receive the proper education on the importance of the program, they will enroll later or come back.	For someone who does not have a phone, it will be extremely difficult. For other problems, like lack of credit and battery issues, I think with proper convincing, people will still enroll later. Or otherwise, your team could call them later and remind them to enroll.
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	I think your idea is excellent and cannot think of any better method.
What did you think of your overall interaction with the PACT team?	There was the proper approach from your end. Usually I am here alone but your surveyors kept me company so send me another one soon and I will be a happy man!	Generally the program was OK and we approve of it. One aspect is the seriousness with which the people sick to the drugs when they speak with your surveyors. But the questionnaire was time-consuming. Also, next time, vendor staff could be given t-shirts with the PACT logo.

VENDOR CODE	15	16
Vendor type	Hospital / clinic / health center	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	The SMS reminder was excellent reminder, because people around here share drugs but with this system, they are encouraged to take the staff here seriously. But I think there should be continuous education on these issues. The literacy level around this setting is very low and we get clients from very remote areas. The SMS methodology is best, but my concern is how it can work if people cannot read or do not have phones.	The continuous reminder messages sent to patients was just "wow." It was a great idea since we face the problem of patients not completing their dosages and later coming to complain that they are not feeling well, so the reminder was great
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The intervention was clearly distinct in the sense that it promoted people to complete dosage but the questionnaires were geared toward monitoring patients or get feedback	To me, all was the same program and aimed toward educating people on the need to complete the dosage
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	The intervention is quite straightforward trying to encourage people to complete drugs but the other programs are meant to promote the ACTs and create awareness of their existence. But on a general platform, I feel that the programs are all geared toward a goal of eliminating malaria.	The intervention was specific to encouraging people to complete their dosage, while showing some concern. But other "green leaf" program related to ACTs was just meant to know that some new drugs are out and also for profit, so there was a clear distinction
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	My business [*at this vendor*] I was not affected but the patients now attached more seriousness to completing their dosage. We still have a few people ask us of your personnel because they were once told and they once received such a service	The program began to gain me some respect while people who got the SMS told others and people now trust to buy ACTs as a remedy for malaria.
Did you feel that our program led to focus more on ACTs and ACT clients?	x	I now make sure I do not run out of stock of ACTs
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	The program is very good, especially the community that I come from, where people usually abuse drugs because they do not get proper education. So the program should be nationwide because I know this attitude is widespread - including about other drugs - and need to be checked and this study does just that.	The program would help people be more aware of the necessity to complete their dosage, something that I think should be scaled to the national level
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	Most here are not educated so to me, that will be barrier, because even we are able to convince these people to participate, the other issue will be if they understand and can really read what has been written. Also, most villagers around do not have phones.	The only barrier would be if I do not get a proper education and training to carry out the task expected; with this, the vendor staff would just be appropriate
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	x
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	People here do not have much education, so they feel most times that they are to be put in another long process, so it is just about patience and proper education.	To me, this depends on how the clients are approached. With the proper approach, the skepticism can be eliminated to a large extent.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	No response	People who do not have phones can be given the proper education and even if they do not have phones, with some education, they can get someone close to them to help them enroll
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I will be gladly ready to work with PACT, so far as the administrative process has gone through. It was nice that your study passed through the administrator for the necessary concerns. We are always ready to help out. The only thing is that the time spent with patients was a little long and maybe should be shorter and when the patient gets better, you can ask more questions. But I must commend your efforts and strategy put in place to remind them to complete their dosage	I love this program and next time we should be given PACT t-shirts

VENDOR CODE	17	18
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	The SMS for reminding clients on completing dosage is lovely, to me personally, this type of program should be extended for all drugs, because many patients stop taking drug as soon as they feel a little bit better	Reminding people to complete the dosage was great because people stop taking drugs, especially with any short sign of relief, which should be totally eradicated.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The intervention was direct and straightforward, just to remind people to take drugs. But the questionnaire seemed to me to be to educate the patients as well as gathering information to understand a certain pattern	x
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	I feel that both are geared toward finding a better way to combat malaria and generally make people more aware of the ACTs. But the reminder aspect of your program is different.	The intervention had a direct effect because I got people coming back here to tell me that they got some text and it was great to get feedback. But with other programs, there is no opportunity for feedback.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	Business was normal but on social grounds, I earned respect from individuals that were sent SMS and others that were called on their phones. It was a remarkable experience of the concern of they achieved from your end. So, I gained more credibility to my advantage	Because it was fasting time, things seemed slow, but now things seem better
Did you feel that our program led to focus more on ACTs and ACT clients?	Your program is just at the time that the ACTs were introduced, so it made me also feel the importance and truly many people generally agree that ACTs are good, so that persuaded me to always keep them in stock	I now keep stock of ACTs
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	Malaria is nationwide, and as such, every effort geared toward combatting malaria should be nationwide, and this SMS reminder is just perfect for now.	To know the effectiveness of a drug, it has to be used properly, so it will be great to see people complete their dosage so as to give a better account for the effectiveness.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	The only problem I foresee is that when the clients are many, and all need attention, it will be difficult to explain concepts -- but if it became a general need for such a program, I would be most willing to participate and possibly add another help	Without the questionnaires, I think the program would be perfect for we the vendors. Because our clients do complain of the time they had to wait at other places, which they did not like.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	x
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	The time factor was the main issue but with a little more persuasion, this can be overcome	x
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	Personally, I do not think we can provide credits or phones to people --- certainly not! Education is the most important key. With proper education to clients on the benefits attached, patients will be more willing to enroll	Maybe you should visit them at their homes and find a better way to enroll. I also think proper education of the importance of the program will be good.
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I feel that you should stay at one place for quite a number of weeks or months, because there are some weeks you were present but the cases of malaria were low, but in later weeks, there were many more patients	The questionnaires should be reduced to the barest minimum, like the questionnaire I am going through right now.

VENDOR CODE	19	20
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	SMS helps people to complete their dosage, though many people do not have formal education. But all the same, it is good to be reminding people to complete their dosage.	My issue is that though I see the idea as ideal, my worry lies with people who cannot read. I feel that voice calls should have been considered for clients who can neither read nor write.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	I felt the questionnaire was meant to give feedback as well as gather background information, will the intervention was specifically to encourage people to complete their dosage.	The intervention was just text messages, so there was no physical or verbal communication but the questionnaires give the clients the opportunity to ask questions and also I felt it was done to monitor the intervention.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Your intervention was more serious and had a lot of feedback, while other "green leaf" programs are just to improve the market for those drugs. Also, you were geared toward all ACTs.	The intervention or study had a physical engagement with the patients, showing much concern and explanation of concept and other health issues. But the "green leaf" programs related to ACTs do not have these engagements and so their education does not give much information
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	Other people were encouraged to complete their dosage, so it made them testify as to the effectiveness of the drugs, which has brought more clients and profits for my business	People usually visited by the shop later to buy ACTs because they got information from others that some people were interviewed when they bought drugs. People around here had some respect for the surveyors and felt they were even doctors. Though I did not have many clients coming for ACTs, the few that came encouraged others to come buy drugs from our shop.
Did you feel that our program led to focus more on ACTs and ACT clients?	I now keep more stock of ACTs and on days that I do not have ACTs, the clients disturb me so much. So for now, I make sure to keep more stock of ACTs.	I began to make sure that we did not run out of ACTs.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	Nationwide scaling would make people really feel the effectiveness of ACTs and also would make more people complete their dosages, which would improve health	We vendors are health-service providers and have noted the problem of patients not completing the dosage as soon as they feel any signs of relief. I feel these programs would actually create awareness and would also add our to our voices to encourage people to complete their dosage.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not have any reservations but feel that I should be given some proper training on how to execute the task and also be given some incentives like t-shirts with PACT logo that could help because people seeing that would know a program is running.	The only problem I have is that the people I know around here would not take it seriously because they know me and feel it is just casual, but aside from that, I am most willing to help.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	The printing on the flyers fades away, so if something could be done about that	To me, the yellow color had no cultural or religious implication except good. But the color red is not good and white might get dirty, so I love the yellow color.
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	It was due to a time factor. But a little persuasion might make it interesting.	It was a new experience but with time, people would get used to the program.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	People who do not have phone credit should be helped with phone credit or else be given toll-free services.	To me, I feel about 90% of the people have phones, so the few that do not, I don't know how they can be captured. My suggestion is that people that do not have credit on their phones -- it could be that your organization could contract with the major (telco) networks, so that the number used for the messaging system would be toll-free, so that people who do not even have credit can call on a toll-free line.
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	Try using voice calls too
What did you think of your overall interaction with the PACT team?	I feel efforts should be put in place to make sure there are always ACTs available without shortages and also it should be easy to find and purchase.	My suggestion is that next time you add some incentives, such as PACT calendars and pens, rubber bands or key holders, with the PACT logo was well as some information so as to make people interested in the program, as well as to spend some more time to listen to some education or even also the questionnaire. This would have made the program gain much attention and needed dissemination from individuals who participate.

VENDOR CODE	21	22
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	To me, I feel the program is excellent , but then some people here are not much educated and a lack of any formal education can make cooperation difficult. Left to me, the SMS system is just perfect and that would make certain people drop certain attitudes like sharing dosages with others or abandoning drugs as soon as they felt better.	I feel that in a society that is much educated, the method is excellent but in the community that I find myself, it would be better to use voice calls to clients that are not well-educated
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	x	Whereas the intervention was direct and continuous, the questionnaires were not and to me the questionnaires were for some monitoring rather than alerting people to complete their dosage
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Programs for the "green leaf" have more TV and radio coverage than your PACT program, but then you made more impact of encouraging people to take their drugs. The other programs only encourage buying and awareness.	"Green leaf" programs are only a way to replace existing antimalarials with ACTs, more specifically, to reduced and affordable drugs. But your program is more of a personal health awareness, aiming at encouraging people to complete dosages with a unique SMS system and concern, so to me there is a great distinction.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	Business was normal, because of the fasting period	We used to not have any ACT drugs in our shop but the week in which you started your study, we had to then buy ACTs and from then till now, business has picked up, and so I must say thank you that you made us star to buy and sell ACTs. We even sell more ACTs around here than any other drug, besides paracetamol.
Did you feel that our program led to focus more on ACTs and ACT clients?	I now keep more stock of different types of ACTs. My advice is that there should be a constant supply of ACTs, without shortages, to prevent artificial inflation of prices, because ACTs are very effective.	We now have stock of ACTs thanks to your study.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	It would be nice to be nationwide without the questionnaires, or else the program might not meet its target.	The text messages are usually good to create awareness of health issues while encouraging people to complete their dosage. But voice calls should be made for people who do not have formal education.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I feel I do the job of educating people, but my worry is that I would be spending too much time and money, so I would be grateful if some inventive like cash could be given as compensation	I do not foresee any barriers, but then, it would be nice to pay vendor staff for rendering such services. Not much, but a little, to compensate for the time spent in educating people.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	I would prefer the flyers be like a 4-page booklet that outlines all the importance of the program and the need to complete the dosage, so that people who don't have time can read later and enroll	I think the flyers should be more attractive, for example, decorating the edges of the flyers with flowers or watermarks, just to make it more attractive and appealing to clients.
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Anything new is always like that around here, especially when it has to do with asking questions or spending time.	There was no understanding of the program; with patience and a good approach, things would be better but not 100%
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	I feel these people should be given the right education and they would find a better way to enroll or charge their phones and come back later to enroll	Personally, I think there is nothing that can be done, but generally, in each house at least there would be one phone that could be used to enroll people.
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	I do not have any idea. But putting posters around could help in enrolling people.
What did you think of your overall interaction with the PACT team?	The program is good because it enlarges our business and the more people believe in these drugs, the more they will buy these drugs, and thus profit us. My last question is whether you can do anything to reduce the number of pills from 4 pills to 2 pills or 1 pill? More people find it difficult to complete the dosage because it is 4 pills per portion	I feel that having your life is the prime objective, so I love your program because it is trying to give life back to people. As a vendor, I would need about 2 weeks notice of your study, so as to make the proper preparation, such as having a nice place to sit for your surveyors. How the program should be done for each community is unique in its own way.

VENDOR CODE	23	24
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	I like the idea of encouraging people to complete their dosage. It is a major challenge for we health service providers. The other thing I would like to ask is, what is the fate of those who cannot read and write.	I liked the idea of encouraging people to complete their dosage and the mechanism that you put in place to achieve this aim, because the problem of the people not completing the dosages is an issue that needs to be addressed
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	I did not take the time to observe the questionnaires very much, so I cannot tell more. Also, I feel that definitely that the text message went better with patients than the questionnaires, as some used to come back and tell me, especially about the effectiveness of the ACTs.	I never took the pain to go through the questionnaire. Also, when school [*near here*] vacates, our sales are very slow, so I cannot say I saw a clear distinction.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	"Green leaf" programs mainly focus on creating the awareness of people of the new ACT drugs, how to identify them and also the prices. Your study focuses on helping people complete their dosage and I think your program is more relevant.	Other "green leaf" programs only aim at creating peoples' attention of a new drug on the market, and also with information on prices. But your intervention is looking at solving a long problem of people not completing their dosage.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	People that got the SMS encouraged other people to come to my shop and so it meant more profit. But most of them were also dodging the questionnaires	When the students are on vacation, sales are very low, so I did not see any impact with regards to my business
Did you feel that our program led to focus more on ACTs and ACT clients?	The program also created my awareness that other antimalarials like chloroquine are being phased out and, as such, I should focus more on ACTs, but I have time for other drugs too.	x
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	The program would help eradicate the problem of people not completing their dosages, which is a major issue.	It is a very excellent idea, because many people have a very high tendency to not complete their dosage as soon as they see a sign of relief. So this program would help solve that huge problem.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	With the proper training on the program, I can take up the task but I prefer to be paid for this, because I would have more clients and therefore need more vendor staff. I also advise that you make simple incentives, such as pens with the PACT logo to give to potential respondents.	The barriers would have to do with time. I am the only person in the shop and when we have many clients, I cannot explain the program to all of them. And also, if I received some incentive for my time, that would be fine by me
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	It was good, except that the writing started to fade at a particular time
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Because it was a new program. With time, people would get used to this thing. A suggestion is also that you inform we the vendors as early as one month before the program, so that we could start to create awareness before the program starts.	I felt it was because people were sick and did not want to waste time again. But with a little persuasion, it always works. Also, this flyer thing is something new and as such is bound to face these problems.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	x	For people that do not have credit, you could possibly introduce a system where people can still flash your system even if they have no credit. With people that do not have phones, there is absolutely nothing that can be done. To me, the majority of people have phones and they can help spread the information if they happened to participate.
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I think the SMS is just great.	For the short time that we worked together, to me, things are in fine. I encourage you to keep it up and also make sure that every Ghanaian benefits from these services.

VENDOR CODE	25	26
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	The program especially helped we the vendors to know if drugs were effective. Most people do not usually complete the dosage, and as such, do not give a proper account of the effectiveness of this program. But this program, that a few have benefited from, have come to testify the effectiveness of ACTs	There has not yet been any effective way of encouraging people to finish their dosages, which is also a problem in itself. So, what I like of this program is that it will encourage people to complete their dosage and also to effectively and efficiently ensure the effectiveness of the drug.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The text message to me was very rapid in encouraging people to complete the dosage. But the questionnaire was able to monitor your interventions as well as people who participated in the program.	The reminder seemed different from the questionnaire, since it is geared toward reminding people while the questionnaire, while I do not have any insights on it, is a way to monitor certain patterns.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Your intervention was very good because it focuses on completion of dosage and the welfare of patients but other "green leaf"-related programs for ACTs are basically for price control and also to showcase new drugs.	This intervention is composed of counseling and encouraging people to complete their dosages, but other programs just aim at creating awareness of the existence of ACTs and for profit purposes.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	The presence of your surveyors and the program itself gave me some kind of recognition and better standard as perceived by clients, so now people purchase more from me, even without your presence, but the first week was somewhat slow. But now I sell more ACTs.	Business was normal
Did you feel that our program led to focus more on ACTs and ACT clients?	I now keep more stock of ACTs and make sure I do not run out	Your program activated us to buy and keep stock of ACTs.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	The program would ensure that vendors become more serious whilst also ensuring the health of the nation. What could be better than a malaria-free Ghana?	It would benefit the nation, as it is aimed at giving better health as well as information
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not have any barriers in mind, but you should give incentives you deem fit to compensate for the work done	To me, the only problem will be if I am not given adequate training to carry out the task. Also, I am not a native of Tamale, so language could be a barrier
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	x
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Here at my shop, I did not experience anything of that sort, so I cannot comment on the issue. But probably because it is a new program.	Because it was a new initiative and also patients were exhausted
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	For those with lack of credit, I think your text lines should be toll-free. But for those without phones, I don't know how they can participate.	x
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	For now and the short while that we worked together, I think the program is excellent. The only thing is you should try to extend the program beyond ACTs to drugs in general.	The education that is being given and also the health information is a great initiative and should be continued

VENDOR CODE	27	28
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	Many patients that received the SMS felt good and also had the impression that we the health service providers were being very caring to encourage them to complete the dosage. SMS also ensured the proper use of the drugs and that also reminded them of the advice they received from me.	People are usually very difficult and most of them are very forgetful. What I like most is the effort you are trying to put in place to curb this attitude. It is great because it also gives us the opportunity to know the effectiveness of the drugs we sell.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The text messages had a different agenda, to encourage people to complete their dosage. But the questionnaire, to me, was just to give feedback.	This intervention is to curb the forgetful nature of patients, while the questionnaire is to collect information to help you better assess the patients.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	"Green leaf" related to ACTs only advocates for people to choose ACTs, as well as to know prices. Your intervention was geared toward getting people well and creating their awareness of health concerns.	Your program, to me, does not dwell on profits but the other "green leaf" programs aim to create awareness of a new drug and also the pricing of the new product.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	Patients felt my facility was giving extra care by them receiving SMS, and this made people happy, and as such, promoted my facility, so I got recommendations and this made people buy more of my drugs.	The presence of your surveyors gave the opportunity to me to have someone to share ideas with and talk, while the little talks the surveyors had with patients made them direct some of the market women to buy drugs from me. Things were still slow, because it was the fasting period, but now things have picked up
Did you feel that our program led to focus more on ACTs and ACT clients?	I now make sure that I have ACTs in stock. Also, just this morning I was out of ACTs but upon seeing your personnel, I remembered I did not order ACTs	I keep more ACTs now. But I would like you to know that some suppliers retail at GHC 1.10, and I feel something must be done or else retail prices will escalate sometime soon.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	Because of the awareness created and the credibility that I have earned now.	The awareness of the need to complete the dosage is good and should be extended to all drugs.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	For me, I do not have any problems or foresee one, but if the program would take much of my time, then it would be good to give incentives to show appreciation for my time spent.	I do not foresee any barriers. But I would wish that the supply is constant and also the price lowered a bit so that I personally could take the task. That is, so that the incentive to me would be the profits that I make from my sales of ACTs, as the sales of ACTs are going up.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	The color of the flyers is OK but I think the writing on the flyers should be of an alternative color that will better catch the attention of others and prompt them to read the flyers	I do not think anything should be changed.
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	To my clients, it was a new experience, and as such they felt a little hesitant, but after a little explanation, they are always willing to take the flyers and participate	New, unique programs like this would face these problems but with time and persuasion, it will be better.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	To me, it can be solved, but just letting those who qualify participate	Many people do have phones and I think that no intervention can be 100%. But I think I great lot of people would be qualified to be enrolled.
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	The program should not be discontinued. I also feel the GHC 1.5 price of the "green leaf" drugs is perfect, and as such, I only pray there is constant supply and a very stable price. Because drugs like Malafan are not that effective, but because it is only 50p, people buy them. But with ACTs at GHC 1.5, people now purchase the ACTs more.	I think the SMS reminder should be continued and extended to all drugs, not only ACTs. You could also improve by printing t-shirts of PACT, so during the program we vendors could wear them.

VENDOR CODE	29	30
Vendor type	Nurse, during off-hours	Hospital / clinic / health center
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	The program of sending SMS is great. My problem with such an intervention is that around here, many people are not educated and I wonder if they would read the text messages. But all the same, the interview alone with the patients made the patients to take my advice more seriously.	Most patients do not complete the dosage or even share the ACT course with other patients, which makes the malaria parasites develop resistance to most malaria drugs. This intervention I find very unique and a savior to eliminate this negative attitude, which has negative economic and health consequences.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The questionnaire to me was a method to monitor the progress of patients that enjoyed the intervention	As the administration and I (*the vendor*) are very busy, we did not dwell much on your interview with your patients.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	You focus more on completing the dosage, while "green leaf" programs usually focus on pricing and how to identify affordable antimalaria drugs	Most of the "green leaf" programs do not emphasize on completing the dosage, which you are doing so well.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	Many people now say madam has personnels that work about ACTs, so it made me more credible and also people who do not come here for consultation now still come to buy ACTs from me. Which means more profit for me, thanks to your study.	The interview process and talks with your surveyors, as well as your SMS system, created a positive thinking that the government was more concerned about ACTs, so they then took the whole process seriously, and, as such, have used most ACTs we give correctly. And to me, that is a great step in promoting good health and thus is a plus in our business process as a state-owned health service provider.
Did you feel that our program led to focus more on ACTs and ACT clients?	I now know not to run out of stock of ACTs because people buy these drugs a lot	x
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	To promote good health and also to eliminate the negative attitude of not completing the dosage	Chloroquine is no more effective because people abused this antimalaria drug and now it is useless, with much money spent to research new anti-malarials. This kind of program would help preserve the new anti-malarials and also raise awareness of the need to complete the dosage to the full course of the drug, whilst also preserving this new drug.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I can take up the task and I do not foresee any barrier that could hinder the task. But my concern is that if we vendors should take up this task, efforts should be put in place to make sure that we are not in short supply of ACTs. We will need constant supply and then when clients increase in number, we will always have stock to help patients and also to maintain increase and sustain our credibility and service to our clients	I do not foresee any barriers, only that I will encourage you to find a means to control the pricing of ACTs. The important thing is that efforts should be put in place to ensure a continuous supply of ACTs with the price control at the other vendors. We will be most willing to take up the task of encouraging people to complete the dosage through this kind of program.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	It was OK for me.
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Many people do like and respect me, so your surveyors and myself did not encounter such issues but if it happened elsewhere, convincing will be the magic.	Most people are not much educated but most will comply to talk.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	I think people could get the phone numbers of neighbors so that you could make them eligible.	x
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I love your cooperation and support as well as the respect you gave to my outfit and I would love to see the program continued.	The encouragement is only that more efforts should be put in place to ensure that these new ACTs, which are very affordable and effective, could stay long to combat malaria.

VENDOR CODE	31	32
Vendor type	Hospital / clinic / health center	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	The reminder was essential in a sense that it made people who would otherwise have not completed to complete their dosage. Patients come back to tell us about how the SMS helped them, while also the interview in general gave them a perception that the government was monitoring the new ACTs and so took our advice seriously and also talked to their relations about it.	Many people would normally stop taking their medicines as soon as the get better and very soon they will sicken again. But with this program, this negative attitude could be curbed.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	I did not have much preview with the questionnaire and interview process.	x
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Other "green leaf" programs neither meet people personally nor focus on completing the dosage, which is very essential in achieving better health. But I think your program was unique as it was face-to-face and also the SMS made it more special and created and impression of good concern for the patients.	Your program is able to get into direct contact with patients, which I see to be very important and the best way to deal with people. The other "green leaf" programs do not have that kind of personnel *[sic]* touch.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	Patients generally had a better positive thinking, which permitted them to complete their dosage, whilst also taking our advice seriously. And it helped to reduce the ways in which people abused the drugs, so to us it was helpful because helped us give better health service as well as receive good reports for our hard work, so it is a plus for us.	The interview that surveyors had with my clients give them the feeling that my vendor staff gave them extra attention as compared with shops that did not get the service and that meant a plus to my profits
Did you feel that our program led to focus more on ACTs and ACT clients?	x	Though I did not focus on ACTs that much, but at least I became more aware to keep enough stock each week.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	The problem of people not completing their drugs could be eliminated or reduced to the barest minimum and as such, make people have better health. Also, it will preserve the ACTs for longer and not let it lack efficacy like chloroquine, which is not effective in treating malaria anymore and is being phased out.	The program should be extended because many people would really stand to benefit with regards to their health. Also, the negative attitude (about finishing medicine) could be brought under control.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not foresee any barriers and so we will be most willing to take up this task. But I would be very grateful if a workshop could be organized for training we vendors or health service providers. I also wish that at that workshop and after the program, certificates should be issued to show appreciation and as a form of incentive.	The only barrier I foresee is if there are network problems and peoples' enrollment will not go through. Aside from that, I think everything should be cool. Incentives can also to be given to vendors, for example, t-shirts, but I do not think of getting paid because this is also a way I can give back to society.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	I would think that in the future, the flyers should be pink and have the "green leaf" logo on the flyer.	It is portable and OK to handle, so I am fine with it, especially the color yellow
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Because it is a new program but here at our [*vendor type*], people really complied and were willing to participate.	Many people are just passers-by but with a little explanation, people understood and participated. And also, because it was the fasting time, people looked tired.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	I think that you should make your text lines toll-free so that patients without credit can enroll but those for those without phones, I think that if they want to participate, they can find a neighbor's number to enroll.	I feel peoples' numbers should be taken and they can be called later and enrolled
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I would love if this program was continued and not discontinued.	I felt the surveyors did not spend much time in my shop. You should have stationed a surveyor at my shop for at least three weeks or 4 weeks. Keep this program up.

VENDOR CODE	33	34
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	The text reminder was the main reason I allowed for myself to participate in this study, because as a vendor, I see it (when patients do not complete their dosage) as a major problem that needs to be addressed	It is only when patients complete their dosage that the effectiveness of a drug can be assured. I think the SMS has made people to complete the dosage and has given a good account of ACTs.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The intervention was directed at reminding people to complete their dosage, whilst the questionnaire was just to get background information on people that will enjoy the intervention.	x
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Your study focuses on reminding people to complete their dosage, but other "green leaf" programs related to ACTs base on promoting the new drug and the pricing aspect.	I felt the program was geared toward promoting health, so it was not that different.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	I became more serious about ACTs and generally sales have gone up.	x
Did you feel that our program led to focus more on ACTs and ACT clients?	I now keep more stock of ACTs and also in different varieties	I now have more stock of ACTs and the selling has become faster now.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	This intervention will help eradicate the attitude of patients not completing their dosage, which implies a healthier nation	The whole nation stands to benefit, because peoples' attitudes towards taking drugs can be modified to suit a better standard.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not foresee any barriers in taking up this task. My only thing that I require as a vendor is that if you could give me a constant supply of ACTs without delay. The profits that I make from my sales would be my motivation to take up this task, because a lot of people patronize the ACTs.	I do not foresee a barrier but I feel vendor staff should be given t-shirts with PACT logo
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	I feel the flyers should be green
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	x	Because it was a new project. But with some convincing, patients obliged most of the time.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	Because it was a new program it could reason. I think people need some education and then it could turn out to be better.	People without phones, unfortunately, cannot be given phones. But I think it is only a small minority who will not have a phone. But patients without credit they should be encouraged such that they buy credit later to enroll.
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	I do not have a better idea but i feel it is only a few people who might not qualify	x
What did you think of your overall interaction with the PACT team?	There was good education from your surveyors about the study. But my concern is that the supply should be constant for the ACTs. My other concern is that the prices of ACTs should be controlled because the retail price is getting higher than we expected and it is just the earlier days yet.	The program should be taken seriously and continued so that patients would help complete their dosage, because it is a major problem for we vendors or health service providers.

VENDOR CODE	35	36
Vendor type	Pharmacy	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	I liked the idea of reminding people to complete their dosage. Because it is a problem we vendors face. Patients only come back to complain that they still do not feel better and upon inspection it can be realized that they did not complete their dosage.	The SMS reminder helped people to complete their dosage, because the 4 tablets of ACTs, most patients think is too much, but with the reminder, people will complete their dosage.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	I did not have the luxury of going through the questionnaire, so I cannot honestly say things were so clear to me	x
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Other "green leaf" programs only focus on pricing and promoting brands but your study is unique in the sense that you remind patients to complete their dosage.	To me, the short time spent here shows that both programs are aimed at promoting ACTs
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	Business was normal. The ACTs were just introduced. But I must say that it is your program that made us now buy ACTs with the "green leaf".	But most patients felt they spent a lot of time, though this did not affect my work or business in any way
Did you feel that our program led to focus more on ACTs and ACT clients?	Because we now keep ACTs with the "green leaf," thanks to you. But there are shortages in recent times that need to be addressed.	x
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	Creating awareness for people about health issues is very good for a healthy nation	It would be good to educate all Ghanaians on the need to complete the dosage. Because patients not completing the dosage is a huge problem that needs to be addressed.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	The only barrier would be that if clients are many, it would be difficult to explain issues to patients. But we can still take up the task. But please, print the vendor staff PACT t-shirts.	But personally, as a vendor, I think it would be better for you to organize a workshop for vendors so that they can be better trained and educated to take up the task. I think PACT t-shirts should be printed for vendors as well.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	x
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	People felt a little weak from their sickness, but after some promotion, they became willing to participate.	x
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	If patients are given better education, they will be most willing to enroll later on by another means	For those that do not have credit, you should take their phone numbers and call them later or enroll them without them flashing into your system. For those that do not have phones, you could take numbers of their friends or relatives that you will call by voice and enroll later on.
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	The cooperative nature of the study and the respect for our business was OK. I felt we were told the truth about the project. Even though we feared it was going to monitor health service providers, we were much convinced later that your program was not so. Thanks to your surveyors, too.	I feel your program is good. But there is too much shortage of the ACTs and patients who already use these drugs feel they are good, so find it difficult to take other ACTs. So if you could help to make the supply sufficient and stable.

VENDOR CODE	37	38
Vendor type	Pharmacy	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	Most patients would mostly not finish with the dosage. The SMS system was the first of its kind that I have noticed and to me it is excellent in trying to remind people because of our forgetfulness or sometimes some patients fear too many pills	The text system helped a lot to make patients complete their dosage. One particular observation was that your surveyors gave patients the courage to come back to us and ask questions of the drugs given to them, and then some do come back later to report other issues
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	Your intervention was distinct as it sought to encourage people to complete their dosage, but for the questionnaire, the feeling was that people understand that the program is ongoing and when clients participate it serves as a platform to track a specific pattern.	x
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	There is a clear distinction with what is the other "green leaf" programs deal and focus mainly on the new products and varieties as well as prices. But your program is not does only create awareness of people to take their prescription seriously but also encourage them to complete their dosage to have satisfaction. This study also helped them realize the importance of completing the dosage.	The "green leaf" programs generally focus on pricing and how people can identify affordable ACT drugs but do not focus on the number of pills and give no words of encouragement to complete the dosage, which you are doing and the problem of not completing drugs is serious.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	The presence of surveyors and subsequent text reminders made our services here special, and due to people having completed their dosage, and having relief from malaria, it encouraged other people to buy more ACTs from the shop and a few are still expecting text messages. However, they know ACTs are good and only as a result of completing their dosage. I also make profits	x
Did you feel that our program led to focus more on ACTs and ACT clients?	People are more convinced about ACTs and as such I do well to keep them in stock.	x
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	I feel that the program could help lessen the amount people spend to treat malaria, and this is only the result of people getting the full complement of drugs. If they do not complete the drugs, later the malaria resurfaces and they have to spend already scarce resources to treat malaria, and this is a silent economic burden that could be avoided just by completing the dosage. It will benefit Ghanaians to adopt such a program nationwide.	Because it would help solve the problem of patients not completing the dosage, which i think should be extended to all drugs.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not necessarily foresee any barriers in scaling-up but the challenge will be to convince the many illiterates we have to participate in the program. I think that with time, when it becomes nationwide, people would get used to the program and feel willing to participate	I do not foresee any barriers, but for the vendor staff, providing credit on their phone could be an inconvenience. Health care for the people is our prime concern but the consulting process this credit could be used to call your office to report other issues. As a medical center, we see it an obligation to promote any program legally that aims at improving health conditions and awareness of the people, so we would be most gracious to act positively.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	I do not see the need to make any alterations.	x
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Many patients felt it was a waste of time, but with a little convincing, they get to realize the importance of the program. But some definitely end up not participating.	It was, but now here, in this facility, we try to convince them, so it was not much of a problem. But when people do wait long hours, as we are treating in-patients first, they become a little tired.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	For people that do not have phones, if they really understand the importance of the program, they can just get the number of a relative or a neighbor so that your study allows them eligibility to participate in the program. For people without credit, you could make the text lines toll-free.	I think you should make your text-line toll-free but I think about 70%-80% of people have phones or have access to a phone somehow, by relatives or neighbors.
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I applaud this program as being good and hope it would not be discontinued.	We are very grateful with the way you conducted your study, with periodic visits and without interference in our business and work schedule. I think the questionnaire is OK but it took some time, which made patients not comfortable. If the questionnaire was reduced to the barest minimum, in the future, people will participate without complaining. But I pray that this program is continued to help patients to complete their dosage.

VENDOR CODE	39	40
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	Reminding people to complete their dosage is a great deal of work that we try to do. I was happy when this initiative finally started.	My clients felt I cared for them. Also, the reminder is a great method that could be used to curb the negative attitude of not completing dosage
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	I did not take much time to go through the questionnaire and also you spent not much time at this vendor.	x
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Your intervention was clear in that it focused on reminding people to complete their dosage whilst giving feedback, but other "green leaf" programs dwell more on promoting and creating awareness on pricing.	I feel that the text message reminder was a unique and distinct feature that clearly separates you from other "green leaf" programs related to ACTs. Moreover, you keep in touch with the vendors and the patients, but other programs only target profit and promoting the new ACTs.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	Business was normal. Only that the client numbers were low at the time, so I could not feel any direct profits but the study also did not set my business back any	My clients felt better because they completed their dosage and also felt I showed extra care for them. This made clients introduce more people to my shop, and I make more profits
Did you feel that our program led to focus more on ACTs and ACT clients?	x	I now keep more stock of ACTs, and I must say that it sells well.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	Patients completing their dosage is a major challenge. And if this program is scaled up to a national-level, it would help curb this negative attitude.	A nation-wide scale-up would create awareness of the importance of completing the dosage and will promote good health among Ghanaians.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	The only barrier I foresee as a vendor is if I do not receive the requisite training required to undertake the task. But I would also love to be given, like t-shirts, that could help motivate the vendors to do the work diligently.	I do not foresee any barrier in understanding this task and would be most willing to participate and help in any way possible. We vendor staff must receive the appropriate training to understand the task
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	To me it was convenient	The flyers are portable and the yellow color is my favorite
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	x	Many people around here are market women and men. I think that is why. But with convincing, things could be better.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	For those that lack credit, it should be free so that they can flash without credit	If they really do appreciate the importance of the program, they could use the neighbors phones to participate.
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I only encourage that even though the work is difficult, I believe that the program should not be discontinued.	I would encourage that the implementation is not stopped but continued to help fight malaria, while at the same time helping patients to know the importance of completing the dosage for every drug, and not just antimalaria drugs.

VENDOR CODE	41	42
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	I like the text message system, as it reminded patients to complete their dosage, especially those patients that would not have completed the dosage. My reservation is that, how would patients benefit from this system if they can neither read nor write. Because it is important that they all benefit from this program.	I do not know what we would have done, many clients come to complain that they do not get better, and when you investigate, most people have not completed the dosage and I feel the text system did better in trying to get people to complete their dosage. Kudos.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The intervention aimed only at encouraging people to complete their dosage, but the questionnaire, which was so long, did not encourage people in any way to complete the dosage. Moreover, I feel the questionnaire was used to track patients that participated in the study.	I am most of the time alone and busy, so did not take much time to observe the questionnaires.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	To me, the distinction was that you used different methods to create health awareness. But your study was more effective in not only creating health awareness but actually encouraging patients to complete the dosage, while other "green leaf" programs are not sensitive to this negative attitude of patients not completing their dosage as soon as they see signs to relief.	The distinction lies in the fact that you do well to encourage people to encourage patients to complete their dosage without any price. But other programs only target profit and also promote ACTs.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	We here had more credibility and the SMS and interviews encouraged people to complete their dosage, which made them spread the good news to others and a week after you left, sales have gone up till now.	Business was normal, only that the few clients that participated were happy and over time bring people the know to buy ACTs from us.
Did you feel that our program led to focus more on ACTs and ACT clients?	We now have more ACTs due to the study and also the increase in sales, so we now keep enough stock.	x
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	I believe the attitude of patients not completing their dosage or sharing it with others is a nationwide problem, so if your intervention is made nationwide, it would help curb this attitude. In the scale-up, I feel the reminder should be for all drugs and not only anti-malarial drugs.	I normally will support any program that seeks to better the lives of people and I think this program, when made nationwide, would give the opportunity to numerous people who do not know the importance of completing dosage, and will realize such importance and abide thereafter.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	The only barrier I believe I foresee is that when we have many clients, it would be difficult to detain them whilst others wait, and it will affect your business negatively or we would need more vendor staff. I would be fine if I received some small payments as compensation for the work or even if nothing can be paid but t-shirts with pens with the PACT logo could be a form of motivation.	I do not foresee any barrier, the only thing I can think of is that I am always there alone, but I hope if the program is to start, we may have to add another vendor staff.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	The writing on the flyers was not all that clear, as it was fading. I would also love that color of the flyer should be changed to sea blue	No, I think it was just fine
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	I think it was because this flyer thing was the first of its kind, but with a little persuasion many people did comply and participate in the study.	Because it was a new program and more people thought it was a waste of time. But I think when things are explained, most participate.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	Patients who don't have phones can be helped by taking numbers of relations or neighbors they trust and can contact somehow. But also I believe many of the people have phones. For those without credit on their phones, I think you should make your text lines toll-free. For those with low battery, they can be well-educated and their phone numbers taken so that they are called by voice and reminded to enroll.	I think the text lines should be toll-free. But I think for battery issues, after charging, those people could enroll later.
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	My only reservation is that the first surveyor who came here was very good and friendly, but your second surveyor that came was not all that friendly, but later on this went well. I would like that this study, especially the text message reminder, should not be continued.	Though we worked only some few days with your surveyors, I felt encouraged by their composure and friendliness. But I feel you should extend your program and next time spend more days or weeks at my shop. Keep up the good work.

VENDOR CODE	43	44
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	The reminder to me was the most special thing. Here in our community, most people share drugs or would not complete the dosage if s/he feels better. But I think the reminder helps a lot.	It was a great idea that I think I loved very much and will love to see continued. My only reservation is that many people here are not educated, and I will want to know if they can also benefit from the reminders.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	x	Though very few people were interviewed, there was a distinction because the intervention was aimed as a reminder but the questionnaire was a document to identify people that participated in the program.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	I feel that the only distinction is the fact that your intervention is to encourage people to complete the dosage while other programs do not, but I think you are all promoting good health.	Other "green leaf" programs relate more to promoting the ACTs and also for price control, but your intervention is aimed at reminding people to complete the dosage.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	The few that visited my shop and tried the ACTs, with an interview with your surveyors, made patients complete their dosage and felt better, and told friends. We sell more ACTs now than before.	During the fasting period, we did not record many malaria cases and as such, I cannot really tell that my business was impacted. But, personally, as a vendor, was, however, given a the first-hand information about ACTs and I have kept them in stock then till now, and now I make a lot of profit, so the study enlightened me and helped me to now keep ACTs.
Did you feel that our program led to focus more on ACTs and ACT clients?	I must say, it is your study that drew our attention to the ACTs, though we do not focus only on ACTs, we do keep more in stock now.	I have more stock and the patients also request more.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	I feel that the vendor staff's job of educating people to complete their dosage would be complemented, and as such, patients would take vendors seriously whilst completing their dosage and getting much better.	I believe this text message reminder could be a very perfect mechanism to remind people to complete their drugs and I think every Ghanaian should benefit from this important health issue.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not foresee any barriers as long as proper training is given to the vendor staff to be able to work and execute the task with diligence.	I do not foresee any barriers to scaling-up, as long as we vendor staff are given the right education and training to undertake the task. But I will also suggest that when the program is scaled up, PACT or ACT t-shirts should be presented to the vendor staff and also to make the program very lively.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	x
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	People were generally afraid and had the perception that they could be asked to pay money one day and were skeptical. I think this is because the illiteracy rate here is high. But with some convincing, clients would participate.	Because it was a new program, that is why, but I did not encounter this at my shop.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	x	x
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I feel that you should put efforts to control price from retailers or suppliers, because they raised their prices and are now making it difficult for we vendors to sell at GHC 1.5, but it is on ads everywhere that we can only sell at GHC 1.5, and that affects our business. I would also urge for a constant supply of ACTs.	I love the idea of reminding patients to complete their dosage. But the language barrier should be broken so that uneducated people can also benefit from this important program.

VENDOR CODE	45	46
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	I think it was a very great experience that could inform patients to complete their dosage. My only problem is that our shop is right at the market and many of our clients are market women, most of whom cannot read or write, so how can they be helped or benefit?	Many patients would not have completed the dosage; more especially when they feel a little better. I think your intervention has helped in doing just that, for which I commend this effort to help patients.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	Our shop was very busy and it was the fasting period, so I did not have much time to observe the questionnaires.	I believe the two were connected but the intervention was immediate.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Both programs aim to better the lives of people. But your intervention did more and had a direct impact on encouraging people to complete their dosage but other "green leaf" programs do not pay attention to this important issue of patients either sharing drugs or not completing the dosage.	Most programs related to ACTs have done well in trying to promote ACTs, whilst also controlling prices to make the poor afford. But the unique mark of your study is the mechanism put in place to make people complete the dosage, which is even the most important aspect, especially for ACTs, considering the number of pills to complete in three days.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	It was during the fasting period and generally sales were very low, so we did not feel any impact on our business.	Business was normal. I can say directly that business grew during the study but I think things were just normal.
Did you feel that our program led to focus more on ACTs and ACT clients?	We were a bit skeptical about the new ACTs, so we had few in stock, but your presence also made us want to be more serious and also keep different types of ACTs.	x
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	The issue of patients not completing dosages is nationwide, so I personally feel the program should have been nationwide.	In my opinion, it is not fair that the program is only within Tamale. Patients not completing their dosage is ancient and as such, the efforts should be nationwide, to create awareness on the need to complete dosages, not just for antimalaria drugs but for all drugs
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not foresee any barriers, only that when clients are many, it will be difficult to take up the task, so we may have to add one or two vendor staff.	I do not foresee any barrier and would love to take up this task to help eradicate the problem of people not completing their antimalaria drugs. Because malaria is a killer and all efforts should be put into place to facilitate treatment
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	x
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	The market women do business and usually did not have much time as some clients were going from the market to home. I thinking patience and more convincing will do the trick for them to participate.	The program was the first of its kind, so that was why, but most people were convinced.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	If people are educated well, they will charge their phones and enroll later.	x
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	We had a good and wonderful time working with your surveyors, as they also did much to try to make us understand the program better and to clear our doubts.	In the future, vendor staff should be paired with one of your surveyors and trained such that when your surveyors are on break or not around, vendor staff can still administer the questionnaire on their behalf as well as educating patients and creating awareness of the importance of completing the dosage.

VENDOR CODE	47	48
Vendor type	Hospital / clinic / health center	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	I think there is no better way remind as well as encourage people to complete their dosage than this. I think it is an excellent idea.	It was a great idea to use the flyers and SMS and I liked the idea as it was explained to me. But we did not have many clients to have given me the opportunity to experience the real thing.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	There was no time to look at the questionnaire, given the distance between the dispensary and where your surveyor sat, so I cannot comment much on this issue. But my belief is that the intervention is to encourage patients to complete the dosage whilst the questionnaire was for some sort of monitoring	There were no clients to interview
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Most of the "green leaf" programs mostly focus on making people aware of how to identify new affordable ACTs and also pricing, without any effort to encourage patients to complete the dosage, which your program did best. Also, your program made many patients realize the importance of completing the dosage.	The other "green leaf" programs, like the ones on TV, only focus on promoting the new drugs and also pricing to encourage people to patronize ACTs, but I think your program focuses more on completing the dosage, which is a big problem. I believe only 80% of clients will complete the dosage, but with your intervention, more could be achieved.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	Our *[vendor]* is always off and on. On some days we get more patients and some weeks not the same. But I cannot say your study had any impact on our business.	x
Did you feel that our program led to focus more on ACTs and ACT clients?	We had some briefing on the introduction of the new ACTs and here [*in this vendor*], all diseases are serious and we do not have any special focus when it comes to our services.	I now keep more ACTs but only that the ACTs are not in constant supply and the prices of ACTs are increased due to artificial inflation
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	Patients not completing their dosage is a serious negative attitude that we have tried to discourage. I think this problem is nationwide and as such, everyone would stand to benefit if this program is made nationwide.	The reminder helps greatly for patients to complete the dosage. My suggestions is that also, if radio programs and TV ads could be used as a means to encourage every Ghanaian on the need to complete the dosage, and not only of malaria medication.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not foresee any barriers. And we as health service providers are there for the good health and welfare of the clients and as such, we are most willing to help out and participate when the program is scaled up.	There are no barriers for me as far as taking up this task. But to be efficient, I would advise you to make ACT drugs more available to the vendors, as there are frequent shortages of late and price increases, which are also putting pressure on us to increase prices. So, my pleas is that efforts are made to make ACTs more available.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	Yellow is my favorite color.	x
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Generally, people feel reluctant because they are sick, but your surveyors did well in trying to persuade them to participate, so I think in the future, much persuasion should be used.	We did not have clients, so I do not think I can give a reason. But my guess is that because it was a new program and clients just needed some small amount of persuasion.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	When patients realize the importance of the program, they will charge their phones and enroll later. But for those without credit, maybe the text line should be made toll-free.	x
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I want to say it was great working with all your surveyors, as well as the appropriate approach made by PACT before, during and after the study and we will always be ever-willing to work with PACT. And I think the program should be continued.	Many people do find it difficult to complete drugs because they feel the number of pills to take in a day are too many and as such do not complete the dosage. SMS was a great intervention. I would also suggest that efforts should be put in to reduce the four pills to a single pill to encourage even more people to complete the course.

VENDOR CODE	49	50
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	It was a great idea but we did not have many clients.	It was rather unfortunate that at my shop, clients did not participate in your program due to the times I am open. But I am a also nurse at [*a hospital*] and I like the idea of reminding people to complete because it is a major problem. More also, the ACTs pills are many to them.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The surveyor did not have many people to interview, so there was not much time to observe the questionnaire	There was no interview at my shop.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	I think it is distinct by the special fact that you focused more on patients completing the dosage rather than pricing as other "green leaf" programs related to ACTs are all about.	Though there were no interviews, it was clear from the concept of the program that you aimed more to encouraging people to complete the dosage, while other "green leaf" programs focus more on pricing and promoting the new ACTs
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	The surveyor did not spend much time here - only a few people came for ACTs during that period.	x
Did you feel that our program led to focus more on ACTs and ACT clients?	x	x
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	I think this program should be made nationwide, so as to make all Ghanaians realize the importance of completing the dosage and the effects if the dosage is not completed	I missed the opportunity to have clients to go through your program, and to enjoy the text message reminder. I would like more people nationwide to enjoy the advantage of being reminded and completing the dosage and having its full complement
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not foresee any barriers. But I will hope that vendor staff would be given appropriate training in order to take up the task. I also think t-shirts with the PACT logo should be given to the vendor staff as motivation.	I do not foresee any barriers, I will be most willing to participate in the program
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	I think the flyers should be green	To me it is OK
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Although we only had a few patients come, I think generally a little convincing should do.	x
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	I think people who don't have phones could either use a relative's phone number or a neighbor's.	x
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I think the program should be continued and maybe spend more time at my shop so I could experience and observe more. The text reminder is a great idea - congrats.	It would have been great to have clients experience this wonderful idea, I only wish this program could continue.

VENDOR CODE	51	52
Vendor type	Pharmacy	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	It was a nice idea to remind and encourage people to complete their dosage, as this is a major problem, whereby patients even share drugs with other relatives. So, it was a great idea to try to get people to complete the dosage.	It was good to remind people to complete the dosage but my only worry is that around my community, most of them are not educated, so I wonder if something could be done to take care of such people.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	The questionnaire was used to collect data that would help track how potential respondents lived and how they could be tracked, but the intervention was mainly to encourage patients to complete the dosage.	x
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Other "green leaf" programs focus mainly on making sure that market prices could be controlled but your intervention was mainly to encourage people to complete the dosage.	I feel your program and other "green leaf" programs all aim at creating awareness of the new ACTs, but your intervention has gone farther, to encourage participants to complete the dosage, which is the most difficult part.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	Patients who completed the dosage due to encouragement from your ends had an effective relief, which made them introduce other people to my shop. Moreover, patients felt that I care more for clients, which also gave me profit.	Business was normal and was generally good.
Did you feel that our program led to focus more on ACTs and ACT clients?	Even though I had ACTs at the beginning of the program, I did not have other varieties but this program made me keep more varieties of ACTs.	The ACTs are good drugs, which now people ask of many times. Your study has made me keep more ACTs, too.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	It would be great to have more people being encouraged to complete their dosage. The issue of people not completing their dosage is nationwide, so the program must be nationwide.	It is always difficult for people to complete the dosage. Many clients do complain that the 4 pills at a time is many, so patients do not complete the dosage. But with this program nationwide, it could help get people out of such difficulties.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not foresee any barriers. I would only hope that in your next study, maybe vendor staff be given t-shirts of the IPA/PACT program. This could also prompt other people that there is an ongoing study or program.	I do not foresee any barriers, only that when clients are many, it would be difficult to keep them waiting, but I think if it becomes a necessity, I can introduce another staff at my shop.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	I do not want any changes, only that the writing was sometimes fading and I think that should be taken care of next time.	I would prefer that the flyers are green.
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Because it was a new program. But after some explanation, so many obliged to participate.	Generally, when people are sick, they do not want to waste time when they are getting their treatment. But I did not experience such difficulties from clients.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	If people have proper education on the importance of the program, they will do their best to participate in the program as expected.	x
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	Generally, there was a good relationship with the surveyors, as well as the team leader. With every bit of explanation to make the program better and understood to me.	The good thing I have noticed is the effort being put in place to encourage people to complete the dosage. I think the program should be continued.

VENDOR CODE	53	54
Vendor type	Licensed Chemical Seller	Licensed Chemical Seller
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	The SMS reminder was good and to me it was one-of-a-kind, as an aspiring nurse who also operates a shop, I see that the SMS reminder is a great effort to encourage patients to complete the dosage.	I really liked the SMS text, as it would do a great job to try to let people complete the dosage and as such, have the full complement of the ACT drugs or antimalarial drugs
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	Your surveyors spent only two days here, and it is difficult to have insight on the questionnaires	With the interviews I witnessed, I believed the questionnaires were used to track potential respondents and the intervention basically to encourage patients to complete the dosage
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	I feel that both studies were geared towards creating health awareness to the public.	To me, all the "green leaf" programs mostly do not talk of how pills should be taken and also do not encourage patients to complete the dosage. A unique thing your intervention did was to just remind people to complete the dosage.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	This could be the result of the short time spent here	Maybe because it was the fasting period. That is what I think; now sales are good.
Did you feel that our program led to focus more on ACTs and ACT clients?	x	Now I keep more stock, because my sales of ACTs are up.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	I believe that even though I have not experienced much on the text reminders, I feel it will do a lot to help people who would not have completed the dosage.	It would be good to tackle the bad attitude of not completing the dosage and I think these efforts should not be confined to one area or region, but rather Ghana as a whole.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not foresee any barriers but maybe the vendor staff can be given t-shirts with the PACT logo	I don't foresee any barriers, only that vendor staff should be given proper training as to how to take up this task.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	The black ink writing on the flyers was fading and I think that it should be taken care of
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	The responses here was not encouraging; also, because of the short time spent here, I cannot tell	Few people were interviewed but I do not encounter such issues. But I think people might have thought it was a waste of time, but some more convincing will do.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	x	I think if the concept and the importance of the study is better explained, patients would re-charge with credit and also change their batteries and come back to enroll
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I liked the concept of the study as explained but I only hope that the study time spent at my shop should be extended next time, for me have a better experience and also for me to have given a better interview	I really never thought you would be back again after that long time. But it is great you still remembered us and even come to officially say goodbye to us. I also think the text message reminders should be continued.

VENDOR CODE	55	56
Vendor type	Hospital / clinic / health center	Hospital / clinic / health center
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	It was an excellent idea, but my only concern is that around the community in which we operate, the people are mostly not educated and cannot read nor write. How would these people stand to benefit?	It has been a big issue for us, asking patients to complete their dosage, and most patients would not, which makes malaria treatment ineffective, prolonging and increasing health risk. So it was a great idea to try to take-up the task to encourage patients to complete the dosage. Technology like this SMS reminder is just an excellent idea, with much effect to helping patients complete the dosage
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	I did not dwell much on the questionnaires, generally because I was always busy.	Distant from your surveyor, sorry.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Most "green leaf" programs aim at promoting the new green leaf ACTs while also trying to create awareness of the prices and how these drugs can be identified. But your intervention does all the difficult work of trying to make people complete the dosage, as they believe the pills are too many.	The intervention had much direct contact with the very patients that need it. It has the quick and effective means to talk to patients and remind them to complete the dosage. Affordability without improving the completing the dosage would weaken efforts to combat malaria, whilst preserving new malaria drugs and reducing the economic burden in treating malaria.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	At [*this vendor*], we serve the people around and most have peak times, but I cannot make any clear calculations of profit.	x
Did you feel that our program led to focus more on ACTs and ACT clients?	Here at [*this vendor*], every case is equally important.	We have been prompted on how the ACTs would be made available to people infected with malaria. As [*this vendor*], we give priority to saving lives and also doing our quota to trying to provide better service.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	Many people in Ghana, especially in the rural areas, would usually not complete their dosage; they would usually stop after they feel better or even share drugs with other people. This negative attitude has adverse effects on the drugs and patients. So if these text reminders were scaled nationwide, it would help every Ghanaian.	The much time spent here at [*this vendor*] should I say has at least malaria cases have reduced and moreover, people do not return a second time to treat malaria, meaning that the SMS reminder is working and if scale-up to a national level with intensity, it could help reduce malaria cases, which would also mean saving money that would have otherwise been used to treat malaria.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	We will be most willing to participate in such a study to help all our patients. Personally, I do not foresee any barriers but I will expect that we the vendors or health service providers would be given the requisite training to undertake such a task.	I do not foresee any barriers and our unit is always willing to be of any assistance to execute such an idea
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	I think they are OK	x
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Generally when people are sick, they would want to leave the [*vendor type*] soon, so that could be why. But after some persuasion, they are mostly willing to participate, more especially at our [*vendor type*].	Most times, patients have already spent some time trying to see a doctor and subsequently taking drugs from the dispensary, so they become tired, but with persuasion, most people do oblige
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	I feel that most people have phones and can enroll, but for the few without phones, if the concept is explained well to clients, outlining the importance of the study, the patients will be most willing to enroll into the program using the phone or a neighbor or relative. For people without credit, I think you should make your text lines toll-free, so clients with credit can still flash the system.	x
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	We appreciate the respect accorded us and we particularly enjoyed working with all your staff. We hope that the next text reminder thing comes to stay.	Cooperation amongst your surveyors was most perfect, without interference in our business but yet still comported themselves during the study while carrying out their duties. We are most willing and looking forward to work PACT.

VENDOR CODE	57	58
Vendor type	Licensed Chemical Seller	Hospital / clinic
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	Even though the opening of my shop was not consistent and had less clients probably due to fasting, I think from conversation with your surveyors that it was such a great idea. I wish I would have experienced more to make meaningful contributions. But anyway, congrats on the idea.	It has been a challenge trying to convince patients to adhere to the advice that we give, most especially when it comes to completing the dosage. I think this program is one-of-a-kind that has done this and will do it if continued. I was happy for such an idea to help we as health service provides to remind and encourage people to complete the dosage.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	We did not observe much interview.	My cage from where I give drugs and flyers is a distance from the surveyors, and as such, i could not really observe any interview to hear what was being discussed.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Your study dwelt more on encouraging patients to complete their dosage, and they do complain that the pills are many. But other "green leaf" programs focus more on price and logo.	I believe and see much emphasis and adverts on trying to promote the "green leaf" ACTs, but the distinction is in that your intervention considered the most important aspect -- of actually if people would complete the dosage and really get better. Kudos.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	x	The only thing is a few times some patients would complain that the study took too much time, so some clients grew impatient but in all, it did not really affect our business because we do help to convince and most times your surveyors just let them go, because it is voluntary
Did you feel that our program led to focus more on ACTs and ACT clients?	I do keep much stock now and of different varieties of ACT.	We give priority to almost every case or disease
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	It would be of great importance to make Ghanaians benefit from such a program, which has tremendous effect in encouraging people to complete the dosage.	To me, chloroquine and other antimalarials have lost efficacy for treating malaria or combating malaria due to misuse; as such, scaling up would only help preserve ACTs, while reducing the economic burden of treating malaria and its other complications. it would be wise in this direction to expand this idea throughout Ghana
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not foresee any barriers, but I would hope that the vendor would be given much training to carry out such an important exercise.	I do not foresee any barriers, but I must believe that vendor staff would be taken through a training to execute such a task and that all the materials needed when the program is implemented are available
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	It was perfect for me	They were OK, only some faded a bit and that is something that should be fixed in the future
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	I did not experience much here due to clients making low purchases during the period of the study.	People were generally in a hurry or weak or had perhaps already taken time trying to see the doctor and also to get drugs. I think convincing would do for most potential respondents.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	x	The text lines should be toll-free
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I think that in the future, this sort of study should make surveyors stay at a vendor for longer, such as 2 months.	It was great working with PACT and its team, mostly for passing administrative procedure while trying to help most people that would not have otherwise completed their dosage and, as such, would not have gotten better and would always spend money to treat malaria. Also, it is a great idea to try to find ways to preserve ACTs, so as not to be making it useless like the chloroquine now. I only hope this great idea is replicated throughout Ghana.

VENDOR CODE	59	60
Vendor type	Pharmacy	Hospital / clinic / health center
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	In pharmacy, it is called compliance, and many different methods are used to achieve this. Many people more times do forget to complete the dosage. I think this idea is basically a compliance method that is new and would be great to prompt and encourage patients to complete the dosage. It is an excellent compliance method for the tech age.	It was a great experience for most people and in the right direction in trying to use technology, more also the text reminder to help and encourage patients to complete the dosage
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	We did not spend time to observe the questionnaires or interviews.	I was a distance away from the recruiter and did not observe.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Much of the "green leaf" adverts are just to promote its product while controlling the price, something which kills local industries. But your intervention focused on completing the anti-malarial course, which to me is very important.	I think your intervention has probably done the most important and yet difficult part, where patients would not complete the dosage, an effort that makes you distinct from other "green leaf" programs.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	Business was normal, only a few clients complained of the time they had to use in answering the questionnaires	x
Did you feel that our program led to focus more on ACTs and ACT clients?	x	As a [type of vendor], we normally would give concern to all the diseases, so we do not necessarily focus on one.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	It would do a lot to curb the negative attitude of sharing drugs or forgetting to complete the dosage. This attitude is nationwide and not limited to a particular geographical region, so it should be nationwide.	The text reminder of this sort would help eliminate the negative attitude of particularly all Ghanaians to the importance of completing antimalarial drugs and other drugs.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	We do not foresee any barriers; I have enough staff and we are ready to help but t-shirts of PACT would do for staff to make it more uniform next time.	We do not foresee any barriers. But we may have to on some occasions get extra staff to take up this task. But we also hope that the training program would be first organized for vendor staff before the commencement of scale-up.
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	I would prefer the color to be green.
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	People were in a hurry but a little persuasion usually helps.	Generally people do not spend much time and when they get to take drugs and are leaving, they have to answer questions again, which is not at all good for them. But I think your guys persuaded a number of them.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	x	x
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	My comments have to do with supply as well as production. Now we have shortages of ACTs for adults as well as Coartem in the system, with the reason that the producing companies are making analysis. I think the local companies, especially in Ghana, should be equipped with the capacity to produce more and also subsidize their ACTs -- without that, the local companies will perish while there are also shortages and lapses in the system. Seriously scrutinize the supply chain and also help local companies to produce affordable ACTs.	It was great to spend such quality time trying to cooperate with each other while carrying out such an important activity. We hope and are most willing to ever work with PACT as well as the team. We thought you left without a goodbye but I think it came at a good time. We appreciate the lessons learnt.

VENDOR CODE	61	62
Vendor type	Licensed Chemical Seller	Pharmacy
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	It was such a great experience, as it had added a voice to our call to patients always insisting they complete their dosage. I was delighted by this idea. Only it was during the fasting period, and I hope the reminder text continued now.	I feel generally that people are forgetful and, as such, I believe that the text reminders will be the best idea for now. It is a challenge for we vendors and it is great to have this idea to back up our efforts to curb this negative attitude of not completing the dosage.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	I did not observe any interviews and clients that got antimalarial drugs during the fasting period were just a few.	We did not preview the questionnaire and did not observe interviews.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	I think both programs target at improving the health as well as the economic life by reducing the most to treat malaria. But your intervention tackles the issue of completing the dosage, which is a major challenge.	Even though I feel you are all doing the same task of trying to help people get affordable and yet effective treatment for malaria, your uniqueness is in the fact that you stress and focus on completing the antimalaria drugs, which is great and important.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	It was the fasting period	x
Did you feel that our program led to focus more on ACTs and ACT clients?	We have stock of different varieties of ACTs	We have stock but your study was not long enough to conclude on this question
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	The text reminder could be a possible way to encourage people to complete the dosage, a major challenge which should be tackled. I think the program should be expanded nationwide to eliminate this negative attitude.	It would be a better idea to help all Ghanaians benefit from this important program that makes sure people do not abuse the new antimalarial drugs and run it ineffective like chloroquine
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not foresee any barriers, but I only hope that vendor staff would be given the appropriate training to understand such tasks	x
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	It was OK	It was portable and convenient for me, so I feel OK with it
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	We did not experience such cases in our shop but I think convincing would always do	x
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	x	x
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	It was a great experience working with PACT. It was rather unfortunate that much time was not spent at my shop while also the fasting period made sales slow. It think this text message reminder should be continued and intensified nationwide. Congrats on the completion of such a study.	x

VENDOR CODE	63	64
Vendor type	Licensed Chemical Seller	Hospital / clinic / health center
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	I think it is a great idea. I did not experience much due to a lack of patients during the study period at my shop, but I believe it should have done a lot to improve patients' attitude of not completing the dosage	It was such an excellent idea. The encouragement with the text reminder is great and I think that patients that took part enjoyed and benefited a lot, even with the short time spent here. Patients that did initially not want to participate have come later to commend the text reminder.
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	I did not observe any interviews	As the administrator with other responsibilities, I did not observe the questionnaire.
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	Many of the "green leaf" programs related to ACTs that are shown on TV focus on promoting ACTs while controlling price. But the effectiveness of these ACTs only lies in completing the dosage, that which makes your program distinct from other green leaf programs	"Green leaf" programs, for me, have failed because while they make the ACTs affordable, they do not try to make the patient complete the dosage, an area which distinguishes your study and which I think you are effectively managing.
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	The fasting period was slow generally. But currently demand for ACTs is on the rise.	As the administrator, I do not have such records to make that calculation
Did you feel that our program led to focus more on ACTs and ACT clients?	To be honest, it was the start of your study and the subsequent positioning of a surveyor at your shop that made me to purchase ACTs, and now I have many varieties of "green leaf" drugs	As a [*type of vendor*], we give priority to all cases.
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	Generally patients are very forgetful when it comes to completing the dosage, either when they feel a little better or when they feel the pills are too much. This attitude is nationwide and it would only be wise to expand the text reminder nationwide to deal with the issue of patients not completing dosage holistically.	We as a [*vendor type*] have always tried to encourage people to complete the dosage as we know the effect of not completing the dosage. I think when your efforts are expanded, it will help health service providers to curb this negative attitude of patients and it should be nationwide.
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I do not foresee any barriers. But I would hope that appropriate training needed to undertake this task would be done, more also, I hope that necessary materials such as flyers would be made available at the right times. Also, I believe t-shirts of PACT/IPA logo should be presented to the vendor staff.	I don't foresee any barriers. We as a health service provider are always willing to cooperate and do our part in promoting good health
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	I think the flyers were OK and convenient but I prefer the color green.	x
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	I did not experience any such cases.	Maybe because patients were tired after waiting too long. But I believe convincing them would do, which your surveyors did well.
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	x	I feel your text line should be toll-free. And also, the program benefits and importance should be explained in detail to patients so that they can enroll later when they charge with credit or batteries
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	x
What did you think of your overall interaction with the PACT team?	I would commend you and your organization for undertaking such a difficult task. I would urge that this program is continued and thanks for the updates and coordination between us and you. Thank you and carry on the good job.	I must commend you for passing through all administrative procedures before and after your study, while also not interfering with our business. We are always willing to work with PACT. Please continue the good work.

VENDOR CODE	65	
Vendor type	Licensed Chemical Seller	
What did you think of our intervention of text of flyers and text message reminders to clients to encourage them to complete them to their full dosage of ACT?	The fact that you remind them to complete the dosage is great, and more also at no cost	
To what extent was it clear to you that the PACT intervention was distinct from our research of the intervention (that is, the questionnaires)?	During your study, the business around here was slow, so I cannot make a good judgment about that issue	
To what extent was it clear to you that our intervention was distinct from the "green leaf" program related to ACTs? [*This question refers to the on-going, nationwide radio- and TV-based marketing carried out under the auspices of the Affordable Medicines Facility - malaria (AMFm) about the price and quality of the ACTs marked with AMFm's "green leaf" logo.*]	The intervention, even though we did not have many clients, was focused on helping people to complete their dosage, whereas the TV adverts related to "green leaf" drugs are targeted more at creating awareness of a new drug and of the prices and of the identification of affordable ACTs.	
In your opinion, did our presence - both for the intervention and to study the intervention - have an impact on your business?	We did not have very many clients, so I cannot say whether it had an impact on my business	
Did you feel that our program led to focus more on ACTs and ACT clients?	x	
Would you like to see a program like ours scaled up to the regional or national level? Why or why not?	Generally people tend to stop taking drugs when they feel some signs of relief. But then they get sick again soon because they did not complete their dosage	
If a program like ours were to be scaled up to the regional or national level, it is likely that a surveyor could not be stationed at every vendor. Rather, vendor staff would be responsible for explaining the program and encouraging and assisting clients in enrolling. **In your opinion, would it be possible to run an intervention such as ours without a surveyor present?**	I would not have any problem if trained well on the program. But incentives like t-shirts would be great if introduced with the program logo.	
We used flyers as a means of encouraging people to enroll in the text messaging system. What did you think of the flyers? How could they have been improved?	x	
Some customers seemed hesitant or skeptical about our flyers. Why do you think this is and what could be done to overcome it in future work?	Because it was a new initiative. But we did not have many clients at the time of the study, but I feel with better explanation, people would be more cooperative.	
A major barrier to having patients enroll into our text messaging system was a lack of credit or battery charge on their phone, or a lack of phone at all. **Do you have any thoughts about how we might overcome this barrier in the future?**	x	
Do you have a different suggestion for how people might be enrolled into a text messaging intervention such as ours?	x	
What did you think of your overall interaction with the PACT team?	The time you spend at a vendor should be longer, for example, up to three weeks. This is because during the first week, business was slow but then it picked up in the coming weeks, so that I could have made certain observations and a better judgment next time.	

APPENDIX G. PACT FOLLOW-UP QUESTIONNAIRE

U. AWARENESS OF MALARIA & AMFM			Instructions
U1	Compared to all the health problems in this community, how common is malaria?	Not common..... 1 Somewhat common..... 2 The most common..... 3 Don't know..... -888 Refuse..... -999	Can prompt with answer choices.

		Yes	No	Don't know	Refuse	
U2	Is it your opinion that malaria can actually kill any adult?	1	2	-888	-999	By adult, we mean people 18 years and older.
U3	Is it your opinion that malaria can actually kill a child under 9 yrs old?	1	2	-888	-999	
U4	Is it your opinion that malaria can actually kill a pregnant woman?	1	2	-888	-999	The pregnant woman can be of any age.
U5	Have you heard about malaria drugs called ACTs?	1	2	-888	-999	
U5a	Have you heard any information in the last week about malaria or malaria drugs? If so, describe.	No (don't know) 2 Refuse..... -999 Yes, explain..... 1				
U5b	What may happen to you if you take non-ACT malaria drugs -- older drugs like chloroquine or Malafan?	Don't know..... -888 Refuse..... -999 ***Explain:***				
U5c	What may happen to your community if many people take non-ACT malaria drugs -- older drugs like chloroquine or Malafan?	Don't know..... -888 Refuse..... -999 ***Explain:***				
U5d	Have you heard that malaria drugs other than ACTs, such as older drugs, might not cure *you* completely from malaria?	1	2	-888	-999	
U5e	Have you heard that malaria drugs other than ACTs, such as older drugs, may no longer work in your community?	1	2	-888	-999	
U6	Have you seen this logo (*show AMFm logo*)	Yes..... 1 No..... 2 Don't know..... -888				➔ **SKIP to COMIC** ➔ **SKIP to COMIC**
U6a	What do you know about this logo?	Don't know..... 1 Refuse..... 2 ***Explain:*** -888				

SURVEYOR NOTE: *How many people are listening to this education session? [____ | ____]*

ALL MESSAGES START WITH THESE POINTS…

- *When a mosquito bites a person, it can inject malaria into his or her blood*
- *When malaria is inside the body, it makes you feel unwell, such as having a fever*
- *When you think you have malaria, you should get a blood test.*

☐ **MESSAGE 1 –** ***uses page 1 of the comic only***

- If you actually have malaria, take the treatment prescribed to you.

☐ **MESSAGE 2 –** ***uses pages 1 & 2 of the comic***

- If you actually have malaria, you will have a choice of which drugs to take.
- Some of the older drugs – with which you may be familiar like Chloroquine – do not work as well as they used to. Because these drugs have been around for some time, some of the malaria is now stronger than these drugs.
- It may be the case that if you take one of these older drugs, it may not kill all the malaria, so ***you*** *will not be completely cured and may not feel better*
- However, ACTs, the new combination drugs that have been available in Ghana since 2005, can kill all the malaria, even that stronger than the old drugs. This means it is more likely that **you** will be completely cured.

☐ **MESSAGE 3 –** ***uses pages 1 & 2 of the comic***

- If you actually have malaria, you will have a choice of which drugs to take.
- Some of the older drugs – with which you may be familiar like Chloroquine – do not work as well as they used to. Because these drugs have been around for some time, some of the malaria is now stronger than these drugs.
- It may be the case that if someone takes these older drugs, it may not kill all the malaria. When another mosquito bites this person, it will swallow these stronger parasites, which it then will inject into the next person it bites. This person will not be able to kill all the malaria with the older drugs. *When this happens,* ***the whole community*** *is less safe from malaria.*
- However, ACTs, the new combination drugs that have been available in Ghana since 2005, can kill all the malaria, even those stronger than the old drugs. This means that when a mosquito bites a person with malaria, it will not pick up any living parasites with which it can infect another person.

☐ **MESSAGE 4 –** ***uses pages 1 & 2 of the comic***

- If you actually have malaria, you will have a choice of which drugs to take.
- Some of the older drugs – with which you may be familiar like Chloroquine – do not work as well as they used to. Because these drugs have been around for some time, some of the malaria is now stronger than these drugs.
- It may be the case that if you take these older drugs, it may not kill all the malaria. ***You*** *may not be completely cured and may not feel better.*
- In addition, when another mosquito bites you, it will swallow these stronger parasites, which it then will inject into the next person it bites. This next person will not be able to kill all the malaria with the older drugs. *When this happens,* ***the whole community*** *is less safe from malaria.*
- However, ACTs, the new combination drugs that have been available in Ghana since 2005, can kill all the parasites, even those that are stronger than the old drugs. This means that when a mosquito bites a person with malaria, it will not pick up any living parasites with which it can infect another person.

☐ **MESSAGE 5 –** ***uses pages 1 & 2 of the comic***

- If you actually have malaria, you will have a choice of which drugs to take.
- Some of the older drugs – with which you may be familiar like Chloroquine – do not work as well as they used to. Because these drugs have been around for some time, some of the malaria is now stronger than these drugs.
- It may be the case that if someone takes these older drugs, it may not kill all the malaria. When another mosquito bites this person, it will swallow these stronger parasites, which it then will inject into the next person it bites. *When this happens,* ***the whole community*** *is less safe from malaria.*
- In addition, even after taking some drugs, if you are infected with the stronger parasites, ***you*** *may not be completely cured and may not feel better*.
- However, ACTs, the new combination drugs that have been available in Ghana since 2005, can kill all the parasites, even those that are stronger than the old drugs. This means that when a person has malaria, even if it is the stronger parasites, s/he will be able to cure the malaria completely and feel better.

U7	What new things, if anything, did you learn about malaria drugs from this education?

V. SOCIAL CAPITAL

SURVEYOR NOTE: please make sure to find a comfortable space for the respondent before beginning this section.

V1 Sometimes, there are issues with trust and communication between people living in the same village/community.

To what extent (not very much, somewhat, very much) are trust and communication hindered in your village/community [*BETWEEN THE FOLLOWING GROUPS*].

SURVEYOR NOTE:
Circle the number that corresponds to the respondent's answer

	Very much	Somewhat	Not very much	Not at all	Don't know	Refuse
a. Between differences in formal education	1	2	3	4	-888	-999
b. Between differences in wealth/ material possessions	1	2	3	4	-888	-999
c. Between differences in landholdings	1	2	3	4	-888	-999
d. Between differences in social status	1	2	3	4	-888	-999
e. Between men and women	1	2	3	4	-888	-999
f. Between younger and older generations	1	2	3	4	-888	-999
g. Between long- time inhabitants and new settlers	1	2	3	4	-888	-999
h. Between political party affiliations	1	2	3	4	-888	-999
i. Between religious beliefs	1	2	3	4	-888	-999
j. Between differences in ethnic background	1	2	3	4	-888	-999

V2 Please tell me whether, in general, you agree or disagree with the following statements:

	Agree	Disagree	Don't know	Refuse
a. Most people in this village/ community are basically honest and can be trusted	1	2	-888	-999
b. People are always interested only in their own welfare	1	2	-888	-999
c. Members of this village/community are more trustworthy than others	1	2	-888	-999
d. In this village/ community, one has to be alert or someone is likely to take advantage of you	1	2	-888	-999
e. If I have an issue, there is always someone to help me	1	2	-888	-999
f. I do not pay attention to the opinions of others in the village/ community	1	2	-888	-999
g. Most people in this village/community are willing to help you with finances if you need it	1	2	-888	-999
h. Most people in this village/community are willing to help you with non-financial matters if you need it	1	2	-888	-999
i. This village/community has prospered in the last five years	1	2	-888	-999
j. I feel accepted as a member of this village/ community	1	2	-888	-999

SURVEYOR SAY: "Thank you very much for your time!" **Time end: [___ | ___] hours : [___ | ___] minutes**

APPENDIX H. AMFM OUTCOMES FROM THE INDEPENDENT EVALUATION

Table 24: AMFm Indpendent Evaluation results reporting on affordability and availability indicators for s-QA.ACTs in Ghana at end-2012. Ghana surpassed the benchmark for availability and just met the benchmark for afforability. All prices in US$, at exchange rate of GH₵ 1.67 to US$ 1.00.

s.QA.ACT:	Overall		Urban		Rural	
	Private facilities and pharmacies	Licensed Chemical Sellers	Private facilities and pharmacies	Licensed Chemical Sellers	Private facilities and pharmacies	Licensed Chemical Sellers
Availability *(% outlets stocking)*	90.1%	78.4%	89.1%	82.1%	96.9%	72.8%
Stocking *(s-QA.ACTs / QA.ACTs)*	82.7%	96.5%	81.6%	96.4%	92.3%	96.7%
Price *(median retail price, US$)*	1.20	0.90	1.20	0.90	0.90	0.90
Affordability *(ratio of prices for s.QA-ACT to SP)*	3		3.2		3	
Mark-up I *(% increase from supplier to retail price)*	50%	50%	50%	50%	33%	50%
Mark-up II *(absolute increase from FLB to retail price)*	1.08	0.86	1.1	0.86	0.77	0.83

Citations

Hanson, K, C Goodman, S Tougher, A Mann, Barbara Willey, F Arnold, Y Ye, R Ren, and S Yoder. 2012. "Independent Evaluation of Phase 1 of the Affordable Medicines Facility - Malaria (AMFm), Multi-Country Independent Evaluation Report: Final Report". Calverton, Maryland London: ICF International London School of Hygiene and Tropical Medicine.

Table 25: Nov and Dec 2011 antimalarial availability, *the AMFm Independent Evaluation (IndE)*

	% Total Stocking *(%-point change from baseline)*	% Urban Stocking *(%-point change from baseline)*	% Rural Stocking *(%-point change from baseline)*
Total			
s-QA.ACT	**80.2**	**83.7**	**74.8**
any QA.ACT	**82.7** *(+51.9)*	**85.2** *(+35.5)*	**83.9** *(+52.5)*
non-QA.ACT	**67.0** *(-3.2)*	**73.7** *(-11.6)*	**56.5** *(-10.1)*
Public health facility			
s-QA.ACT	**75.7**	**71.5**	**77.5**
any QA.ACT	**80.7** *(-5.5)*	**73.2** *(-10.7)*	**83.9** *(-2.7)*
non-QA.ACT	**62.6** *(-5.5)*	**65.1** *(-4.8)*	**61.5** *(-6.3)*
Private not-for-profit health facility			
s-QA.ACT	**85.6**	**100.0**	**76.3**
any QA.ACT	**92.4** *(+40.8)*	**100.0** *(+50.8)*	**87.5** *(+35.4)*
non-QA.ACT	**77.8** *(-22.2)*	**61.6** *(-38.4)*	**88.3** *(-11.7)*
Private health facility or pharmacy			
s-QA.ACT	**90.1**	**89.1**	**96.9**
any QA.ACT	**93.9** *(+35.1)*	**93.5** *(+23.0)*	**96.9** *(+55.7)*
non-QA.ACT	**89.3** *(-8.7)*	**91.6** *(-7.0)*	**73.7** *(-23.1)*
Licensed Chemical Seller			
s-QA.ACT	**78.4**	**82.1**	**72.8**
any QA.ACT	**79.9** *(+60.6)*	**82.6** *(+54.0)*	**75.2** *(57.5)*
non-QA.ACT	**62.7** *(-3.3)*	**69.2** *(-6.5)*	**52.7** *(-11.9)*

Citations

Hanson, K, C Goodman, S Tougher, A Mann, Barbara Willey, F Arnold, Y Ye, R Ren, and S Yoder. 2012. "Independent Evaluation of Phase 1 of the Affordable Medicines Facility - Malaria (AMFm), Multi-Country Independent Evaluation Report: Final Report". Calverton, Maryland London: ICF International London School of Hygiene and Tropical Medicine.

Table 26: Nov and Dec 2011 antimalarial retail prices, *the AMFm Independent Evaluation (IndE)*

	Median price - Ghana *(change from baseline)*	Median price - urban *(change from baseline)*	Median price - rural *(change from baseline)*
Total			
s-QA.ACT	**0.90**	**0.91**	**0.90**
any QA.ACT	**0.90** *(-2.49)*	**1.20** *(-6.15)*	**0.90** *(-1.80)*
non-ACT, non-AMT	**1.45** *(+0.47)*	**1.70** *(+0.11)*	**0.67** *(+0.02)*
Public health facility			
s-QA.ACT	**0.90**	**0.90**	**0.90**
any QA.ACT	**0.90** *(-1.80)*	**0.90** *(-1.80)*	**0.90** *(-1.80)*
non-ACT, non-AMT	**5.06** *(+2.52)*	**5.06** *(+0.50)*	**5.06** *(+3.20)*
Private not-for-profit health facility			
s-QA.ACT	**0.90**	**0.90**	**0.00**
any QA.ACT	**0.90** *(-4.54)*	**0.90** *(-3.86)*	**0.90** *(-5.91)*
non-ACT, non-AMT	**5.06** *(-0.50)*	**12.63** *(+12.93)*	**0.06** *(-5.69)*
Private health facility or pharmacy			
s-QA.ACT	**1.20**	**1.20**	**0.90**
SP (most popular)	**0.30**	**0.30**	**0.30**
s.QA.ACT/ SP	***3***	***3.2***	***3***
any QA.ACT	**1.20** *(-6.28)*	**1.20** *(-6.97)*	**0.90** *(-5.91)*
non-ACT, non-AMT	**1.81** *(-0.52)*	**1.81** *(-0.50)*	**2.16** *(-0.21)*
Licensed Chemical Seller			
s-QA.ACT	**0.90**	**0.90**	**0.90**
any QA.ACT	**0.90** *(-1.66)*	**0.90** *(-1.80)*	**0.90** *(-1.66)*
non-ACT, non-AMT	**0.61** *(-0.01)*	**0.90** *(+0.42)*	**0.61** *(-0.06)*

Citations

Hanson, K, C Goodman, S Tougher, A Mann, Barbara Willey, F Arnold, Y Ye, R Ren, and S Yoder. 2012. "Independent Evaluation of Phase 1 of the Affordable Medicines Facility - Malaria (AMFm), Multi-Country Independent Evaluation Report: Final Report". Calverton, Maryland London: ICF International London School of Hygiene and Tropical Medicine.

Table 27 Nov and Dec 2011 median percentage (gross) mark-ups between antimalarial supply and retail prices, *the AMFm Independent Evaluation (IndE)*

	Median mark-up- Ghana *(%-point change from baseline)*	Median mark-up - urban *(%-point change from baseline)*	Median mark-up - rural *(%-point change from baseline)*
Total			
s-QA.ACT	**50.0**	**50.0**	**50.0**
any QA.ACT	**50.0** *(+16.70)*	**50.0** *(+12.50)*	**50.0** *(+16.70)*
non-ACT	**47.1** *(-2.90)*	**47.1** *(-7.10)*	**50.0** *(+0.04)*
Public health facility			
s-QA.ACT	**25.0**	**25.0**	**15.4**
any QA.ACT	**22.2** *(+17.9)*	**25.0** *(-27.8)*	**11.1** *(-1.80)*
non-ACT	**0.00** *(+0.00)*	**0.00** *(+0.00)*	**0.00** *(-4.70)*
Private not-for-profit health facility			
s-QA.ACT	**25.0**	**25.0**	**0.0**
any QA.ACT	**25.0** *(-36.80)*	**25.0** *(-)*	**0.0** *(-61.8)*
non-ACT	**25.0** *(-8.30)*	**25.0** *(-)*	**0.00** *(-33.30)*
Private health facility or pharmacy			
s-QA.ACT	**50.0**	**50.0**	**33.3**
any QA.ACT	**50.0** *(+17.60)*	**50.0** *(+13.50)*	**33.3** *(+8.30)*
non-ACT	**38.9** *(-2.30)*	**38.9** *(-25.00)*	**25.0** *(-4.00)*
Licensed Chemical Seller			
s-QA.ACT	**50.0**	**50.0**	**50.0**
any QA.ACT	**50.0** *(+16.70)*	**50.0** *(+3.30)*	**50.0** *(+16.70)*
non-ACT	**50.0** *(+0.00)*	**50.0** *(-6.30)*	**50.0** *(+0.00)*

Citations

Hanson, K, C Goodman, S Tougher, A Mann, Barbara Willey, F Arnold, Y Ye, R Ren, and S Yoder. 2012. "Independent Evaluation of Phase 1 of the Affordable Medicines Facility - Malaria (AMFm), Multi-Country Independent Evaluation Report: Final Report". Calverton, Maryland London: ICF International London School of Hygiene and Tropical Medicine.