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**ETHICS OF PLANNING FOR, AND RESPONDING TO,
PANDEMIC INFLUENZA IN SUB SAHARAN AFRICA:
QUALITATIVE STUDY**

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degree of Doctor of Philosophy**

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ABSTRACT

This thesis argues that ethical issues in Ghana and Malawi represent barriers to pandemic influenza management and prevention. The ways in which ethical issues arise and are manifested are poorly understood, in part because there is little knowledge and inadequate Planning for, and Response to, Pandemic Influenza (PRPI). Rather than offering simple answers, this thesis describes how ethical problems emerge in the course of pandemic authorities performing their everyday duties. The central aim is to understand what ethical issues mean to policymakers and how they may be resolved. An extensive review of the experiences of the 1918 influenza pandemic including the epidemiology is examined to illustrate the profound impact of the disease and lessons that can be learnt. The study operates at two distinct but related levels. Firstly there is an investigation of PRPI at a broad level. Secondly, an exploration of the ethical issues that emerges from PRPI within the analytical framework of decision-making models. A qualitative study using semi-structured interviews is used to conduct the study with a “purposive sampling” of forty six policymakers from Malawi (22) and Ghana (24).

Utilizing existing normative ethical theories, but acknowledging theoretical and empirical approaches to public health ethics and bioethics, this thesis provides a contextual public health framework to study broad moral problems in particular situations. The findings of the study reveal that normative claims can successfully influence policy if substantiated with empirical evidence. Ethical problems are highly practical and contextual in nature, occurring differently in the context of particular settings, cultures, values and moral judgments. Policymakers interviewed identified ethical problems in relation to four key areas: the extent and role of resources in PRPI, the nature of public health interventions (PHIs), the extent of the impact of PHIs and the extent and process of decision-making, reasoning and justification. Policymakers resolved ethical problems by simply applying rules, work norms and common sense without moral and flexible principle-driven thinking. Policymakers’ technical knowledge of ethics is inadequate for balancing the hard pressed moral tensions that may arise between the demands of civil liberties and public health. These results underscore the need to update overall goals in pandemic operations, training and education. Most importantly, an ethical framework remains an important part of dealing with ethical problems. A process of developing an ethical framework is proposed, but the key to combating any ethical problem lies in understanding the PRPI strategy.

DEDICATION

This thesis is dedicated to my family. I have been able to complete this work because of them. They encouraged me throughout the dissertation process. They sacrificed in many ways for me to succeed. Thank you for your patience and understanding. God Bless!

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LIST OF ACRONYMS

ADC	Area Development Committee
AI	Avian Influenza
AIWG	Avian Influenza Working Group
BMCs	Budget and Management Centres
CADECOM	Catholic Development Commission in Malawi
CAQDAS	Computer Assisted Qualitative Data Analysis Software
CEAPI (UK)	Committee on Ethical Aspects of Pandemic Influenza
CHAM	Christian Health Association of Malawi
CHSU	Community Health Sciences Unit
CMS	Central Medical Stores
COMREC	College of Medicine Research Ethics Committee
CPHE	Contextual Public Health Ethics
DAHI	Department of Animal Health and Industry
DAHLD	Department of Animal Health and Livestock Development
DEC	District Executive Committee
DHMT	District Health Management Team
DHO	District Health Officer
DoDMA	Department of Disaster Management Affairs
EPRPI	Ethics for Planning for, and Response to, Pandemic Influenza
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GHS	Ghana Health Service
GISN	Global Influenza Surveillance Network
GRCS	Ghana Red Cross Society
HMIS	Health Management Information System
HPAI	Highly Pathogenic Avian Influenza
IAC	Influenza Assessment Centre
IDSR	Integrated Disease Surveillance and Response
IEC	Information, Education and Communications
IHR	International Health Regulations
ILI	Influenza Like Illness
MDA	Ministries, Departments and Agencies

MLFM	Ministry of Lands, Forestry and Mines
MoA	Ministry of Agriculture
MOFA	Ministry of Food and Agriculture
MoH	Ministry of Health
MRCS	Malawi Red Cross Society
MW	Malawi
NADMO	National Disaster Management Organization
NAITC	National Avian Influenza Technical Committee
NAITF	National Avian Influenza Task Force
NCC	National Coordinating Committee
NGO	Non-Governmental Organization
NHA	National Health Accounts
NIC	National Influenza Centre
NMIMR	Noguchi Memorial Institute for Medical Research
NSU	National Surveillance Unit (GHS)
PDM	Proactive Decision-Making
PHC	Primary Health Care
pH1N1	Pandemic H1N1
PI	Pandemic Influenza
QHP	Quality Health Partners
PRPI	Planning for and Response to Pandemic Influenza
RRT	Rapid Response Team
SADC	Southern African Development Community
SARS	Severe Acute Respiratory Syndrome
USAID	United States Agency for International Development
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Fund
VS	Veterinary Services
WB	World Bank
WHO	World Health Organization
WMA	World Medical Association

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CHAPTER 1: INTRODUCTION

This thesis examines the ethical issues arising from Planning for, and Responding to, Pandemic Influenza (PRPI) within a wider context of public health and medicine. In particular, the thesis explores the implications of preparedness and responses to pandemic influenza and the specific types of ethical issues that arise from public health in the settings of Ghana and Malawi. A related issue in the thesis concerns how policymakers¹ understand, identify, describe and attempt to resolve ethical problems within everyday, real-life contexts at their work. This thesis endeavours to increase understanding about how public health policymakers set policies concerning pandemic influenza. It provides an introduction to ethical dimensions, such as those of decision-making, connected to equitable and fair allocation of limited resources and accountability. Policymakers often struggle to balance the hard pressed moral tensions that arise from the combined demands of civil liberties and public health, and the disagreements that develop between values and scientific evidence. Advanced study of ethical issues confronted in PRPI is an integral part of understanding decisions that policymakers make when responding to the pandemic. In this introductory chapter, I argue why a study of PRPI is important, particularly where resources are limited, and pandemic influenza as a global biological phenomenon is poorly understood. Firstly, it is important to define what pandemic influenza is and why it has taken centre stage in this study.

For the purpose of informing and also orienting the reader, influenza, commonly referred to as ‘flu’, is a disease that affects the upper and lower respiratory tracts (throat, nose and lungs) in humans and some animal species. It is a highly contagious disease caused by several subtypes of influenza viruses. It is not the same as the common cold, nor is it related to gastroenteritis, commonly referred to as “stomach influenza”. As will become apparent in the next chapter, there is often confusion between seasonal influenza and pandemic influenza. Seasonal influenza is the term used to refer to the influenza outbreaks that occur regularly in certain seasons of the year. The term pandemic is derived from the Greek ‘pan’, meaning all, and ‘demos’, meaning people. As such, pandemic influenza refers to particularly virulent strains of rapidly spreading influenza that can create a world-wide epidemic. Pandemic

¹ In this thesis, the terms policymaker and decision-maker are used interchangeably. Policymakers refer to a group of individuals who operate in institutions such as government or non-governmental organizations with influence or authority to determine policies at the local, regional or national level.

influenza outbreaks are unpredictable, spontaneous, severe and rare events. There is no precise and consolidated definition of pandemic influenza (Doshi, 2009). However, the World Health Organization (WHO) defines pandemic influenza as a disease outbreak that occurs when an influenza virus, to which most humans have little or no existing immunity, acquires the ability to cause sustained human-to-human transmission leading to community-wide outbreaks (WHO, 2013). For many years the WHO defined pandemic influenza as “an outbreak that causes enormous numbers of deaths and illness due to the development of a new influenza virus to which the human population has no immunity”.² This definition gradually disappeared and has now been subsumed within a broad definition of geographical spread, satisfying the internationally accepted definition of a pandemic as it appears in the Dictionary of Epidemiology (Last, 2001). To keep up with this definition, the WHO redefined an influenza pandemic as simply a new influenza virus that appears, against which the human population has no immunity, crucially omitting the phrase “enormous numbers of deaths and illness” (Doshi, 2009; Cohen and Carter, 2010). This has led to a considerable controversy over whether the WHO definition was changed to enable the declaration of the 2009 outbreak, pandemic influenza. The lack of precision in the definition of pandemic influenza has also led to considerable debate as to whether the occurrence of pandemic is a predicate of geography and virology, and not disease severity. The removal of the wording “high mortality and morbidity” from the definition of pandemic influenza has important public health and economic implications, particularly on resource-intensive planning efforts among the poor countries, as will be discussed in chapters 6-9.

Pandemic influenza outbreaks and their impact on populations have a long history. Many influenza outbreaks are believed to have occurred between 877 and 1481 (Ministry of Health, UK (1920)), and the first well-recorded influenza outbreak, according to Potter (2001), occurred in 1580. It is difficult to verify claims that these were indeed influenzas because no one could identify the causal agent at that time. Perhaps these inferences are based on descriptions of symptoms by observers working within very different cognitive and cultural frameworks. Christopher Addison the Right Honourable, M.P and Minister of Health for

²<http://web.archive.org/web/20030202145905/http://www.who.int/csr/disease/influenza/pandemic/en/> (Accessed: July 31, 2013). This satisfies the technical definition of a PHEIC said to be a situation that: is serious, sudden, unusual or unexpected; carries implications for public health beyond the affected State’s national border; and may require immediate international action.

Great Britain admitted in 1920 that since early times there have been outbreaks of catarrhal conditions which were clearly mistaken for what we now know as influenza (Ministry of Health, UK (1920)). The influenza outbreak of 1889-91 was the first pandemic to be described as global, and one to which epidemiologists attach the probable etiology of influenza. However, we can be sure about the 1918 pandemic influenza because tissue samples survived for examination. The virology of influenza was established beyond doubt in the 1930s; until then influenza was thought to be caused by a bacterium or bacillus. According to Lazzari and Stöhr (2004), humanity has since 1580 experienced thirty-one possible influenza epidemics (about 1 every 15 years), with three occurring in the twentieth century: the outbreaks of 1918, 1957, and 1968. Among these, the 1918-20 pandemic influenza was the most devastating, killing more than 50 million people worldwide (Potter, 1998). So far in the twenty-first century, only one influenza pandemic has occurred – that of 2009. The first recognised case of 2009 H1N1 influenza was detected in mid-April 2009 in Mexico, though in reality it had been spreading for 6-8 weeks before this. The virus quickly spread around the globe, and on June 11th 2009, as the number of H1N1 cases skyrocketed with widespread transmission on at least two continents, the WHO raised its pandemic alert level to declare the pandemic.

Although the 2009 pandemic influenza appeared to be relatively mild, over 18,156 influenza-related deaths were reported in more than 214 countries and overseas territories (WHO, 2010). A modelling study by US CDC estimated 61 million cases of pandemic H1N1 influenza and 12,470 deaths, including 274,000 hospitalizations in the US alone, between April 2009 and April 2010 (CDC, 2010). Although African countries have gained ground in the fight against influenza, the ability to detect, monitor and respond to influenza is still a struggle. For example, data for the 2009 pandemic influenza remains incomprehensive in Africa, particularly in Ghana and Malawi, yet well documented examples of influenza data such as those from the US and UK illustrate the fact that influenza is one of the greatest burdens on morbidity and mortality. Addressing the World Health Assembly after the start of the 2009 pandemic, Dr. Margaret Chan, director-general of the WHO said “a defining characteristic of a pandemic is the almost universal vulnerability of the world’s population to infection.”³ Not all people become infected in a pandemic outbreak, but nearly all people are

³ http://www.who.int/dg/speeches/2009/62nd_assembly_address_20090518/en/ (Accessed: April 3, 2014).

at risk". The threats of pandemic influenza point our attention to the need for preparedness. Prior to the 2009 pandemic H1N1 (pH1N1), and following the unprecedented outbreak of Highly Pathogenic Avian Influenza (HPAI) caused by the H5N1 virus, the WHO instigated a movement for preparedness, demanding that all countries develop pandemic management protocols in preparation for the next pandemic. The world responded to this much-needed call by establishing pandemic plans that would assist in reducing the threat intensity of a probable pandemic influenza. Ghana and Malawi developed their first influenza implementation plans in 2005 and 2006 respectively in accordance with the International Health Regulations (WHO, 2005a).

Despite developing plans, progress towards influenza preparedness across Ghana and Malawi remained slow however, facing far more practical challenges than in places like the UK and US which responded quickly with well consolidated plans. The incomprehensive plans for Ghana and Malawi at the time of writing undoubtedly raised serious concerns as to whether specific responses to Planning for and Response to Pandemic Influenza (PRPI) would be achieved in a real pandemic situation. Prior to the pandemic outbreak in 2009, Ortu et al. (2008) observed that PRPI tasks in the entire continent of Africa remained unmet, including the extent to which these plans would be implemented.

Despite the challenges Ghana and Malawi faced in the mild 2009 pandemic, little is known on how the governments translated their influenza plans into response actions during the pandemic period. Several studies consider how countries in Africa responded to the pandemic outbreak (Katz et al., 2012; Mihigo et al., 2012), but there have been no studies on Ghana and Malawi specifically. A few studies have examined the role of ethics in the planning for and responding to pandemic influenza in least-resourced countries (Ortu et al., 2008) but none exist in the settings of Ghana or Malawi. Yet these countries are heavily affected by limited capacities in influenza surveillance and disease control strategies – areas that invoke most ethical problems. The international community through the IHRs require that poor countries conduct disease surveillance and report any threats within their borders in order to alert other countries but even so the international community continue to pay less attention to the financial needs of these countries to enable them conduct surveillance activities. If the international community fails to support developing countries in strengthening surveillance systems at the local and national level, yet expect them to report any threat that constitutes a “public health emergency of international concern” for example, there

may be considered to be ethical issues arising from the role of reciprocity and solidarity. The state has a responsibility to provide early warning signals of any outbreak to its population because this is necessary for rapid diagnosis and case management. The contribution of surveillance data can be used to develop a well matched vaccine for the main influenza viruses in circulation. Equally crucial to the early warning response required to mitigate and prevent pandemic outbreak is the ability of the policymaker to be able to reason and deal with a wide array of ethical issues. Ethical reasoning is the ability to decide between good and bad, and remains a banner for creativity and achieving the best outcomes. For example, if policymakers fail to reason adequately concerning the balance between people's privacy or autonomy and protecting population health during screening and medical testing, it raises serious ethical and human rights concerns. Ethical reasoning based on knowledge and critical evaluation of the matter will enable us to pay attention to equally effective interventions that may be least intrusive, fair and non-discriminatory. Public health initiatives such as developing communication strategies and updating overall goals in pandemic training and education, including a range of other responsibilities necessary for contingency operations, are lacking (Ortu et al., 2008). This is where reasoning becomes crucial to finding answers and alternative actions in the problem of pandemic influenza.

Crucial to the development of pandemic preparedness and response strategies is the need for ethical considerations. During a severe outbreak of pandemic influenza, medical practitioners and policy experts will be called upon to support the healthcare needs of those affected, not only in terms of ethical obligations to look after sick patients, but also to balance their obligation against the needs of population health. This is a difficult and challenging task to fulfil in a public health emergency response, but remains a prominent issue that any healthcare service will have to deal with. Thus, addressing ethical issues of planning for and response to pandemic influenza requires an understanding of how they emerge, are perceived and conceptualised. It marks a potential departure point of investigating moral problems fundamentally rooted in institutional, organizational and social structures as well as understanding the effective responses required to change these structural dynamics and forces (Hoffmaster, 1994).

Ethical problems in the field of public health and medicine are documented in literature, particularly in textbooks of bioethics (Beauchamp and Childress, 2009). Even so, most of

these literatures are based on anecdotal evidence (Clarke, 1992) and are specific to high-income countries. Hoffmaster (1994) and Callahan and Jennings (2002) suggest that ethical issues should be explicitly studied and understood based on factual evidence rather than normative accounts found in textbooks. Ethical problems can be highly contextual in nature, occurring differently in the context of particular settings, cultures, values and moral judgements. Thus, a deeper understanding of the types and nature of ethical issues can assist authorities in the ethical and policy decision-making processes. Most importantly, evaluating evidence based accounts necessitates, validates and clarifies normative ethical accounts, which are often deeply rooted in the way ethical issues are interpreted and justified. The principal problem between empirical fact and prescriptive statements are discussed in Chapter 4 (section 4.1.0). The concern in this thesis is the manner in which normative and empirical ethical accounts are applied to different ethical considerations. While normative and empirical ethics can be applied in total isolation of each other, both normative and empirical ethics can be used together to reach an acceptable moral position necessary for resolving an ethical issue. What we see from the above discussion is an array of difficulties arising as a result of attempts to apply moral theories to resolve ethical problems. But what exactly are normative claims and what constitutes empirical evidence? According to Hoffmaster (1994), normative evidence are norms that attempt to tell us how we ought to live and what ought to be morally right, giving us reason to believe in something. On the other hand, empirical evidence is acquired by observation or experimentation to inform our judgement to believe, support or disprove a specific empirical claim.

If countries like Malawi and Ghana are to improve preparedness, they must evaluate the facts of the disease in terms of where their countries stand, what progress they have achieved, and what must be done next in terms of their political, social and economic situations. Such strategies must also focus on the problematic ethical and legal issues that represent barriers to pandemic influenza management and prevention. For example, given a situation in which there are limited supplies of vaccines, should children, young adults, or seniors be prioritised? Should such decisions be made on the basis of criteria of pure utility, or more ‘deontological’ principles of absolute right to health care? Where should policymakers draw the line in the trade-off between personal freedom and public good in social-distancing measures? How should we decide between the collective interests of the public and those of an individual? Who should decide? How should we arbitrate between these conflicting demands and

perspectives? These are some of the many ethical questions that confront decision-makers responsible for pandemic planning.

While Ghana and Malawi are among the countries in sub Saharan Africa that have developed pandemic preparedness drafts, they are yet to incorporate ethical planning into their national pandemic preparedness policies. Ongoing policy debates and ethical enquiries into the ethical problems of planning for, and response to, pandemic influenza proceed normatively – that is, from moral debate about what might promote the greatest good, constitute correct conduct, or result in the best actions. There are concerns that policymakers may not engage enough in critical and practical moral judgements relevant to preparedness protocols. This thesis argues that the normative claims found in policy debates can be substantiated with empirical evidence found in public health and bioethics to explain and justify policies. For example, to justify public health measures, such as quarantine or restricting people’s movement, policymakers ought to have valid scientific evidence that supports their claims that quarantine or restricting people’s movement, and indeed work, is necessary. If these measures are to be optimized and accepted widely by society, it is also important to ensure restrictive public health measures are balanced with societal norms (obligations) and values (beliefs).

Current methods described normatively within bioethics literature fail to address most ethical challenges in public health. Equally, public health ethics fails to capture the needs of individuals as a whole. Seeking a collaborative discourse of public health ethics and bioethics is an important task for assessing the relative strengths of the two disciplines and understanding to what extent their seemingly contradictory premises can in fact be reconciled. Kass (2004) argues that as bioethics becomes more deeply engaged in a dialogue with public health, a new level of scholarship in the field may develop to a point where efficiency and those in greatest need of health protection and health services are prioritised accordingly. These controversies reveal the relationship between public health and medicine to be an interesting one. This is where the theoretical knowledge discussed in Chapter 4 becomes useful for understanding and producing context-based knowledge necessary to resolve controversial ethical problems.

As will become apparent, this thesis attempts to provide a process upon which to develop an ethical framework that can be used to resolve moral disagreements or problems that

commonly arise in public health practice. Moral disagreements or conflicts arise due to communication failures or differences in the way policymakers make judgments. This study purports to contribute new knowledge on ethical preparedness within public health practice. However, this is not possible unless the approach of public health ethics goes beyond narratives of normative ethics to confront the central dilemmas arising empirically from the contrast between public health ethics and bioethics, albeit dilemmas that preparedness for a pandemic present. For Hoffmaster (1994), ethical considerations, or any other claims that provide ethical solutions, need to be substantiated with empirical evidence, since normative claims or models alone are inadequate as a justification for policies to promote possible ethical answers. Tate (2011) tells us that ethical models are useful in providing structure and facilitating reflection on actions, but critical thinking is important too, and this cannot take place without the use of models. Moral views or guidelines that are universal but cannot be substantiated or asserted within a particular setting, not only pose daunting challenges for pandemic influenza policy, they also raise ethical problems among implementers.

Hoffmaster is particularly critical of the existing approaches in moral philosophy that concentrate on developing and justifying theories while paying little attention to the practical utilization of those theories on policies. He considers that normative accounts of medical ethics are too abstracted and surrounded by conflicting principles whose judgements rely upon assumptions, such as the definition of physician-assisted suicide in the euthanasia debate – an issue yet to be resolved. It is not straightforward to apply assumptions of moral theories to concrete problems in a non-problematic manner unless the moral concepts and norms fit the settings and contexts in which these problems are invoked. While Hoffmaster makes it clear that moral philosophy can be inadequate for policies, he claims that the principles of normative ethics are of value and significance in informing decision-making. The problems in normative ethics are embedded in its applicability, including the gap that exists between the general concepts and categories of moral norms and the particularities of actual moral situations. As is noted in Chapter 4, situational and contextual appropriateness of a moral issue is central to moral decision-making but cannot be achieved in terms of hypothetic-deductivism in normative ethics. If situational aspects of actual problems are neglected, could it be that ethical problems result from inadequate reasoning or justification?

Rather than offering straightforward answers, this thesis will describe how ethical problems or dilemmas are confronted by the authorities carrying out their duties as they react to the

pandemic in light of scepticism, criticism and differences of opinion. This study uses the case of the 2009 pH1N1 outbreak, focusing particularly on how pandemic preparedness drafts were implemented and the moral dilemmas that public health leaders faced in dealing with pandemic influenza. Ethical planning for, and response to, pandemic influenza is particularly important in less-resourced countries where public health capacities and clinical infrastructure are already inadequate; this thesis will suggest ways of reducing ethical problems within the country-specific situations.

The thesis operates at two distinct but related levels: an investigation of preparedness for, and response to, pandemic influenza, specifically in sub Saharan Africa and an exploration of the ethical issues that emerge from this investigation, focusing in particular on their relevance for policymakers. Recent policy developments on pandemic influenza preparedness in sub Saharan Africa have yet to progress to an acceptable level of public health preparedness (Ortu et al., 2008; Government of Malawi, 2006; Republic of Ghana, 2006). Furthermore, while evaluating the content of pandemic preparations and response plans (including relevant policies) it becomes clear that the decision-making process does not permit deliberations based on sound ethical reasoning or scientific evidence. Indeed, as we shall see, the available drafts for preparedness strategies are characterized by a lack of systematic attention to the ethics of mitigating pandemic influenza.

The central aim of this thesis is to explore and understand what ethical issues mean to policymakers, and how they may be resolved in Ghana and Malawi. To accomplish these tasks, it is important to investigate the relationship between pandemic influenza and ethical issues and what this nexus means exactly to public policy and practice. Of course, there is a sense that addressing infectious diseases such as pandemic influenza yields ethical issues when individual liberty is restricted or when facilitating triage and identifying resource allocation. As such, acquiring an understanding of the relationship between pandemic influenza and determinants of ethical issues creates a platform upon which answers to the ethics of PRPI can be assessed. Before examining the causes and types of ethical problems, the following questions need to be explored to guide the thesis.

1. What are the deep-rooted historical tensions in pandemic influenza?
2. How does the history of pandemic influenza shape current policy for future ethical preparedness?

3. How was Planning for, and Response to, Pandemic Influenza (PRPI) implemented?
4. What are the ethical issues policymakers encounter in PRPI?
5. How do policymakers conceptualize, perceive and resolve the types of ethical problems they experience in PRPI?
6. What are the ethical considerations for improving public health responses to pandemic influenza in developing countries like Ghana and Malawi?

There are two major steps taken to answer the above questions: first, examining the historical context and epidemiology, particularly how these inform the ethics of PRPI, and secondly investigating a sub-group of policymakers' views and opinions within the analytical framework of decision-making models.

The theoretical perspective employed in framing these research questions is loosely based on five pieces of writing. First, I draw on Mann and Gostin (1994) who focus on the ethics of civil liberties and human rights. Second, I draw on Pellegrino (1981) who underlines the importance of the concept of ethics of prevention. Third, I use Hoffmaster's (1994) emphasis on moving away from a theory-driven 'applied ethics' to a more situational, contextual approach that opens the way for conception of empirical dimensions of ethical problems. Fourth, Callahan and Jennings (2002) call for empirical investigation of ethical problems through a collaborative approach. Finally, I draw on Rest and Narvaez (1994) and their conception of moral development in terms of moral reasoning and judgement. I argue that, taken together, these authors have established a strong apparatus which can be utilized in the study and analysis of public health ethics, and that they support the view that ethical issues should be understood based on factual evidence rather than relying only on normative assumptions. The authors (Mann and Gostin, 1994; Pellegrino, 1981; Hoffmaster, 1994; Callahan and Jennings, 2002 and Rest and Narvaez, 1994) provide a discourse upon which ethical considerations in developing public health responses to pandemic influenza in Ghana and Malawi can be established.

1.1.0. This Research: Framework and Methodology

As case studies, Ghana and Malawi are particularly worth investigating, given their long colonial histories and the fact that they are among the first countries in sub Saharan Africa to have developed pandemic planning initiatives. They provide a comparative base and context

in which specific forces driving policy construction can be studied. In addition, Ghana and Malawi are among the least-resourced countries and are heavily affected by limited capacity in the surveillance and disease control strategies most needed to prepare, prevent, and mitigate pandemic influenza. As such, this study provides a significant test case for assessing how severely limited budgets constrain pandemic preparation and response, and the ethical issues that arise from this. Furthermore, the countries are among those to experience the recent impacts and challenges of 2009 pH1N1 and HPAI H5N1 and as such they provide exceptionally important primary data (response actions, knowledge, attitudes, and perceptions of influenza) from which the study of Ethics for Planning for, and Response to, Pandemic Influenza (EPRPI) can begin.

Pandemic influenza poses a serious health threat to the rest of the world because its occurrence is unpredictable and most people may not have the existing immunity to the new influenza strain causing the pandemic. The speed at which the 2009 H1N1 virus spread from Mexico to the rest of the world within a short period of time was unprecedented for a disease considered very mild. However, it is clear that the international spread of the virus from person to person is easily facilitated by passenger air travel. While pandemic influenza can cause a large proportion of illness and death over a large geographical area and within a short period of time, the adverse effects and human suffering (including economic disruption) are likely to be experienced disproportionately by the vulnerable and 'at risk' population of underdeveloped countries. Poor countries are at increased risk because of limited access to prevention or treatment interventions and large subpopulations are particularly vulnerable during an influenza pandemic because of their underlying health conditions (Groom et al., 2009). Thus sub Saharan Africa, particularly Ghana and Malawi, are likely to be more heavily affected because there is a larger immunocompromised population than any other region of the world due to HIV and AIDS. The extent to which poor countries would be affected depends upon various determinants of health. For example, trade and globalisation has eased connectivity, and movement of people and goods. In the case of HPAI (bird flu), geographical positions, particularly those in proximity to the wetlands, are presented as high risk. Wetlands create an ideal breeding ground for the virus not only in seasonal birds but also in both animal and human populations. Ghana and Malawi are close to wetlands. In addition, the proximity between people and animals in rural areas in Ghana and Malawi, and the inadequate public health infrastructure, overcrowding, poor sanitation and living conditions heightens any risk of a

pandemic outbreak (Coker et al., 2008). Recent studies suggest that households play a major role in the community spread of influenza virus during annual epidemics and occasional pandemics (Cowling et al., 2010; Yang et al., 2009).

Given that Ghana and Malawi are not particularly immune to pandemic influenza outbreak, they are more likely to experience operational challenges and difficulties in managing the disease. In light of the severity of the disease, a special burden of responsibility is placed on their politicians and policymakers. Before I embarked on the fieldwork for this dissertation, I observed that Ghanaian and Malawian politicians and policymakers appeared keen to influence public policy on pandemic influenza and indeed there was political will; however, during the research I concluded that these authorities were in fact non-proactive. If politicians and health policymakers recognize that pandemic influenza can be a serious and unexpected event with significant public health implications beyond Ghana and Malawi, why have they been reluctant to enforce and consolidate influenza policy to reflect the inter-pandemic activity needs of these tropical regions? If officials and experts know that pandemic influenza has complex causal-effect relationships with detrimental outcomes, why are public health measures still dominated by issues of the rule of law, politics and economics, and not by science and ethical deliberations? Harper et al. (2008) suggest authoritative actions based on scientific evidence to inform policy and provision of information to the public in order to help avoid public disquiet or panic and mitigate societal risks of a pandemic.

In this study I attempt to bridge the gap between moral theory and applied ethics (which I argue must be bound to the contextual situation in which they are embedded). The goal of this project, therefore, is to contribute effectively to the ethics of planning for, and responding to, pandemic influenza. The effectiveness of pandemic preparedness is not just a matter of having a plan, but of having one that maps out ethical issues and finds legitimate solutions in their own context; such plans need to be fully supported by political and social structures. To achieve this goal, I plan to use the analytical methods of social science to investigate the problematic ethical challenges that Ghana and Malawi face. Qualitative data was collected through interviews using a semi-structured questionnaire. These were designed to identify the specific ethical dilemmas facing policymakers in Ghana and Malawi, and to gather qualitative insights into how best to resolve them. As I shall argue, in order for an ethical solution to be widely acceptable, the concept of public health ethics needs to be deployed as a sensitizing concept.

Given the concepts of moral philosophy, there is a tendency for experts of ethics to favour one or two moral theories over others to justify and inform their idea, theory or proposition in a particular field. My position for a public health approach, as will be clearly shown in Chapter 4, does not suggest that bioethics is irrelevant. In fact I use the concept of the biomedical model of bioethics to expand the context of public health ethics. Bioethics and public health are important contributions to theoretical and methodological approaches, justifying what is right and wrong in explicit issues of ethics. The Nuffield Council of Bioethics (2006) insists that, given the reasons or justifications for decisions, ethical analysis can lead to a shift in our views as we come to appreciate the basis on which those with different opinions make their judgments.

1.2.0. How I Became Interested in the Topic

Before I began this study, I was very interested to know exactly what constituted a well-founded course of action in public health, in addition to which an ethical framework could mediate the concerns of both individuals and the public. I was also interested in how questions posed by moral philosophy were of any practical use in a public health context. I became specifically interested in the ethics of planning for, and response to, pandemic influenza following a training programme in public health during my postgraduate studies. Although the training focused on spatial epidemiology and the modeling of pandemic influenza, my developing interest became primarily inclined to the ethics of PRPI in the context of sub Saharan Africa. At first my primary focus was investigating the ethics arising from antiviral resistance and new antiviral treatments of H5N1 influenza, but reviewing the literature in the context of my research problems, it became clear that there was a need to conduct research that investigated the ethics of PRPI. The threat of pandemic influenza due to H5N1 outbreak showed how easy it is for infectious diseases to spread round the world. The H5N1 problem, particularly its ethical implications, enabled me to recognize the distinction between what the anthropologist Bronislaw Malinowski (1922) describes as a ‘foreshadowed problem and [a] researchable question’.

As I amassed further information, I noticed interrelated problems associated with the ethics of planning for, and response to, pandemic influenza, particularly in the tension between population health and individual perspectives and the challenges of human rights and bioethics. I began to consider how a poorly resourced Ghana or Malawi would rectify the

problems uncovered by SARS and H5N1 in readiness for another pandemic influenza of the future, given that Ghana and Malawi's response strategies are incomplete and their health systems weak and unprepared. The slow progress towards a genuinely ethical preparedness was alarming not only relative to other African countries, but also to the fact that preparedness protocols were seemingly too vague and unlikely to be accepted by society (Ortu et al., 2008; Kotalik, 2005). Considering questions such as why the ethics of prevention is neglected in current policies, and why it is ethically problematic to choose between civil liberties and quarantine, persuaded me to undertake this research with the hope that it may improve policy debates and public health practice.

1.3.0. Thesis Outline

This thesis is divided into nine chapters (including this introductory chapter); the individual arguments presented in each chapter are related to the overarching question of ethical implications of planning for, and responding to, pandemic influenza. This introductory chapter has outlined the research problems, why it is necessary for this study to be carried out, and how I became interested in this specific thesis topic. In Chapter 2 I examine the epidemiology of influenza, and argue for the importance of its understanding prior to taking measures to prevent the disease, since epidemiological uncertainty gives rise to significant practical challenges and ethical issues. Chapter 3 has three components: firstly it provides an historical analysis of how Ghana and Malawi responded to the pandemic influenza of 1918. Secondly, it provides an analysis of influenza diffusion that allows us to understand the space-time dynamics of the disease, including patterns and characteristics of human-environment interactions in diverse locations. It is argued that pandemics must be analyzed in terms of how they start and spread, and must be understood, not as single episodes experienced by the population of individual countries, but rather as a series of related events occurring around the world. Thirdly, it is discussed how historical tensions in Ghana and Malawi may serve as a background for ethical deliberation in pandemic outbreaks.

In Chapter 4 I provide a critical review of the literature on public health ethics and bioethics, which will be used to construct a theoretical framework both for the framing of the research questions, and for the interpretation of the case study findings. The weakness and strengths of the various schools of moral philosophy that have influenced public health and bioethics will be discussed, and the argument will be made for a contextual ethics for decision-making in pandemic situations. Chapter 5 outlines the research strategy and methodology of this thesis

and discusses the rationale for employing qualitative methods (i.e. interviews) for the case studies. The methodological challenges and issues related to the sampling, recruitment, interviews and the analysis of data are also considered, as is the reliability of the findings. Chapter 6 presents accounts of how policymakers in Ghana and Malawi respectively plan for, and respond to, pandemic influenza. Particular attention is paid to the way these African countries translated their national influenza policies into actual response actions. It is argued that any moral theory applied to the problem of influenza pandemic must also examine the scope of government intervention.

In Chapter 7 I explore the nature of the ethical problems encountered during pandemic planning for, and response to, the 2009 H1N1 pandemic outbreak. The chapter employs the theoretical framework developed in Chapter 4 to understand the specific ethical issues raised. Chapter 8 discusses how empirical data enables policymakers to deal with the ethical problems they encounter in order to understand the nature of the decision-making processes and delineate ethical problems when dealing with influenza pandemic. It is argued that solving ethically difficult problems in a way that accounts for real-life situations demands an assessment and examination of individual cognitive styles and different ways of processing information.

Chapter 9 presents a conclusion to the findings. Drawing together the various strands of the argument, the chapter considers the possibility of a contextual public health ethical framework for pandemic influenza preparation and response within a public health framework. The chapter discusses how histories of pandemic influenza offer important lessons for current policy. It assesses the study's key insights and contributions to influenza preparation and response by considering the new findings and what they tell us about ethical problems in public health pandemics. I consider the extent to which the findings on decision-making styles and ethical reasoning pave the way for a future ethical framework for Ghana and Malawi. Finally, I offer a discussion on the limitations of the study, and suggest possible directions for future research in policymaking.

CHAPTER 2: EPIDEMIOLOGY OF INFLUENZA

2.1.0. Introduction

This chapter discusses the epidemiology of influenza on two interchangeable levels. On one level I discuss inter-pandemic influenza, also known as seasonal influenza⁴, and on the other, pandemic influenza. Seasonal and pandemic influenza are infectious diseases that affect the respiratory tract of humans. There is often confusion between seasonal (regular) influenza and pandemic influenza (rare). Typically, pandemic and seasonal influenza, including common colds, have striking similarities and differences. For example, seasonal influenza is more common in some seasons, with its peak of activity occurring in winter in temperate climates, while pandemic influenza is unpredictable, spontaneous, severe and rare.

The last four influenza pandemics occurred in 1918, 1957, 1968 and 2009. Seasonal influenza follows predictable seasonal patterns because it is caused by viruses that are already in circulation; pandemic influenza is unpredictable because it is caused by new influenza viruses to which the human population has little or no immunity. Unlike pandemic influenza, repeated exposure to the seasonal influenza virus helps build the immunity system in humans. In contrast, pre-existing immunity to pandemic influenza is low if not zero due to a lack of repeated exposure to the virus.

The most obvious difference concerns the level of impact of the two. For example, seasonal influenza is a self-limiting disease that will run its course and have a modest impact on society. Seasonal influenza will cause some deaths but most people survive it, while pandemic influenza is widespread, usually with a higher frequency of fatal outcomes, and it can alter patterns of daily life. Despite their different impacts, both have economic and public-health implications in terms of levels of morbidity and mortality. For example, hospitalization contributes to losses in working days due to sickness and reduction of quality of life due to secondary infections.

Although much is known about the effects of influenza (seasonal or pandemic), the disease is not generally acknowledged in Africa. Nonetheless, influenza remains an important source of

⁴ The terms seasonal influenza and inter-pandemic influenza are used interchangeably to refer to regular occurrence of flu infections every winter in the Southern or Northern hemisphere although in the tropical regions it occurs any time all year around.

economic loss worldwide. For example, the total economic loss in the US due to the burden of influenza amounts to \$87.1 billion every year (Molinari et al., 2007). Although influenza is of public health and economic importance, it is relatively underestimated as a major public health issue in developing countries. In Africa, for example, seasonal influenza or Influenza Like Illnesses (ILI) are not considered of great importance and patients would rather cough and sneeze than seek medical help. While seasonal influenza produces lower-level activity in space and time, the cumulative mortality of these regular epidemics is greater overall than that of rare pandemics. The elderly and the vulnerable sick have an increased risk of serious complications and death as a result of seasonal influenza.

Since pandemic influenza is a disease caused by a new virus, a subtype to which most of the human population has little or no immunity, this means that some healthy people may be at risk of the disease. In the past, pandemic influenza has occurred in healthy children and young adults. Because most people will have no immunity to the pandemic virus, illness rates are expected to be higher than seasonal epidemics of normal influenza.⁵ A recent comparative epidemiology study suggested that pandemic and seasonal influenza A viruses have broadly similar characteristics in terms of viral-load dynamics, severity of clinical illness, and transmissibility (Cowling et al., 2010). Even so, it should be noted that the 2009 pandemic influenza (pH1N1) A virus is antigenically unrelated to other human seasonal influenza viruses. The 2009 virus remained antigenically unchanged in May 2012, still affecting young adults (as in the 2010/11 season) but now called seasonal influenza (Mytton et al., 2012).

This chapter will chronicle relevant epidemiological observations of seasonal and pandemic influenza. I will argue that examining the epidemiology of pandemic and seasonal influenza is an important endeavour for the enduring problems of future influenzas, and also for the awareness that the epidemiology of the disease contributes to ethical reflection. Most importantly, the epidemiology of seasonal and pandemic influenza needs to be understood in order to optimize current options for prevention and treatment.

Influenza epidemiology and seasonality are important parts of the ethics of planning for, and response to, pandemic prevention and treatment strategies. Poorly designed epidemiological

⁵ <http://www.greaterkashmir.com/news/2006/Feb/23/how-safe-is-to-eat-poultry-and-poultry-products--1.asp> (Accessed: April 3, 2014).

interventions pave the way for ethical concerns. For example, the failure of countries in Africa to record basic data, such as influenza morbidity and mortality rates, generates not only inappropriate interventions, which are costly, but also affects surveillance and control programmes. Moreover, the lack of specific records to diagnose, with fair precision, influenza and other respiratory diseases with similar manifestations, represents a major obstacle to determining whether the cause of death is attributable to influenza infection or other associated factors. If these are not well-documented and informed, numerous ethical implications are likely to arise due to information bias and uncertainties about the best available evidence.

Epidemiological observations (excess mortality, morbidity, attack rates, clinical symptoms etc.) including inferential statistics that explain epidemiological events, are important and crucial for any public health decisions that inform prevention and control strategies; they are also ways of avoiding ethical problems. Pellegrino (1984) has observed that epidemiology needs moral grounding (albeit human judgement) to inform important choices for a meaningful contribution of epidemiology to begin.

2.2.0. Virology of Influenza: Antigenic Variation and Antigenic Drifts

The effects of pandemic influenza upon levels of mortality are clear, as gathered from the three major influenza pandemics of the 20th century – those of 1918, 1957 and 1968 – but what distinguishes them is of special interest to the epidemiologist. The 2009 pH1N1 influenza added new knowledge to the fast growing literature on epidemiology in terms of disease patterns, transmissibility, burdens and control measures. Since there is extensive literature on the virology of the disease, my account of this topic is highly limited. Nevertheless, scientists have managed to isolate three types of influenza virus, classified as types A, B and C. The biological, physical, and chemical composition, structure, and mode of replication are characteristics that distinguish these types of influenza.

To a lesser extent, influenza description is the same. For example, influenza A, B and C are enveloped virions that contain a negative-sense single stranded RNA genome. They all belong to the family, Orthomyxoviridae and measure 80-120nm diameter and 200-300nm

long.⁶ Influenza A and B are described as possessing two surface glycoproteins in the membrane, namely neuraminidase (NA) and haemagglutinin (HA), while influenza C virus completely lacks the part of neuraminidase activity (Stephenson and Zambon, 2002). These differences in ‘virus types’ bring about epidemiological consequences. For example, since two glycoprotein spikes, hemagglutination (HA) and neuraminidase (NA) are each coded by a different genome segment, they tend to undergo continuous antigenic variations, either because of mutation (antigenic drift) or genetic recombination (antigenic shift). It is these external variations in the antigens (HA and NA) that have now become critical in explaining the character and unrelenting waves of new virus strains that attack humans (Cliff et al., 1986).

The lack of neuraminidase activity in type C virus makes it endemic; as such it has not been associated with influenza epidemics that affect most countries. Instead, it is regarded as one of the 300 or so viruses that together make up the aetiology of the common cold. Type A and B viruses are considered major human pathogens and have been associated with major epidemics because of the haemagglutinin and neuraminidase activity. Type A virus is in theory one type of influenza virus that leads to a major epidemic. The reason for this is that type A undergoes infrequent, major changes called shifts and more frequently, minor changes called drifts.

Influenza type A viruses experience both drifts and shifts, while type B viruses only experience antigenic drifts occasionally, which means the latter is fairly stable. The public health implication of this is that only humans exposed to the virus will build up immunity, but because it is infrequent it leaves a large portion of the population susceptible to the disease. Influenza type B is a disease predominantly in children. Lack of exposure should, in theory, lead to large epidemics, since only those exposed to the disease may acquire some degree of immunity. For example, in the 2009 pH1N1 there was evidence that the pandemic attack rate in persons over 55 years was far lower than in those under 55. The suggestion, supported by evidence from serological surveys performed in the UK, is that persons over 55 had higher levels of pre-existing cross reactive antibodies and were therefore protected somewhat from the infection (HPA, 2009). This would suggest that exposure to the H1N1

⁶ <http://www.cidrap.umn.edu/infectious-disease-topics/h1n1-2009-pandemic-influenza> (Accessed: April 3, 2014).

virus that was in circulation from 1918 until 1956 may have conferred some protective immunity in the elderly. This is strongly suggestive as the previous H1N1 virus and the current 2009 pandemic virus are antigenically related.

Antigenic drift refers to small, gradual changes that occur through point mutations in the two genes that contain the genetic material to produce the main surface proteins, haemagglutinin and neuraminidase.⁷ Antigenic shift of these viruses makes the new strain of virus unrecognizable to the human immune system due to genetic reassortment. For this reason, a new influenza vaccine must be produced regularly to correspond to the ever-changing virus that leaves the population vulnerable. While RNA viruses mutate quite readily and are thought to explain drifts, sequence data indicates that mutation is an extremely unlikely explanation of antigenic shifts (Cliff et al., 1986). It is, however, often hypothesized that antigenic shifts occur in humans since sequence haemagglutinin and neuraminidase of influenza viruses in humans are the same as those found in viruses endemic in birds, thus reassortment is the likely mechanism.

It is also this antigenic variation in the nucleo-protein that provides the basis for the classification system whether the virus is type A, B, or C. The haemagglutinin (HA) activity has public health importance for immune response, since the HA segments are also found in emerging influenza viruses circulating among swine. Classification of an influenza strain according to the WHO is based on 5 categories: the antigenic type, A, B or C; the host of origin if nonhuman; the place of first isolation; the strain number; and year of isolation (Cliff et al., 1986). For example, a virus first isolated in Southeast Asia is designated A/Asian/1/57 (H2N2). In most influenza discussions, a description of a particular virus is distinguished by the antigenic character of haemagglutinin and neuraminidase, with digits representing incremental shift to new forms. In the next section, I review the spread of influenza in a population, including the general clinical manifestation of the disease.

2.3.0. Transmission and Clinical Manifestation of Influenza

Knowing how influenza is transmitted, or its clinical manifestation, can help make options available for its control and for modelling its effects. While there are two major transmission processes, person-to-person and environmental, clinical manifestations are numerous. Person-

⁷ See <http://www.cdc.gov/flu/avian/gen-info/flu-viruses.htm> (Accessed: April 3, 2014).

to-person transmission involves the virus passing from one person to another during coughing and sneezing, spreading infectious droplets of respiratory secretion which are inhaled by susceptible individuals. Environmental transmission can be direct or indirect via contaminated surfaces facilitated by animals, hard surfaces or nuclei air droplets.

An influenza attack begins when inhaled droplets of the influenza virus are established in the mucosa of the respiratory tract. The transmission rate of infection depends on various factors, including over-crowding, virus survival and transfer, condition of the environment, and level of susceptibility, e.g. immunity, age, smoking and season. For example, low humidity and low temperatures are factors that predispose virus survival and transfer, while human behaviour such as uncovered coughing and sneezing will enhance droplet emission.

The rate of transmission of influenza is difficult to establish due to various factors in the transmission processes. Nevertheless, practical methods to determine the number of secondary cases generated by a primary infectious agent during the infecting period, among susceptible people, are possible using the basic reproduction number (R_0). R_0 is a measure of transmissibility of pandemic influenza, while a more practical approach for seasonal influenza is known as reproduction number (R) which also measures secondary cases generated by primary cases but in a partially immune population. R_0 and R estimates are in the range of 1.7–5.4 for pandemics and 1.0–2.1 for inter-pandemic influenza (Simonsen et al., 2011). Four different methods, Reproduction number (R) using the early exponential-growth rate, a simple susceptible–exposed–infectious–recovered (SEIR) model, a more complex SEIR-type model that accounts for asymptomatic and hospitalized cases and a stochastic susceptible–infectious–removed (SIR) with Bayesian estimation, are used to determine the effective reproduction number at a given time (Chowell et al., 2007).

Reproduction number (R) is important in pandemic preparation as it shows policymakers the expected attack rates and reminds them of the multiple factors for disease transmission. From the perspective of control, the basic reproduction number (R_0) determines what interventions can be deployed to halt transmission, especially if the R_0 value is higher than 1. If R_0 is 0.9, eventually an outbreak dies out, if it is 1.1 it spreads slowly and if it is 2.0 the numbers double with each interval period between generations of cases. R_0 is the threshold parameter, determining whether or not there will be an epidemic. Getting the R_0 below 1 is critical for control, as is an understanding that R_0 may change over time and be different in different

settings, e.g. schools versus workplaces (as in early 2009). R_0 also determines the endemic equilibrium proportion of those susceptible in the population and determines the critical vaccination threshold.

Policymakers need to know that an attack of influenza begins once the virus is inhaled and established in the mucosa of the respiratory tract. The shortest transmission time is a day; the longest, nine days. The incubation period is a period from the receipt of the infectious material to the onset of clinical symptoms, this range from one to three days but may be as long as seven days (Cliff et al., 1986). The latent period may last up to three days. The latent period refers to the time in which the invading viruses are seemingly inactive in their course of development, without emission of an infectious material. The latent period ends once an infected person becomes infectious. Clinical illness extends beyond the infectious period but plays no critical part in the transmission period as the infected person becomes non-infectious at this stage of terminal period of attack. In epidemiological terms, the latent period is followed by the infectious period and the infectious period is terminated by the recovery of the patient or death. In infectious diseases, particularly pandemic influenza, the terms incubation and latency can be, but are not always, synonymous. The latent period is generally shorter than the incubation period. The distinctions between the two have significant relevance to pandemic influenza policy. For example, a policy on quarantine can be implemented to contain the disease at the source once the incubation period is known in terms of when an individual is discharging the infectious material to other people before clinical symptoms appear. On the other hand, it is unnecessary to quarantine individuals during their latent period which does not involve emission of any kind of infectious material. Mass quarantine can inflict significant social, psychological, and economic costs without resulting in the detection of many infected individuals (Day et al., 2005).

The epidemiological concern is the latent period: when a perfectly healthy individual may become infected with influenza yet show no signs of clinical illness, permitting them to unknowingly shed the virus. Infection or shedding of the virus usually begins at the end of the latent period and during the early infectious period. Asymptomatic infection is a well-defined feature in inter-pandemic influenza, but the occurrence of sporadic cases of influenza without links to known cases suggests that shedding of infectious viruses is possible in carriers. A serological study in a UK boarding school found subclinical infection in one third of those without symptoms (HPA, 2009). Another surveillance study of 426 persons infected

by 2009 pH1N1 virus in China showed an average duration of viral shedding spanning up to six days whether or not fever was present (Cao et al., 2009).

The clinical onset of influenza is generally marked by shivering, coughing, pain in the muscles of the limbs and back and sweating. The common clinical symptoms of the 2009 pandemic influenza were characterized by typical influenza-like illnesses with fever, cough, sore throat and gastrointestinal symptoms such as nausea, vomiting and diarrhoea.⁸ In the 1918 pandemic influenza according to the UK MoH report (1920), symptoms such as coryza were occasionally present, but nasal discharge was never very marked, while sneezing was uncommon. Photophobia was occasionally noted, while aches and pains in the back and limbs were always present as initial symptoms; severe headaches were rare. Tonsillitis and pharyngitis were present to some extent in virtually every case.

Given a better understanding of transmission dynamics and clinical manifestation, it is hoped that policymakers will be able to organize cost-effective strategies, such as voluntary quarantine, and strengthen surveillance, reversing the epidemiological risk trends. Policymakers with an understanding of influenza will be able to question or debate whether contact tracing is particularly valuable when there is evidence that asymptomatic individuals do transmit the disease effectively (HPA, 2009). Contrary, a recent systematic review to determine whether influenza transmission occurs from asymptomatic infection or prior to symptom onset suggests that there is limited evidence concerning the role of asymptomatic or presymptomatic influenza-infected individuals in disease transmission (Patrozou and Mermel, 2009). If policymakers do not base their decision-making processes on empirical transmissibility evidence, they are likely to allow unethical practices by quarantining asymptomatic individuals who may not be infectious to others. In an attempt to understand transmission of influenza in more detail, could research studies allow volunteers to be deliberately infected with a virus so we are better prepared? Likewise ethical issues are likely to occur during preparations for a pandemic event; if for example, authorities utilize or assign misleading values of basic reproductive numbers (R_0) to the disease and accordingly apply it to intervene in the early stages of the outbreak. Although R_0 is used to gauge the magnitude of the risk of an epidemic as discussed earlier, it is normally calculated after an outbreak has

⁸ <http://www.cidrap.umn.edu/infectious-disease-topics/h1n1-2009-pandemic-influenza> (Accessed: April 3, 2014).

occurred. As such assigning R_0 values to an outbreak in real time is a difficult process, yet to this end R_0 threshold may or may not give the true value of an outbreak. R_0 is of critical importance to PRPI which lies in understanding the pandemic outbreak and its potential risks. It is not being suggested here that authorities should not attempt to assign or calculate a specific value of R_0 to predict the dynamics of an influenza outbreak. Rather, if they do so, they should be aware that influenza can manifest itself differently under similar geographical and/or demographic circumstances. There is evidence that a change in population-dependent parameters may affect the value of R_0 , even though the disease parameters stay constant (Johnson and Mikler, 2011). In the next section, an epidemiological analysis is furthered to understand why viruses peak in the winter months and what happens in summer.

2.4.0. Epidemiology of Seasonal (Inter-pandemic) Influenza

In the northern hemisphere, seasonal influenza outbreaks occur between November and March, while in the southern hemisphere seasonal influenza occurs between April and September. Seasonal influenza activity in the tropical region is not strictly seasonal as it occurs throughout the year, with bi-seasonal peaks in summer and winter. Most tropical countries, including Ghana and Malawi, report seasonal influenza at any time of the year, even during rainy seasons. There is a high influenza activity throughout the year but two to three outbreaks/influenza peaks a year is a more common pattern rather than a constant level of circulation, as is the case in Singapore and Hong Kong (Simonsen et al., 2011; Viboud et al., 2006).

The climate difference between winter and summer has implications for public health in terms of periodicity and influenza vaccine production. For example, cyclic trends of influenza occurring throughout the year will not only make it difficult to survey and monitor, but also make it impossible to keep track of its impacts and consequent epidemiological behaviour. Periodicity of influenza observed without a distinct pattern also presents difficult challenges in the understanding of the true nature of viruses that could cause the next pandemic. Careful understanding of seasonal influenza, through continuous collection of surveillance and monitoring data of influenza activity taking place at any time of the year, will assist policymakers in preparing for rare pandemics, while giving us insight into the convergence of ethics and health promotion as far as the next pandemic is concerned.

Studies on the seasonality of inter-pandemic influenza are rare in the tropical region of Africa, particularly in Ghana and Malawi. Due to insufficient knowledge about the epidemiology of inter-pandemic influenza in the tropics, cool and dry conditions are perceived as necessary and possibly a sufficient facilitator for influenza transmission (Tamerius et al., 2011). Emerging studies from Asia, on the other hand, have increasingly documented new insights. For example, we now know that an increase in influenza activity and transmission may not only be related to geographical conditions, but also facilitated by social patterns, such as school activities.

Why influenza peaks in cold months is unknown, but it certainly involves geographical and environmental factors, such as overcrowding and low temperatures. The climate difference between winter and summer gives the characteristic oscillation of influenza activity that takes place between the northern and southern hemispheres. Lagace-Wiens et al. (2010) have suggested that oscillation of influenza activity may be escalated by fomites that serve as a secondary mode of transmission, and the higher intensity of sterilizing ultraviolet light in the summer months may serve to reduce the environmental burden of the viral disease. Hope-Simpson (1981) proposed that a 'seasonal stimulus' intimately associated with solar radiation can explain the remarkable seasonality of epidemic influenza.

Higher serum vitamin D levels and other immunomodulating factors associated with ultraviolet light levels have also been suggested as factors influencing cyclic trends of influenza (Lagace-Wiens et al., 2010). Cannell et al. (2008) have highlighted nine epidemiological conundrums to explain cyclic trends. In their study they conclude that the nine epidemiological conundrums are best explained by vitamin D's seasonal and population effects on innate immunity.

Since influenza viruses constantly change, adapting to geography and immunity, it is important to continuously study the disease. Global health experts believe that if seasonal influenza is not monitored or surveyed, it could be the spawning ground for new potent strains of the influenza virus. Identifying any new strain is the best way to avoid another pandemic in the future. Occurrence of seasonal influenza separated by a six-month period of influenza activity between the hemispheres can help vaccine production, assuming the novel influenza virus that appears in early autumn in the northern hemisphere is relatively similar to that which appears in winter in the southern hemisphere. It has been observed in many years

that circulating viruses in both northern and southern hemispheres may be antigenically identical. Technically, what this implies is that vaccines produced from viruses in the southern hemisphere could be made available in the northern hemisphere to offer partial protection against circulating viruses and vice versa. In this kind of situation, the WHO make recommendations on seasonal influenza vaccine composition for the northern and southern hemispheres in February and September each year after a technical consultation which includes, but is not limited to, members of the Global Influenza Surveillance Network (GISN) (Lavanchy, 2001).

Two vaccines are produced every year; one for the Northern, and one for the Southern Hemisphere.⁹ However, it is not possible to obtain an effective influenza vaccine that is well matched to the main influenza viruses in circulation if some countries, particularly poorly resourced countries in the tropics, do not contribute to the global surveillance data. Compounding this problem is the emergence of secondary bacterial infections due to viral infections. The increased use of antibiotic therapy to prevent secondary bacterial infections is worrisome. For example, increasing the use of antibiotics has a significant impact on health-care costs and the emergence of antimicrobial resistance (Bertino, 2002).

Since some influenza viruses develop resistance to the antiviral medicines, illness and complications may be more likely, especially in high risk individuals, because their effectiveness to treat may be limited. Antiviral medications are most effective when given early in the infection, but when an H275Y mutation arises in influenza A in the presence of the N1 moiety it renders the virus fully resistant to oseltamivir, also known as Tamiflu. The H275Y mutation does not affect the effectiveness of Relenza, also known as zanamivir, another antiviral medication. Thus, it is necessary to have a mixed stockpile of oseltamivir and zanamivir because the latter still works. Even so, routine prescription of antiviral medicines can raise significant moral problems. For example, authorities may assume that oseltamivir works when in fact it is ineffective against any influenza virus that has undergone H275Y mutation. It is thus important for authorities to monitor genetic changes in viruses to determine antiviral resistance. In public health practice, there is no room for errors. The failure by authorities to recognise and act appropriately in the way that is best for the patient is in itself a cause for ethical concern. This illustrates the

⁹ http://www.who.int/ith/vaccines/si_iAh1n1/en/ (Accessed: June 06, 2014).

contextuality of the emerging ethical problems in relation to transgression proposed by Wark and Krebs (1996). As will be shown in Chapter 8, the present study confirms the significance of similar perceived ethical concerns arising from public health practice. Ethical passivity and inattention may arise if authorities are not acquainted with current knowledge of the disease, including the necessary tools to enable them to act appropriately. Again, poor prescription of antibiotic drugs to treat secondary infections of influenza without laboratory diagnosis could lead to drug resistance problems. In addition, vaccination is not the most effective strategy to deal with influenza because it is affected by timing and resources. There is evidence to show that once vaccines are produced they may take a long time to reach poor countries and the lack of resources within the health system in poor countries may facilitate slow progress towards implementing the vaccination programmes. In addition, there are vaccine safety concerns following the administration of the A(H1N1)pdm09 vaccine. There is strong evidence suggesting a safety signal of increased narcolepsy diagnoses following the start of the pandemic vaccination campaign in Europe (Wijnans et al., 2013).

2.5.0. Inter-Pandemic versus Pandemic Influenza

Frequent occurrence of seasonal influenza subtypes explains the epidemiological features, such as seasonality of the disease; the precise mechanism of emergence of the new variants; determining who is susceptible to the disease or who is at risk, what are available countermeasures and how effective they are. I would therefore argue that preparing for seasonal influenza is a vital tenet to the main features of future preparedness for, and response to, pandemic influenza. A study by Carcione et al. (2010) found that pandemic and seasonal influenza infections are substantially similar in terms of patients' symptoms, risk factors, and the proportion of patients hospitalized. To a lesser extent, groups at risk of complications from seasonal influenza were similarly at increased risk of complications from the 2009 pH1N1 influenza. 2009 pH1N1 predominantly affected young adults, with few cases among the elderly, while seasonal influenza affects individuals of all ages but complications are more common in those younger than 5 years or frail adults over 65. Severe cases among children who contracted the pH1N1 pandemic were mostly attributable to secondary bacterial infections, predominantly in children with co-morbidities, whereas adults seemed to have primary viral pneumonia and acute respiratory distress syndrome (ARDS), often without a pre-existing illness (Rothberg and Haessler, 2010). Myles et al. (2012) have

found demographic, ethnic and clinical differences between patients admitted with pandemic H1N1 infection and those hospitalised during seasonal influenza activity.

Even with these marked differences, studies conducted during both pandemic and inter-pandemic periods demonstrate that age specific attack rates are often highest among school children (Cox and Subbarao, 2000). Whilst seasonal and pandemic influenza can be managed to an extent by vaccination, increasing surveillance and improving basic sanitation such as ventilation and personal hygiene, wearing masks, and school closure, all assist in reducing transmission. Although some measures such as restricting travel may reduce transmission, they may be unlikely to have a significant effect on influenza since not all measures are legitimate even when evidence justifies their use (Gadd, 2010).

While seasonal influenza occurs frequently, adding new knowledge to perplexing features, what is notable is how poorly prepared some countries still are, particularly Ghana and Malawi. Vaccination rates for seasonal influenza among the high risk population in Africa remain close to zero. Not only does this reveal the existing problems within strategies of vaccine distribution, but also that the causal connection between pandemic and inter-pandemic influenza is often downplayed.

Ghana and Malawi alike do not have management plans that consider high risk groups such as HIV/AIDS and chronic patients. The fact that most of Africa is vulnerable should remind us of the importance of redoubling our efforts to protect patients, not only for pandemics but for a predictable event every winter (Choi et al., 2011). Indeed, what is observed in inter-pandemic influenza is usually what would be observed during a pandemic. It is therefore with this knowledge of the disease and the effectiveness of countermeasures that most decisions should be made, and upon which difficult moral questions should depend.

The next section brings me to a discussion of susceptibility, hospitalisation and attack rates of influenza which are equally important to understand. I will also consider how a policymaker would deal with an influenza outbreak that has a high clinical attack rate and how a policymaker would deal with a high fatality influenza problem. I will also discuss the burden of pandemic and seasonal influenza.

2.6.0. Susceptibility, Hospitalization and Attack Rates of Influenza

2.6.1. Pandemic Influenza

Nguyen-Van-Tam and Hampson (2003) cite the work of Parsons (1893): that clinical attack rates for pandemic influenza occurring in 1889-1892 was estimated to be 25-50%. The attack rate of the 1918 pandemic influenza is believed to have been much higher, particularly among young adults around the world (Potter, 2001; Pyle and Patterson, 1984). The overall global clinical attack rates for the 1918 influenza are estimated to be 20-25% of the population (Potter, 2001).

In Africa, attack rates for 1918 varied between countries. In South Africa, where records are relatively good (Patterson, 1983) the influenza attack rate was around 22-42% (Phillips, 1988). During the pandemic of 1957, attack rates were relatively similar to 1918. It is believed that the 1957 Asian pandemic affected some 40-50% of people, of which 25-30% experienced clinical disease (Potter, 1998). The attack rate of the 1968 Hong Kong pandemic influenza was 40%, occurring among children aged 10-14 years (Cox and Subbarao, 2000). In Africa, Ortiz et al. (2011) report attack rates for symptomatic infection during the 1968 pandemic influenza to have been around 20%. The influenza outbreak of 1977 has never been accepted as a pandemic. Nevertheless, disease attack rates of > 50% were observed among children and young adults of < 20 years (Cox and Subbarao, 2000).

Globally, the overall case-fatality rate (i.e. the number of infected people who died) for the 2009 pH1N1 influenza was less than 0.5%, and the wide range of estimates from 0.0004% to 1.47% (Writing Committee of the WHO Consultation on Clinical Aspects of Pandemic (H1N1) 2009 Influenza et al., 2010). Early investigation notably overestimated or underestimated the true burden of influenza (Reed et al., 2009). In 2009 pH1N1 clinical illness most affected younger rather than older age groups. Children < 1 year, 1-4 years and 5-14 years had the highest medical consultation rate for influenza-like illness (HPA, 2009). The overall rate of hospitalization around the world ranged from 1-10%. Overall hospitalization in England was between 1.3% and 2.5% (HPA, 2009). On average 10-25% of hospitalized patients around the world were admitted into intensive care units (ICUs). Case hospitalization ratios were considerably higher for infants < 1 year and adults > 65 years (HPA, 2009; Nguyen- Van-Tam et al., 2010). Based on a report by the WHO Strategic Advisory Group of Experts (SAGE) on immunization, fatal outcome was recorded in 2-9% of

hospitalized patients.¹⁰ Pregnant women had a 10 times greater risk of ICU admission than the general population. 7-10% of all hospitalized cases were women in their second or third trimester of pregnancy. Severe outcomes occurred when underlying medical conditions were present, such as chronic lung diseases and asthma (Nguyen-Van-Tam et al., 2010).

No clinical attack rates or case-fatality data is available for Malawi and Ghana or various other sub Saharan countries. The lack of data on gross attack rates and Case Fatality Rates (CFR) has serious implications for planning for pandemic preparedness. For example, since planners cannot ascertain the volume of hospitalised or fatal cases, mobilisation of the health services planning to provide necessary care and treatment to infected individuals will be severely affected.

2.6.2. Seasonal Influenza

The attack rates for seasonal influenza are highest among those under 1 year of age (20-30%) while for those aged 1-9 years attack rates are between 15% and 45%, and those over 40 years between 12% and 20%. The attack rates for young adults aged 20-39 is 16-21%. An overall attack rate of between 10 and 20% has been observed among the general population (Cox and Subbarao, 2000). Attack rates in susceptible populations, such as schoolchildren or those in nursing homes have been found to be as high as 40-50% (Cox and Subbarao, 2000).

In Africa, seasonality is strongest away from the equator and in southern parts. Clinical influenza attack rates range from 34% to 67% and rate of hospitalization varies, with children admitted to hospital with Acute Respiratory Infection (ARI), from which influenza virus is identified, varying from 0%-15.6% (Gessner et al., 2011). An unpublished study in Ghana has reported about a 19.6% attack rate among the population aged 2 months to 74 years. Epidemiological data in Ghana and Malawi is scarce. The absence of information about the impact of influenza (attack rates, susceptibility and hospitalization) in sub Saharan populations, particularly Ghana and Malawi, affects how vaccination programmes should be implemented. Countries that use seasonal influenza vaccines have adopted a policy of targeting influenza vaccination efforts towards those at 'high risk' of severe outcomes, including those 65 years and older, persons with certain chronic diseases and their close contacts (Simonsen et al., 2011).

¹⁰ <http://www.who.int/wer/2009/wer8449.pdf> (Accessed: April 3, 2014).

Attack rate figures can also make important contributions to estimating the burden of infection and determining the vulnerable part of the population. In the absence of clinical attack rates and hospitalization data, for either seasonal or pandemic influenza, how do policymakers forge their response plans in terms of who they should allocate the limited material resources to? How do policymakers approximate figures of those expected to become ill from pandemic influenza when data on seasonal influenza is unknown?

It is of interest here to investigate how Ghana and Malawi are strengthening their laboratory and epidemiological reporting to ensure consistent high quality standards long term. The next section looks at the surveillance methods in determining the burden of pandemic and inter-pandemic influenza.

2.7.0. Methods of Determining Excess Mortality and Burden of Pandemic and Inter-pandemic Influenza

While seasonal influenza epidemics are geographically restricted and produce lower mortality than pandemics, this statistic was seriously challenged by the 2009 pandemic. Even before that, the cumulative morbidity and mortality of seasonal influenza probably exceeded that of rather rare pandemics. The combined effects of the pandemics in 1957 and 1968 in the USA, accounted for about 98,000 excess deaths, compared to seasonal influenza epidemics between 1957 and 1968, excluding the pandemic years, in which the total excess deaths was over twice the number of excess deaths during 1957/68 (Nguyen-Van-Tam, 2010). Given the importance of seasonal influenza on mortality and morbidity, Nguyen-Van-Tam reiterates that seasonal influenza should not be underestimated as a major public health issue (Nguyen-Van-Tam, 2010).

Surveillance of seasonal or influenza-like illness data is important in monitoring influenza cases, but sources of such information, particularly in Africa, are meagre. The quantifying of influenza in sub Saharan Africa is generally more difficult than with other infectious diseases which have clear-cut clinical signs. Influenza illnesses, especially mild ones, go unreported and sometimes may warrant no medical attention although influenza virus infections can lead to fatal complications and death associated with pre-existing medical conditions such as cardiovascular diseases (Finelli and Chaves, 2011). In cases of death associated with pre-existing medical conditions, influenza would not be typically identified as the primary cause

of death. As a result of difficulties in determining the mortality attributable to influenza, mathematical models have been developed to sort out death categories. Excess mortality for example, was developed to define the number of deaths observed during an epidemic of influenza-like illness in excess of the number expected (Glezen and Couch, 1989). The approach was first pioneered and used in 1847 by William Farr to characterize an influenza epidemic in London and has been redeveloped and extensively used throughout the twentieth century (Simonsen et al., 2011).

Epidemiologists in seasonal climates determine excess deaths attributable to influenza, including influenza burden on hospitalization (during winter months), by use of Serfling-like cyclical regression models and Arima models (Simonsen et al., 2011). These models are not applicable in tropical climates where seasonality is all year round because these methods require cyclic seasonal patterns of viral activity interrupted by influenza-free periods.

In tropical climates where there is less seasonality, viral surveillance data with the integration of hospitalization or death indicators is strongly encouraged for calculating excess mortality. Surveillance of morbidity data using claims of sickness, partly from combined laboratory and clinical investigations, are valuable indicators of a true occurrence of influenza against respiratory virus infections, but this idea is difficult to apply to sub Saharan Africa because the indirect measures and sources of information required are not readily available.

2.8.0. Excess Mortality in Pandemic and Inter-pandemic Influenza

Excess mortality of influenza epidemics was developed in 1847 prior to the discovery of the etiology and virologic surveillance of influenza in 1933 (Patterson, 1983). This raises debate as to whether the number of excess deaths observed before 1933, particularly during the 1889 and 1918 pandemics, were a true reflection. It further raises questions on how Wade Hampton Frost, a pioneer epidemiologist of the US Public Health Service, defined influenza when tabulating excess mortality that he had observed and reported in 1918/20 (Frost, 1919). Mortality related to influenza for three quarters of the US was estimated to be > 675,000 excess deaths for the pandemic period spanning September 1918 through to February 1920 (Glezen and Couch, 1989).

Johnson and Mueller suggest that influenza deaths in Africa mounted to about 2.375 million in the space of a few months, while another study by Jordan estimates influenza deaths at

1.35 million, roughly one percent of the total population of Africa in 1918 (Jordan, 1927). The mortality statistics for Nyasaland (Malawi), judging from the records reaching the chief medical officer, indicate that about 85,000 excess deaths occurred among both Europeans and native populations. In the Gold Coast (Ghana) about 88,500 excess deaths have been attributed to the pandemic (Patterson and Pyle, 1991). Globally, it is estimated that about 50-100 million people died due to influenza in 1918 (Johnson and Mueller, 2002). In the next chapter I will discuss the Mortality of Influenza in Africa and its credibility.

In 1957 and 1968, pandemic influenza caused about some 2-3 million and 1 million excess deaths respectively (Nicholson et al., 2003; Potter, 1998). Mortality records on the 1957 and 1968 pandemic influenza in Ghana and Malawi are not readily available. In the 2009 pH1N1, African countries officially reported 168 deaths attributable to influenza. Ghana reported only one death and Malawi none. These extremely low figures could suggest underreporting in most parts of Africa. As of 1 August 2010, the World Health Organization had reported over 18,449 deaths worldwide from more than 214 countries and overseas territories or communities.¹¹

Compared with pandemic influenza, inter-pandemic influenza annual excess mortality of influenza is more difficult to estimate. However, the level of mortality burden is usually less severe in comparison to pandemic influenza, although both have similar characteristics such as viral shedding, secondary infections, and transmissibility patterns. Globally, inter-pandemic influenza related deaths are estimated between 250,000 to 500,000 each year and related cases of severe illness about three to five million each year.¹² In the US, about 41,400 people died each year between 1979 and 2001 from inter-pandemic influenza (Dushoff, 2006).

The age-specific risk of seasonal influenza-related mortality is highest in individuals over 65 years. Deaths of about 90% occur among those over 65, while 75% of deaths occur among those aged over 70 years. About 55% of deaths occur among those over 80 years old. In contrast to inter-pandemic influenza, pandemic influenza age-specific mortality varies considerably and will depend on the type of influenza strain, severity and geography. For

¹¹ http://www.who.int/csr/don/2010_08_06/en/index.html (Accessed: April 3, 2014).

¹² <http://www.who.int/mediacentre/factsheets/fs211/en/> (Accessed: May 16, 2014).

example, in 1918, the highest mortality age group ranged between 21 and 45 years, while the 1889 influenza killed infants and the elderly.

The 1957-58 outbreaks seem to have created havoc among the 5-10 and 40-60 age groups, with the elderly being the most severely affected. The 2009 pandemic affected mostly young adults under 25 years of age (Vaillant, 2009, Chowell et al., 2011). Just as with other epidemiological indicators, knowledge about influenza excess mortality can have important public health practical implications in planning hospitals' needs or deciding antiviral or vaccine interventions.

2.9.0. Source of Surveillance Data: Global and National Surveillance

Surveillance of seasonal or influenza-like illness data is important in monitoring influenza cases, but sources of such information, particularly in Africa, are inadequate. The quantifying of influenza in sub Saharan Africa is generally more difficult than for other infectious diseases with clear-cut clinical signs. Influenza illnesses, especially mild ones, may warrant no medical attention and many cases in Africa are unreported; this is because clinics are out of reach, or patients simply cannot afford money for health services. In addition, the lack of laboratories in Africa to help diagnose the disease escalates the problem of underreporting of influenza cases even further.

Isolation and identification of the influenza viruses solely depend on epidemiological research and laboratories, but well-equipped research experts and equipment are critically short. For example, use of national diagnostic algorithms supported by real-time RT-PCR equipment and reagents can be an effective way of monitoring virus circulation, especially given the greatly increased sensitivity of real-time RT-PCR detection compared to earlier technologies, such as the direct fluorescence antibody (DFA) test (WHO, 2010a).

Detecting viruses this way, including filing weekly reports, does prove to be very expensive in resource poor countries however. Even in Europe, this process is so expensive that only a few 'virus isolations' can be conducted on a small fraction of the population. Other methods of updating information data on influenza are available. For example, influenza data can be obtained from mortality and morbidity records from sources such as primary health centres (clinics and hospitals). Although these records must reflect the prevalence of influenza in the community, the association is by no means a direct one. Some deaths may be attributed to

influenza while others are coded to other causes and complications. For these reasons, excess mortality, as explained before, is used to distinguish mortality characterized by death caused by influenza and as a result of secondary complications.

The drawback of the excess mortality method is that it may not be a sensitive measure of predicting the baseline of influenza. Establishing baseline data requires adequate and timely virologic surveillance information on the course of epidemics in order to accurately represent the occurrence of non influenza deaths in the absence of significant influenza virus activity (Glezen, 1996).

Alternatively, morbidity data collected from reports of sickness and combined laboratory and clinical investigations have been used as valuable indicators of the occurrence of influenza as opposed to respiratory virus infections. This inquiry is done by indirect measures and includes sickness benefit claims recorded in national insurance returns, increased notification reports from general practitioner consultations, increased school absenteeism, and increased use of hospital resources (Nguyen-Van-Tam, 1998). It is important to note that in Africa such information may be unavailable due to weak health services and the non-existence of national insurance schemes. Similarly, a telephone triage (TT), internet and social media early warning system has been proposed for monitoring influenza related activities; in Africa, particularly Malawi and Ghana, very few people have access to telephones and internet though. The spread of mobile phones is limited to urban areas but a large population lives in rural areas.

While the role of a global surveillance system of influenza is to isolate and identify as rapidly as possible any new influenza strains and collate this information for the production of a vaccine, there are undoubted general difficulties in Africa, not only in countries that give a partial and incomplete monitoring account of the virus, but also those that create a blackout of the early warning of the next pandemic on a global perspective. In fact, to establish an accurate cross-section of the distribution of influenza at a global scale requires, ideally, data from all countries of all continents.

Europe has come to be known as the best coordinated region in the world as far as a surveillance system is concerned, but even among these countries, returning morbidity and mortality data on influenza to the WHO has always been underreported, creating broken

threads in space-time data. Global surveillance overemphasizes viral culture and isolation because of vaccine production. However, there are other types of surveillance systems for influenza that can provide an indication of the disease activity in the human population including burden of the pandemic, pyramid of severity, spread of disease, and risk factor determination. Surveillance approaches in animal population involve routine counting of birds and reporting all dead birds to relevant officials. The purpose of monitoring birds is to provide better estimates of the baseline risk associated to AI virus infections and establish a more sensitive indicator of the virus activity. Surveillance in animals, and particularly birds, ought to be emphasized to reduce the risk of transmission of influenza to humans as in the case of avian influenza. The purpose of influenza surveillance is to send early signals of an impending influenza activity in the human and animal population, and provide information for treatment, prevention and control of influenza. It is also important to note that most surveillance types, including contact tracing, involve gathering personal data and reporting such cases to relevant authorities. For this reason, individual privacy may be restricted by the State if using such personal data or suspending individual rights are used legitimately to intervene or manage the influenza outbreak.

2.10.0. Control Strategies: Principal Countermeasures

Having offered a critical review of the epidemiology of influenza in terms of excess morbidity and mortality, epidemic timing, seasonality, transmissibility and antigenic variation, susceptibility and attack rates, the actual contribution of these epidemiological observations already provide key information for influenza prevention and control. For example, understanding influenza transmission from avian species-to-human or person-to-person informs countermeasures such as observing high standards of hygiene, wearing masks and avoiding overcrowded or infected places.

During a pandemic period, the WHO recommends that if a national returns from another country which is affected by the pandemic virus, they should be advised to stay at home for 7 days to monitor their health condition. This advice is given by many countries to their citizens and corresponds to the incubation period of 1-4 days, and the syndrome usually lasting 3-7 days. This advice assumes the home country is not yet affected by the pandemic virus. The advice also assumes returning individuals have a high risk of having been infected due to likely exposure to the virus whilst abroad. Voluntary isolation is a desirable public

health measure but is more controversial (Personal Communication¹³). Mass Outbreak control strategies recommended by public health institutions include quarantine, contact tracing, prohibiting children from visits to hospitals, encouraging the use of Personal Protective Equipment (PPE), use of chemoprophylaxis, mass treatment and prophylaxis with antiviral drugs.

Vaccination is not a primary intervention strategy in pandemic influenza but it is an essential public health intervention during a pandemic and the most appropriate intervention that can be used to prevent and mitigate influenza if the vaccines are effective and produced on time.¹⁴ The role of pandemic vaccine is to minimize clinical illnesses and deaths during a pandemic. It has always been necessary to manage a pandemic for some months with no vaccines, thus the use and combination of other approaches are essential. During the pandemic of 2009, the global response involved the production and distribution of 900 million of doses of pandemic influenza vaccines, a step suggesting pandemic vaccines can protect people from the disease. However, the lessons from 2009 instead challenge the accepted wisdom that vaccines can effectively prevent influenza during a pandemic. The lessons following the 2009 pandemic influenza show that vaccines are unaffordable and often do not arrive on time even if you can afford to push your way to the front of the queue. There are also challenges related to the development of the vaccine. Due to the constant mutation of the virus responsible, it is difficult to develop an up-to-date vaccine against an unknown virus. Understanding the virology of the disease, particularly the infectivity patterns, helps scientists to build an appropriate vaccine. The ability of the influenza virus to shift and drift means the most optimistic benefits of protection cannot be guaranteed among the population because vaccines have to change each year. Since influenza viruses change over time, immunity conferred in one season will not reliably prevent infection by an antigenically drifted strain, therefore annual immunization is recommended (NACI, 2010). Although

¹³ Prof. Elaine Gadd and Ian Shaw argue that voluntary isolation is only reasonable in a pandemic period and if that country is free from the pandemic virus. The WHO advice is impractical, unrealistic and arguably unreasonable if the country is already infected. This advice is also useless if applied to inter-pandemic influenza. Gadd and Shaw cite an example where a UK national visiting France during the winter flu season returned home and had to stay at home for 7 days- if this was to happen it could inflict significant social, psychological, and economic costs especially if the advice fails to yield the intended result such as the detection of infected individuals.

¹⁴ <http://www.phac-aspc.gc.ca/cpip-pclcpi/ann-b-eng.php> (Accessed: April 3, 2014) .

effective vaccines will be available eventually, they will take 4-6 months to produce (virus isolation, identification, clinical trials) and distribute.

Vaccine safety for mass immunization has always been a societal concern despite all the vaccine checks and clinical trials. Until now, it has not been empirically supported that the vaccine is 100% effective in preventing clinical cases of influenza, but this may not matter if herd immunity levels are achieved. A systematic review of 20 randomized trials of the effects of the vaccine in healthy adults shows that inactivated parenteral vaccines have an efficacy of 68% (95% confidence interval [CI] 49%-79%) in reducing virologically confirmed cases, but only of 24% (95% CI 14%-33%) in reducing clinical (ILI) cases (Demicheli, 2001).

More recent clinical studies of the 2009 H1N1 monovalent vaccines have observed response rates of 19-92% among children aged 6 to 35 months, while children aged 3 to 9 and young adults 9 to 18 years of age achieved the protective antibodies in 44%-93% and 81% respectively (Nolan et al., 2010). In another study in Taiwan, vaccination given 3 weeks after the second dose induced protective antibodies in 89% of all age-groups (Lu et al., 2010).

While vaccines provide good protection against influenza strains and significantly reduce time off work, it is quite important to be aware that elevated risk and adverse effects may have public health importance. Vaccines are not a primary strategy to deal with pandemic influenza because they do not arrive on time. Vaccines remain to be used against seasonal influenza among countries that are able to afford them. Antiviral drugs are another option that has demonstrated an important role in the control and prevention of influenza, especially if used within 48 hours of symptom onset. Unlike amantadine and rimantadine, which are only effective against influenza A, the new neuraminidase inhibitors, zanamivir and oseltamivir, have been developed for influenza types A and B. Because of the high cost involved with these pharmaceuticals, social distancing measures, such as quarantine and closing schools, are also important strategies, arguably neglected in current debates.

Until recently, a lot of research on household surveys has indicated that closing schools may be effective in reducing attack rates (Glass and Barnes, 2007; Heymann et al., 2009). In the past, closures of schools, isolation and quarantine were successfully used to contain influenza. However, there are still concerns that these methods may not be realistic approaches in real pandemics because of the complexity of the transport network, trade and

liberal societies today, including uncertainties regarding who to quarantine when shedding of the virus that infects others takes place in asymptomatic individuals. Not only is quarantine difficult to implement and often ineffective on a large scale, it also has a historical reputation of discrimination.

Given these challenges, pandemic experts in Africa will have to rely heavily on both new and old experiences of pandemic influenza outbreaks to prepare for, and respond to, probable influenza threats. Lessons can be learned from the ongoing lack of understanding of the disease and early months of the pandemic when vaccines are unavailable, stages which necessitate other preventive measures. Even if vaccines become available, they will probably fall well short of the desired production target since vaccine production is very expensive and only a few African countries will be able to afford limited doses for their citizens, while others will rely on donations. The cost of 1 injectable inactivated influenza vaccine is between \$7 and \$10. Furthermore the current treatment of high-risk individuals with antivirals has only proven to be of benefit in the first 48 hours after onset of symptoms and thus access issues would be considerable in much of Africa.

In these situations, the only measures of intervention available for poor countries, but crucial for rapid response, will mostly be non-pharmacological interventions built around a stronger health system. In addition, although influenza viruses are not known to be transmissible to people through eating processed pork or other food products derived from pigs, the WHO and FAO advise that pork meat should be cooked thoroughly to inactivate any viruses potentially present, and hygienic practices maintained when handling it (World Organisation for Animal Health, 2009). This advice relates specifically to the 2009 swine influenza pandemic and may become irrelevant if another pandemic arises from a virus emerging from a different species such as birds. Would there be any more logic in killing a load of chickens or ducks except in South East Asia where they may contribute to spreading the infection? In Egypt in early 2009, the state instructed the slaughter of all pigs. This was regarded as ridiculous and ineffective by international observers. Some argued it was a Muslim government persecuting Christians who make up the majority of pig farmers in Egypt.

Pandemic H1N1 2009 virus has recently been discovered to affect swine and poultry. A study by Pasma and Joseph (2010) suggests that culling practices or slaughter of sick animals is not necessary since infected animals recover and do not pose risk to humans. Follow-up

investigations on these observations are necessary, especially in the context of Africa since these few studies do not provide adequate evidence. Most importantly, basic research is greatly needed to evaluate and perform drug sensitivity on available viral isolates to determine potential utility of all available antiviral agents. It is also necessary to report new epidemiological patterns and characteristics to the WHO. The administration of antiviral treatment, if available, should immediately be given to patients. Drug intervention will not stop the full blown pandemic but will surely reduce the severity and surge on hospitals, assuming stockpiles of these drugs are sustained.

Constant surveillance through the collection of epidemiological data for early detection of epidemics and identification of virus variants is an important control measure. However, this requires global organization and financial support to achieve a tight and effective global surveillance network. Contingency arrangements can be initiated during the inter-pandemic period. These initiatives can include strengthening surveillance, improving vaccine coverage, and antiviral public health interventions to reduce spread and improve communication and influenza awareness.

2.11.0. Conclusion

In this chapter I have outlined the epidemiology of influenza, both inter-pandemic and pandemic, in terms of epidemiological observations. I have further considered their likely epidemiological contributions in the context of policy and ethics. Although epidemiologists have made important advances in the field, a study of influenza still reveals many paradoxes. For instance, for more than a decade the world braced itself for an avian H5N1 pandemic outbreak emerging from Asia (Simonsen et al., 2011). Preparation for this pandemic was very much focused on the surveillance of wild and domestic birds, while keeping a grip on the most important geographic sources of the disease in Asia. Unexpectedly, the pandemic H1N1 virus emerged in Mexico, not only undermining the predicted possible source of pandemic in East and Southeast Asia (Nguyen-Van-Tam and Sellwood, 2007), but also emerging from swine-origin H1N1 viruses. Although we now know the impacts of influenza in terms of mortality, we still do not know about the direct indices to measure influenza deaths.

Indirect indices, such as excess mortality and morbidity and hospitalization, measure the impact of the disease. Measuring a sudden increase in illness or death from complications of influenza has not only presented difficulties but also remains a challenge considering that

there is a signature age shift to typical pandemic influenza. These sharp differences in age specific attack rates, especially between seasonal and pandemic influenza, also remain public health concerns despite the similarities in their epidemiology. A related difficulty, especially in sub Saharan Africa, is the level of surveillance data and its quality. Surveillance data in terms of recording of influenza mortality and morbidity is patchy, rendering difficulties in the rapid assessment and forecasting necessary to intervene. Data on the nature of influenza in Africa, such as methods of transmission, seasonality, age specific attack rates and other control measures to be employed, are all important. Nevertheless, very little is verified in the context of sub Saharan Africa.

While decision makers recommend immunization with vaccines targeting certain age groups, the actual perceived benefits will depend on whether vaccines are effective and administered on time. The design of the vaccines will be depend on the epidemiological findings and targeting individuals will be based on cost benefit analysis in the context and settings where they are applied. Most epidemiological indices and observations that I have discussed present ethical implications. Even in light of epidemiological evidence, preparedness for influenza remains insufficiently evaluated, while specific measures in containment plans are sufficiently aligned to law and order.

Clearly, in the event of a serious and sudden outbreak of pandemic influenza, and once the government has resolved the competing ethical principles (i.e. individual liberties, equality, protection of the most vulnerable, efficacy, equity and solidarity), the people need to cooperate with the national solution. Scientific assessment of influenza risk and policies needs to be communicated to the public as soon as it becomes available, especially where there is significant loss of liberty and discrimination. In a public health emergency and where resources cannot reach everyone, people can be discriminated against by others within society. Due to natural individual instincts some people will do anything to protect themselves and their families in an emergency crisis thus disregarding other people's emotions. This was evident in Washington, USA, for example, when H1N1 influenza was first isolated in Mexico in 2009; a few workers of Mexican origin were prohibited from entering the work premises unless they provided evidence from a physician to prove they did not have the virus, regardless of whether the personnel showed symptoms. Getting the right message across through communication is necessary to clarify rumours, panic and fear. This becomes another way of addressing perceived discrimination much earlier

before it cuts in – achievable by sensitising the people to make informed decisions about risks, not guided by emotions.

There is also a significant issue of values and solidarity that the rich countries have with the poorest countries. These are held in high regard in the global partnership on the influenza surveillance network and remain the foremost plan to fight the pandemic. But the plea for solidarity is always founded on convergence of interests. Ethical issues are likely to arise because universal solidarity on surveillance networking is inadequate, because of hidden economic agendas and conflicting priorities among countries.

In the next chapter, I review the history of pandemic influenza in Ghana and Malawi in terms of epidemiological and geographical patterns of the 1918 pandemic. I also discuss the administration of the disease in terms of responses and actions. Kilbourne (1973) once wrote that influenza is much studied yet least understood and for this reason influenza demands a constant questioning of ‘what happened’ in the hope that understanding of past events will help with those of the future.

CHAPTER 3: HISTORICAL CONTEXT OF 1918-1920 PANDEMIC INFLUENZA IN SUB SAHARAN AFRICA

“To articulate the past historically does not mean to recognize it "the way it really was." It means to seize hold of memory as it flashes up at a moment of danger. ... Only that historian will have the gift of fanning the spark of hope in the past who is firmly convinced that even the dead will not be safe from the enemy if he wins” (Walter, 1969)

3.1.0. Introduction

This chapter presents a historical account of the 1918 influenza pandemic as a way of understanding the context in which Ghana and Malawi planned for, and responded to, pandemic influenza. Illustrating past experiences and insights in the way policymakers operated, throws important light on political and social-economic impacts of pandemic influenza. The quote by Walter above urges us to look back at the past before it is forever lost to the realm of the forgotten. This chapter creates a background for the study of planning for, and response to, 2009 pandemic influenza.

In the history of influenza, there are believed to have been about 31 possible influenza outbreaks since 1580. They all intrigue epidemiologists, but the 1918-19 influenza pandemic is of particular interest for this thesis. Among the pandemics of the first half of the 20th century the 1918-19 pandemic influenza stands out, not only in its general epidemiology, but its absolute and relative mortality, which has been useful in studying the historical lessons of the disease. It is also the first pandemic that can be unequivocally attributed to the influenza virus, although we are pretty sure about 1889-92. While the 1918-19 influenza pandemic is seen to offer important lessons for dealing with future pandemics, these are yet to be fully studied, particularly in the historical context of Ghana and Malawi. This chapter argues that understanding the 1918-19 pandemic influenza renders exceptional insights into studying the 2009 pandemic influenza, particularly in terms of the specific forces of policy designs and the role they play in the planning for, and response to, the disease. Historical considerations under colonial administration, particularly rapid diffusion and progressive changes, are uniquely important in further defining and evaluating the disease and the implications for ethical issues in terms of how they emerge, are perceived and are resolved by policymakers. This chapter is not about comparative history in terms of issues with time span; rather it is

concerned with understanding the role of the 1918 pandemic in present day policy thinking in Africa.

This historical chapter therefore has two main objectives. First, the chapter looks at how Ghana and Malawi were afflicted by, and responded to, the pandemic influenza of 1918-19. I am able to make some general reflections on the epidemiological history of the 1918-19 pandemic which succeeded the influenza pandemic of 1889-92. An in-depth descriptive historical account is sought while discussing the diffusion of the disease, colonial responses and demographic impacts in Ghana and Malawi. While this chapter focuses on descriptive historical accounts of Ghana and Malawi, attempts have been made to analyze and study this disease in a bigger picture, not just in terms of similarities and contrasts in patterns, numbers, and policies, but in terms of the historical context in which the pandemic occurred and the effects the pandemic had on political, economic and social trends at the time. What lessons can we draw from the past to help us craft current policies on planning, particularly in dealing with, and handling a pandemic in our societies today? The description of influenza diffusion, particularly how it started and was manifested, allows us to understand the space-time dynamics of the disease including patterns and features of human-environment interactions.

To fully accomplish this, a re-reading of archive resources contained in the confidential correspondence files of the British Colonial Office (CO), stored in the National Archives in Kew, London would be required; reviewing national reports and missionary medical reports including newspapers provides insights into the social history of the pandemic in Ghana and Malawi. The main types of records reviewed at the CO (formerly known as Public Records Office (PRO)) include entry books, gazettes, sessional papers and original correspondence i.e. despatches between the governor's high commissioner and authorities in London or letters from other government departments. The references in the footnotes, particularly PRO/CO were located after consulting the original indexes and different registers guided by key words.

Secondly, this chapter paves the way for my theoretical framework (Chapter 4) and is intended to clarify my claims that there is sufficient historical data in Africa. Appropriate conceptualisation of the theoretical framework requires well founded historical interpretations empirically informed and thus any claim that there is no data is a matter for concern. Reading the history on pandemic influenza in Africa, I encountered several

pessimistic statements: “Africa will be worse attacked” (Garrett, 1994), “Africa, already a distressed region will experience profound challenges due to effects of influenza” (Ortu et al., 2008; Oshitani et al., 2008), “Due to lack of data on the pandemic, Africa may have contributed greater mortality at the global level” (Murray et al., 2006; Dawood et al., 2012), “Africa has inadequate scholarly material and there is absence of historical data on influenza” (Murray et al., 2006). The response to such claims and statements, as this chapter argues (see section 3.2.0.), is that there is in fact ample quality historical data and rather a lack of scholarly interest in that data.

The body of this chapter is divided into five sections: the first seeks to clarify claims that there is a lack of historical data in Africa. The second section draws attention to the socio-historical consequences and diffusion of pandemic influenza in Africa. The third and fourth sections present the history of pandemic influenza in the Gold Coast (present day Ghana) and Nyasaland (now Malawi) respectively; they provide a comparative discussion on the role of state interventions in pandemic influenza. The impact and the general reaction of the native population, including problems encountered and the justification of policy designs, are examined. Here, ethical issues are also examined closely in terms of how they were invoked in practice, particularly in relation to policymaking and justification. The last section provides the conclusion and discussion of lessons learnt from these methodological case studies. In this chapter I will refer to Gold Coast and Nyasaland when referring to 1918 and to Ghana and Malawi when discussing contemporary events.

3.2.0. Lack of Historical Data in Africa: Seeking to Clarify Claims

African literature on historical events regarding the 1918 pandemic influenza is believed to be insufficient (Murray et al., 2006; Johnson and Mueller, 2002; Garrett, 1994; HPA, 2009). While key scholarly works of Nicholson et al. (1998), Crosby (1989) and Barry (2004) have attempted to highlight the global historical perspective of pandemics, their substantial contribution of work is limited to America and Europe. At first glance, historical data for the rest of the world, including Africa, Asia and Latin America, is not readily available, suggesting there is a gap in the general readership on pandemics. As this historical chapter unfolds, it will become evident, however, that in Africa historical work on pandemic influenza is readily available. There is plenty of historical data for Africa although interpretations are generally incomprehensive and sometimes too generalized parallel to the global context.

Key articles by Patterson and Pyle (1991), Tomkins (1994), Ohadike (1981; 1991), Phimister (1973), Phillips (1987; 1990) and Ranger (1988) demonstrate evidence of existing historical studies in Africa. Collectively, one could argue that the articles fail to present an African perspective in its entirety, as compared to the scholarly work of Crosby (1989) and Barry (2004) who have studied and written extensively on the US. Yet while extensive historical work on pandemic influenza is yet to be born, official and unofficial records have survived in Africa in colonial records. This chapter demonstrates the ample data for interpretation, causality and analytical explanations of influenza events that theoretically could have played an important role in the policy development of planning for, and response to the 2009 pandemic influenza.

3.3.0. Diffusion of 1918-20 Pandemic Influenza in Africa

The spread of the influenza epidemic, including its consequences, was relatively similar throughout Africa as observed by many commentators. Influenza came to Africa in three waves between August 1918 and January 1920. The first wave of influenza pandemic penetrated Africa through ports and harbours and made its way into the interior facilitated further by communication routes, rainy weather, poor sanitation and the chaos following the First World War.

As a growing number of historians have recognised, the disease was introduced to Africa by a series of events. Many commentators have observed that the first appearance of influenza in Africa was observed in Sierra Leone. On 15 August 1918 HMS Mantua arrived in Freetown harbour with a large number of cases of Spanish influenza on board. The introduction of influenza into the colony of Sierra Leone is believed to have originally been shipped from the American ports, where influenza had been prevalent at the time HMS Mantua left the American shore. Others believe that when the Mantua refuelled in Britain, it unquestionably took influenza viruses on board and transported the disease to Sierra Leone.

Whatever the source, heavy mortality stirred the native population deeply. This led to the creoles indulging in a very abusive press campaign against the colonial government for its alleged carelessness and indifference in matters affecting the health of the country. The pandemic in Sierra Leone followed the global epidemiological pattern in its diffusion. In a relatively short period of time, the disease reached Gambia. A report on the epidemic of

influenza in Bathurst, Gambia colony, suggests that the disease was imported from Sierra Leone.

While the Governor of Sierra Leone was aware that Freetown, and particularly the harbour, was affected by an influenza outbreak that was a virulent and dangerous form, he failed to take precaution measures to quarantine the vessel at the harbour. In his correspondence to the Secretary of State at Downing Street, the Governor admitted the lost opportunity to prevent influenza outbreak from spreading had the vessel been quarantined much earlier.¹⁵ The Governor of Sierra Leone could not take any actions on the vessels because sanitary affairs of warships lied outside civil control and influenza was not a notifiable disease.¹⁶ On 25 August, the ship S.S. Prah left Freetown for Bathurst but, owing to bad weather, did not reach the Gambian port until 29 August.¹⁷ The ship had 52 passengers who seemed well upon arrival but after a few days a couple of passengers developed symptoms of influenza. From this time onwards, scattered cases of influenza began to appear throughout Gambia until, at the end of the first week of September, the epidemic became general. In the Gold Coast (Ghana), influenza was introduced by the warship S.S. Shonga arriving from Freetown, Sierra Leone.

Influenza reached the Gold Coast on 31 August 1918. It spread north along the trade routes, and by mid-September reached the furthest corners of French Guinea. During the months of September and October, without any warning, influenza reached Lagos, Nigeria after the arrival of the ocean liner S.S. Bida, carrying passengers suffering from the disease who then entered the town without passing sanitary authority checks. Passengers destined for Lagos are believed to have boarded the ship in Accra, Gold Coast. The first shore cases in Nigeria were discovered on 23 September 1918 and, a few days later, the disease spread inland following the railway, appearing in Abeokuta on 1 October and Ibadan on 5 October 1918.¹⁸ Once the epidemic had penetrated Nigerian seaports, it made its way into the interior following trade

¹⁵ PRO, CO 879/118/1, The Governor of Sierra Leone to the Secretary of State, Received 6 November, 1918, Enclosure in no. 61, folio 53257.

¹⁶ <http://www.ascleiden.nl/Pdf/workingpaper77.pdf> (Accessed: July 31, 2013).

¹⁷ PRO, CO 879/118/1, Report of the epidemic of influenza in Bathurst, Gambia Colony, from September, Enclosure in no 71.

¹⁸ PRO, CO 879/118, Report on the Influenza Epidemic in Lagos, October, 1918, Enclosure in no. 129, folio 325; See also Ohadike (1991).

routes, such as railway lines, rivers and motor roads, progressing according to the speed of normal transport prevailing on each highway (Ohadike, 1991).

As the outbreak of influenza progressed, it became certain that no country was safe. The northern part of Africa was riddled with high levels of cases. Early cases of mild influenza were first reported in Egypt at Alexandria in May 1918, while Cairo reported its first case in June 1918; however, the cause of the increased death rate towards the end of that year does not appear in influenza mortality annual reports because influenza was not a notifiable disease in Egypt (Ministry of Health, UK (1920)). Since influenza was observed in Africa as early as May, this contradicts many commentary reports that the first appearance of influenza in Africa was observed in Sierra Leone. The cases observed in September in Egypt were actually second waves of influenza. Just as in Egypt, two other waves of influenza swept over Tunisia and Algeria; although the cases that appeared at the end of May 1918 were very mild while the second waves in September and December caused a large number of deaths (Ministry of Health, UK (1920)).

Influenza reached Southern Africa at about the same time as most countries in West and East Africa. South Africa was first to be affected in September; three weeks later in October, Bechuanaland (now Botswana) and Southern Rhodesia (now Zimbabwe) became infected.¹⁹ Nyasaland (now Malawi) was affected in early November. In Southern Africa, just as in West Africa, the disease began at ports and then spread inland to the high commission territories. The earliest outbreak in the Union of South Africa occurred in the vicinity of the harbour area in Durban on 14 September 1918 (Ministry of Health, UK (1920)). It spread to the central Rand area, where numerous cases were observed around 18 September, chiefly among the natives working in mines (Ministry of Health, UK (1920)). Basutoland (now Lesotho) was severely hit by the influenza pandemic. The disease was very prevalent during the months of October and November. Deaths are not registered as attributable to influenza, but information gleaned from the observation of medical staff, native chiefs and statistics recorded by the medical missionaries indicate that a lot of people died from this disease (Ministry of Health, UK (1920)).

¹⁹ PRO, CO 626, Annual Medical Report on the Health and Sanitary Condition on the Nyasaland Protectorate, 1918.

Influenza reached Swaziland at the same time as the Union of South Africa although it was a less severe type than in most parts of South Africa. Influenza broke out in Bechuanaland in October and spread rapidly across the whole territory, except the Western Kalahari and the Ngami littoral (Ministry of Health, UK (1920)). Influenza reached Southern Rhodesia along the railway line from the south, with its first case detected in Bulawayo on 9 October. Within days the disease broke out with extraordinary virulence at Que Que Umona and Salisbury (Ministry of Health, UK (1920)).

In East Africa, influenza was prevalent in Uganda during the last week of October 1918; the first case was reported at Entebbe. Mombasa was hit by 23 September. A few days later, Kampala and Jinja were also affected. The epidemic reached its peak in Uganda during the third week of November 1918 (Ministry of Health, UK (1920)). The epidemic spread throughout the protectorate causing thousands of deaths by the end of December. Meanwhile, Zanzibar was attacked between October and December 1918. Cases had already occurred in British East Africa in October following the arrival of two ships from Bombay in Mombasa (Ministry of Health, UK (1920)). The disease was reported at Portuguese East Africa (now Mozambique) by 20 October and southern Nyasaland by 5 November.

Diffusion of influenza is an important concept rarely examined in Africa. The above account is an attempt to profile the diffusion patterns and the transmission dynamics of the spread of influenza in time and space. The relevance of diffusion patterns in Africa provides the basis to understand how the disease spread and speed, and this can inform the development of policies that are able to control the disease. The 1918 pandemic in Africa ran its course smoothly without much interruption and took a number of countries by surprise with its death toll. This suggests that most countries were not prepared since they did not identify the causative agent or know how to confront it.

While most countries in Europe were aware of the source and diffusion mechanism of the disease through communication routes (roads, rivers), these determinants were relatively unguarded. There are lessons to be learned from the way the disease diffuses, especially now with an increase in cross-border and cross-continental movement. The demographic spread of influenza is relevant for current debates especially when flagging up issues about where the focus should be when planning (the borders or the centres of cities) and how fast responses can be implemented.

3.4.0. History of Pandemic Influenza in the Gold Coast (Ghana)

3.4.1. Diffusion of the Pandemic Influenza in the Gold Coast

The Gold Coast, once a British colony, lies a few degrees north of the equator and covers an area of almost 240.000 sq. km. It is bordered by the Ivory Coast to the west, Upper Volta (now Burkina Faso) to the north, Togo Land (now Togo) to the east and the Gulf of Guinea to the south. In the Gold Coast (now Ghana), the influenza was introduced into the country by the warship S.S. Shonga, arriving from Freetown, Sierra Leone. Figure 1 illustrates the spread and diffusion of influenza in the Gold Coast. Influenza reached the Gold Coast on 31 August 1918. It is believed that the earliest influenza signs were seen at Cape Coast in a mail officer who alighted from the S.S. Shonga on 31 August 1918. The S.S. Shonga moved away from the coast and proceeded eastwards towards Accra with influenza patients on board; upon arrival on 3 September 1918, the vessel and the crewmen of the S.S Shonga were quarantined as an immediate precautionary measure in the hope of controlling influenza. However, 16 patients had to be hospitalised overland.²⁰ Within just two weeks of the landing, influenza was widespread. According to Patterson (1983), the disease spread rapidly along the Cape Coast into the interior of the country. It is uncertain whether the Cape Coast may have been infected before the S.S. Shonga reached it.

On 5 September 1918, the disease had already established itself at the port of Sekondi and the surrounding towns. In Kofuridua, the first case was a schoolgirl from Accra who is believed to have arrived in town with the disease on 19 September; her brother who lived in the same house was struck down the next day.²¹ Ten days later, Kofuridua and the surrounding towns had changed drastically: places of business were closed and markets deserted.²² Axim was not affected until 25 September, when boat-boys (sailors) arrived from Sekondi and introduced the disease.²³ From 27 September to 2 October the infection spread slowly, but from 3 to 7 October it spread quickly.

The first case in Saltpond was recorded on 21 September and the outbreak reached its peak in the first week of October (Patterson, 1983). All native medical professionals had the disease and within a fortnight the town was deserted and markets practically empty. Yeji had its first

²⁰ PRO, CO 879/118, Government of Gold Coast, Medical and Sanitary Report, 1918.

²¹ CO 98/30, MSR, 1918 pp7; See Patterson (1983).

²² *ibid.*, pp 7.

²³ *ibid.*, pp 8; See Patterson (1983).

case on 8 October, while Bole and Salaga became infected on 26 October and 5 November 1918 respectively (Patterson and Pyle, 1983). In the north-western part of the country, the outbreak hit Wa and Lawra between 7 and 15 November and spread from there, reaching Tamu on 16 November. Tamale was affected on 12 November and by 27 November, outbreaks had occurred in every major settlement in the northern territories, including Zuarungu, Navrongo, Paga, Bawku and Gambaga (Grischow, 2006). Indeed, influenza spread over the entire Gold Coast in about three months (Patterson, 1983). In a state of disbelief and shock, the Governor is recorded to have said: “the disease spread with devastating rapidity and in three waves, disorganizing everything. Almost everybody was attacked almost at once during the first wave”.²⁴

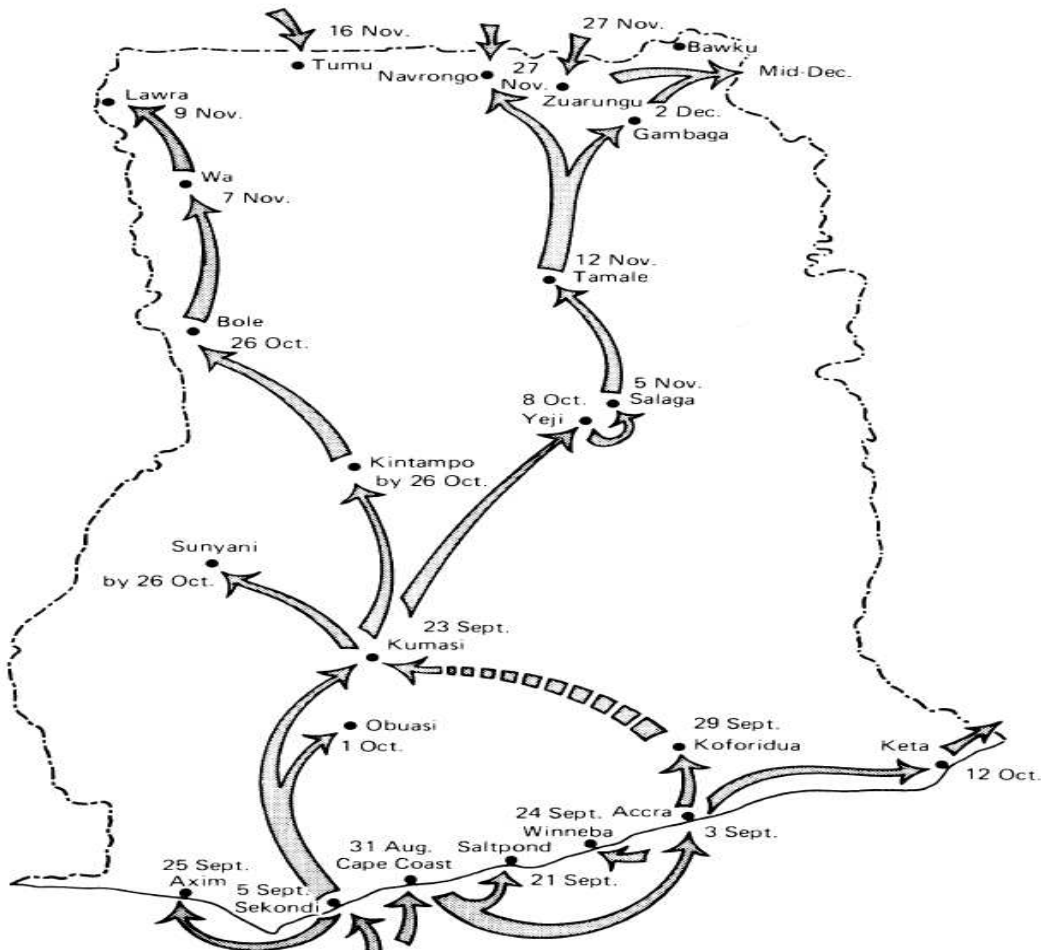
The diffusion of the disease in the Gold Coast reveals that influenza spread is not only global but that the disease can extensively manifest itself at a national and local level. The rapid diffusion of influenza in the Gold Coast, apart from being facilitated by communication routes, was also supported by social and economic conditions such as unsanitary conditions and poverty. In addition, influenza was not a notifiable disease under the quarantine ordinance, making it hard for the medical authorities to take action. Understanding diffusion patterns has great relevance in understanding the early stages of a pandemic outbreak. While it is difficult to establish the pattern of waves that swept the Gold Coast as this differed from place to place, two and three waves were observed.

The first wave was short, about six weeks beginning at the end of August and reaching its summit by 30 September. Areas that had reported early cases observed a steady decline until mid October when most reported their last cases. The second wave ran its course for about 8-12 weeks beginning in the early part of November, remaining slow in formulation and more destructive in terms of mortality at its peak. The third wave was also slow and partially reverted to mild influenza as observed in north-eastern provinces in April 1919 and Ashanti in November, 1919.²⁵

²⁴ PRO, CO 879/118, Government of Gold Coast, Medical and Sanitary Report, 1918.

²⁵ PRO, CO 98/32, Northern Territories Annual Report For 1919, Gold Coast, Government Press, Accra, 1920.

Figure 1: Map of Influenza Speed – Gold Coast (Patterson, 1983).



These observations are interesting for planning assumptions (see planning assumptions for Ghana in appendix 14) especially when determining appropriate interventions necessary for each wave of the pandemic period. Timing the duration of the pandemic through waves is necessary not only to predict how the pandemic will develop but also to ensure that planning against the reasonable worst case scenario is smooth and able to adjust as it is implemented. Historical diffusion of influenza is useful for understanding social history but also when studying the 2009 H1N1 planning for, and response to, pandemic preparedness.

3.4.2. Actions and Responses to 1918-19 Pandemic Influenza in Gold Coast

Influenza arrived in the Gold Coast at a time when the country was totally unprepared to deal with the disease. The demands of war had reduced medical staff in civilian hospitals to skeleton levels. The sheer scale of the pandemic forced the colonial and local authorities to undertake everything reasonable to combat the pandemic. Generally, the measures

undertaken by local authorities comprised the provision of medical and nursing relief, food and other supplies, arrangements for burial of the dead and increasing the capacity of hospitals and transport of the sick. This work was usually done through voluntary organised committees (Ministry of Health, UK (1920)). Containing and stopping the disease spread was tried on many occasions through various measures. However, since colonial physicians did not really understand the disease in terms of what was causing the influenza it was difficult to arrest its progress or treat its victims.

Public health measures, such as quarantine and other preventive measures were implemented but failed to contain the outbreak. The medical officer in Accra, upon being informed about influenza on the S.S. Shonga, quarantined the vessel, but ended this after cases were found elsewhere. In other circumstances, quarantine worked. For example, authorities at a prison camp in Saltpond quarantined 13 of the 30 prisoners who had influenza. They were put in a large, dark cell and given a mild diaphoretic and expectorant mixture, and all recovered.²⁶ The rest of the prisoners did not develop influenza. In Kumasi, the capital of Ashanti, the medical officer proposed quarantine in many areas of the town after the disease struck. However, it was too late and did not work. The Chief Commissioner of Ashanti and his Provincial Medical Officer wanted to stop railroad passenger traffic into Kumasi, or at least to halt third class passengers and inspect all others (Patterson, 1983). However, closing the roads and the courts had no effect. The attempts to cordon off the northern territories from Ashanti did not receive support among the natives. Nevertheless, quarantine and segregation were implemented to the extent that, not only did they close schools and ban public meetings, but they also restricted police and clerical workers from doing their duties. In the northern territories and Ashanti, the administration constructed fences around infected towns, placed markets outside their borders and directed traffic to alternative trade routes.²⁷ The volume of trade and the probability that police barriers would be avoided made such a policy totally impractical (Patterson, 1983).

The most serious attempt to maintain quarantine was at Lome, then under British occupation, although neither the Senior Medical Officer at Lome nor the local military commander had much hope that quarantine would work. Even so, strenuous measures were taken to protect

²⁶ PRO, CO 98/30 MSR, 1918 pp9.

²⁷ MSR (1919), Report on Ashanti for 1918, Gold Coast, Government Press, Accra; See Grischow (2006).

the city and the troops being trained there.²⁸ As noted by Patterson (1983), the fifty-seven known cases, plus the suspected cases, were isolated; road and rail traffic was halted; ship passengers were subjected to medical inspections; schools and churches were closed; meetings were banned; troops were confined to barracks; and medical advice was dispensed through the chiefs. In Larwa, Tumu and Wa, one third of the patients were relocated to new huts on the fringes of the infected villages, and larger towns and villages were completely cordoned off (Grischow 2006). Food, water and necessary supplies were placed outside the camps and only the attendants could come out to collect these items for the patients inside. In many circumstances, chiefs were instructed to build isolation camps, ban large meetings including funerals, block the movement of infected people, burn their clothes and fumigate their houses.²⁹

There were also attempts by district commissioners to protect their constables and station workers by keeping them out of towns (Patterson, 1983). These actions were based on the idea that infected persons posed a serious danger to others, and because colonial officials believed that the disease spread along lines of communication (Grischow, 2006). It was not until later, when they began to consider that influenza could not be stopped that quarantine faded. The officials in Accra also realised that quarantine measures were useless and needlessly disruptive and should not be attempted any further (Patterson, 1983). Despite giving up strict quarantine, local officials sometimes continued to restrict gatherings and most schools were closed. Justification for this, especially in schools, was to restrict transmission among students and allow vacated school buildings to be used as emergency hospitals. The efficacy of closing schools, borders and gatherings is still debatable even today. The manner in which quarantine was implemented stimulated an issue of social order which will be discussed in Chapter 9.

Due to the war there were also few doctors and health officers and very little care for a large fraction of the influenza victims; recruitment was not possible.³⁰ The staffing situation was particularly grim during the pandemic, as evidenced by Governor Clifford's frantic telegram

²⁸ SMO, 12 October, 1918; See Patterson (1983).

²⁹ Dalziel (1920), Memorandum on cerebrospinal fever in the Northern Territories of the Gold Coast and Ashanti: Gold Coast Sessional Paper 6 of 1919-1920, Government Press, Accra; See Grischow (2006).

³⁰ Gold Coast Departmental Reports (1919), Report on Ashanti for 1918, Government Press, Accra.

informing the colonial office in London that no medical professionals were available to respond to the pandemic.³¹ In addition to skeletal levels of medical staff, there are no records to suggest decentralisation in administering control measures. Colonial administrators did not engage chiefs or traditional healers for managing and controlling the disease as an alternative to offset the shortage of medical staff and ineffective drug therapy.

In many parts of the country, the already dysfunctional and dislocated public health system contributed to the poor colonial response to the pandemic. Medical aid was unavailable, or one medical officer would look after a large group of patients.³² In the northern territory, one medical doctor covered more than three districts at once, even when he was not well.³³ A few medical officers were available for the Eastern Province, but did not have a government doctor. Medical officers were stationed at Tamale, Wa and Gambaga. No medical officers were stationed in any of the other districts, of which there were eight, excluding Yendi. One medical officer was stationed at Yendi because of its strategic trade position and vibrant market system serving the southern parts of the protectorate; also because it was the capital of Dogomba in the Northern Province of the Gold Coast, once a Germany territory. The acting provisional medical officer expressed concern that seven of those stations had Europeans and that there was a desperate need for medical officers to oversee the Europeans' welfare.³⁴

The Principal Medical Officer in Accra attempted to temporarily recruit private native practitioners to be posted in other towns, but the few physicians who were approached refused the assignment, pleading family responsibilities and other pressing business (Patterson, 1983). Others declined the assignment or refused to serve in other parts of the country because there was too much money to be made in Accra at that time. African physicians were less likely to be relocated or even work overtime because of the deep resentment against discriminatory practices within the colonial medical service (Patterson, 1983; Gale, 1973).

³¹ Grischow (2006); Principal Medical Officer to Colonial Secretary, 20th October, 1918, NAG Acc no. 2753/58.

³² Gold Coast Departmental Reports (1919), Report on Ashanti for 1918, Government Press, Accra, 1919.

³³ The Zuarungu Diary, 5 December 1918, NAG ADM 56/1/223.

³⁴ PRO, CO 98/32, Northern Territories Annual Report For 1919, Gold Coast: Government Press, Accra, 1920.

While the colonial administrators tried to do all they could to respond to the outbreak, very little could be achieved. The lack of medicines equally frustrated their efforts. The available medical officers in different territories of the Gold Coast appealed for effective medicines and for instructions on how to treat influenza, but neither their colonial administrators nor the colonial office in London had much to offer (Patterson, 1983). The best advice given was that people should avoid contact with influenza victims and stay in their houses. The sick were equally advised to stay inside rather than moving about in the breeze (Patterson, 1983). Cough medicine, if available, could be given if required, but it was obviously ineffective. What worked best, as noted by the medical officer for Ashanti, was ensuring that patients were kept comfortable. However, patients were not always cooperative. For instance, in Tumu District, people insisted on walking around in the sun with high fevers, refusing to lie down for fear that they would die.³⁵ Many people supposedly moved about in search of miracle medicines. Patients were seen consulting African healers and private physicians, but their expertise was equally ineffective.

In the long-term the authorities became aware that little could be done. Although this was the case, the government was heavily criticised in the Legislative Council (an arm of the government) for not doing more to educate the public. Many Ghanaians were highly critical of the medical department's performance, especially in Keta, where they publicly accused the government of callousness; and many others were bitter about the shortage of physicians (Patterson, 1983). The colonial administration was denounced for its lack of interest in training African physicians, its poor contribution to the health of the native population, and its discriminatory practices which protected European physicians and populations.³⁶

3.4.3. Pandemic Influenza in the Gold Coast and the Impact on People

The influenza pandemic of 1918-19 was unquestionably the greatest challenge to the Gold Coast in many centuries. The pandemic not only caused death, it had many secondary effects; for example, orphans suffering from the disease were deserted without anyone to help them. Influenza caused great personal suffering and temporary disruption of normal activity throughout the Gold Coast (Patterson, 1983). It is impossible to ascertain precisely the

³⁵ The Tamu diary, 29 November, 1918; See Patterson (1983).

³⁶ Gold Coast Departmental Reports (1919), Report on Ashanti for 1918, Government Press, Accra; See Harry A. Gailey Sir Hugh Clifford (1856-1941) in African Proconsuls (1978), European Governors in Africa.

number of people who contracted the disease and who were hospitalised, but in all regions of the country, a majority of the population experienced high fever, pain, and debility, which marked the disease (Patterson, 1983). Some patients took weeks to recover and some showed 'queer and strange' behaviours long after the epidemic had passed (Patterson, 1983).

Society in many towns and villages was at the point of disintegration. Fear of the pandemic made friends and relatives abandon each other. Throughout the Gold Coast, the destruction of the pandemic brought about a change in gender roles since many women were sick and men had to pound seeds to remove husks and prepare meals. The changing roles were later followed by a change in staple food. Ohadike describes how cassava, once rejected as a staple, was accepted in the aftermath of the pandemic because of food shortages (Ohadike, 1991; Gewald, 2007). Since the disease hit in the dry season, when the pandemic was at its peak, many subsistence farmers did not prepare their fields, which consequently resulted in low food yields and a decrease in food supplies. With funerals suspended, markets closed and illnesses attacking men and women, the only thing people could do was wait.

The strongest lasting effects of influenza on the Gold Coast were the devastating death tolls. There are many contradictory reports about how many people died but government reports estimate the number of deaths for the entire country as 88,500.³⁷ Other reports suggest that around 60,000 people died in the whole country, enumerated based on the 1911 census (Patterson and Pyle, 1983). The official population estimate for the 1911 census was 1,504,000, and this figure was widely recognized as being lower than the actual figure at that time (Patterson and Pyle, 1983). There were no accurate mortality statistics kept at that time, and revising mortality estimates of the 1918 pandemic based on a census that was outdated by seven years, does not give a complete picture.

From statistics gathered from individual reports, it is estimated that the northern territories conservatively recorded 28,000 deaths, while fatality cases for Ashanti were estimated to be 9000.³⁸ It is believed that the enumeration for Ashanti could have exceeded this figure since the Chief Commissioner admitted that unaccounted bodies were seen being taken away from

³⁷ Government of the Gold Coast (1919), MSR for the year 1918, Government Press, Accra.

³⁸ PRO, CO 98/32, Northern Territories Annual Report For 1919, Gold Coast: Government Press, Accra, 1920.

towns and villages.³⁹ In addition, reported deaths were expressed as percentages of the total but it is not clear whether these figures were being compared with the 1911 census. What this suggests is that excess mortality or numeration of influenza statistics was not an epidemiological endeavour at the time. Nevertheless, the northern territories recorded a much higher mortality in 1918 compared to the rest of the country. A total of 7880 people died in Wa, Lorha and Tumu, representing 6.7% mortality. At Bawku, about 2354 people died, while at Navarro-Zuarungu about 15,000 lost their lives to influenza.⁴⁰ The mortality level recorded in the north-eastern province totalled 18,263, but it is believed to have been much greater in reality. The commissioner reported that in many instances children were not included in the returns while the true number of deaths in villages was sometimes withheld on account of superstitious fears of the natives.⁴¹ The district commissioner, A.W Cardinall, for example, claimed that neither of the chiefs of Bongo or Bolgatanga counted the children because it was impossible to reckon children as persons and the number of deaths among them was so great (Patterson, 1983).

In the town of Tamu, there were 146 deaths in people over the age of 40, while there were 1415 deaths among people under the age of 40. More women died than men and most of the women who died were pregnant (Grischow, 2006). More young men under the age of 40 died than older ones. This unusual pattern and high death rate was associated with the early harmattan⁴², which is believed to have facilitated pneumonia among the infected people, but it must be remembered that cerebrospinal meningitis, even measles could have played a role too since it was raging in the north-west at the time of the influenza outbreak (Grischow, 2006). Another reason for the higher death rate in the northern territories is possibly because the pandemic was in the dry season, when respiratory diseases are generally most dangerous, and perhaps also because so many people were sick at the same time leaving few available to provide nursing care.⁴³ The reason adolescents and young adults were affected far more than the elderly was possibly that the older people retained immunity from the previous pandemic.

³⁹ The Gold Coast Leader, 21 October, 1918.

⁴⁰ Government of the Gold Coast (1919), MSR for the year 1918, Government Press, Accra.

⁴¹ PRO, CO 98/32, Northern Territories Annual Report For 1919, Gold Coast: Government Press, Accra, 1920.

⁴² Harmattan is a dry desert (dusty) wind that blows from the Northeast of Ghana from December to March. It lowers the humidity and creates hot days and cool nights in the north.

⁴³ Patterson (1983); Government of the Gold Coast (1920), MSR for the year 1919, Government Press, Accra.

It is also likely that this complete alteration in age incidence is due to the circumstances of the population; at the time war meant that young soldiers aggregated and moved in bulk providing far greater opportunities for the disease to spread. This has significant relevance for influenza transmission necessary to planning preparedness.

What the impacts of pandemic influenza reveal in current debates is the need for better preparedness to mitigate and prevent the outcomes of influenza outbreak such as death and sickness. For this thesis, influenza impacts, particularly those of 1918-19, raise important questions about preparedness in general and their relevance to ethics. For example, how can policymakers prepare to prevent outcomes in terms of appropriate interventions and cost, when numbers of hospitalised cases and deaths are unknown? An account of the impacts of pandemic influenza is an attempt to provide some local answers to questions of national preparedness since the level of preparedness varies from country to country and some countries bore the burden more than others. Studying the impacts within the context of the Gold Coast is a key argument for facilitating the adequacy and responsibility for decision-making in pandemic situations. Although the governance of the Gold Coast was very different from present day Ghana and influenza pandemic is a global situation, studying the impacts may still aid better understanding of the disease and generally help us prepare for a similar pandemic today that has spurred fears globally. The next section on the history of pandemic influenza in Nyasaland will enable a comparative analysis with the Gold Coast.

3.5.0. History of 1918-20 Pandemic Influenza in Nyasaland (now Malawi)

In order to further illustrate the profound impact of influenza upon Africa, Malawi, then known as Nyasaland Protectorate, offers a potentially useful historical case study for future preparedness for the disease. Nyasaland (Malawi), a landlocked country, has a total surface area of 118,000 sq. km, of which 24,208 sq. km is taken up by lakes. It occupies the southern part of the East African Rift Valley lying between 9 degrees and 17 degrees south of the equator. The country is bordered by Portuguese East Africa (now Mozambique) in the south and east, Northern Rhodesia (now Zambia) to the west and Tanganyika/Zanzibar (now Tanzania) to the east and north. A geographical map of Nyasaland (now Malawi) is shown in appendix 1. The total population of the 1911 census was 970,430. The total population in 1919 was estimated at 1,226,000.

During the First World War, Nyasaland was a vital link in the East Africa campaign because of its strategic and military position for the invasion of German East Africa (present-day Tanzania) from its southern borders. The battle at Mlangali was a significant engagement during the invasion of German East Africa from the south. On 24 July 1916, the 1st Kings Rifle, a unit primarily made up of Malawians led by the British asilikali (soldiers), forced the Germans to withdraw (Page, 1980). Despite triumph, the chief concern for the British was when, how and where the Germans would attack Nyasaland in their retaliation efforts. Given the importance of the battle, it is understandable that Nyasaland established defensive posts in several parts of the country. These efforts substantially increased transportation demands and established new lines of communication for fighting the enemy effectively.

Due to the lack of automobiles during the war, human transport (Mtengatenga) facilitated and served the British transport needs from south to north and largely on the eastern shores of Lake Nyasa (Page, 1977). These activities led to military achievements, but the continuous movement of troops, human carriers and their followers were of concern to public health, especially when smallpox and bubonic plague ravaged the country during the war. The movement of troops led to the spread of infectious and contagious diseases. In his report to the Chief Medical Officer in London the principal medical officer, H. Hearsey, noted that the health of the Protectorate was not satisfactory owing to the extensive movement of natives, into and within the Protectorate, necessitated by military operations.⁴⁴ It was difficult to restrict the movement of asilikali, checking the spread of the disease, as the increasing military demands for labour had to be met.⁴⁵ In an excerpt taken from a confidential correspondence from the Governor of Nyasaland to the Secretary of State, Governor Sir George Smith wrote; “while the war continues with its enormous drain on the medical profession generally, it is improbable to make changes within the medical service that divert this cause”⁴⁶ Halting the war operations due to disease outbreak, pulling out and losing military ground the asilikali had gained was definitely a step backwards from the viewpoint of the British colonial administrators.

⁴⁴ PRO, CO 626, Annual Medical Report on the Health and Sanitary Condition on the Nyasaland Protectorate, 1917; Also see Notes, Short Comments, and Answers to Correspondents, *The Lancet* 20 September 1919 (Volume 194 Issue 5012 Pages 551-552.

⁴⁵ *ibid.*

⁴⁶ PRO, CO 32904 no 40, Nyasaland Original Correspondence: G. Smith, Governor of Nyasaland to Secretary of State on 5 July 1918.

Although activities of the enemy forces were confined to the borders of Portuguese East Africa, the asilikali from the Nyasa-Rhodesian field forces were stationed along the entire eastern portion of Nyasaland and Lake Nyasa. Even upon getting intelligence reports and news of 1918 influenza outbreaks that devastated Britain, Sierra Leone and South Africa in September, the then acting Governor and Commander-in-Chief, Sir H. L. Duff, continued military operations and heightened the fast movement of troops across the country. Sir H. L. Duff was completely aware of what was ahead of him. The movement of the troops facilitated communicable disease outbreaks such as bubonic plague and smallpox.⁴⁷ And indeed the first case of plague was introduced into Nyasaland from German East Africa by native German prisoners of war.⁴⁸

Prior to the outbreak of influenza, the acting Governor is reported to have established infectious disease health centres near war locations, trade routes and communication lines to respond to the spread of smallpox and bubonic plague. Despite these establishments, there is no other evidence to suggest that the Governor prepared for the coming of influenza outbreak. There is evidence to support the view that he knew of the outbreak in the Union of South Africa and he was aware that its impacts had devastated Britain; he simply could not undertake remedial measures immediately however.⁴⁹

Intelligence on the outbreak of influenza, gathered from the report dispatched to the Colonial Office in London from a medical officer administering the government of Nyasaland, 14 February 1919, suggests information and news about the spread of the disease was received by Nyasaland Protectorate at the beginning of September 1918. The cases of influenza in the Union of South Africa were predominantly mild type causing low mortality (Ministry of Health, UK (1920)). In October, the character of the disease in the Union of South Africa altered, it assumed a more severe type and caused a high mortality among the population. On 18 October, Salisbury reported the presence of influenza and Nyasaland immediately prohibited the return of its sick troops from the Union of South Africa through Southern Rhodesia. On 20 October, the disease made its appearance in Beira, Portuguese East Africa,

⁴⁷ PRO, CO 525/82/45872, Nyasaland Original Correspondence: Governor H. Duff to Colonial Office, 9 December, 1918.

⁴⁸ See Notes, Short Comments, and Answers to Correspondents. *The Lancet*, 20 September 1919 (Volume 194 Issue 5012 pages 551-552).

⁴⁹ *The Nyasaland Times*, 31 October 1918; 7 November, 14 November 1918.

and on 21 October, severe cases among natives were reported at Chinde.⁵⁰ Between 21 and 27 October, several cases were discovered on river boats and a railway line at Chindio. The register of correspondence for Nyasaland protectorate indicates that the first cases for Chinde included 11 Europeans and 318 natives, while Chindio recorded 11 cases and 2 deaths among natives.⁵¹

While these cases were reported in the neighbouring countries, no cases were reported in Nyasaland. Figure 2 illustrates the spread of influenza in Nyasaland. According to the register of correspondence, the first case in Nyasaland was on 1 November.⁵² The epidemic penetrated Port Herald between 1 and 5 November, arriving from the terminus of the Shire Highland Railways in Portuguese East Africa. From there, it made its way into the interior of the Protectorate following the same lines of communication facilitated by the movement of troops on Lake Nyasa, rivers and roads.⁵³ Within a few days, despite sanitary officials at Port Herald making attempts to prevent entry of the disease from Portuguese East Africa, it reached Limbe and Blantyre on 9 November.⁵⁴

There is a controversy as to when influenza actually appeared in Zomba. From Blantyre, influenza veered northwards following the motor roads and the course of Lake Nyasa to reach Zomba, the capital of Nyasaland, on 18 November. Zomba is believed to have been affected much earlier than is officially reported though. For example, a telegram from the officer administering the government of Nyasaland to the Secretary of State for the Colonies, reports a considerable increase in influenza cases by 13 November. A telegram report that over 1000 people, including 285 Europeans, were hospitalized in Zomba due to influenza suggests that the disease had come under notice before 18 November. More than 800 people, including 96 Europeans, were hospitalized at Limbe.⁵⁵ The West Shire districts reported their cases at Chikwawa on 27 November. The disease spread rapidly, affecting many villages and estate workers around Chikwawa (mostly remote areas) in the following month. Approximately 1799 cases were reported, with 122 deaths. On 28 January, the Roman

⁵⁰ PRO, CO 626, Annual Medical Report on the Health and Sanitary Condition on the Nyasaland Protectorate for the year ending 1918, Government Printer, Zomba, 1919.

⁵¹ *ibid.*; Also see CO 703/6 see 21-27th October, 1918.

⁵² PRO, CO 53323, note that document is destroyed under statute.

⁵³ PRO, CO 626, Annual Medical Report ending 1918..

⁵⁴ *ibid.*, PRO, CO 626, Annual Medical Report ending 1918.

⁵⁵ *ibid.*, PRO, CO 626, Annual Medical Report ending 1918.

Catholic Mission reported 3700 cases with 249 deaths.⁵⁶ Mlamba Bay, a port on Lake Nyasa in German East Africa, reported the disease on the 26 November, although since the disease was rampant in German East Africa by then, it is unclear whether infection came from Mlamba Bay or Nyasaland. Fort Johnson remained unaffected until 3 December, when cases were simultaneously reported at this station, Mangochi and Monkey Bay. Furthermore, New Lanjenburg and Kyambila reported the presence of the disease on 5 December and Mwaya on 6 December.⁵⁷ After that the disease made its appearance in various parts of Nyasaland. Precise dates and returns, however, are difficult to obtain. On 6 December, Lower Shire districts reported 56 cases, with three deaths. Initially, the disease was of a mild type, but in the following month it assumed a severe form and became prevalent among the natives residing in the hills. Of the 200 cases treated at Chinde mission, 17 died.⁵⁸

Mlanje reported its first definite cases on 21 December, and in far north of the country, Vua and Karonga on 2 February 1919.⁵⁹ The outbreak arrived in towns from more than one source. Towns such as Vua and Karonga are believed to have been infected much earlier than the evidence suggests. At 1/1 K.A.R hilltop camp, Mbamba Bay, the disease recurred on 23 January 1919 after it was reported to have died out on the 1st of that month. Meanwhile, at Chinde, by 6 December 1918 the disease had died out amongst the Europeans. But upon the arrival of two military drafts from Limbe and Zomba, a further twenty-two relapsed cases were admitted to hospital, and among these, four deaths occurred.⁶⁰ The outbreak in Zomba ceased in early January, 1919.

In Lilongwe, five villages were reported as being infected with the disease in December. In January, 1919, 128 deaths were reported from the area, with much of the work attending to the sick being done by white fathers. Dowa district reported its first case towards the end of December, 1918. The disease was reported as spreading rapidly, especially among the villages along the lakeshore, accompanied by a high mortality rate. Dedza reported the

⁵⁶ PRO, CO 626, Annual Medical Report on the Health and Sanitary Condition on the Nyasaland Protectorate for the year ending 1918, Government Printer, Zomba, 1919.

⁵⁷ *ibid*; See also Ministry of Health, UK (1920).

⁵⁸ PRO, CO 626, Annual Medical Report ending 1918.

⁵⁹ PRO, CO 626, Annual Medical Report ending 1918.

⁶⁰ PRO, CO 626, Annual Medical Report ending 1918.

appearance of the disease around the middle of December. Accurate information about the spread of the disease in the district is difficult to obtain as natives were suspected of hiding serious cases. They did this to avoid denial of racial segregation, discrimination and unpredictable actions from the colonial administrators (Hokkanen, 2004). The natives feared that once identified as having the disease they would be taken away from their families to isolation camps, and their dwelling huts destroyed if deemed unsanitary. From Mlanje district, a thousand suspected cases were reported during the month of November and upon the arrival of a medical officer in December; several deaths were reported.

Figure 2: Map of Influenza Speed in Nyasaland (Now Malawi)



Source: Author's analysis of speed and diffusion of influenza.

The disease did not reach the Marimba district until the end of December but several deaths were reported at Ngara which were considered to be the result of influenza.

In west Nyasa district, influenza cases were reported as being prevalent at Vun and Usyisya in December, but they had apparently ceased by the end of January. In north Nyasa district, the first case was brought to the attention of the district officer on 22 December. He attributed the introduction of the disease into the district to the troops who passed through on their way to Vun. Cases were reported from Upper Shire district at the end of November and in December, 115 cases and 7 deaths were reported at Mtchru and Liwonde.

The diffusion of influenza in Nyasaland reveals future challenges of the disease especially now that travel is so much quicker, facilitated by modern speed boats, ships, aircraft, and cars.

3.5.1. Mortality and Preparedness for Pandemic Influenza in Nyasaland

The influenza pandemic of 1918-19 caused an unforgettable disaster in Nyasaland. Mortality data reported is scanty and unreliable, but judging from the correspondence records reaching the chief medical officer, 60,000 or more may have died in the entire country, about 5% of the 1.2 million enumerated in 1919. In his official despatch the acting governor of Nyasaland estimates that over 1769 died, including Europeans and Indians (Ministry of Health, UK (1920)). This figure is no doubt far below reality as many patients went untreated and many deaths were not reported to the authorities. Even the Acting Governor, in his covering despatch, said 'it is important to note that the statistics despatched are far from being an exhaustive record of the epidemic, since scores of thousands of cases have occurred in outlying native villages (Ministry of Health, UK (1920)). A breakdown of the mortality count among Europeans in Nyasaland was lower than among Indians and the natives.

The death rate for Europeans was 47 per 1000, while for Indians and natives, the rates were 147 per 1000 and 117 per 1000 respectively (Ministry of Health, UK (1920)). The reasons for this huge gap can be suggested by remarks made by the port medical officer: 'it was apparently difficult to do much for the native population, to whom the disease was a complete novelty'.⁶¹ There is also evidence to support the view that sanitary conditions for the natives

⁶¹ Ministry of Health, UK (1920); PRO, CO 626, Annual Medical Report ending 1918.

were much lower. Natives did not have access to sanitary latrines, cisterns or tanks and rainwater was used for drinking and cooking purposes.⁶² The sanitary department was still unorganised, running on insufficient funds to extend necessary measures and maintain trained native sanitary inspectors. It is also believed that overcrowding among the natives was another factor that facilitated high mortality rates. Major towns like Blantyre, Limbe, Zomba, Lilongwe and Karonga were fast-growing, owing to shanties, polluted cities.

Due to a shortage of medical staff, it was impossible to carry out any serious investigation to identify the connection between communicable diseases in general, and statistics among the native population. In his medical report ending in 1919, A.G. Eldred noted that at no time in the year were there more than five medical officers in the whole country, only three of these were Nyasaland medical officers, and the available medical staff had never, during the whole year, been up to 60% of full strength.⁶³ The available medical staff could only counsel bed rest and symptomatic treatment and hope for the best. Could more have been done to reduce the impact of influenza? It is noted that very little was done in terms of surveillance, monitoring and even recording morbidity and mortality. There was also no ethical apparatus or framework to assist with moral reasoning amongst authorities. This is likewise true of planning and other logistics such as corporations and partnerships, which were never attempted. In the next section, I examine the colonial and societal responses.

3.5.2. Responses to the Pandemic in Nyasaland

The sheer scale of the pandemic exceeded the resources of the colonial masters in Nyasaland. Not only did it challenge the established missionary work and colonial administration of Nyasaland but it also led to a collapse of the public health system. Colonial medicine, one legitimate element that held European imperialism together, came under threat after it failed to address the effects of pandemic influenza. For the native population, the much proclaimed bio-medicine was perceived to be useless and many people undermined it. The overall consequences paved the way for disobedience to the white man's rule. Influenza intensity, its rapidity in diffusion and unresponsiveness to any form of drugs, convinced the native population that colonial medicine was an imperialist strategy. This impotence of missionary

⁶² *ibid*; See Medical Report ending 1916 and 1917.

⁶³ PRO, CO 626, Annual Medical Report on the Health and Sanitary Conditions on the Nyasaland Protectorate for the year ending 1919, Government Printer, Zomba, 1920.

bio-medicine, according to Ranger (1986), gave a powerful stimulus to alternative ideas of disease causation and healing. It is argued that influenza also changed held views on religion, as natives, particularly those who worshipped vumbuzo or nyau (local gods), perceived the emerging influenza as capital punishment for disgracing, undervaluing and forsaking indigenous gods and local prophetic beliefs (Hokkanen, 2004, 2007). Even those who believed in Christianity thought this was the end of the world in readiness for the coming of Jesus Christ who will judge the unbelievers. The native beliefs hastened when Colonial administrators considered closing churches and missionary schools as a means to halt the disease spread. A great deal of tact seems to have been displayed by colonial administrators on this, reassuring natives that closing churches or schools was a temporary act.

Many natives looking for explanations for the sudden devastation caused by the unknown disease attributed it to the white people's dominance in Nyasaland. This is understandable following the uprising and subdued rebellion against the increased demand for human carriers (Mtengatenga) and wartime service led by John Chilembwe in 1915. In fact, there had been several uprisings in Nyasa, but the present one was the start of political protests and anti-colonialism. Across Africa, as observed in Nyasaland, influenza was blamed on the presence of Europeans who had conquered and seized land, unseated rulers and created new ones, imposed new laws and taxes and encouraged new religious ideas and practices (Killingray, 1999). The disease was attributed to witchcraft by some and in the remote villages there was, at first, a tendency to resort to ordeal⁶⁴ by poison (Ministry of Health, UK (1920)).

Since the medical service was so stretched, officials gave impractical advice to combat the disease using a concoction that was made of ash and water as medicine. Similarly, a range of drugs, from quinine, aspirin, salts and disinfectants, were administered in the hope that the remedies would perform miraculous wonders. These ideas, facilitated by the colonial government dealing with Nyasaland, were obtained from contemporary medical journals (Davidson, 1918). Even so, there is no empirical evidence to suggest these medical interventions were effective. Ranger (1986) tells us that bio-medical understanding of influenza was minor amongst the Europeans; as a result, they did not communicate effectively to Africans about the disease. This situation was made even worse after colonial

⁶⁴ A primitive form of trial to determine guilt or innocence by subjecting the accused person to fire, poison, or other serious danger, the result being regarded as a divine or preternatural judgment.

administrators considered economic decisions that favoured European welfare. Colonial administrators moved resources and prioritized a few medical officers to serve the white people in selected hospitals, while doing little to even bother to explain such actions. It could of course be argued that there was no point trying to explain the aetiology of influenza to the natives since the Europeans themselves knew very little about the nature of the disease.

Not only did the Europeans fail to explain the disease, they also completely failed to account for the disease mortality and morbidity. This is supported by remarks made by a medical officer: ‘the absence of vital statistical returns of the general population of the protectorate can as well be seen as limited value to public health.’⁶⁵ The colonial administration of influenza led to mistrust and unforgiving responses amongst the natives for various reasons. Native contract workers, even those that were exposed to the disease in towns, decided to flee from the proximity of the colonial masters to rural areas, which of course spread the disease even further to remote areas. These kinds of societal responses demonstrate the need to explain the truth to people about the disease in order to avoid fear, panic, denial and unpredictable actions amongst the population.

The above challenges were not the only ones; as of 1918, Nyasaland did not have a sanitary department, meaning organization and management of influenza could only apply epidemic and contagious disease rules. Thus strict quarantine measures were put into effect, severely restricting all non-military movement of people, animals and even grain, but tolerating the movements of asilikali to defend the lines of war. This suggests that the policy on pandemic influenza, particularly on strict quarantine measures, was not consistent. Nevertheless, prior to the influenza being widespread in Nyasaland, every effort was made to prevent the introduction of the disease into the area through the establishment of quarantine stations at Chinde, Chindio and the borders of all districts adjoining Portuguese East Africa.⁶⁶ This happened after the first case was recorded. However, maritime quarantine and other methods were unsuccessful against influenza, which spread explosively and was less readily identifiable (Tomkins, 1994). The example serves as a lesson for the use of non-pharmaceutical interventions such as quarantine: these measures are only helpful in delaying

⁶⁵ PRO, CO 626, Annual Medical Report on the Health and Sanitary Conditions on the Nyasaland Protectorate for the year ending 1920, Government Printer, Zomba, 1921.

⁶⁶ PRO, CO 626, Annual Medical Report on the Health and Sanitary Conditions on the Nyasaland Protectorate for the year ending 1918, Government Printer, Zomba, 1919.

infection and reducing the burden of the disease; they do not necessarily halt the disease when it is already circulating. The colonial administrators ought to have made other strides in the management of the disease; one thing they could have done was work closely with local people, such as chiefs, to find ways to avoid or manage the disease.

Although effective vaccines to manage influenza were not available during the 1918-20 outbreaks, the idea of vaccination was seen as the most successful intervention due to the success of the smallpox, typhoid fever and rabies vaccine that had been developed previous to the 1918 influenza pandemic. Even today scientists are confident that immunization can offer existing solutions to current influenza problems, but cannot be a primary strategy in pandemic influenza. Much as immunization and non-pharmaceutical interventions remain part of future resolutions for influenza, these strategies are still underestimated even in the present. Governments and policymakers today are concerned about whether these strategies will ever effectively work in real pandemic scenarios. Another lesson that was underlined during the 1918 pandemic in Nyasaland, even in terms of current policy (see Chapter 4), concerns the colonial administration's lack of responsibility towards ethical considerations in its course of action. Due to the pervading power of colonialism and racial difference, colonial officials could only allocate financial resources to the enforcement of maritime inspection and quarantine, urban sanitation, and the preservation of 'European' life and health. While this allowed sanitary inspectors to complete house-to-house visitations to detect the disease and provide consultation, it did not cater for the native population.

In desperate circumstances, volunteers were recruited from the European community to participate in relief efforts but again they were not enough to oversee the welfare of the native population. It is not clear why the colonial government ignored the potential for help from indigenous people whom they could have recruited as volunteers from local communities. Nevertheless, reading colonial African history suggests that colonial administrators had no faith in the natives, particularly in traditional medical practitioners, despite intensively using them in the white man's war. This is not to suggest that colonial officialdom in Nyasaland did less to respond to the pandemic; in fact, their actions were more than most in Africa, especially considering the medical service was so meagre. Colonial administrators admitted their inability to satisfy the health needs of a large population of natives, but nevertheless

they opened influenza hospitals and made medical aid available.⁶⁷ Colonial efforts scaled up to the extent of providing large quantities of requisite drugs which were distributed to all district officers and various missions in the protectorate for the population who were out of reach of hospitals and dispensaries. The majority of responses that contributed to the actions against influenza in Nyasa came from the colonial office in London whose advice regularly focused on energies for coping with the effects of the epidemic.

3.6.0. Conclusion: History of 1918 Pandemic Influenza: Past, Present and Future

This chapter has reviewed the history of the 1918 pandemic in the Gold Coast and Nyasaland. Some ethical concerns have been highlighted e.g. the prioritisation of the white population over the natives, and the lack of available treatment. Governance on the part of the colonial administrators and simply the lack of resources generated important ethical concerns. Gaining historical insight on the political and socio-economic level in public health is important in understanding how influenza policies are developed and how much they change over time. As observed, it was not possible to review the history of pandemic influenza under different conventional time periods: colonial, post colonial, modern period (those of the 20th century such as the 1957 and 1968). The choice of the 1918 pandemic is deliberate since according to Potter (2001) many of our current fears and knowledge are embodied in this history, history which may offer important lessons in the formulation of current policies. Potter emphasises the relevance of the 1918 pandemic influenza to epidemiologists and medical historians as it serves to underline the past with information that might help in the future (Potter, 2001).

Analyses of the 1918 events are a subject of considerable importance, but without a strong historiographical framework within which to debate and interpret history, not only are questions of validity and credibility raised but they also facilitate a “cry wolf syndrome” as far as current understanding of present day Ghana and Malawi is concerned. The purpose of this chapter was to gain some understanding of how policymakers initiate and develop policies and how the general population responds to the impacts of the disease. To a greater extent, this chapter has flagged up important sociological questions as to why the current debates and literature on pandemic preparedness in Ghana and Malawi undermine the role and relevance of history in developing policy. As mentioned earlier, historical literature and

⁶⁷ PRO, CO 626, Annual Medical Report on the Health and Sanitary Conditions on the Nyasaland Protectorate for the year ending 1919, Government Printer, Zomba, 1920.

its interpretation regarding pandemic influenza is, at the moment, sufficient across Africa, particularly Ghana and Malawi. There is plenty of scholarly work and substantial contributions of work on influenza, covering social, political, cultural and economic gaps necessary in the general readership of pandemics.

This chapter contributes in several specific ways. Tracking the spread, colonial response and demographic impacts of the 1918 pandemic influenza in Ghana and Malawi, I believe, paints a bigger picture in terms of similarities and contrasts in patterns, numbers and policies. There are many other benefits to studying the historical context of pandemic influenza in present day Ghana and Malawi, not only for its effects on political, economic and social trends, but also for understanding significant and different interpretations that would otherwise remain fragmented and under-theorized. The pandemic influenza policy of any nation should adopt a developmental pattern within its historical narratives which is beyond those influenced by the historical welfare of other countries. In respect to this assumption, the question can be raised as to whether the development of pandemic influenza policies in present Ghana and Malawi are adequately explained within the context of empirical and historical evidence. In addition, what should be the influence of the 1918 experience on contemporary policymaking?

It is possible to draw lessons from the impact of the 1918 experience which has relevance to informing contemporary policy thinking. To take what was done in 1918 and apply that to today is to learn to deal with coping with a pandemic. The 1918 experience, in terms of deaths, had economic and psychosocial impacts on those who survived. Today, death occurring at a large scale is rare and death has generally been taken out of the household. Authorities or pandemic planners need to talk about death and tough life issues that might arise during a pandemic outbreak as family members are more likely to see their loved ones die in their arms. The relevance of this is to prepare society's psychological response. One way to learn and apply what death means is to openly start discussing the death issue in terms of how people would be affected if dozens of deaths occurred in a village, including the best coping strategies if death was to occur on a large scale in the future. During the 1918 pandemic influenza, authorities prohibited public gatherings and closed schools. These actions were justified because they made a difference in attempting to manage the pandemic influenza. Today, there is varying evidence that suggests closing schools makes a difference, including the importance of the timing of school closures.

Indeed, there are striking differences between 1918 and the present. Today, we have seen an increase in globalisation and trade that has a direct role in disease transmission; as such working out ways to monitor the disease in a timely fashion during difficult circumstances will be crucial. Today, we have much more developed communication technologies powered by dozens of electronic newspapers, TVs, radios, mobile phones and internet services, although these are limited in present day Ghana and Malawi. Thus the speed at which pandemic influenza outbreak may be reported would be slow, as is noted in Chapter 6. Nowadays, we have a much more advanced sense of critical infrastructure and interdependency between the structures than our grandparents did. And the political and economic landscape has changed compared to 1918; even so, it is yet to be seen if new opportunities for more hospitals are to amount to the acceptable level of health care. In 1918 medical centres that oversaw the health of Europeans only amounted to basic nursing care. Just like in 1918, it is important to reflect that after any crisis is over, more should be done to rectify problems identified during the crisis.

In the next chapter, a conceptual theoretical framework is developed based on the historical knowledge of influenza, moral debates and empirical evidence on the role of pandemic influenza. The theoretical framework is introduced before examining its applicability to Ghanaian and Malawian pandemic policies.

CHAPTER 4: THEORETICAL AND CONCEPTUAL BACKGROUND: THE LIMITATIONS OF MORAL PHILOSOPHY AND THE NEED FOR A CONTEXTUAL ANALYSIS IN PANDEMIC DECISION-MAKING

4.0.0. Introduction

The purpose of this chapter is to develop a conceptual framework that can be used to investigate the ethics of Planning for, and Response to, Pandemic Influenza (PRPI) in sub Saharan Africa, particularly in Ghana and Malawi. I will argue for the need for a new approach to public health and bioethics to tackle the inherent ethical problems within these fields. Each discipline is problematic when considered in isolation, and each provides conflicting theoretical insights into the problems of infectious diseases. For example, some scholarly studies have argued that public health ethics tends to neglect the category of the individual within its theoretical explanations (Petrini, 2010; Bayer, 2007; De Vries et al., 2006); conversely, bioethics is said to oppose public health interests (Bayer et al., 2004; Schuklenk, 2003). I will argue that a new paradigm that negotiates the concern for the individual with the more social concerns of public health must be grounded in empirical observation rather than abstract philosophical reasoning. Throughout this chapter, I will discuss how public health ethics and bioethics can together generate an effective framework for studying ethical problems, their conception and resolution. A theoretical framework conceptualised in this way begins to offer solutions to overarching problems and parallel theoretical insights that policymakers encounter in everyday practice of public health and medicine (specifically when dealing with pandemic influenza). To develop this conceptual framework, I will examine various schools of moral philosophy and key empirical literature for contributions to the planning for, and responses to, pandemic influenza. One of the key arguments in this chapter is that moral philosophy is not in itself an adequate tool for those with responsibility for decision-making in pandemic situations. This chapter will discuss how moral philosophy has been used to conceptualise the fields of public health and bioethics and I will attempt to demonstrate the limitations in these various approaches, arguing for a more contextual approach to ethical decision-making.

4.1.0. Empirical (Fact) and Normative (Value) Ethics: Distinction and its relevance for Public Health and Bioethics

Sociologists and philosophers have traditionally held opposing views regarding the respective claims of empirical ethical research and normative claims. Social science research is

concerned with describing the world “as it is” (or how it is perceived to be) (Draper and Ives, 2007). Philosophy is traditionally concerned with how the world ought to be: it is essentially prescriptive, seeking to guide decisions and actions and to evaluate and analyze moral concepts (Draper and Ives, 2007). The two fields of study, described in this way, could be said to occupy the different worlds of what “is” and “ought” to be respectively (Draper and Ives, 2007). This dichotomy has also been mentioned within debates about sociological method as the fact/value distinction. Garrard and Wilkinson (2005) have discussed the importance of the fact/value distinction for understanding the nature and scope of enquiry into bioethics. Relating the field of bioethics to the well-known philosophical problem of deriving ethical conclusions from empirical premises, they note that ‘if we cannot derive ethical conclusions from them, the role of empirical data in bioethics appears suspect’ (Garrard and Wilkinson, 2005). However, this methodological impasse leads to a severe delimiting of the scope of bioethics, which becomes merely normative, speculative, and unable to draw conclusions from the objective conditions of social reality.

A useful way of approaching the problem of the fact/value distinction is by considering the different positions taken up by Max Weber and Émile Durkheim, two of the most important ethical thinkers within sociology. For Weber, statements of facts are one thing, statements of value are another, and any confusing of the two is not permissible (Dahrendorf, 1987). Weber's ideas on facts and values not only considered developing the field of sociology but also how an ethical approach could progress in biomedicine. Weber was concerned with the possibility of a value-free science, his theory presuming a split between the “values” of political order that are beyond critical evaluation and the science of the structure of social reality that might be used as technical knowledge by politicians. In sharpening the issue of a “value-free” science to this pragmatic point, Weber moved the debate beyond methodological arguments towards an order of relevance. He demanded that sociology attain the status of science because he wanted clarity about the world, but his inability to reconcile the claims of fact and value within a single method of social enquiry meant that his search for truth was cut short at the level of pragmatic action.⁶⁸ In the end, Weber did not feel the need to legitimise the study of society by establishing its credentials as a science, thus keeping values and facts separate.

⁶⁸ Weber's biography at <http://www.biography.com/people/max-weber-9526066> and his collected works at <http://voegelinview.com/from-The-Collected-Works/max-weber-and-positivism-pt-1.html> (Accessed: May 23, 2013).

For Durkheim, conversely, moral rules come from society and are thus amenable to scientific study, and they must be viewed as facts like other social facts. Durkheim (1953) tells us that society must be labelled as a collective being and viewed as a set of social facts since these have a different reality from the facts of natural science. Durkheim and Weber's methods are useful as they enable a relationship between values and ethics that might relate to the developing field of sociology despite their origins in opposing principles. Adherence to facts by these theorists is usually praised and it is an assurance that empirical evidence in relation to ethics has not been entirely rejected by normative accounts. This makes it possible to derive ethical conclusions from the (contextual) facts of the social world.

This debate as to the possibility of ethics being derived from empirical observation continued, as is reflected in the historical development of medical ethics. In the twentieth century, different ways to examine ethical issues emerged. By the 1970s, some scholars sought to create a different kind of medical ethics to examine normative values; the new discourse of bioethics was the result. The term "bioethics" is believed to have been invented by Van Rensselaer Potter, a research oncologist at the University of Wisconsin, who published an article in 1970 entitled 'Bioethics: the science of survival' (Potter, 1970). This was later followed by his book *Bioethics: Bridge to the Future* (Potter, 1971). The earlier practice of bioethics was characterized a great deal by agreed moral arguments and a methodology that took the form of voting, as opposed to ethical analysis. It was only later that ethical theories became available for ethical analysis and judgment became concerned with issues like "who decides, when to decide and who benefits from the inadequate resources". Despite the scope of ethical analysis and arguments, moral direction and critical moral reflection remained the centre of controversy. Bayer et al. (2004) suggest that methodological controversy arose because the emerging bioethics drew its principles from general rather than Hippocratic medical ethics. The rationale for situating bioethics within a general ethical paradigm was partly to enable the posing of questions of immediate social concern, such as; "can anyone do any good ethics without underlying theory"? and "what ethical theories are appropriate in ethical analysis"? However, other disagreements and conflicts in the methodology still lingered and no one seemed able to deal with them during the paradigm shift to bioethics.

Emerging infectious diseases in public health confronted bioethics with other concerns, another aspect that created moral heterogeneity in the field of bioethics. The fact that there were many concerns about the rights of individuals and the responsibilities of the state to

protect health, led to the emergence of the new field of public health ethics – a perspective this thesis is concerned with. Since the development of bioethics and public health ethics in the 1970s, adversarial relationships and tensions have existed between those concerned with issues of individual freedom (including autonomy and human rights) and those who emphasize the role of society and culture in establishing ethical conduct. Although individuals are competitive with one another for resources or status, it is important to remember that society is made up of individuals, thus ways of dealing with conflicts are embedded in institutions and organizations to which they belong. The problem, however, is the issue of legitimacy of control. Institutions may empower individuals but they do so in ways that are constrained by rules and sanctions. Weber is very clear that we should distinguish power constrained by law or other social practices from power that is exercised in a purely individual and arbitrary fashion. Through such rules and sanctions, institutions can empower individuals to exert control over resources and social functions and, by doing so, limit or deter social order and thus indirectly resolve ethical issues in general.

Bioethics and public health ethics are further discussed later in this chapter. Just as Max Weber and Émile Durkheim could not reach agreement, public health ethics and bioethics tend to secure moral considerations between individuals and population health with completely opposing claims. The presence of tension and disputes signify that conflicts among values arise in public health, where facts are considered to narrow the shortcomings of values that frequently appear. Even today, moral philosophers struggle to balance public health decisions between what is best for the individual and society as a whole. This is when empirical and normative ethics should come into play to guide ethical actions. However, these goals are being increasingly challenged by a number of factors, mostly those relying on empirical and normative accounts of ethical reasoning.

When laying out the debate between empirical and normative accounts, it is important to remember that philosophy can fundamentally aid and clarify values and views of reality: the study of philosophy is not simply an isolated endeavour, but rather one that attempts to make normative ideas clearer, in order to resolve or prevent disputes. The presence of philosophy is an important aspect for any sensible debate on ethics, although this is clearly disputed within the texts of empirical ethics. For Engelhardt (1986), empirical ethics are always to some extent derived from normative ethics, that is, within the realm of ideas and values brought forward to sketch a rational and consistent account of empirical answers. This, however, requires one to be a geographer of concepts and values, analysing and criticizing the

advantages and disadvantages of alternative projections and the mapping of concepts and values. This kind of undertaking is inherently philosophical; it is not one of empirical anthropology or sociology. Bioethics as an intellectual enterprise contributes towards the better understanding of controversies in a similar way to philosophy. It offers a better appreciation of our cultural context by encompassing analytic skills and a knowledge of the history of ideas (Engelhardt, 2011).

Empirical ethics is not particularly concerned with what is held to be the correct conduct in a particular society, or with determining what viewpoint is most credible to most people. Rather, it endeavours to determine what reason should be; credited by impartial, unprejudiced, non-cultural biased reasoning, the only interest of this is consistency and the force of rational argument. This unprejudiced viewpoint can be fully achieved only through the goals of empirical research, which serve as a guide to tentative moral answers. There are numerous but often neglected relationships between normative and empirical ethics that provide unique answers to particular questions: both provide moral guidance, in the sense of giving instructions regarding the likely character of the moral world and the moral significance of choices within biomedicine. Similarly, the development of sociology led to an interest in ethical reasoning within empirical perspectives; for example, the assertion that empirical sociological research in bioethics should be focused on the ethics of research, the creation of moral boundaries, bioethics and social policy, and the bioethical imagination (De Vries, 2006). According to De Vries (2006), this passage offers practical models of cooperative work, where the strengths of each discipline are brought together to advance our understanding of bioethical issues and to move towards a more just and effective social policy.

Empirical ethics in a broader sense holds profound implications for moral philosophy and public policy. Today, it is increasingly being proposed that applied moral philosophy directing moral perspectives demands evidence-based information. However, embracing empirical evidence remains a slow and contested issue in bioethics because it has long been firmly based on normative theory. Yet empirical and normative ethics taken together allow for a deeper understanding of people's interests, patterns of behaviour, and culture. Moreover, it broadens the understanding of ethical concerns from an empirical perspective into people's actual objectives. If empirical public health ethics and moral philosophy can be applied together to gain insights into the ethical issues of planning for, and response to,

pandemic influenza, then it is necessary to align this dissertation with that process. It is hoped that meaningful interpretation derived from empirical ethics, applied within the knowledge of normative ethics, can provide ethical solutions to problems encountered in public health pandemics. An ethical methodology that proceeds this way, supported by evidence of the nature of ethical issues, is likely to guide and clarify moral claims or ideas in a more satisfactory and effective way. For example, by using empirical evidence, moral theories will be applied intentionally and not in an exploratory or unconscious way. The other advantage is that the outcomes of moral acts can be assessed precisely, since these outcomes are validated.

4.2.0. Public Health and Public Health Ethics: Definitions and Conceptualizations

One of the goals of this study is to identify the public health related dilemmas and emerging problems faced by policy-makers during the 2009 H1N1 pandemic influenza. To construct a complete picture of what ethical dilemmas or problems might mean in this context, an extensive analysis is needed. This entails defining public health and conceptualizing the ethics embraced in moral theories. A working definition of public health is therefore needed before dealing with the data-sets which form chapters 6-8. Public health is a contested concept with various definitions. However, one widely recognized definition comes from the World Health Organization (WHO); it defines public health as the science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society and individuals (Wanless, 2004). Although the tenets of public health are to prevent health threats through good advice and the prevention of disease by concerted efforts, its goals have shifted towards a crowded intersection involving prevention strategies, health risks and health outcomes. The terminology of public health was first coined in the early part of the nineteenth century to distinguish communities and societies from individuals when promoting and protecting the population's health.

In 1920, Winslow defined public health as:

“the science and the art of preventing disease, prolonging life and promoting physical health and efficiency through the organized community efforts for the sanitation of the environment, control of community infections, the education of the individuals in principles of personal hygiene, the organization of medical and nursing services for the early diagnosis and preventative treatment of diseases, and the development of social machinery which will

ensure to every individual in the communities a standard of living adequate for the maintenance of health” (Winslow, 1920).

Despite Winslow's definition of public health being outlined in 1920, its influence can still be seen in many of the recent accounts of public health. For example, the Acheson report (Acheson, 1988) and the Institute of Medicine (1988) subsequently embraced Winslow's definition. What is peculiar in Winslow's definition are the discussions about how public health is to be achieved; specifically, how things ought to be arranged to bring it about. However, the noticeable difference between the definition of public health by Winslow and the revised versions articulated by the IOM and Acheson report are seen to be embedded within a more critical interpretation of the concept of public health.

The Institute of Medicine (IOM) redefined public health in 1988 as “public health is what we, as a society, do collectively to assure the conditions in which people can be healthy”. On the other hand, Acheson redefined it as “the science and art of preventing disease, prolonging life, and promoting health through the organized efforts of society”. This is the definition the WHO tends to use nowadays. The first definition seems to allow for the non-universal nature of the concept of ‘health’, and in this sense incorporates critical interpretations of health, while the second is normative taking for granted the (universal) concept of health in the manner of Winslow.

The normative dimension and debate about the definition of public health has not ended; Lawrence Gostin has recently argued for a redefinition of public health. For Gostin (2010) public health is defined as a societal obligation to assure conditions for people's health. In the same debate, Childress et al. (2002) also noted that public health is primarily concerned with the health of the entire population, rather than the health of individuals. Childress and his colleagues provide a list of features that emphasize the promotion of health and the prevention of disease and disability: the collection and use of epidemiological data; population surveillance and other forms of empirical quantitative assessment; a recognition of the multidimensional nature of the determinants of health; and a focus on the complex interactions of many factors – biological, behavioral, social, and environmental – in developing effective interventions (Childress et al., 2002). This account given by Childress is an important one because it includes not only an account of the aims of public health, but also a focus on the entire population's health and determinants of health, including a list of certain

public health methodologies. According to Mann et al. (1994), civil liberties and public health must be fundamentally linked in order to realize policy goals in a non-discriminatory manner.

The meaning of public health differs from place to place. The original concept of public health – the purpose of which constituted societal approaches to improving population health – has recently been applied to clinical medicine and focuses on the interest of the individual. Public health is a derivative term that is population-based, meaning that it draws its evidence from population statistics (such as relative or attributable risks) rather than individual data entrenched in clinical medicine. The primary health care (PHC) approach of the Ottawa charter of 1978 is another good example which attempts to define public health through its ten key areas of preventive health (see appendix 2) (Tarimo and Webster, 1994). The major concern for the PHC which is entrenched in public health is to set priorities based on likely improvements in overall (not disease-specific) health in populations and population subgroups by conceptualizing prevention as a set of activities (Starfield et al., 2008). However, these goals have become eroded and increasingly neglected amid emerging themes of globalization, trade, and foreign policy (Sambala et al., 2010).

Having given an overview of different public health definitions, it is now important to look at how public health ethics is construed. At this point, it is worth noting that the different definitions of each assume different understandings of the field in terms of methodologies and attitudes to concepts such as preventive medicine. Furthermore, the different meanings of public health have produced confusion in the development of a coherent public health ethical code. Thomas et al. (2002) have discussed the Code of Ethics in Public Health. The scope of public health changes over time under the influence of new paradigms, so the concept of public health ethics has been stretched beyond its initial definition. Not only has public health ethics become increasingly challenging for policymakers, but better approaches to public health ethics have evolved, further changing the concept of public health. Coughlin and Beauchamp (1996) define public health ethics as “the identification, analysis, and resolution of ethical problems arising in public health practice and research”. Public health ethics has completely different domains of interest compared to its counterpart “medical ethics”. Whilst public health attempts to deal with emerging and re-emerging communicable and non-communicable diseases, public health ethics seeks effective early warning systems and ways to deal with these problems before they worsen. Since public health ethics is a subfield of

public health and has recently been recognized as a subfield of bioethics too, Coughlin (2008) has argued for the inseparability of public health and public health ethics, demanding the interplay between population, health and the individual. Traditionally, public health and its ethics incorporate individuals and society within their analyses.

Whilst definitions of public health tend to emphasize communities, individuals remain an important part of their analyses. The professionals representing the field of public health medicine, such as epidemiologists, social scientists and psychologists, work with both individuals and communities towards well-defined goals of public health. Applying ethical considerations in this way remains problematic, especially for African professionals. For example, how do you decide who gets the limited vaccines when everyone needs them? Experts in public health ethics have an obligation to safeguard society as well as protect individual interests. This is unlike bioethics, where the individual is the primary focus.

4.3.0. Principal Moral-Philosophical Paradigms that have Informed the Discourses of Bioethics and Public Health Ethics

As The Nuffield Council of Bioethics (2006) has argued, given the reasons behind decision-making, ethical analysis can lead to a shift in our views, as we come to appreciate the basis on which those with different opinions make their judgements. From its inception, bioethics and public health ethics have been informed by various schools of moral philosophy. In bioethics, particular influences have been: utilitarianism, which focuses on ‘happiness, well-being, and the material outcomes of our actions’ (Häyry, 2007); some form of Kantian or deontological ethics (often overlapping with liberal individualism), which stresses issues of human autonomy, as well as the duties and rights of rational individuals; and communitarian or virtue ethics (usually based in Aristotelian theory). Such theories are ‘centrally concerned with the notion of the ideal or ‘good’ society, virtuous being and action, regard for the other, and so on’ (Peterson, 2011). The field of public health ethics and bioethics can be seen as dominated by moral philosophy, a discipline concerned with articulating and defending the rights and wrongs of behaviour.

Ethical reasoning and judgement in this case depends on the meaning, cultural values and morality linked to the problem. It is appropriate to define moral theory as a branch of philosophy that deals with morality and the distinctions between right and wrong. Moral theories set out rules of conduct for any human action and offer a theoretical starting-point

for public health ethics and bioethics. Their use in public health gives the experts an opportunity to explain the reasons for certain courses of action and justifies decision-making. However, public health and bioethics deal with moral theories and ethical problems in different ways. There is no moral theory (or even combination of theories) that can balance the ethical interest of medicine and public health – a consensus conceptual framework that theoretically integrates and engages empirical viable research. This provides an opportunity to analyze and study ethical situations whilst helping practitioners define and use moral theory. Callahan and Jennings (2002) have recently observed how moral reasoning and decisions are concluded in public health. In their view, ethical analysis, which focuses on the multifaceted nature of problems, is lacking. The difficulty in finding definitive solutions to problems that take a complex form, such as narratives, is partly attributed to the lack of sufficient teachings of public health ethics in schools. Callahan and Jennings (2002), for instance, attribute the narrow application of public health ethics to the large number of moral theories. This makes it difficult for public health professionals to select the appropriate discourse for their different roles. Technical skills and good intentions would be appropriate solutions for utilizing moral theories in public health ethics. However, the available conceptual frameworks for addressing complex moral problems in the field of bioethics and public health are far too inadequate. A range of moral theories were explored through a theoretical case study during the fieldwork and are discussed in chapters 8 and 9.

4.3.1. Utilitarianism

The school of utilitarian ethics has been particularly influential in the field of bioethics. Häyry (2007) remarks that by the early 1990s, “bioethics was widely considered synonymous with utilitarian medical ethics”. This influence may be attributed to the fact that, of all the moral philosophies reviewed, it is the most suited for decision-making and therefore useful for policymakers. The fundamental premise of utilitarianism, both in terms of the actions of individuals and of social policy, is that actions should aim for a maximum utility, which is usually defined in terms of creating happiness or satisfaction. The origins of utilitarianism are found in the writings of Jeremy Bentham (1970) and John Stuart Mill (1969). Utilitarianism holds actions as right or wrong according to the balance of their good and bad consequences (Beauchamp and Childress, 2001). For a utilitarian, overall utility is based entirely on the consequences of an action. Moral justifications compel the utilitarian to engage in methods of judgement that aim at producing the maximal value. Bentham (1970) refers to greatest happiness of greatest numbers as the criteria in the measure of the consequences. Although

this perspective has an intuitive appeal in public health, the doctrine is split into two factions because of the disagreements in the index of consequence measurement. Subjective utilitarians believe that the measure of outcomes should be grounded in individual experiences, while objective utilitarians seek an index measure of knowable outcomes. Utilitarianism is a distinct approach to ethical reasoning in public health despite suggestions of unfairness. For example, a utilitarian can prioritize resources to those who make the greatest contributions to society rather than those in the greatest need. Analysing ethical problems using the utilitarian approach, it is easy to notice critical variations of views arising as a result of different interpretations of the measure of utility. Roberts and Reich (2002) attribute the variation in the capacious usage of the utilitarian model to minimal public health training in ethical analysis. However, the advantage of the utilitarian model of decision-making is that it deals perfectly with chaotic environments, the consequences of which can be fully supported if such values of utility are acceptable. Utilitarianism can be seen in the increasingly collectivist direction of public health ethics, since it directly advocates state interventions. Public health utilitarianism is renowned for creating an increasing emphasis on social rather than individual welfare. However, it is being challenged as a foundation of public health ethics by other moral theories. Utilitarianism is currently insufficient to deal with experiences and debates concerning individual rights; for example, “whose rights take precedence in a pandemic when resources are inadequate – is it those of infants or grandparents?”

4.3.2. Kantianism

Kantian/deontological ethics are concerned with the inherent moral character of actions and whether or not an action can be ‘universalized’, so that any rational agent would act in a way that is consistent with how he or she wishes to be treated in an identical situation. Hence, the moral agent of Kantian theory contrasts strongly with the utilitarian agent aiming to maximize utility or satisfaction, instead focusing on the motivation of an act, which should always be in accordance with the principle of duty or moral obligation. Kant (1998) states that an ‘action done from duty has its moral worth not in the purpose to be attained by it, but in the maxim in accordance with which it is decided upon’. In practice, bioethicists, influenced by Kantian positions, tend to defend absolute moral positions, typically arguing, for example, for the inherent moral wrongness of euthanasia, and ignoring the potential consequences of such moral absolutes (such as the suffering caused). A utilitarian would argue that in a hypothetical situation in which one could choose to kill one person in order to

save the lives of one hundred people, one should choose to kill the person on the basis of the principle of the greatest happiness. Conversely, a deontological position would stress the inherent wrongness of the killing of an innocent. Kantian ethics are often used in debates about resource allocation, typically to support the defence of universal rights to healthcare (Daniels, 1985).

According to Roberts and Reich (2002), deontology and consequentialist theory both claim to be universal moral theories and both seek to develop a single moral standard for all human societies. Furthermore, Kantian theory focuses heavily on individual rights. Like utilitarians, Kantians claim that the moral worth of an individual's action depends exclusively on the moral acceptability of the rule that morally determines valid reason for an action (Kant, 1998).

Kantian ethics are often limited in situations where tough decisions have to be made, such as a chaotic pandemic influenza environment. For Kantians, the categorical imperative of "rule of obligations" such as truth-telling, determines moral worth, but this is difficult in a pandemic situation where everyone in a population wants to receive a service but access is limited. This raises the question: are rules of good conduct such as truth-telling, equity and honesty, adequate for ethics of public health?

4.3.3. Liberal Individualism

Liberal individualism is a right-based theory that uses moral discourse to protect an individual against oppression, unequal treatment, invasion of privacy, liberty etc. Liberal individualism appears to be dominant in American culture. But the philosophical viewpoint of this moral outlook has recently had great influence on other cultures in the world, especially in the political and economic debates between conservatives and liberals. The moral rules and principles of individualism consider moral decisions that support the protection of human life through advocacy of right to treatment, autonomy and confidentiality. This overarching framework has philosophical roots in the work of Kant which lays down rules and procedures to counterbalance its emphasis on self-interest with an ethical view of human agents as having inherent value, dignity and rights (Harrist and Richardson, 2006). The conflict between personal -interest and respect for the rights of others is settled by formal principles of procedural justice (Neal, 1990; Rawls, 1971). Liberal individualism represents a genuine endeavour to do away with dogmatism and affirm

freedom without abandoning our moral duties to others (Richardson and Zeddies, 2001). Liberal individualism, unlike utilitarianism and Kantianism, prescribes moral judgments using the legitimate role of rights in protecting individuals from political and scientific injustices. For example, Dworkin (1986) attempts to define the legitimate role of rights by suggesting that rights can either be absolute or prima facie. In his thesis, Dworkin argues that political rights are not absolute, thus can be overridden by other rights, such as those of a state, if such rights warrant a far more significant benefit. Although ethical analysis of individualism puts individuals at the heart of the ideology, Dworkin insists that claims of public utility are highly significant in overriding individual rights. The state cannot act as if rights never existed when making their decisions solely based on social utility. But how do public health experts successfully protect the legitimate interest of population health in the midst of this confusion without denying fundamental human rights?

4.3.4. Communitarianism

Communitarians seek to reduce the attention given to individual rights and privileges, and rather strengthen the attention on communal values and interests while maintaining the connection between an individual and the community. Communitarianism is a “system of social organization based on small self governing communities. It emphasizes the responsibility of individuals to the community and the social importance of family units”⁶⁹. Family units act as an intermediate between an individual and the state and thus focus on the need to balance individual rights and the interests of the community. The theoretical perspective of communitarianism maintains that our moral thinking has its origins in the historical traditions of particular communities and not simply collections of individuals (Petrini, 2010). According to the Encyclopaedia Britannica the “term communitarian was coined in 1841 by John Goodwyn Barmby, a leader of the British Chartist movement, who used it to refer to utopian socialists and others who experimented with unusual communal lifestyles”⁷⁰ Philosophically, this was to be used in the generation to come to understand the importance of common good. Rivals in classic accounts of communitarianism include Mill and Locke. According to the Encyclopaedia Britannica communitarianism is an

⁶⁹ The Oxford Pocket Dictionary of Current English (2009).

<http://www.encyclopedia.com/topic/Communitarianism.aspx#2-10999:communitarianism-full> (Accessed: April 05, 2014).

⁷⁰ <http://www.britannica.com/EBchecked/topic/1366457/communitarianism> (Accessed: April 05, 2014).

“attempt to deepen the understanding of communal and social solidarity rather than theorize about the relationship between the individual and humankind”⁷¹ A communitarian stresses ties of affection, kinship and a sense of common purpose and tradition, and then the significance of social bonds and the balance between individual rights and social responsibilities, promoting persuasion rather than coercion in the quest for pro-social behaviour through communication, consensus and pluralism. Like all critics of Kantianism and liberalism, they point out that these theories neglect the collective dimension of public-health that is strongly valued in communitarianism (Petrini and Gainotti, 2008).

4.3.5. Four Principles of Biomedical Ethics

The four principles is a relatively new approach that derives its ethical characters and virtues from within the dominant normative ethical theories. Theoretical pioneers, Beauchamp and Childress (2001) claim that their account of ethics as a moral theory is consistent with the criteria for theory construction. However, their critiques argue that principlism is not a theory like other normative theories. Callahan (2003), for example, argues that principlism is not nearly as rich a moral theory as it initially seems. He has observed that the four principles have individualistic bias and the capacity to block substantive ethical inquiry. According to Beauchamp and Childress (2001), the four principles of biomedical ethics are characterized by the language of autonomy for individuals, non-maleficence, beneficence and justice. The principle of respect for autonomy acknowledges that a person’s right to hold views, make choices and take actions are based on personal values and beliefs (Beauchamp and Childress, 2001). The autonomy principle is closely connected to Kant’s observation that all persons, as rational beings, deserve respect. Autonomy based on this understanding will imply that the patient’s wishes are to be followed, while in rationalist terms there could be reason to go against the patient’s wishes. Like philosophy, rationalism views reason as the origin of knowledge or truth.⁷² The Principle of non-maleficence asserts an obligation not to inflict harm on others. However, duties that seek benefits for the patient may conflict with this obligation. For example, if an influenza patient refuses treatment that is proven and beneficial, should a doctor withdraw treatment? If not, how does this relate to the autonomy of the patient? The Principle of Beneficence is the obligation to treat persons with respect,

⁷¹ <http://fs.huntingdon.edu/jlewis/syl/IRcomp/303WrightComunitrnV2.htm> (Accessed: April 05, 2014).

⁷² Rationalism basically disrespect other ways of knowing and it should be distinguished from the term rationality or rationalization.

refrain from causing harm and maximize the benefits for others. This category requires doing “good” to others, but this principle does not indicate what “good” is and what it means to an individual (Petrini and Gainotti, 2008). The concept of Justice is rooted in earlier works by John Rawls. However, Beauchamp and Childress’ Principle of Justice asserts equitable and appropriate treatment in light of what is owed to persons. Their meaning can be interpreted differently, since the four principles do not define what “just” is, or who is entitled to this justice. Nevertheless, Beauchamp and Childress have attempted to evaluate their approaches to ethical reasoning, such as public health, to capture a wider audience. Critics have maintained that the principles of biomedical ethics are to resolve ethical problems in the health care setting.

4.4.0. Towards the Need for New Concepts: Contributions of Moral Theories to Public Health Ethics

Wynia (2005) notes that protecting civil liberties fosters healthy behaviours, while restrictions on liberty drive unhealthy behaviours underground, where they may wreak greater havoc. Striking a balance between the competing and crosscutting issues between societal rights and individual civil liberties to justice is not new. Mann et al. (1994) attempted to reconcile public health in a human rights framework to sort out the blunt consequences each had on the other. Mann et al. (1994) advocate two fundamental responsibilities that every public health practitioner must contend with. One is to protect and promote public health; the second is to protect and promote human rights. After considering Mann's work, Childress et al. (2002) did propose mapping the terrain of public health ethics. However, the framework proposed for future public health ethics does not solve Mann’s concerns about human rights. Childress proposes five justificatory conditions: effectiveness, proportionality, necessity, least infringement and public justification. These are to determine the superiority of public health over individual values such as liberty; this does not mean warranting coercive public health action that eliminates ethical issues. Jonathan Mann’s call for public health responsibility is an opportunity to highlight the need for bioethics and public health ethics to collaborate in addressing conflicts.

Using the work of Mann et al. (1994) and the ethics of prevention proposed by Pellegrino (1981), it becomes quite clear that solving ethical issues before they arise is the best answer to the conflicting problems of public health. According to Hoy (2004), “this is equally [as] good as saying that people should be provided with obligations that present themselves as

necessarily to be fulfilled but are neither forced on one or are enforceable". It is at this point, as Edmund Pellegrino suggests, that we should attempt to eliminate the causative factors of ethical issues and push moral concerns outside the ethical realm. According to Hoy (2004) in his post critique model of critical resistance, ethical resistance and freedom are conceptually and practically related. The motivation for resistance comes from encountering constraints on freedom. Hoy's analysis may provide sociological insights to support Pellegrino's notion of ethics of prevention and Mann's idea of civil liberties. Ethical behavior is more than the law; it is about individuals, society and each of us. Hoy's book illustrates clearly that ethical obligation is unenforceable precisely because others are powerless in relations with one another. According to Bachrach and Baratz (1963), power requires the connectedness of obligations imposed by people in power, and individual compliance. If there is any social order in this power relationship, it is the compliant that chooses what to do, thus power must be given to the individuals because social order is dependent on the active participation of individuals. Actions that are obligatory and yet unenforceable suggest they are not freely undertaken, and as a result of this, people are unlikely to comply, leading to social disorder and ethical concerns.

Unless legislation or state incentives are enforced accordingly, problems of resistance will be addressed. Likewise this suggests that if social order is maintained, people are able to cooperate, comply with and support actions that are good for society. In short, people are likely to obey the law if it is agreed upon between the people and the authorities prior to enforcement. Where social order breaks down, and in attempt to restore it, authorities may use force or punish individuals who do not cooperate or comply; hence such actions may result in or cut close to ethical issues. This illustrates the interconnectedness between social order and ethical concerns. For example, if social actions imposed by the authorities go against individual interests in the case of quarantine, the affected individuals will not obey and if they are forced to comply, such action goes against the authorities' moral obligation and individual rights.

The concept of social order is broad and interacts differently from ethical issues. For example, solutions to social order proposed by Hobbes (1651[2009]) can be regarded as authoritarian or autocracy of which libertarians would not welcome. Parson's approach to solutions of social order is also problematic because it fails to incorporate people's norms including their social approval of individual choice and social interaction. Hayek's

(1968[2009]) solutions to social order offer an interesting account; as it begins by describing the two kinds of social order that exist – “made” and “grown”. This will be discussed further in Chapter 9 (see 9.10.0 and 9.10.1). According to Hayek, order is a design of the thinking mind that exists as an imagination although is not readily recognised. Such order is manifested in society and determined by individual actions by matching intentions and expectations of other individual actions that may not be known by everybody. Drawing on this understanding of spontaneous social order, it is important to apply this concept in this study alongside traditional ethical reasoning and decision-making in order to balance individual interests against those of public health. To achieve this, according to North et al. (2009), we need to study social structures, social interactions and social transmissions as part of PRPI activities.

As will be further discussed, maintaining social order can mitigate ethical problems before they occur. In cases where actions constitute moral concern and there is need to be mitigated, moral theory is also useful if applied accordingly and supported by those without power. Moral theory is good only if it is practical, thus we require moral consideration of all available moral theories, such as utilitarian, communitarian and Kantian, liberal individualism, the four principles of biomedical ethics and others, such as ethics of care etc. Going beyond the concept of utility, rights and opportunities, sociality and solidarity is the right direction in rationalizing benefits in society. Embracing and attempting to use general moral theories in public health ethics does not mean it cannot commit to any particular theory. Childress et al. (2002) are right in suggesting that the most effective ways to protect public health are to respect general moral considerations rather than violate them, employ voluntary measures rather than coercive ones, protect privacy and confidentiality, and, more generally, impress rather than impose on the community.

4.5.0. Bioethics and Public Health Ethics

Bioethics is defined as a field that studies ethical issues in biomedicine. Often the term will cover a range of areas to describe medical, clinical, research ethics, biomedical and public health ethics. Although the role of bioethics is to determine moral progress in each area of the scientific discipline, there are many overlaps in the topics covered by the term. The concept of bioethics attempts to master the ethics of other fields but finds itself in conflict with the idea and meaning of public health. The definitive task of bioethics is to determine good and right actions in its ethical analysis. However, when doing so, this raises moral conflicts in the

scope of other considerations. It is within these controversies of who gets ethical priority (the individual or society) that the field of bioethics has widened its ideologies to incorporate the idea of public health.

Public health ethics is founded on societal responsibility to protect and promote the health of the population as a whole (Buchanan and Miller, 2006). Ronald Bayer was among the founders of public health ethics in the 1970s. Other scholars contributed with writing proposing the ethics of resource allocation, ethics of prevention and civil liberties/public health, to expand the ethical remit of bioethics (Kass, 2004). Ethical analyses that go beyond patient-physician relationships to consider the challenge of protecting the greatest number of people were not then a subject of bioethical inquiry. Even now, the field of bioethics is widely understood to encompass but is not be limited to clinical ethics. The fact that the health of the public is not a subject of ethical inquiry raises concerns for the ethics of infectious diseases. For example, during a severe pandemic influenza outbreak, scholars have warned that bioethics' prevailing doctrines need to be reassessed in order for bioethics to meet the needs of public health (Lachmann, 1998). This problem is attributed to its history and its lack of philosophical perspective mirroring public health issues (Kotalik, 2006). For example, the *Encyclopaedia of Bioethics* defined the earlier content of bioethics, but philosophers failed to appreciate the characteristics of infectious diseases that confront public health. The *Encyclopaedia of Bioethics* omitted the imperative of public health ethics, suggesting that infectious diseases at the time were not considered to be themes of ethical significance. A study by Francis et al. (2005) notes that if bioethics had considered ethical debates in infectious diseases, the development of informed consent, confidentiality and distributive justice would be construed differently from the way they are now.

This thesis supports the view that bioethics lacks sufficient interpretative power to locate theories for specific ethical solutions in public health. For most scholars, bioethics is assumed to be the wrong place to start public health ethics (Bayer and Fairchild, 2004). Callahan suggests that ethical problems in public health go beyond solutions of bioethics. In Africa, where developing ethics is basically zero, public health professionals might not be conversant with moral theories due to their complexity in determining what is appropriate and what is not. This raises questions about how African countries like Ghana and Malawi are prepared to prevent and manage ethical issues when bioethics and public health ethics are unable to construct principles that are agreed on by all concerned to be applied in a pandemic situation.

4.5.1. Can Bioethics and Public Health Ethics be Incorporated into a Single Paradigm?

Little agreement exists on the paradigm of bioethics in solving moral problems. As noted earlier, philosophical criticism in bioethics is embedded within the approach of engagement. Three main positions distinguish bioethicists; all relate to their methods, justifications and decision-making. One group of bioethicists may reach a justified moral judgment by means of a “top-down” approach when undertaking ethical analysis. This group usually place emphasis on general norms and ethical theory and constitute three broad categories: consequentialism, deontology and teleology (Kuczewski, 2002). A second group of bioethicists justify their decisions by taking a “bottom-up” approach to moral analysis. An example of this ethical approach is casuistry. Casuistry is a single and universal ethical theory that relies on individual cases – it proceeds inductively, and grounds ethical justification in a given problem. The final group of bioethicists take none of the above approaches: the approach, often known as the coherence method, is developed through a process known as "reflective equilibrium". The "four principles approach" to health care ethics utilizes this kind of justification.

Conflicts and disagreements are quite common in contemporary bioethics because of the methods used for problem solving. Based on the consensus approach, bioethicists derive moral decisions depending on the solutions that have public consensus. In contemporary bioethics, consensus is a process of reaching an agreement on moral solutions. Although this approach is important, it has its own relevance in pluralistic society and is counter to the ideals of secularist societies. It is widely accepted that bioethicists embrace consensus as a goal to their efforts. Nonetheless, interpretation of this means that the role of bioethics may be compromised since bioethicists advocate particular ethical themes. In fact, bioethicists should strive to find the outcome of moral analysis and not simply be influenced by consensus, which sometimes may have little impact on social policy.

Although bioethics is highly established as a discipline, it is yet to suggest relevant ethical methods for collective efforts in public health. The American Public Health Association recently met to discuss a proposal to define this contribution; however, not all moral theories, such as deontological, are available for a public health contribution (Callahan and Jennings, 2002). There is no specific contention of ethical analysis from which to draw specific principles and serve them as references in public health. I do not suggest a set of rules to

make conclusions in moral analysis of public health issues, but rather a method that will provide substantial analysis. Public health moral dilemmas require more precise ethical analysis that demonstrates public health circumstances. The difficulties of moral justification in public health ethics, especially which moves away from the patient-physician paradigm towards new considerations of population health, needs to be explored while respecting autonomy and individual rights. In current research, it is hypothesized that public health professionals' attempts to resolve ethical problems, using the approach of bioethics, instead heighten conflict and infringement. This was evaluated in the context of Ghana and Malawi to ascertain the hypothesis (Chapter 8). By moving bioethics closer to public health ethics, it is hoped that African professionals would have the opportunity to manage individual and societal health while avoiding becoming embroiled in these futile debates. For example, preventing pandemic influenza by establishing adequate surveillance units and managing influenza by treating patients effectively with antiviral drugs means that ethical issues relating to surveillance or access to healthcare would be outside the context. Applying the ethics of prevention can attempt to eliminate most ethical problems such as hard rationing decisions. For example, Edmund Pellegrino suggests that simply acquiring adequate resources, or improving health service provision and shifting resources from where they are not needed to meet preventative demands, can solve most ethical issues. Pellegrino (1981) suggests a spectrum of interventions, such as health education and incentives. Faden and Faden (1978) conclude that ethics of education as public policy can facilitate persuasion and manipulation against the interests of public health.

4.6.0. Empirical Public Health Ethics: Bridging the Gap Between Theory, Policy and Practice

In public health literature of recent years, the issue of ethics has been advocated to deal with ethical problems for a variety of reasons. Until now, little empirical knowledge has been available on the types and nature of ethical problems related to pandemic influenza. This raises the question of whether current empirical ethics evidence can bridge moral theories, public policy and public health practice.

Empirically investigating ethical issues relating to influenza pandemics is one such area that is relatively under-researched and has inhibited the systematic development of the research agenda and meaning of ethical issues. An understanding of ethical issues can only be obtained if we investigate them through various methods of study. Traditional methods for

collecting ethical data tend to use questionnaire based quantitative and qualitative approaches. More recently, desk research methods, such as mathematical and epidemiological modelling, have explored hypothetical ethical issues, but only a few have looked at emerging ethical issues arising from an influenza pandemic. While a number of these studies have mapped out ethical issues of other diseases, very little is known on pandemic influenza. Ethical issues on pandemic influenza that have been documented are largely normative and lacking in empirical evidence. For most, these ethical issues are outside the scope of the African context. While ethical issues can be generalized, it is not scientifically acceptable to seek or manipulate ethical solutions of one issue of public health to fit another. However, policymakers often do so to help to ground appropriate decisions.

A focused debate on ethical issues cannot begin unless we first gain insight into the ethics of research and practice. A full account of research ethics is given by Canadian based researchers who have studied ethical issues of HIV/AIDS in an international setting.⁷³ Their study, although manifestly in HIV/AIDS, explored ethical issues arising in research settings where infrastructure and the local ethics review processes were inadequate. The study highlights ethical issues at every stage of research, including the researcher's participation, politics and challenges in balancing rigorous data collection with cultural sensitivity (Gahagan et al., 2008). Kazatchkine and Hirsch (2000) studied ethical issues related to clinical research in developing countries. According to their analysis, going around asking people for consent, so that they bear the burden of the trial while the benefits are passed onto the advantageous group, caused ethical issues (Kazatchkine and Hirsch, 2000). Although informed consent is acceptable to allow researchers to test a hypothesis and permit conclusions to be drawn for generalizable knowledge, the process of asking people is sometimes inconsistent with their values, interests and preferences. In Africa, a study has shown that informed consent in clinical trials is inadequate, if not exploitative (Moodley et al., 2005). Similarly badly designed clinical trials and research questions breed ethical issues mainly around reliability and validity of the studies under investigation. Poorly designed and underpowered studies would fail to provide accurate and reliable answers to the research questions, even though the questions are well framed (Kalantri, 2003).

⁷³ Canadian Association for HIV/AIDS Research, Ethics Issues for Canadian HIV/AIDS Researchers in International Settings, Canadian Association for HIV Research, 2008. Also see <http://ethics.cahr-acrv.ca/CAHRreportFinal.pdf> (Accessed: October 12, 2010).

Ethical issues related to the research of human subjects as opposed to practice are most frequently discussed. In pandemic influenza management, ethical issues emerging as a result of research and utilization of vaccines have been identified in public health literature. For example, scarcity of vaccines and antiviral drugs are also expected to cause ethical issues as far as rationing is concerned. The high surge in economic demand for future vaccines will place a burden on manufacturers for vaccine supply. However, without sufficient notice or contracts, priority supply will be restricted only to those with arrangements. Fleming (2005) has cited that the supply of vaccines will be a cause of ethical concern. In his review, he notes that vaccines and drugs will be manufactured at selected plants, but in the event of a serious pandemic, countries may suspend routine trading practices and global travel (Fleming, 2005). Because of this, developing countries are likely to be severely affected by the break in supply chains due to transport logistics since borders will close. Closing borders will prevent aid from reaching poor populations, and it could be an excuse and opportunity for the developed world to produce and vaccinate their own populations before opening up to poor countries.

Mitigating and managing a severe pandemic influenza outbreak requires enough doses (at least 7 billion) are made available on time in the early part of the pandemic to vaccinate the global population and achieve the required protection against the influenza strain that causes the pandemic. Given the global duties of solidarity and responsibilities that countries have to each other, particularly in the case of sharing viruses and surveillance data, those who have enough resources will be obligated to supply vaccines to those who are in need. As a result, rich countries will be under intense political pressure to ensure vaccines are supplied to the poor countries as well. Greater pressure will also be placed on pharmaceutical companies to speed up vaccine production for export. Scaling up vaccine production capacities may require switching from egg based to cell derived production processes and in other instances may also require new vaccine platforms for mass production; but this is yet to be approved by authorities. In the presence of such political and scientific pressure new unapproved vaccine production techniques may be used to speed up production, thereby raising quality control issues.

The ethical issues concerning scarce technical and human resources have been widely researched following the SARS outbreak in Asia and Canada. Ethical problems are likely to emerge if technical and human resources are inadequate. For example, ethical problems will arise if medical professionals decide not to work at the bedside due to fear of contracting the

disease, or they feel obliged to stay at home and look after their families. Sometimes, the lack of transport to ferry patients or health workers to locations such as main hospitals could cause ethical concerns. A recent survey assessing the willingness and ability of health care workers to report to duty found that more than 80% were willing to work if there is a disaster, but only 57% were willing to work during a severe acute respiratory syndrome (SARS) or smallpox outbreak (Qureshi et al., 2005). In contrast, surveys in the aftermath of SARS, carried out by Seale et al. (2009) and Alexander and Wynia (2003) note limited willingness of health care workers to report to work in the presence of personal risk, despite belief in professional duty. Singer et al. (2003) have also identified ethical issues related to SARS. In their study, ethical issues emerged as a result of irrational decision-making and failure to balance individual freedoms against the common good, fear for personal safety against the duty to treat sick people, and economic losses against the need to contain the spread of a deadly disease (Singer et al., 2003). The ethical issues identified include individual liberty, protection of the public from harm, proportionality, reciprocity, transparency, privacy, protection of communities from undue stigmatization, duty to provide care, equity and solidarity (Singer et al., 2003).

Interestingly, most of these studies have mapped out ethical issues from non-African settings. While ethical issues can be widely generalized to African settings, a number of questions remain to be answered particularly on how such ethical problems maybe resolved. Most importantly, is it possible to apply an ethical framework that addresses ethical issues encountered elsewhere? There is nothing wrong with adopting an ethical framework developed from other countries to mitigate ethical problems; however, it is important to be cautious about its implications. The adopted ethical framework may be considered universal but may also fail to support and guide ethical decisions on matters that are culturally sensitive in nature. For policymakers, the worry is the cost of such implementation of an ethical framework without grounding empirical evidence which is central to public health practice. Ethical frameworks are developed based on different contexts relevant to address specific ethical problems embodied within certain cultures and norms. Thus we cannot draw on an ethical framework that cannot supply an adequate answer to real moral problems that certain countries may experience. Unless the ethical issues identified as universal are validated in the context of values and culture, it is not possible to equate these issues in the same way.

There are two sides to ethical problems. Ethical problems can be rooted in issues of universalism and cultural pluralism, thus on that basis ethical guidelines or framework can be informed differently. For example, ethical frameworks based on ethical universalism will take a position that demands moral principles apply to everyone irrespective of their cultural or historical background. Indeed, universalists assume that ethics apply worldwide and insist that a sense of moral value is a universal truth. However, cultural pluralism is about specific cultures within communities whose values and goals become accepted by the wider culture. If confronted with universal norms, cultural pluralists attempt to interpret the ethics around diverse cultures. For a cultural pluralist, what it means to show respect for the elderly or for individual liberty in Sweden may be different from what it means in Malawi. As can be seen, ethical conflicts and problems arise between the viewpoint of a universalist and a cultural pluralist, as far as the nature of ethical frameworks are concerned. While ethical frameworks promote discussions and balance the issues to reach a decision about the best option, it is also important to validate universal ethical claims in the context of certain values and cultures. This can be done by studying, checking or verifying whether or not the ethical framework yields the answers of morality.

Ethical principles may be universal but the frameworks by which they are linked to specific acts of policy and practice must be adjusted to local conditions. We may use the same reasoning to decide who gets priority access to scarce health care resources, but the cut-off may be in quite a different place depending on whether you are in New York or Accra. This thesis argues that ethical issues are highly contextual in nature and generally facilitated by various factors. This is the very reason why the ethical theories outlined above need to be applied to investigate the ethical issues encountered in the context of Ghana and Malawi.

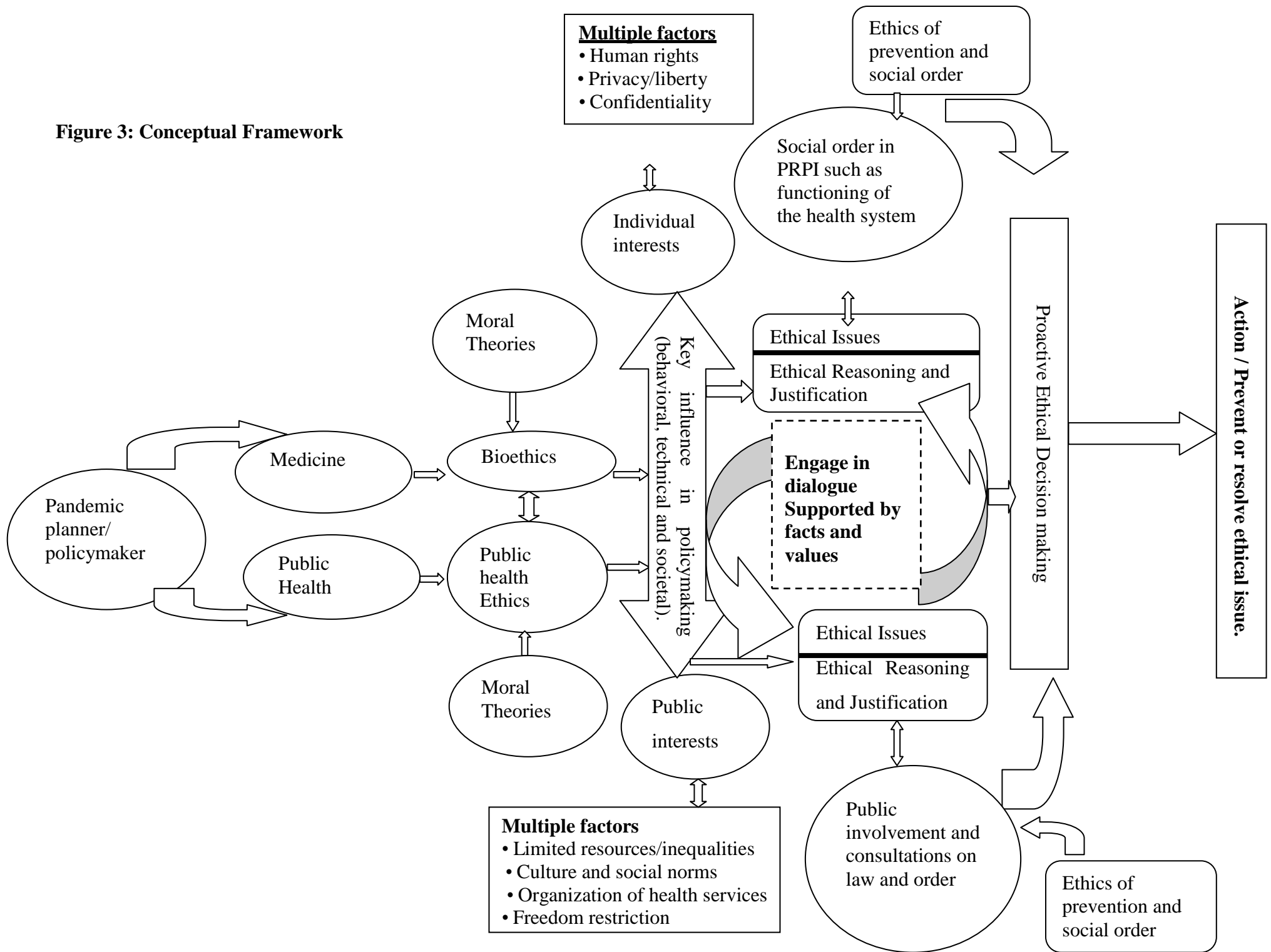
4.7.0. Conceptual Framework for Investigating Ethics of Planning for, and Responding to, Pandemic Influenza

Having extensively reviewed the bigger picture of the public health ethics debate, it is now important to show how this thesis may be able to offer insights into the study of ethical problems, how these problems are conceptualized in decision-making and resolved during response actions. Studying three key areas (human behavior, environment and technicality) can have greater effects on understanding planning and response actions in terms of how ethical problems arise and are resolved. The purpose of the conceptual framework proposed

for this thesis is to assist study of the role of ethics of planning and response. It also remains a departure point in discussing the analytical framework or Proactive Decision-Making (PDM) developed in the thesis. Contextual Public Health Ethics (CPHE) is the underpinning conceptual framework for this thesis. I am attempting to locate an appropriate line of reasoning for resolving ethical dilemmas, particularly in under-resourced countries in Africa where this debate is dormant. Muller (2001) has suggested that public health decisions, although not simple to map out, must be acceptable and proven to resolve inconsistent public health actions. Simply rejecting or accepting ethical decisions, picking and choosing judgment without reasoning or locating what's morally acceptable, is bad practice, although common in Africa. Generally, developing public health ethics in sub Saharan Africa is a progressively slow movement, crawling from evidence to action while hampered by the lack of infrastructure and specialized ethical practitioners. Despite this slow progress, the level of public health ethics currently being practiced emphasizes public interests above all else, even though this may cause injustice to others. The concept of Contextual Public Health Ethics, although its premise leans towards public interest, is useful to balance private interests by taking into consideration civil liberties, human rights, the ethics of prevention and social and political concepts. The proposed CPHE position is a compromise leading to consensus: its aims are to balance public and private ethical expectations within the ideas of public health ethics.

According to this approach, decision-making processes taking the form of reasoning and justification should not only consider the ethics advocated in public health medicine, but should be reasoned within the socio-cultural and political settings supported by facts and values of all concerned. This consensus approach is useful in informing fair decision-making as well as minimizing risks and maximizing benefits to the population. This concept strengthens public health in two ways. Firstly, it goes beyond the traditional ethical reasoning of balancing potential harm and maximizes potential benefits in public health through the use of laws (social order), moral theories and policies that are agreed upon. This approach promotes dialogue between public and private individuals, and strengthens understanding of moral theories to expand and improve technical performance through consolidated ethics. Secondly, by identifying ethical problems thoroughly in terms of how they are caused and the way they are resolved, it gives us the opportunity to adjust the various interactions such as environmental, technical and behavioral determinants necessary to control and manage the effects of ethical problems. The framework consists of four elements: moral theories, the

Figure 3: Conceptual Framework



concept of public health ethics and bioethics, triangular determinates (human behavior, environment and technicality) and performance and action strategies.

According to the framework presented below, an assessment of decision-making and response actions in public health should begin with an analysis of moral theories; i.e. a review of rules of conduct needed to frame an ethical argument for moral action. Ethical problems and dilemmas should be determined within the context of public health and medicine. This process is further facilitated by three key determinants: behavioural (attitudes, values and motivation), technical (social order, policies, laws, skills, training, resources, leadership) and society (structure, culture, communities, NGOs, religion). Based on the various interactions, solving these problems demands collective approaches, such as those facilitated by the field of public health ethics and bioethics.

The conception being proposed here relies heavily on empirical evidence, public consultations and dialogue to facilitate a particular course of action. The framework provides the philosophical basis for ethical reasoning and prepares policymakers with knowledge and leadership to apply in their decision-making. The theoretical framework is adaptive, proactive and reflective meaning that policymakers should be flexible, active decision-makers, whose advocacy should be subjected back and forth to critical thinking when diagnosing and prescribing answers to ethical problems.

4.8.0. Towards a Proactive Decision-Making (PDM) Analytical Model for Public Health

Public health is a fast growing interdisciplinary field drawing its practitioners from different backgrounds, such as business, science and engineering. Diversity in public health means that practitioners tackle problems with different perspectives and technical mindsets. Due to threats of infectious diseases, relevant decisions are made to manage and control the disease problem. In recent years a number of public health decision-making models have sprung up, with noticeable disagreement about the course of action or manner of resolving conflicting policies associated to infectious diseases. Analysis of such decision-making processes can be seen in the manner and type of actions that each practitioner takes to pursue their goals and interests. Decision-making is deeply fragmented because we do not have general analytical models that appraise and examine the determinants that drive both decisions and non decisions. According to Bachrach and Baratz (1963) non decisions occur and are observable if there is bias, limitation of scope and manipulation of a latent issue. It could be argued that

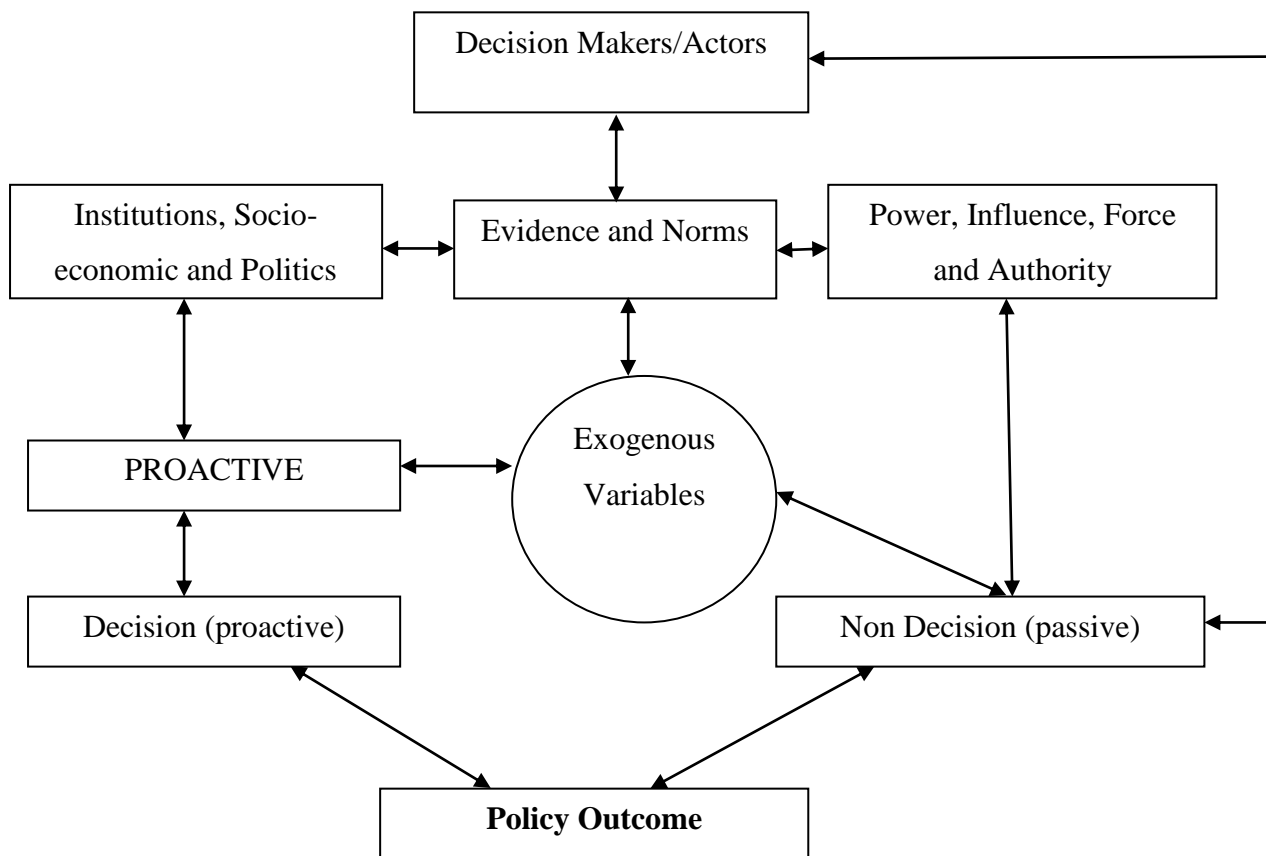
in such decisions (non decisions) outcomes often tend to be passive and normative, largely influenced by manipulating values, myths and political institutions. On another hand “decision” as it were, should be actively informed by evidence and values as well as reasoning and judgment of reasonable outcomes. For a decision or non decision to be made, it must constitute certain characteristics within the equations, such as influence and power. For example, actors, organizations or decision-makers with sufficient power or resources can use such power or resources to dominate or achieve goals or manipulate and block the functioning of rules and procedures for decision-making or conflict resolution. In order to investigate decision-making processes that affect policymaking, policy implementation and policy outcomes must be understood, including factors that influence them. Explanations that focus on internal structures of policy formulation, such as power, influence, force and authority among decision-makers, play an important role in determining policy outcomes. Policymaking takes place in institutions and organizations; as such it is important to study them. Furthermore, endogenous factors such as socio-economics, politics, evidence and norms have significant influence on decision-making.

To understand decisions and non decisions, a Proactive Decision-Making Model (PDM) is proposed and used as an analytical tool to study the various interactions in the decision-making processes. Figure 4 highlights factors that significantly influence the decision outcomes. One of the strengths of the analytical framework proposed here is to study and explain the key factors that influence decision-makers to make decisions or non decisions as they do. It also provides a way in which key decision-makers should view and tackle policy problems. It does this by elaborating on the causal chain and setting out the explanatory variables and how they interact to affect policy outcomes. Analysis of the explanatory variables (Figure 4) can help sort out the details of what is and what is not significant to study in this thesis. Most importantly, it begins to inform the design of the methodology, particularly how policymakers decide how PRPI should be implemented including how ethical issues should be perceived and resolved. Before moving on to briefly discuss the criteria of choosing this methodology, it is essential to clarify how the explanatory factors incorporated into the analytical framework affect policy decisions.

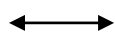
The starting point in investigating decisions and non decisions is to consider who the decision-makers or actors are. Decision-makers or actors’ refers to individuals or groups who decide about the course of action on a latent issue. In Chapter 1, I defined decision-makers as

a group of individuals who operate in institutions such as government or non-governmental organizations with influence or authority to determine policies at the local, regional or national level. Decision-makers play a mediating role and that is the centre of this methodology. This is the first step in the analysis as it begins to situate the key players involved in determining policy outcomes. It is also a departure point for methodological consideration for this study as it is able to give pointers towards key data sources for decision-making analysis and method. For example, as will be described in the next chapter, I was able to identify decision-makers as key actors and include them in the study analysis regardless of their power and influence in the decision-making process.

Figure 4: Analytical Framework



Legend:



Decision-makers can be studied to gain insight about their role-taking in decision-making and retrospectively study policy outcomes by which we can highlight various factors involved in the decision-making processes.

The next step is to understand the relevant power, influence, force and authority and how these characteristics might influence the decision-making process. For Bachrach and Baratz (1963) the concepts of power, influence, force and authority have different meanings and are of varying relevance. Bachrach and Baratz note that power and influence are used interchangeably and force and authority are neglected in the decision-making process.

The difficulty in distinguishing clearly between power and influence is further complicated by the fact that the two are often mutually reinforcing, that is, power frequently generates influence and vice versa (Bachrach and Baratz, 1963). According to Bierstedt (1974), influence is persuasive while power is coercive. In other words, we surrender voluntarily to influence while power demands compliance. To demonstrate and achieve power requires the connectedness of conflicting values between persons in the power relationship. In a power relationship it is the compliant that chooses what to do, while in a force relationship it is the actor that chooses the course of action. Force, like power, involves a conflict of values; but unlike power, these are non-rational and tend to be non-relational (Bachrach and Baratz, 1963). Force means the decrease or restriction of choices or social action of one person by another in a firmly ordered system. Authority, according to Weber (1946), refers to subordinate groups accepting commands from the superior groups. Like power, authority here is regarded as a relational concept: it is not that the superior group possesses authority, but that the subordinate group regards the superior group's communication as authoritative (Bachrach and Baratz, 1963).

In this analytical framework institutions and organizations are important to investigate because of the impact they have on decision-making. It is necessary to examine institution-actor relationships at the international, national, regional and local level. Institution helps to define the standards and rules of operation. Institution can be formal, such as government departments and non governmental organizations, and informal, such as less organised individuals or groups. Institutions differ in the way they operate from one country to another due to the scope and domestic and foreign policy priorities. Due to the influence that institutions may have, it is important to go behind the scenes when identifying institutions, in order to analyze covert actor-institution relationships. And due to the nature and type of institution in terms of the influence they exert on policy outcomes, less organised groups are more likely to be missed out if equal attention is not paid. The assumption in this analytical framework is that the limited involvement or exclusion of certain institutions may influence

or change the dynamics of how a decision would have been made. This explains why some institutions at the local level in this thesis were included for study analysis despite being less organised.

This analytical framework also integrates the roles of politicians because politics cannot be excluded from any model of decision-making. Again this informed the study to the extent that politicians were included in the analysis. Politicians oversee the disaster and emergency preparedness which sits in the office of the president in both Ghana and Malawi. Thus it was appropriate to seek views of politicians on how disaster programmes are implemented, including the way they go about making policies on pandemic influenza. The other explanations included in the analytical framework, as indicated earlier, are socio economic factors. The relevance of analysing the social and economic aspects of decision-making is to provide estimates of expected gains or losses of such decisions and if necessary make trade-offs. Equally importantly, socio-economic assessment provides an opportunity for strategic decisions when social or economic resources are available and accessible to be integrated into the decision.

Norms have been incorporated in the analytical framework because in the decision-making process there are no established rules for predefined solutions. Indeed, norms may be shared beliefs about what is considered an appropriate behaviour in a given society and they guide collective actions. Norms can be legal, customary or informal and are in competition with each other at a given time because they co-exist and overlap. This provides the major source of conflict about what one should and should not do. The understanding of norms is crucial in balancing values with evidence and more importantly, it maintains social order.

Since decision-makers are mediating players in this analytical framework, it is important to study and analyze the existing processes of decision-making to gain insight and directions about how policymakers go about making decisions as they do. Table 1 below shows Mnemonic PROACTIVE i.e. Problem, Reframe, Objective, Alternatives, Consequences and chances, Trade-off, Integrate, Value and Explore or evaluate, which can be applied to any decision that is made. Using mnemonic PROACTIVE tool for decision-making and applying it retrospectively to policy outcomes, it is possible to highlight the nature of decisions or non decisions including factors that influence decision-makers in making decisions.

Table 1: Mnemonic PROACTIVE Decision-Making Tool (Hunink et al., 2001).

	Step	Type and perspective	Tools
Step 1 PRO			
P	Problem	Define problem	What will happen if I do nothing? Is there a problem
R	Reframe	Reframe from multiple perspectives	Consider perspectives of patient, physician, department, hospital, payer, society
O	Objective	Focus on the objective	Consider diagnostic certainty, medical effectiveness, microeconomics, and macroeconomics, psychosocial, political, ethical, and philosophical aspects
Step 2 ACT			
A	Alternatives	Consider all relevant alternatives	Wait and see, intervention, obtain information Different combinations, sequences, and positivity Criterion of diagnostic tests
C	Consequences Chances Connectedness Chaos	Model the consequences and estimate the chances	Model disease and events Estimate the corresponding probabilities Be aware of the connectedness of all things Life is a network on a boundary between order and chaos
T	Trade-offs	Identify and estimate value trade-offs	Value of the outcomes Life expectancy Quality of life Monetary costs
Step 3 IVE			
I	Integrate	Integrate the evidence and values	Qualitatively Quantitatively
V	Value	Optimise expected value	Maximise desirable outcomes Minimise undesirable outcomes
E	Explore Evaluate	Explore assumptions Evaluate uncertainty	Evaluate variability Evaluate stochastic parameter, and model structure uncertainty

Although the mnemonic PROACTIVE decision-making tool is used to make decisions, retrospectively it can be used to study the explicitness about the problem, objectives, trade-offs, evidence and values involved in the policy outcomes. The analytical framework, PDM, is informed by the elements in the Mnemonic PROACTIVE, for example, when studying the nature of decisions or non decisions that were made.

The criteria on which this analytical framework is applied to examine decisions are four-fold. First, it is practical (non-normative) and able to narrate the facts as they are step by step, as illustrated in figure 4. The framework is not prescriptive or exhaustive thus it can be used to study decision-makers as individuals and policy outcomes at any stage of implementation. Second, the framework is very flexible and simple. It does not promote specific issues of individual experts; rather it is open and transparent on the broad range of issues that it might be significant to map out in the analysis. Put simply, it is interdisciplinary. Thirdly, the framework facilitates comparative research and does this by including broad explanatory variables which apply to a range of decision-making processes in other sectors. Fourth, the variables incorporated in the framework are not directly linked to policy outcomes and as such heighten the explanatory power of the framework because it accounts for the differences in the effects of exogenous variables. In short, it can be generalizable. And finally, the analytical framework is operational and recognises the fact that making decisions is a complex task and it can be difficult to comprehend.

The mnemonic PROACTIVE (Table 1) developed by Hunink et al. (2001) typically describes the decision analysis to assist with comprehension of the problem. It begins to give insights into endogenous and exogenous variables and their impact on the decision outcomes. It does this by permitting the decision-makers or actors to divide the logical structure of a decision problem into its components so that it can be analyzed individually, and then recombine it systematically so as to suggest a decision (Hunink et al, 2001). From the point of operationality, mnemonic PROACTIVE is not the analytical framework. Mnemonic PROACTIVE is incorporated within the proposed analytical framework shown in figure 4 because it takes into account thorough thinking in the nature of decisions that are made and work their way up to address the decision-making problems and the multiple factors involved. Through this process, I have been able to answer general questions like: what makes a good decision; how would one tell whether a decision made by public health professionals is legitimate, and how could it be justified as a good decision?

4.8.1. Ethical Decision-Making Models

The purpose of any decision-making models is to assist in the comprehension of problems by empowering decision-makers to make a choice as to which course of action is the most appropriate. Most of the decision-making frameworks that were reviewed in this thesis seem, at first, to be the appropriate frameworks to use in analysing how ethical issues are perceived and resolved. But, informed by the specific research questions in this thesis, most of the decision-making frameworks were dismissed as an analytical tool because they were weak. A considerable number of decision-making models are concerned and recognize ethics as a domain in itself; that is, a set of concepts and principles upon which to identify, establish and evaluate an ethical problem. For example, most were not concerned with establishing the relationship between variables such as planning and response, and ethical issues; even among the ethical models, most were not concerned with individual and situational roles to posit ethical positions. Trevino's ethical model, for example, attempts to capture the combination of both the individual and the situation variables to explain and predict ethical decision-making behaviour (Trevino et al., 1986). Trevino's decision-making is, however, purely theoretical and designed to guide future business ethics.

Similarly, other decision models, such as Farrell and Gresham, Hunt and Vitell, and Dubinsky and Loken, focus on specific ethical issues in marketing (Ford and Richardson, 1994). Those advanced by Rest (1986) and Jones (1991) are the only models that offer a theory of individual ethical decision-making that can be applied to other contexts and settings and have frequently been used in health care. However, these ethical decision-making models are rarely used in public health because they are not analytic in nature. Although not developed for use in public health, they do provide enough ethical discussion essential for studying, recognizing and resolving an ethical issue. The idea of these models is to ensure practitioners act ethically as individuals while making society as a whole ethical in the way it treats everyone⁷⁴. There is a great deal of grounds for concern that whatever we do may have consequences for the welfare of others. Unfortunately, we cannot always agree merely through verbal agreement, or even establish some sort of ethical principles upon which all of us could act and accomplish our moral ends.

⁷⁴ <http://www.scu.edu/ethics-center/> The The Markkula Center for Applied Ethics works with faculty, staff, students, community leaders, and the public to address ethical issues more effectively in teaching, research, and action (Accessed: April 22, 2013).

The fact that these measures are difficult to obtain because they are manifested in behaviour and intellectual skills led to Rest's proposal to develop a framework to assist with ethical insights. Rest proposed a four component model for an individual's ethical decision-making and behaviour. These include: recognizing the moral issue, making moral judgement, establishing moral intent and acting on moral concerns. Rest reiterates that success in one stage does not guarantee success in any other stages. The most important aspect in Rest's model is that empirical research is emphasized as establishing the relationship between moral judgement and action. However, this type of model offered by Rest does not offer a simplistic means of ethical reasoning or an easy way of acquiring practical skills to analyze and evaluate situations of ethical perspectives.

Unlike most daily decisions, many substantial public health decisions involve considerable disagreements on the course of action and involve uncertainties and compromises. With such complex decisions, it can be extremely difficult to arrive at the best option, let alone justify it. As such, decision-makers require better ways to make ethical public health decisions; they need some simplistic visual or written aids. The uncertainties surrounding the existing decision-making models led Daniels (2000) to improve the "accountability for reasonableness" model for public health decision-making. This model is deliberative and democratic in nature, focusing on justice issues in relation to the problem of health care in a priority setting. Accountability for reasonableness makes it possible to educate all stakeholders about the substance under deliberation on fair decisions under resource constraints (Daniels, 2000). Critiques of this model argue that it is not comprehensive enough to deal with the anticipated difficult questions of decision-making in public health that is concerned with non-priority setting situations. Friedman (2008) proposes a concept beyond accountability for reasonableness that promotes public involvement upon which reason is judged on its merits, such as consistency, plausibility and explanatory power, without any regard for its alleged sources of authority.

Other models in medicine appear to be quite comprehensive and tend to influence the level of ethical reasoning, but they are inadequate to inform an analytical framework for this thesis. For example, the shared decision-making model involves patient-physician relationships. The model requires the physician to share medical knowledge and opinions with the patient, and the patient in return shares values and preferences with the physician. Applying this model in

developing countries where decision-making is paternalistic (doctors are still in charge of diagnosis, and prescription, without the participation of the patient) can prove challenging.

Building on models of decision-making processes, such as moral development by Rest (1986), an issue contingent model by Jones (1991), the health and human rights model by Mann et al. (1994) and the accountability for reasonableness model by Daniel (2000), could assist in developing an ethical framework. The ethical frameworks proposed by Canada, the UK and New Zealand, for example, draw on the accountability for reasonableness model when addressing issues of priority setting such as ensuring equitable, fair and cost-effective access when rationing limited resources to prevent and treat influenza. Accountability for reasonableness has obvious appeal to most ethical frameworks because it promotes four concepts such as relevance, publicity, revision and enforcement. In order to establish a fair process for priority settings, an accountability for reasonableness model has been at the heart of ethical framework development, for example, in the ethical frameworks for Canada, the UK and New Zealand. The ethical frameworks for Canada, the UK and New Zealand are based on principles for decision-making, although a deliberative and democratic process plays a bigger role. While principles need to be agreed upon beforehand within the ethical frameworks in order to effect a swift and reasonable resolution at the beginning of an influenza outbreak, the ethical principles are not very explicit in the frameworks. There ought to be a process of decision-making that guides principles in light of the many challenges associated with pandemic influenza. This thesis attempts to cover these gaps and I begin to do this by proposing a way of developing an ethical framework in Ghana and Malawi, as will be discussed in Chapter 9. This new way is not only limited to an accountability for reasonableness model but also utilises other concepts that I have reviewed such as moral development as proposed by Rest (1986). Decision-makers must appreciate moral authority and how this is essentially set through reasoning and judgement. Decision-makers can not only rely on agreement on various principles in solving ethical disputes in priority settings, but may also find it useful to rely on a clear process of reasoning and judgement in handling ethical problems.

Decision-makers must be able to recognise an ethical issue, be able to obtain facts about moral judgement, evaluate moral motivation or character, make a decision and, if possible, test this decision or reflect on the potential actions. The analytical framework discussed in

this chapter leads us to examine broad applicability and the needs across institutional, cultural norms and priority settings in public health. Proactive decision-making, as illustrated earlier in this chapter, is a problem solving analytic tool that can be used to appraise evidence and values, thereby allowing the decision-maker to make decisions explicitly so as to show what needs to be avoided or achieved.

4.9.0. Conclusion

The goal of this chapter was to develop a conceptual framework that can be used to investigate the ethics of planning for, and response to, pandemic influenza in sub Saharan Africa. This involved the consideration of moral philosophy upon which two dominant approaches of bioethics and public health ethics are derived and defined. Weber and Durkheim's discussion of the notion of facts and values offers insights into historical debates and how problematic it is to bring together empirical and normative ethics. Moral theories have been considered, giving a glimpse into how policymakers in public health may consider making ethical decisions. Importantly, the discussion on moral theories attempted to explore the contributions to public health ethics. The review of bioethics and public health ethics revealed that disagreement exists between these paradigms in solving moral problems relating to pandemic influenza where individuals and the public alike are affected.

Having also reviewed empirical research on the ethical problems associated with pandemic influenza, it becomes clear that there is little empirical research investigating ethical problems in Africa. This chapter proposes that one way of studying ethical problems and the controversies between bioethics and public health, is to engage them on a level of reflective equilibrium. A contextual public health ethics as a theoretical framework and a proactive model of decision-making as an analytical framework have been proposed to guide and give insights into how public health professionals actually pursue and resolve practical problems of pandemic influenza. The Contextual Public Health Ethics is a useful concept that balances private and public interests by taking into consideration the civil liberties, human rights, ethics of prevention, social and political concepts.

The contribution of the chapter is the realisation that PDM is an appropriate analytical tool in bridging public policy, theory and practice. This is useful for exploring how public health professionals try to solve the ethical problems in a pandemic, since this tool is open-minded and applies deliberative and empirical actions to a range of identified problems. In the

proactive model, decision-makers invoke issues that are later discussed alone and agreed under fair terms. The chapter also facilitates transparency about reasoning that all can eventually agree to, if relevant. The above framework is applied to Chapter 6 of this thesis to examine the planning for, and responses to, pandemic influenza in Malawi and Ghana. It is then applied to Chapter 7 to study how policymakers identify, perceive and resolve ethical problems. This conceptual framework is applied to the role of decision-making in ethical reasoning and justification in Chapter 8.

CHAPTER 5: METHODOLOGY

5.1.0. Introduction

This chapter describes the strategy used to address the research questions set out in Chapter 1. It considers what type of data is best to inform the study and how such data is acquired and analyzed. It will be argued that using qualitative methodology involving interviews and case studies is appropriate for gaining insights into the questions that this thesis poses. As will be shown, the chosen methodology and method not only deal adequately with the research questions concerned, but also contribute to the entire process and focus of studying Ethics of Planning for, and Response to, Pandemic Influenza (EPRPI). According to Silverman (2001), when conducting qualitative empirical studies, the research process must constitute a theory, hypothesis, methodology and method. Drawing on these four basic concepts, it is possible to make sense of the data that researchers' collect, either to test hypothesis and theory, or simply to use the data to develop a tentative hypothesis or theory. As indicated earlier, this study is not concerned with developing theory; rather it is interested in examining the exploratory concepts using specific data.

In order to address the research questions of this thesis, the study design must be clearly defined in terms of its protocols and procedures. Chapter 4 outlined the theoretical and analytical framework, particularly how it benefits the methodology. Based on the theoretical framework, Contextual Public Health Ethics (CPHE), and the analytical tool, Proactive Decision-Making (PDM) analysis, provided enough methodological details to understand decisions and explore ethical issues in a dynamic sense. The conceptual analysis paid attention to the context of controversies and how these emerge and are resolved in public health. As discussed in Chapter 4, the theoretical framework in part explains the social phenomenon in studying ethics of PRPI. The analytical tool, PDM, provides methodological considerations for this study. PDM was used to study the various interactions in the decision-making processes. The explanatory factors that influence policy outcomes were able to point me towards key data sources and methods. Analytical considerations examined, such as internal structures of policy formulation including institutions, norms, power, influence, force and authority, guided what type of data to collect, who to recruit, and when to alter questions or define emerging themes. The guiding assumptions in the study, which are reviewed in public health literature, are that firstly, good planning leads to better responses (although this requires critical reasoning and

justification as well as consideration of ethics) and secondly, that effective response to pandemic influenza depends on preparation prior to the pandemic outbreak.

While the research questions seek to examine what policymakers considers as ethical problems and how they are identified and resolved in public health, the intention in this chapter is not solely to test hypotheses, but rather to scrutinize closely the unexplored ethical issues in public health. An interpretive (qualitative) study is the most appropriate way of uncovering or deconstructing the meanings of a phenomenon.

The research design used in this thesis does two things: it explains how ethical issues emerge (explanation) and why they are resolved in the manner they are (interpretation). As such, the present study may be compared with that of Rogers (2004), a public health qualitative study that sought not only to test a theory or hypothesis of causality of ethical issues but also explored how ethical issues in public health settings are resolved. It is not a requisite in qualitative research studies to have a specific hypothesis, unlike theories, which should be developed during the early stages of research. For Silverman (2001), hypothesis testing in qualitative studies, although assessed by its validity or truth, is not a general approach to studying a research topic. Ballinger (2006) also asserts that the qualitative research may require data for testing the hypothesis but it is not restricted to this model.

5.2.0. The Study Focus and Research Philosophy

Before describing how this research was undertaken, I will attempt to justify the methodological choice used to study and analyze the ethics of PRPI. In Chapter 1 I briefly outlined how I found a focus in the guiding assumptions of this research. Pandemic planning suggests that cost-effective planning and response to pandemic influenza requires a reflection on ethics, since science without values cannot contribute fully to the success of policy development and pandemic preparation. Thompson et al. (2006) argue for the application of value judgements to science. They maintain that values and ethical norms make a significant contribution to planning by revealing the levels of harm the public are prepared to accept, how the burden of negative outcomes should be distributed across the population, and whether or not more resources should be invested in planning assumptions, such as stockpiling antiviral medications.

Chapter 2 indicated the extent to which scientific information helps policymakers make difficult decisions on how, where and to whom resources should be allocated, as well as other problems that are encountered in preparing for and getting through an influenza pandemic. As will be shown in the data chapters, construction of these tasks appears to be simple, but in practice they are not so clear cut. As Kotalik (2006) noted, the pandemic planning process not only requires scientific engagements, facts and forecasts, but also consideration of value judgements. The pandemic planning process is not purely a scientific and administrative task but also may involve everybody in society including lay people. The pandemic planning in Ghana and Malawi, as will be discussed in Chapter 6, is a scientific task. I became convinced that policymakers rely very much on science for evidence and decision-making and pay less attention to societal norms. In open democratic societies, planning for a pandemic influenza must account for people's stories, their values and beliefs, in order to maximize the potential outcomes of scientific ideas of the experts. There is a rhetorical use of science, albeit logistics, rather than the evidential use.

As will become clear in the data chapters, policymakers use science or logistics as a common sense justification for their actions, and the possible reference to specific scientific or logistical studies as providing an evidence base for policymaking. In the UK, for example, politicians frequently refer to science in a very general way as a catch-all justification, when scientists themselves would emphasise the uncertainty of the policy conclusions that might be drawn. Policies and programmes are frequently developed around anecdotal evidence, while in many other cases decision-making is driven by crises, emergency issues and the concerns of organized groups. Policy solutions that fail due to bad execution or other reasons consequently reflect key ethical concerns. For example, Gostin (2004) tells us that "there is no way to avoid the ethical dilemmas posed by acting without full scientific knowledge and societal needs". In other words, policy solutions may need both science and values.

It is from the above assumptions, and the ad hoc problems of governance, that my research interest grew towards understanding how policymakers engage, identify, perceive and resolve ethical issues through a process of decision-making. The questions I asked involved highly

detailed descriptions of policymaker perceptions⁷⁵, opinions and what their work involves. These questions demanded close interaction between the researcher and respondents. This required a qualitative study, providing a rigorous descriptive base upon which subsequent explanatory research can follow (Murphy et al., 1998). The questions I posed not only contributed to the development of conceptual theory and analytical framework applied in this thesis, but also influenced the choice to carry out a qualitative study.

Having decided on the methodology, my concern was to decide on the appropriate technique of data collection and analysis to address my research questions. As will become apparent, I chose to study two case countries (as my case studies) which are put together by the use of interviews and documents as methods for collecting data. Textbooks describe interviews using case studies as important methods of gathering data to explore the meaning of concepts, categories and events that informants experience. I chose semi-structured open interviews to apply to two case studies of Ghana and Malawi; both are practical research tools that offered accurate descriptions of actual events, and were more likely to give insight into understanding of the ethics of PRPI. Holstein and Gubrium (1995) tell us that when choosing a method, it is necessary to consider the status of emerging data. For example, if using interviews, researchers must ask whether descriptions of events are accurate, or simply interpretations or narratives. One must avoid assuming that interviews are literal descriptions of an underlying reality (Dingwall and Watson, 2002).

The theoretical and analytical framework articulated in Chapter 4 was used to develop the research design of this study, including what to research, who to interview, what research questions to pose and how to collect data and analyze and interpret in-depth descriptions of ethical issues that policymakers experience. As indicated in Chapter 1, all the policymakers recruited in this study are individuals in a position of power or authority, those who influence or determine policies. The power relationships within the policy systems in Ghana and Malawi are more or less the same. Policymaking was observed at two levels, macro (government) and micro (independent). The former constituted government policymakers and the latter, independent policymakers representing funders and other NGOs such as the WHO. Government policymakers had the power and obligation to set policy on pandemic influenza

⁷⁵ In this study, perceptions are not the same thing as ethical issues. Perceptions in this thesis are studied in order to understand the extent of ethical issues. This applies to attitudes and opinions.

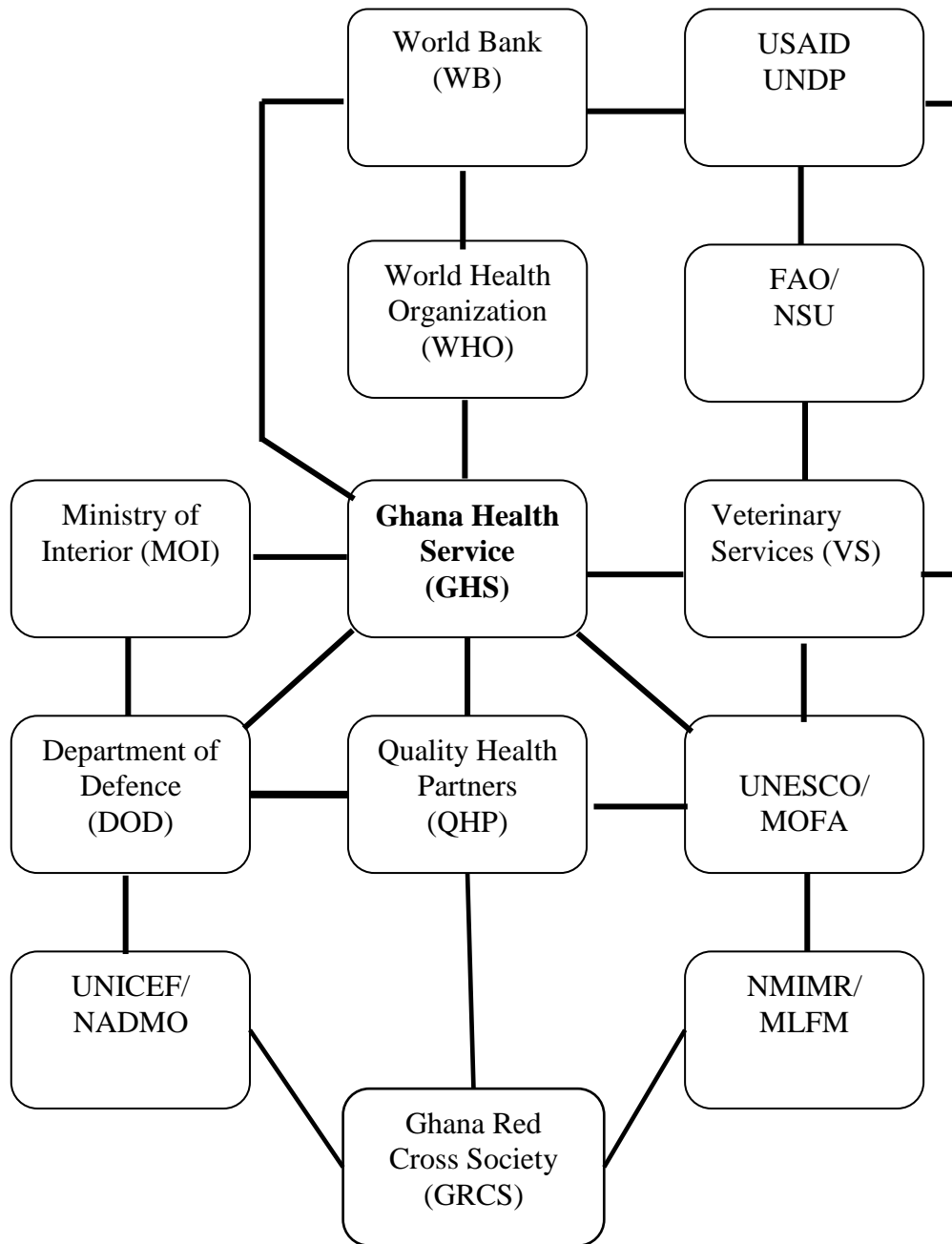
with the help of independent policymakers. As will be detailed in the next chapter, macro policymaking at the government level was problematic. Although government policymakers had the legal right to assign the decision-making process to independent policymakers, they did not do so on the basis of logical interconnection and legitimacy in the process itself. Policy framework on PRPI was fully controlled by the government although independent policymakers did most of the work. It is because of this fact that independent policymakers representing NGOs have been included in this study. Thus, in considering the power relationship between government and independent policymakers, it is important to designate and define policymakers in terms of uttermost responsibility. Micro or independent policymakers operate within their legal authority and are consistent with the macro policies enacted by the government (Brown, 2003).

As far as government policy is concerned, independent policymakers help out with clarification, interpretation and implementation of such policies. Government policymakers in this study constituted representation from infrastructure ministries and other bodies that formed the executive arm of the government. These include politicians or individuals occupying political positions of power, members of the board, government ministries, scientists, researchers and managers directly serving the government. The micro level policymakers constituted executive directors, managers and scientists and researchers representing local and international NGOs. I was able to identify policymakers from a pool of heterogeneous actors in governments, civil society and non-governmental organizations, who could comment and voice their opinions in the study of the ethics of PRPI.

This process of choosing respondents involved a criterion of weighing actors' responsibilities and involvement in the pandemic response process. As such the study brought together different experts to contribute to every area of the ethics of PRPI. Figures 5 and 6 below represent a network of organizations involved in PRPI in Ghana and Malawi respectively.⁷⁶ The analytical framework (PDM) was used to provide insights into how policymakers make

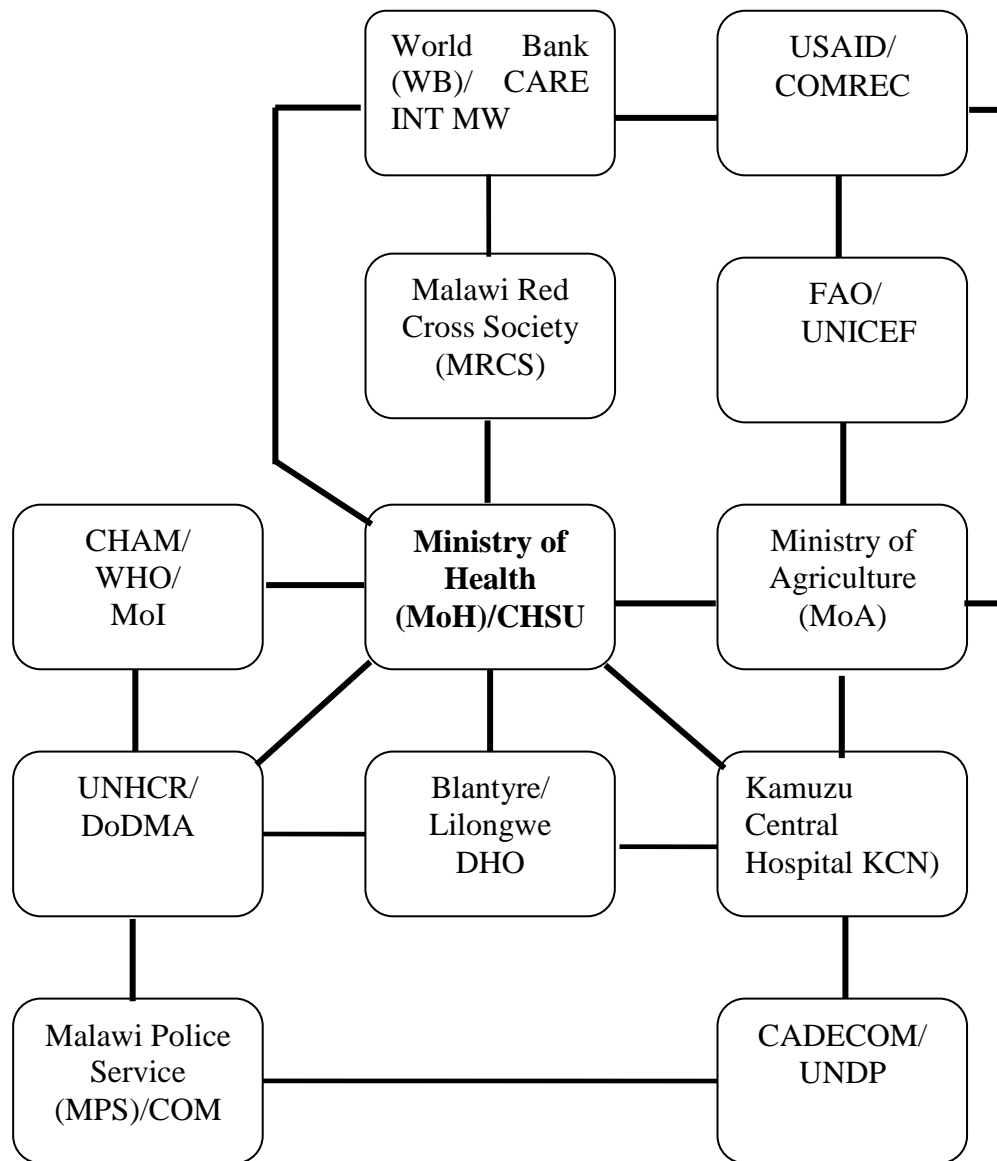
⁷⁶ Figures 5 and 6 represent a network of organizations. Each organization was represented by a policymaker(s). The Ministry of Health (Malawi) and Ghana Health Service are positioned at the centre along with others, to represent official coordination of PRPI. The Ministry of Defence (Ghana) and Malawi Police Service (MPS) were included in this study because issues of social order interact with the ethical dimension of pandemic influenza. Simply put, the Army and Police are involved in maintaining social order; these are indirect issues of public health ethics.

Figure 5: Organizations involved in the Ethics of Planning for, and Response to Pandemic Influenza Interviews in Ghana



- FAO-Food and Agriculture Organization
- MLFM- Ministry of Lands, Forestry and Mines
- MOFA- Ministry of Food and Agriculture
- NADMO-National Disaster Management Organization
- NMIMR-Noguchi Memorial Institute for Medical Research
- UNDP-United Nations Development Programme
- UNESCO-United Nations Educational, Scientific and Cultural Organization
- USAID-United States Agency for International Development
- UNICEF-United Nations International Children's Emergency Fund
- NSU- National Surveillance Unit (GHS)

Figure 6: Organizations Involved in the Ethics of Planning for, and Response to, Pandemic Influenza Interviews in Malawi



- CADECOM-Catholic Development Commission in Malawi
- CARE INT MW- Care International Malawi
- CHSU-Community Health Sciences Unit
- COM- College of Medicine
- COMREC-College of Medicine Research Ethics Committee.
- DHO- District Health Officer
- DoDMA-Department of Disaster Management Affairs
- FAO-Food and Agriculture Organization
- MoI- Ministry of Information
- UNDP-United Nations Development Programme
- UNICEF-United Nations International Children's Emergency Fund
- SAID-United States Agency for International Development
- WHO- World Health Organization

decisions to minimize the magnitude of problems they experience. PDM accepts that the appropriate actions are supported by evidence and values and this is achievable if policies and decision-making processes are studied not only as units of analysis, but also if policymakers themselves are an object of analysis. It is possible to achieve this by different routes. However, the analytical framework for this study highlights the relationships that influence policy outcomes with a range of exogenous factors that may play a role in decision-making. The PDM analytic tool makes it clear that decisions have to be made and if they are not made actively, they will be made by default. PDM identifies decisions made in default as non decisions. In short, policymakers either make or influence policy outcomes, thus as actors they need to be studied and their actions analyzed to determine the kind of decision they make or influence.

5.3.0. Research Strategy

5.3.1. Justification of Qualitative Research Method

Chapter 4 indicated how public health ethics research captures ethical issues. Although there was no chronological pattern in the methodologies themselves, what was apparent was that quantitative and qualitative approaches are used as investigative methods in understanding ethical issues. As a result of the theoretical context of pandemic problems presented in Chapter 4, I decided to focus on policymakers and understanding their role in the ethics of PRPI. In this respect Cresswell (1994) offers the following advice: “Choose a qualitative study because the topic needs to be explored”. By this, Cresswell (1994) mean that variables cannot be easily identified, theories are not available to explain behaviour of participants or their population of study, and theories need to be confirmed. More specifically, I was concerned with the meaning of ethical issues that policymakers assign to their work. To understand how policymakers operate and experience ethical issues, a qualitative methodology was used because it engages the participants more. Qualitative studies involve subjective interpretations, often delivered when participants and researchers engage. In public health, especially in epidemiology, the use of qualitative studies is a challenge, particularly in assuring generalizability, reliability and validity of research.

The choice of qualitative research to study the ethics of PRPI, apart from its ability to engage researcher and respondent, is also evident in the type of questions that arose in the study. For example, interrogative questions, “what and how”, are relevant to the qualitative approach, while “why” looks for a comparison and is often used in quantitative studies. These

interrogative pronouns – “what and how” – appeal for meaning rather than the interpretation of numbers used in quantitative studies. As such the “what and how” questions position this research inquiry to intrinsically retrace the way policymakers make decisions in their work. According to Hammersley (1992), data can only be collected using methods that engage a somewhat close and relatively prolonged interaction with policymakers’ everyday work, so that researchers can better understand the in-depth perspective of policy actions. The qualitative approach demonstrates a method of inquiry that is open, flexible and opportunistic, thus helping this study to constantly refine its research direction.

The other reasons to engage in a qualitative inquiry were based on a strong rationale to present a detailed view of the role of ethics of PRPI. Hammersley and Atkinson (1983) suggest that methods for empirical studies must be selected according to purpose and not due to general claims or prioritising one technique over another. Murphy and Dingwall (2003) have provided a useful starting point to address methodological concerns by asking researchers to consider the choice of empirical methods based on the appropriateness of the research questions and the nature of the information they intend to capture. Geertz (1973) and Cresswell (1994) have considered these perspectives in more detail, by reminding researchers to consider the choice of using qualitative approaches to conduct research based upon the context and the richness of accounts of social phenomena. For example, in this study the qualitative approach yields understanding and a shared construction of possible ethical issues whilst being unidirectional to an observable event. Thus policymakers, particularly State authorities and international policymakers, have the potential to reveal their accounts; Dingwall and Watson (2002) refer to this as “insider versions rather than publicly available versions of ethical issues”. In addition, the qualitative approach allows for a more interpretive analysis given the richness of data content and the nature of ethical issues.

Carrying out qualitative research not only provides depth of data, but also leads to a dialogic learning process. According to Eide and Kahn (2008), the researcher-participant interaction is therapeutic for the participant, evoking stories and memories remembered and reconstituted in ways that otherwise would not occur. Kvale (1996) also suggests that the qualitative approach both allows for interpretive analysis of social knowledge, useful for a wide range of policy outcomes, and is powerful and convincing in its own right towards explaining the whole framework of beliefs, values and methods it adopts. Silverman (2001) tells us that qualitative studies are powerful because of their historical, political and contextual

characteristics that expose issues and transform them into research problems. On the basis of the history, politics, and contextual concerns of pandemic influenza, it was decided that this research should primarily use more than one case study. It was also decided that both documentary and interview data should be collected and analyzed.

5.4.0. Data Collection Method

5.4.1. Mixed Method Approach

Having explored the qualitative methods and argued that it is the best approach to apply to research questions presented in this thesis, I will now explain why the choice of interviews using case countries are the most appropriate data-collecting techniques. The aim of this chapter is to present research methods that capture the depth and complexity of ethical issues as well as the reasoning that policymakers experience in their everyday work. The choice of research technique for generating empirical data may vary depending on the nature of issues intended to be uncovered, understood or described. The present research is interested in accounting for evidence that causes ethical problems, their broader impact, and the social relevance of the role of ethics of PRPI in public health. As such, numerous and distinct data sources become available and relevant. There are four relevant methods that can be applied in this study to collect data. These include observation, analysing texts and documents, interviews, and recording and transcribing (Silverman, 2001). All these methods are useful but, at an earlier stage of the thesis, it was decided that interviews using case countries could be used. Interviews using case countries suited this research because this method is able to gather an “authentic” understanding of policymakers’ experiences of ethical issues and generally enable valuable insights into stories about pandemic preparations.

Prior to undertaking the fieldwork, I considered different techniques of collecting data. Although qualitative research methods were appealing, it was not possible to carry out techniques other than interviews to gain understanding of ethical issues and other aspects of ethics of PRPI. I could not carry out an observation qualitative technique like ethnography, simply observing policymakers in their work settings, or conduct desktop research using records and analysis of national documents, such as pandemic plans. These methods would have been inadequate in addressing the research problems. I rejected the observation approach because it was impractical and required a long period of study to witness infrequent events and cover issues that have low salience for participants. Similarly, research surveys

and desktop research have limitations because they can't produce enough rich data needed to create a full picture of PRPI.

I considered the in-built flexibility present in the qualitative research approach and, from a practical point of view, it was decided that this thesis would use a mixed method qualitative approach. The use of a mixed method qualitative approach is important because it permits constant refining of data, leading to a focused analysis. A study on public health preparedness in Alberta by Moore et al. (2006) has used a similar approach: interviews to gain insight into the tasks involved in the response system combined with cases studies to assess preparedness and responsiveness. Another study on understanding community-based processes for a research ethics review commissioned by the Community-Campus Partnerships for Health (CCPH) successfully deployed this mixed method data collection approach (Shore et al., 2011). In their study, interviews were used to assess the similarities and differences between the protocols used by community-based processes for research ethics review and those used by institution-based review boards, with case studies (two case countries) deployed to gain in-depth understanding of history, processes, ethical considerations, experiences and outcomes of community-based processes. In the case of the study of ethics of PRPI, interviews and case studies not only enable comparisons, they allow policymakers to identify ethical issues, and show how these are conceptualized and resolved in the context of Ghana and Malawi.

5.4.2. Case Countries

The two case sites, Malawi and Ghana, were chosen in order to aid empirical claims and obtain comparative research outcomes. A multiple case study design was preferred over a single case study design because not only did it provide a rich context for understanding the phenomena under observation, it also assisted in uncovering new and divergent themes. The intention of this was to be part of a large multi-method study to explain the complex phenomena of ethics of PRPI. Most importantly, the multi-case study produced valid and reliable results enabling the extrapolation of the study findings' meaning and relevance to other contexts and situations. The two case study sites were identified from the 2009 first African Regional Conference on Pandemic Influenza A (H1N1), held in Johannesburg, South Africa, in which I took part. The choice of Ghana and Malawi was based on five variables of interest: geographical location, quality of pandemic policies, availability of records, vulnerability to probable pandemic threats, and health service management systems. The final

choice was made on practical and theoretical grounds. I did not have adequate funds to choose more than two countries; Malawi and Ghana offered cheaper research costs in terms of travel, and were also more convenient.

In choosing case countries, there are no hard-and-fast rules, although it is strongly advised that they have unique characteristics to satisfy the requirements of research replication. Ghana and Malawi do so; they both belong to different geographical regions, Ghana in West Africa and Malawi in South East Africa. As indicated earlier, this is one reason why the two case studies would add to existing knowledge. In addition, it was feasible and practical to collect data since Ghana and Malawi are English-speaking countries, politically stable and safe. These factors would allow me to conduct fieldwork and, importantly, carry out the interviews and analyze respondent data without the need for a translator. Other considerations were based on the fact that Ghana and Malawi are British ex-colonies, thus providing better comparative histories and records that are freely available at the colonial registry office in London. Despite these advantages, case studies are criticized for their inability to draw “cause and effect” relationships, making it impossible to generalize the findings to a wider population of people (Hamel et al., 1993). However, Stake (1980) counters these criticisms by claiming that case studies are still a preferred research method, even though a single case study is not an adequate basis for generalizations.

By using these two countries as case studies it is possible to explain different approaches to ethical reasoning and justification. Most importantly, the principle for choosing these countries is that both add something new to existing literature. Little has been done on the ethics of planning for, and responding to, pandemic influenza in Ghana and Malawi. This research is, therefore, expected to add knowledge and insight to the limited literature on the ethics of PRPI in Malawi and Ghana, and conclusively give insights on Africa as a whole. This can only be achieved, for example, if PRPI and ethical reasoning are explored. Questions on PRPI and a theoretical case study to examine reasoning and judgement are presented in the interview guide in appendix 3.

5.4.3. Interview Process and Documents

Interviews were used to collect primary data for this research, complemented by histories and documentary analysis. Interviews are an effective method of collecting in-depth information and remained the major part of generating primary data for this study. Interviews retain the

holistic and meaningful in-depth response data to questions posed in this research in a way that other methods cannot. Robson (1994) argues that interviews are a flexible and adaptable way of ascertaining information. As explained earlier, I did not choose these data-collecting techniques as a shortcut to seeking answers to my research questions, but rather as an appropriate and reliable technique that will provide rich and illuminating material for this research. Biases are difficult to rule out though so I designed a mixed method approach of data collection to gain greater perspective.

Semi-structured interviews were adopted for this research (see interview guide in appendix 3) because they allow the interviewer to work out a set of questions in advance. This approach also allows the researcher to modify the order of questions depending on the context of the conversation. The wording of questions can be changed, explanations given and questions deemed inappropriate can be left out, or additional ones included. Most importantly, this method was useful because it provides a level of flexibility that allows the interviewee to express in their own words what ethical problems emerge and how they are managed, without any hindrance from the interviewer. This type of approach allows respondents the freedom to critique, comment, explain and share their experiences, opinions and attitudes as they wish.

The interview guide according to Robson (1994) includes an introductory comment (verbatim script), lists of topic headings and key questions to ask under these headings, and a set of associated prompts and closing comments. The interview guide used to collect data for this thesis had a similar design. Each case country, either Ghana or Malawi, used a similar carefully developed interview guide (there were variations in the manner I held the interview conversation) divided into five broad themes: an introductory section on scene setting, a section on historical aspects of pandemic influenza, a section on the epidemiology of influenza pandemics and related ethical issues, a section on ethical dilemmas and what these might mean to policymakers, and a section on moral reasoning and decision-making. Each topic heading had several questions and prompts.⁷⁷

⁷⁷ It should be noted that appendix 3 is simply a research guide. Each participant was asked a set of questions and sometimes prompted using the research guide and on basis of the conversation. I refrained from bombarding the respondent with all the questions provided in the guide.

All interviews conducted with the respondents were tape-recorded. Tape-recordings and notes were accompanied by a logbook detailing the day of the interview, its location and a general overview of the interview in terms of narrative, the participant's perceptions, attitudes and behaviour. Record-keeping assisted with data analysis and triangulation of transcripts. The interview schedule was divided into two phases (Ghana and Malawi), four months for each country. An approximate two-week break was allowed after each phase of interviews. After each interview, a half day break from the field was allowed for reflection and provisional analysis of the data. This strategy was necessary to manage the labour intensiveness of the fieldwork.

Individuals eligible for the study were those involved in pandemic planning and able to speak a little English in Ghana and any local language spoken in Malawi. In conformity with the process of choosing research cases, the sampling approach was created to recruit policymakers with varied expertise and professionalism so that this study could conceptualize and understand ethical problems and how they are solved. As part of the interview, I asked each respondent, if possible, to provide documentary data in the form of organizational literature and government documents – in some cases I would request a pandemic plan for the nation or local pandemic plans if available. Existing pandemic plans (available online) and other academic literature were retrieved as alternative sources of data to complement and aid understanding of the interviews.

5.4.4. Sampling, Approach and Access

The Global Ethics Observatory⁷⁸ overseen by UNESCO, maintains a database of all experts involved in programmes of ethics including planning for pandemic influenza. I drew upon this database to create my own dataset of prospective interviewees by obtaining their names and addresses. Identifying their role or expertise was rather complicated but was resolved after a few email exchanges. Through this process I managed to identify four experts from Ghana and three from Malawi, all of whom were involved in pandemic influenza planning. In search of more interviewees, I also wrote to the Ministry of Health in Malawi and the Ghana Health Service requesting a draft of their pandemic plans or its contributors. A few people were identified and contacted by email and phone and asked whether they could participate in the study. The number of participants found through this process was inadequate to reach a

⁷⁸ <http://www.unesco.org/shs/ethics/geo/user/> (Accessed: May 22, 2013).

sample size necessary for my research however; a few more were identified at a pandemic preparedness conference in South Africa and this enabled more access. Potential interviewees at the conference were asked to recommend colleagues who I could contact about my research. I received an overwhelming response: sometimes one person would recommend between three and five people. Robson (1994) recommends this kind of snowballing for use when there are potential difficulties in identifying respondents.

All potential interviewees were contacted with an official letter (appendix 4), information sheet (appendix 5), and consent form (appendix 6) either by email or fax. This was followed by a confirmatory telephone call to ensure I had a reply. This proved an effective strategy. In Malawi and Ghana it is acceptable to contact someone provided one has a convincing agenda, even without making a telephone appointment. Telephone calls were made to confirm whether the person was willing to participate in this research and ask if I could include them in my database of interviewees. Similarly, I arranged a specific date, time and location for conducting interviews via telephone.

The pilot for this research activity was planned to be carried out in Zimbabwe, aiming to assess the feasibility of the sampling strategy and whether it was possible to find informants and later implement interviews. However, due to the social and economic instability and possible disturbances arising from political unrest in Zimbabwe at the time of fieldwork, I substituted it with Malawi. The pilot was conducted in Malawi and this country was chosen on the basis that it provided opportunities for clear definition of the focus of the research, allowing me to conduct large-scale research in the same country. Malawi was ideal as a pilot and advantageous as it allowed for more in-depth analysis of the study feasibility. Again, the stability of the country and the availability of the pandemic plan, and related data, made it an interesting country to use as a pilot study.

A purposive sampling strategy was adopted, focusing on individuals, groups and settings that could provide relevant information on the topic (Darlington and Scott, 2002). This strategy allowed decisions about the sampling to be reviewed during the research process and stopped recruiting of more participants when data saturation was reached. A total of 70 participants were identified through the snowballing sampling method and stored in the database of interviewees before I entered the field. I interviewed 46 participants during fieldwork which was sufficient to achieve theoretical data saturation. I made a profile of each interviewed

participant depicting demographic data and details of the interview, such as where and when it was carried out (see appendix 7). A logbook detailing the general feeling of the interview was kept separate and confidential.

5.4.5. Interviewing

This section discusses general issues of interviewing together with the practicalities of my fieldwork, particularly in organizing and carrying out interviews. Prior to interviewing, preparation was done in terms of developing sets of questions and themes to follow. I tried to be as clear as possible in my questioning technique to avoid leading questions and ensure I generated meaningful data. There were general guidelines I established for interviewing that can be found in the information sheet. For example, before the interview I introduced myself, explained the interview purpose to the policymakers and asked whether it was convenient to conduct an interview. I also requested permission to take notes while assuring them that any identifiable personal details would remain anonymous and confidential. In interviews I had two digital recorders, a notepad, a pen and an interview guide. I started the interview with a general open question. For example, I asked policymakers how they had responded to pandemic influenza at the national level.

Considering the complexity and fluidity of the interview topic, I had decided earlier not to adhere rigidly to the list of questions or script; rather I used the guide to ensure the conversation with the respondent covered all the topics of my research enquiry. The interview schedule in appendix 3 is simply a guide and does not suggest that I asked all the questions in a single sitting. Lots of questions in the guide allowed flexibility, choice and guided what to ask. Administering research questions systematically as a routine would negatively impact on the interview process as it would be impersonal and intimidating on the part of the respondent. As Robson (1994) notes, interviews are a kind of conversation that demand a non-threatening strategy to ensure interviewees talk in a free and open manner similar to their ordinary conversational style. Abandoning the structured approach presented in the guide was helpful in shaping the interview focus, as I was able to ask follow-up questions to the answers the respondent provided. This approach allowed respondents to say what was important and express it in their own words.

Before conducting the main interviews, a pilot interview was completed with ten policymakers. Not only were these pilots useful in guiding the best means of engagement

using a focused approach when posing questions, they also helped me avoid repeating questions and issues the respondent had already addressed. Conversations free from repetition are more robust and interesting for the interviewees. The purpose of pilot interviews was to give advance warning about any potential failures in research design and uncover problematic interviewing issues in the large-scale study protocol. For example, as far as the trial run was concerned, the pilot served to work out the “estimated time” needed to complete the interview schedule. Initially I timed the questions as taking an hour and a half to complete but the time schedule almost doubled during the pilot interviews. During the fieldwork I found that sufficient time with the interviewees was essential and that there was, therefore, a need to adjust the schedule.

46 interviews took place in Malawi (22) and Ghana (24) representing over 50 hours of time-recorded interviews. Interview duration varied but the minimum time of “interview proper” was around 48 minutes and the maximum time around 145 minutes. The interview proper is the time I asked the first opening question and ended with the last question. The mean duration of a recorded interview was 72 minutes; this may contain conversation unrelated to the research. The minimum time in the interview was affected by logistical problems. For example, in many cases, experts were constantly busy due to the nature of their jobs; this ultimately demanded extensive travel and sometimes working from the field. Where possible I had to catch up with respondents in their field of work and this involved me travelling as well. Some busy policymakers only allowed me an hour to talk to them during their lunch break, an opportunity I could not refuse to ask few questions. Though time was of the essence and prolonged interviews enabled me to collect a huge dataset, it was also important to consider in-depth data by asking a few questions rather than breadth data to cover all the themes.

The alternate way of working around this problem was to pose questions tactfully, eliciting valuable data in the shortest time period possible. My concern was to take note of the discourses and forms of power that shaped the words articulated within the responses. I was interested in in-depth data with explanations that gave meaning to the research, as opposed to breadth data that provided frequency. Finding a range of responses is achieved by asking questions, and according to Baker and Edwards (2012), this is important within qualitative research in order to build a convincing analytical narrative based on ‘richness, complexity and detail’ rather than on statistical logic. The time duration of the completed interview may

have implications on the quantification of the quantitative responses, such as how many said this or that. Quantification of interview responses in this study may have little relevance to overall analysis of the findings but remains one area of critique of the study reliability and credibility. Quantifying qualitative data, which involves turning the data from words into numbers or percentages, is an acceptable approach in qualitative research. However, the frequency of the number of responses, although important for organising data, does not say very much about where to pay attention in the analysis. What it does do is reveal data saturation – a counting process that was applied in this thesis to determine when to stop interviewing.

The interview locations varied according to agreed arrangements. These locations were generally safe and quiet so as to avoid disturbance. The interviews were mainly conducted in the interviewee's office, cafes and hotel lobbies. The majority of the interviews were held at the interviewee's convenience and preferably during their lunch hour or after work. Interestingly, two Ghanaians and a Malawian policymaker were interviewed in their own homes. The issue of privacy was considered and it was decided that there was no violation; in fact the interviewee was more comfortable and confident at home, giving rise to substantive synergies within the conversation. The interview locations generally did not appear to affect the quality of interviews.

All interviewees completed the profile form which contained their personal data and the role they played in PRPI. All identifying features in the profile form and interview script associated with the personality of the interviewee had to be removed before archiving the material for the next 7 years in a locked cabinet (personal communication from my supervisors). De-identifying information in interview data that is co-produced between the interviewer and interviewee has raised debate. For example, Babbie (1992) argues that personalities within interview data should not be removed from conversation but rather accepted as a fact that enables future replicability. For this reason, figure 5 and 6 are charts of organizations representing the policymakers I interviewed.

To give a proper description of the interviewing process I must discuss the tool that was used to collect the data and how this relates to the validity of future findings. The robustness of the data collection tool, using qualitative methods such as interviews, remains a vexed issue. My own view is that validity of qualitative research rests in the eye of the readers and, most

importantly, their scrutiny of the design of the methodology, such as the choice of collecting data and the process of analysing the data. Patton (2001) supports the notion of a researcher's involvement and immersion in the research by suggesting that situations are subject to change and a qualitative researcher should, therefore, be present throughout to record an event before and after the change occurs and ensure trustworthy, credible findings. In this understanding, trust between reader and researcher is of paramount importance and must rest not only on honesty but a clear description of the research process. As described above, the researcher (author) in this study was actively involved in the design of the research questions and, to some extent, the review of questions during the data collection process. The questions in the interview were informed by research questions and subsequently the literature pertaining to ethics of planning for, and responding to, pandemic influenza. I used a similar interview guide for both Ghana and Malawi. The purpose was to find variations that existed between these two countries. At the end of the interview, the researcher and the respondent exchanged contacts. I also asked for documentary data. In Ghana, I obtained a newly completed plan for pandemic influenza which was still to appear in the public domain at the time of writing.

5.5.0. Data Analysis

Data analysis has been an ongoing process that started when I began fieldwork and carried on throughout the writing of this thesis. After every interview session I listened and re-listened to the tape-recordings connecting each respondent's comments while reflecting on the theory of the thesis. Some modifications took place at this stage, with new questions added, reframed, or removed if deemed unnecessary. To a considerable extent, the fieldwork proceeded without a precise beginning or end, but this stage of the research required a dialectic bridging of analytical research themes. Dey (1993) argues that dialectic informs data analysis from the outset through all phases of the research, rendering arguments that generate and transform raw data into new knowledge.

There are several analytic strategies in qualitative research, although most data analysis is based on analytic deduction or induction. Analytic deductive reasoning, rather than inductive reasoning, was adopted for this research because it allows the testing of data, confirming or negating the study hypothesis, with the goal of most accurately representing the situation. I decided not to use inductive reasoning because this study was not intended to generate data for formulating a tentative hypothesis or in any way end up with the development of theory.

The analytical method used in this thesis, as mentioned before, is the Proactive Decision-Making model (PDM) analytic tool developed from the theoretical propositions (such as mnemonic PROACTIVE). PDM facilitates a deeper understanding of decisions and non-decisions by analysing relationships between various variables such as institutions, actors, power, influence, force, authority, socio-economics, politics, evidence and norms. By studying the mnemonic PROACTIVE and applying it to the 2009 pandemic decisions enabled a four-type process of analysis, identifies a problem and evaluates alternatives (a set of possible actions), assumptions (simplifications of reality), assessment (spectrum of possibilities), and performance (beyond the obvious and routine). PDM, as applied to thematic analysis, seeks to deal with data that takes into account the production and utilization of “codes”. In the present research, analysis of interview transcripts, field notes, histories and policy documents use thematic analysis. The “data” being analyzed involves how policymakers formulate or reach policy decisions and how they translate policies into implementation programmes. A thematic approach to data analysis allows cross-site comparisons, using the accounts of participants to create a multi-dimensional picture. This approach is highly connected to the development of theory and readily informed by existing theories. Thematic analysis is similar to grounded theory since its structure is equally designed to support the process for carrying out this type of code-related analysis. Ryan and Bernard (2000) consider thematic coding a process performed in grounded theory, rather than a specific approach in its own right. Braun and Clarke (2006) argue that thematic analysis is an analytical method in its own right, essentially independent of theory and epistemology and able to be applied across a range of theoretical and epistemological approaches.

Grounded theory, originally developed by Glaser and Strauss in the 1960s, is essentially more concerned with developing theory about phenomena of interest using collected data (Glaser et al., 1967). Since the purpose of this study was not to develop theory, grounded theory was not used, although part of its theory on the process of coding was used to complement thematic analysis. Before demonstrating how I carried out thematic analysis, it is important to distinguish it from framework analysis since both employ a simple ordering of data. The latter approach is suited to applied policy research and better adapted to research that has specific questions, a limited time frame, a pre-designed sample (e.g. professional participants) and a priori issues (e.g. organizational and integration issues) that need to be dealt with in a particular setting (Srivastava and Thomson, 2009). The former, as indicated earlier, involves searching through data to identify recurrent patterns. At first the framework

approach seemed an appropriate analytical tool; it was, however, rejected as it requires a short timescale due to the nature of applied research, and there is often a need to link the analysis with quantitative findings (Pope et al., 2000). In addition, data under framework analysis is more structured, and analysis is explicitly and more strongly informed by a priori reasoning.

There are set rules when conducting thematic analysis but the most important are pin-pointed by Dingwall et al. (1998) as being trained to acquire skills and experience in order to be able to conduct good qualitative analysis. It was from this perspective that prior to the transcription of interview data I assumed the task of researcher to familiarize myself with the data, which is key to thematic analysis. Researchers should be very much involved in good thematic analysis, collecting data and transcribing it themselves. Prior to transcribing the interview data myself, I analyzed the audio recording of each interview session each day in order to create superficial themes. This involved jotting down interesting notes into a “data analysis logbook” clearly marked for each interview. This process was repeated after full transcription, during the coding of the data, and again at the time of writing.

To code and analyse the data, Computer Assisted Qualitative Data Analysis Software (CAQDAS) was utilized. NVivo was the preferred package used to code chunks of data and reduce it to themes and categories, partly because I had easy access to the software (Student license with the University of Nottingham). CAQDAS Textbase Manager or programme requires the data to be fully transcribed to rich text to facilitate the thematic coding and development of categories; the user also needs to be proficient in the programme. Some Textbase Data Managers have complex functions and methods of analysis, thereby raising debate over whether word-processing packages are better. Even among CAQDAS itself, there are numerous pros and cons as to what type of programme is best to use. It is argued, however, that word-processing packages do a better job, as opposed to many tasks undertaken by CAQDAS that initially rely on a lot of the researchers’ reading and familiarization with both the data and software. CAQDAS only worked after recorded audio tape interviews were transcribed and field notes analyzed ready for further analysis. The way CAQDAS handles analysis is not different from word processor use, although I was using this package for the first time. My background is more embedded in quantitative methods, where statistical packages, such as STATA and Epi-info, are used to analyze data. This did

not mean I abandoned analysis using CAQDAS, but I took on board comments by Dingwall et al. (1998), who argue for researchers' experience in data analysis.

Without much experience with CAQDAS, and considering my concern that it would complicate the process of analysis rather than facilitate it (potentially limit the reflexivity and in-depth analysis), in addition, I used a manual approach of data analysis while iteratively working with CAQDAS. This involved re-reading the transcribed data, annotating thoughts in the margin of the script and, where possible, pasting the line references in CAQDAS. Data analysis was kept as simple as possible using word-processing and index text while familiarizing myself with CAQDAS. Applying CAQDAS and manual data analysis was important for rigour and depth. While this promoted a close relationship with the data in terms of meaning and context, I did not distance myself from its advantages, such as coding and retrieval, thereby allowing for comparisons to be made within a vast qualitative dataset.

5.5.1. Getting Started with NVivo 8

It was always my intention to utilize a text database management tool to assist with analysis of transcribed data. I started using NVivo immediately after transcribing the data of each interview session and exported it to NVivo for preliminary analysis. Before getting the software, I did have to attain some experience though. This led me to attend graduate courses at the University of Nottingham to prepare me to use the NVivo 8 software programme. NVivo 8 was released in March 2008, while subsequent versions have been released since then, such as NVivo 10.⁷⁹

NVivo keeps nodes in four ways: Free Nodes, Tree Nodes, Cases and Relationships. Free nodes are open coding of concepts or ideas that are simply listed and have yet to be organized in a sensible relationship. Tree nodes are sometimes referred to as axial codes and demonstrate a relationship between nodes; they are organized in hierarchical thematic codes with a parent node containing multiple child nodes. Cases are special nodes which act as a container to which the content of analysis or observation, such as attributes about persons and sites, are attached. For example, I had two case nodes; one representing policymakers' attributes and what they had to say in Ghana, and another representing policymakers in

⁷⁹ http://www.qsrinternational.com/products_nvivo_features-and-benefits.aspx (Accessed: October 12, 2013).

Malawi. Relationships are nodes that allow for the examination of links between two cases or between two nodes. For example, I developed several relationship nodes; I had one that defined the connection between “ethical issues” and “cause” within the framework of PRPI.

Prior to setting up relationship types, I coded the data using free nodes. In my first interview transcript, I generated 130 free nodes and organized tree nodes side by side to see what categories were emerging, while continuing to create free nodes from other transcripts. A total of 46 transcripts each of about 15 pages were coded into two case nodes (Ghana and Malawi). Free nodes were turned into tree nodes and vice versa: an iterative process that initially involved coding free nodes and sometimes exporting them directly into tree nodes. I then rearranged and restructured nodes in no particular order between free node and tree node depending on what respondents talked about. This was to avoid free nodes getting too long to manage, while organizing them into meaningful interactions and relationships. The nature of analysis adopted here, together with the manual analysis, found categories and themes.

5.5.2. Coding the Data and Developing Analytical Schemes and Models

I adopted a holistic approach to coding, examining the text closely, line by line, and looked for pre-defined themes rather than new ones. This process was repeated several times until shaping and locating patterns of meaning and ideas for coding was achieved. Coding of data was a reiterative process, involving constant moving backwards and forwards, until meaning of the patterns in the data reached saturation. Thematic analysis, as explained before, requires familiarity with the data before producing initial codes, which I had.

Generating codes involved three stages: first, open coding, where some feature of the data that appeared interesting was identified, labelled and defined. Initial codes that matched up with data extracts were collated together by labelling and assigning selection of unique identifiers of text within each data item. The second phase proceeded by reviewing and refining themes in which the connections between concepts were explored to help build categories and interrelationships. Here, I considered whether potential themes and sub-themes formed a coherent pattern and if not, whether this was problematic. Themes that did not fit particular data extracts were redefined or discarded. The third phase involved searching selective coding, where re-emerging theory was further defined and refined. Throughout the process, emerging codes, themes and categories were subjected to comparative analysis until saturation was reached. This was useful for giving structure to the extracted data and

interpretation to the final analysis. Coding for this thesis was theory-driven rather than data-driven. In the former, themes are coded around specific research questions and theoretical framework. Initially each interview transcript was coded equally and a more systematic coding for the entire dataset was completed.

NVivo assisted in locating the most recurrent codes across all interviews. This enabled the researcher to determine where codes overlapped and which ones needed to be dropped and re-named. With the coded categories, just as themes were amenable to modification, new ones developed and old ones were discarded. There is no right coding or even a best way to determine the prevalence of the themes, but an attempt was made to organize these themes within the context of the overall research question. According to Maxwell (2005), just listing general themes or categories without interpretations lacks relevant intellectual insights and risks the credibility of the conclusion. Coffey and Atkinson (1996) advocate the need for expanding and teasing out data in order to formulate themes with a more meaningful interpretation.

For the purpose of validity, data analysis adopted in this study was subjected to the four step process of interpretative validity of data analysis found in Koniak-Griffin et al. (1994). Step one is the accuracy checking of the transcription; step two, the process of coding and developing; step three involves constant comparative procedures until saturation is reached; and step four, validation with an independent researcher in qualitative studies. This was another way of checking the interpretative validity of the analysis and enhancing the process of triangulation.

5.6.0. Conclusion

The aim of this chapter was to reflect on the rationale behind the study design. The methods used to answer the research question are outlined. The chapter argues for a qualitative method utilizing semi-structured interviews with policymakers. This was the only approach that quantified the meaning and understanding of ethical issues experienced by policymakers. As will be shown in Chapters 6-8, qualitative study using case countries assisted in giving insights into how ethical issues are resolved or managed in different settings of Ghana and Malawi. Policymakers from these countries were chosen through snowballing technique and it was necessary to talk to them, particularly about their reasoning and justification in decision-making. These talks were completed through interviews, chosen because they

offered better answers to research questions and their responses were easier to clarify. Interviews were able to discover what policymakers understood as ethical concerns, what caused ethical problems, how ethical decision-making was justified and how the ethics of PRPI was necessary in the governance of pandemics.

The recruitment of respondents and data collection methods used in this study are intended to be clear and credible. An attempt to demonstrate the validity and reliability has been a necessity and overwhelmingly important in showing the reader how this study collected its data, how the data was coded and how themes were produced. The limitations of the methodology are highlighted in Chapter 9 (section 9.15.0), allowing an opportunity to discuss potential means of improvement. Ethical issues in the study design are also discussed in Chapter 9 (section 9.15.1), particularly how they were resolved. This study can claim to have achieved validity and reliability considering that the practical PRPI and ethical issues which arose were fully addressed and the coding and categorization of themes were adequately explained. In the following three chapters, I present the findings; the next chapter will consider how Ghana and Malawi prepared for the 2009 H1N1 pandemic influenza.

CHAPTER 6: PLANNING FOR AND RESPONSE TO PANDEMIC INFLUENZA (PRPI) IN MALAWI AND GHANA

6.1.0. Introduction

Examining the ethics of Planning for, and Response to, Pandemic Influenza (PRPI) is necessary because public health policy and interventions always stir controversy, and often remain surrounded by controversy as they are implemented (Jennings et al., 2003). The purpose of this study is to investigate ethical issues that emerge from such controversy and how policymakers attempt to resolve them. The intention of reviewing PRPI activities is to identify the reasoning underlying public health practice. The PRPI context, as will be seen, opens up the debate on how we might think about the ethics of planning for, and response to, pandemic influenza.

Ethical issues cannot be highlighted or determined empirically unless ways of explaining them are fully investigated (Hoffmaster, 2000). In this chapter, I will consider how Ghana and Malawi translated their national influenza policies into pandemic response actions during the 2009 pandemic H1N1 (pHIN1). The following outline of PRPI in Ghana and Malawi is based on my analysis of data from interviews with policymakers working in government and pandemic implementing agencies representing NGOs. In Chapter 4, I argued that ethical problems encountered in pandemic influenza are deeply embedded in planning assumptions and operational related activities of PRPI. It is therefore necessary to unpack sets of actions involved in PRPI in order to identify the ethical issues.

In this chapter, I will highlight governmental preparations for, and responses to, the 2009 H1N1 pandemic influenza, covering the pre-pandemic, pandemic and post-pandemic stages. To assess the 2009 PRPI, questions exploring preparedness and response actions were presented to policymakers during field work (appendix 3). A public health analytical tool, the Proactive Decision Making Model, was used to analyze the interviews.

This chapter is organized as follows: the next section presents a brief historical context of PRPI. The purpose is to describe the foundation of national pandemic plans. The analytical themes emerging from Ghana and Malawi are presented separately. The major themes include planning and coordination, surveillance, situation monitoring and assessment, prevention and containment, health system response, and information, education and

communications (IEC). Contrasting issues arise from the two countries in relation to practices of PRPI and ethical concerns that are being researched; areas of success and those that require significant improvement are particularly discussed. This chapter will conclude by discussing the implications of these findings in terms of a future PRPI model for Ghana and Malawi.

6.1.1. Historical and Legal Context of PRPI

In the late 1990s, there were renewed concerns that an influenza pandemic may strike (Snacken et al., 1999). The establishment of H5N1 in the avian population according to Mounier-Jack and Coker (2006) had increased the likelihood of an influenza virus that could trigger another pandemic. There were also concerns that once a pandemic started, it would be too late to accomplish many of the activities required to minimize its impact (WHO, 2004).

These threats and concerns led the WHO to publish guidelines in readiness for a new pandemic. The purpose of the guidelines was to assist with prevention and mitigation of the challenges presented by the pandemic. The national and regional planning guidelines were developed and published in 1999, and revised in 2005 and 2009 (WHO, 2005c, 2009a). The revisions incorporated more recent developments, such as the practical experiences gained from responding to outbreaks of avian influenza.

These guidelines provide a framework by which preparedness and response actions can be organised. The planning process is organised in phases, and each phase is associated with a range of universal public health actions. The WHO recommends that Member States consider the proposed phases in the context of country-specific needs, priorities and actions, when developing or updating the national plan. Table 2 below is a WHO (2005b) checklist of pandemic phase description and main actions by phase.

Based on the resolution issued in April 2005, Ghana moved quickly to develop its pandemic plan in December 2005 and had revised it by February 2006 (Republic of Ghana, 2006) and Malawi developed its avian influenza implementation plan in March 2006 (Government of Malawi, 2006). The development of the Ghanaian and Malawian plans was guided by the WHO PRPI strategy based on pandemic phases and the conceptual framework of public health functions such as communication, surveillance, logistics, detection and response and containment.

Table 2: WHO checklist of pandemic phase description and main actions by phase (Source: WHO (2005b)).

Phases	Descriptions	Actions				
		Planning and Coordination	Situation Monitoring and Assessment	Communication	Reducing the spread of the disease	Continuity of health care provision
Inter pandemic	1 No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human infection or disease is considered to be low.	Develop, exercise, and periodically revise national influenza pandemic preparedness and response plans	Develop robust national surveillance systems in collaboration with national animal health authorities, and other relevant sectors	Complete communications planning and initiate communications activities to communicate real and potential risks	Promote beneficial behaviours in individuals for self protection. Plan for use of pharmaceuticals and vaccines	Prepare the health system to scale up
	2 No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.					
Pandemic alert	3 Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.					
	4 Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans	Direct and coordinate rapid pandemic containment activities in collaboration with WHO to limit or delay the spread of infection.	Increase surveillance. Monitor containment operations. Share findings with WHO and the international community	Promote and communicate recommended interventions to prevent and reduce population and individual risk	Implement rapid pandemic containment operations and other activities; collaborate with WHO and the international community as necessary	Activate contingency plans
	5 Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).	Provide leadership and coordination to multisectoral resource to mitigate the societal and economic impacts.	Actively monitor and assess the evolving pandemic and its impacts and mitigation measures.	Continue providing updates to general public and all stakeholders on the state of pandemic and measures to mitigate risk.	Implement individual and societal, and pharmaceutical measures	Implement contingency plan for health systems at all levels.
Pan	6 Pandemic phase: increased AND sustained transmission in general population.					
Post-peak period	Levels of pandemic influenza in most countries with adequate surveillance have dropped below peaks	Plan and coordinate for additional resources and capacities during possible future waves	Continue surveillance to detect subsequent waves	Regularly update the public and other stakeholders on any changes to the status of the pandemic	Evaluate the effectiveness of the measures used to update guidelines, protocols and algorithms	Rest, restock resources, revise plans and rebuild essential services
Post pandemic period	Levels of influenza activity have returned to the levels seen for seasonal influenza in most countries with adequate surveillance	Review lessons learned and share experiences with the international community. Replenish resources	Evaluate the pandemic characteristics and situation monitoring and assessment tools for the next pandemic and other public health emergencies	Publicly acknowledge contributions of all communities and sectors and communicate the lessons learned; incorporate lessons learned into communications activities and planning for the next major public health crises	Conduct a thorough evaluation of all interventions implemented	Evaluate the response of the health system to the pandemic and share the lessons learned

Ghana and Malawi made some country-specific modifications to the WHO PRPI strategy. Both countries reduced the WHO six-tier inventory of pandemic phases to three tiers: alert, serious and emergency. Table 3 shows the three-tier structure operating in Ghana and Malawi. The three-tier response levels are based on the different risks and predict a course that a pandemic due to avian influenza may take in each country. It is not clear how the response levels of the three-tier system respond to other types of influenzas detected within the country and among humans. The three-tier, according to the interviewees, eased communication with the general public but was considered irrelevant because of its main focus on avian influenza and neglect of other types of influenzas.

Table 3: The Three-Tier Structure Operating in Ghana and Malawi

Three-Tier Response Levels	Public Health Action
<p>Alert</p> <p>(a) Highly pathogenic avian influenza (HPAI) detected in poultry population outside the country.</p> <p>(b) Avian influenza human cases detected outside the country.</p>	<p>- To obtain timely and accurate information from other places with a view to prevent introduction of the disease into the country and to detect local cases as early as possible.</p>
<p>Serious</p> <p>(a) Current strain of the virus arrives in the country via migratory birds and quickly infects local domestic bird populations in specified geographic foci.</p> <p>(b) Due to the low rate of bird-to-human transmission of the virus, relatively few human cases are detected.</p>	<p>- To contain the disease as soon as possible, identify foci of infection, prevent local transmission and exportation of disease to other places.</p>
<p>Emergency Response Level</p> <p>(a) viral strain capable of rapid and effective human-to-human transmission.</p> <p>(b) Influenza pandemic declared by WHO.</p>	<p>- To contain the disease as soon as possible, identify foci of infection, prevent large outbreak from occurring, interrupt and stop chain of local transmission and prevent exportation of disease to other places.</p> <p>- To slow down progression of the epidemic and minimise loss of human lives in order to buy time for the production of an effective vaccine against the novel pandemic influenza strain.</p>

Source: Republic of Ghana (2006); Government of Malawi (2006).

On the one hand, modification of the pandemic phases can be an important strategy to bridge country-specific needs such as legal and ethical considerations, provided such alterations are relevant. On the other, the three-tier causes confusion particularly if risk-graded epidemiological scenarios do not correspond to the command, control and coordination framework for emergency response. According to Mounier-Jack and Coker, 2006, the three-tier approach for national implementation is useful in advanced countries with generic emergency planning.

Any PRPI strategy requires legal consistency between international (e.g. the International Health Regulations of 2005) and domestic laws (e.g. local public health laws). Implementation of the International Health Regulations of 2005 (IHR) (WHO, 2005a) to protect the international spread of diseases requires support from the country's local legal framework. Both Ghana and Malawi have legal frameworks to support the IHR, such as Public Health Acts that stipulate powers to the Minister of Health for notification of diseases to the local and international community. Under the same act, all Local Authorities are required to report any outbreak of epidemic influenza where it is suspected or confirmed.

6.1.2. Socio-Economic Situation and Demography of Ghana and Malawi

6.1.2.1. Ghana

Ghana is a sovereign state in West Africa that enjoys peace and stability. It lies a few degrees north of the equator and as a result has a warm climate. Although Ghana has a tropical climate, it experience two major seasons: the rainy and dry seasons (harmattan). Temperatures vary with season and elevation. In the south of Ghana, two rainy seasons occur: from April to July and from September to November. In the North, the rainy season begins in April and lasts until September.⁸⁰

The country covers an area of almost 240.000 sq. km. It is bordered by the Ivory Coast to the west, Burkina Faso to the north, Togo to the east and the Gulf of Guinea to the south.⁸¹ The capital and largest city is Accra. There are ten administrative regions comprising 170 districts.

⁸⁰ <http://www.natcomreport.com/ghana/livre/welcome.pdf> (Accessed: November 15, 2013).

⁸¹ *ibid.*

The total population of Ghana numerated in 2010 is 24 million people. The annual intercensal rate of growth for the country declined from 2.7% in 2000 to 2.4% in 2010 (Ghana Statistical Service, 2011). The population density in 2010 was estimated at about 102 persons per square kilometer. Of the total population, 48.8% are males and 51.2% are females. This gives a sex ratio (i.e. number of males to 100 females) of 95.2 compared to 97.9 in 2000 (Ghana Statistical Service, 2011). Like most countries in Africa, Ghana has a youthful population. A large proportion of the populace consists of children under 15 years, and a very small proportion are elderly persons (65 years and older) (Ghana Statistical Service, 2011). The median age of the total population is 20 years. The 2010 census report showed that the under 4 years cohort accounts for 13.8% of the total population (3% are under 1 year). Furthermore, 24.5% of all Ghanaians fall in the 5-14 year age bracket, 56.9% are 15-64 years, while 4.6% are 65 years or older.

The age structure of the country's population is basically shaped by the effects of high fertility and decreasing mortality rate (Ghana Statistical Service, 2011). According to estimates, life expectancy at birth has increased from 59 in 2002 to the present 64 years (Ghana Statistical Service, 2011). Although Ghana shows some significant signs of improvement in the Demographic Transition (DT) i.e. more childbirth and fatality rates to lower childbirth and fatality rates, progress has been put in jeopardy by the acceleration of the negative impact of AIDS problem on death rates.

In terms of economics, Ghana recently qualified as a Lower-Middle Income Economy with a GDP of US\$ 1,668 per capita in 2013. By sector, agriculture exports account for 25.6% GDP while industry accounts for 25.9% GDP and service accounts for 48.5% GDP. Ghana remains one of the world's top exporters of gold. Other minerals such as diamonds, crude oil, bauxite and manganese are exported in exchange for foreign currency. The GDP is an important health gauge of the country's economy. In terms of the per capita spending on health, Ghana continues year after year to spend less than the WHO's proposed average of 5%⁸² of GDP on health. The health expenditure per capita (USD) in Ghana was \$75 as of 2011, representing 4.8% of GDP. The public sector keeps on to be the chief source of revenue accounting for 56.1% of total health expenditure. Resources in the health sector such

⁸² WHO recommends that countries spend 5% of GDP on health but this has not been formally approved. It remains problematic to attach a figure to what to spend without knowing the challenges a country might face.

as human, infrastructure and technology remain a concern. For example, according to the 2010 World Bank report, the number of nurses and midwives per 1000 people in Ghana was 1.05 and number of physicians per 1000 people was 0.1%⁸³. The number of hospital beds per 1000 people in Ghana was 0.9% in 2011. Over the last decade, there has been a slow gradual increase in the availability of innovative clinical diagnostic equipment such as computed tomography (CT) scanners and Magnetic Resonance Imaging (MRI). In 2010, there were 6 CT scanners and 2 MRI scans for the total population of Ghana. In the presence of limited resources and economic difficulties, where does Ghana allocate its scarce resources? Can it be right that few resources are given to PRPI in the presence of large health issues such as Maternal Child Health, AIDS, Malaria and TB? A discussion attempting to answer these difficult questions on priority settings are laid out in Chapter 7 (see 7.4.0) and Chapter 9 (see 9.9.0). However, a review of the rationing system in Ghana suggests that resources are allocated based on cost benefit analysis and burden of disease. This means the government authorities will pay or offer a service if such a cost yields benefits or addresses health problems according to how they rank on a table. In other words, authorities will only pursue health problems of immediate concern on that table such as AIDS, Malaria and TB. Influenza comes seventh on the list of the burden of disease in Ghana. Nevertheless, since pandemic influenza is unpredictable, if the severe form of the disease did occur the burden could be much worse than that raised by HIV/AIDS. The 1918 influenza pandemic was responsible for killing as many as 25 million people worldwide in the first 25 weeks of the outbreak compared to HIV/AIDS which killed 25 million in its first 25 years. Comparing Ghana to Malawi, it has been observed that health outcomes in Ghana are not strongly related to the level of spending on health services. Ghana fails to consider the main goal of spending which is, presumably, better health.

6.1.2.2. Malawi

Malawi is a land-locked country located around the East African Rift Valley south of the equator. It lies between latitudes 9° and 18°S, and longitudes 32° and 36°E. The country is bordered by Mozambique in the south and east, Zambia to the west and Tanzania to the east and north. Malawi experiences a sub-tropical climate, which is relatively dry and strongly seasonal. The dry season stretches from May to October and the rainy season from November

⁸³ <http://data.worldbank.org/indicator/SH.MED.NUMW.P3> (Accessed: July 05, 2013)

to April. Typically, it is hot in low-lying areas of the south and temperate in the northern highlands.

Malawi is a developing market economy with an estimated population of 15 million; it had an annual growth rate of 2.6% in 2008. Malawi is among the 10 countries with the highest population density in sub-Saharan Africa. It is estimated that it has about 139 persons per square kilometre (range: 579 to 36 per district). The 2008 census reported that the under 5 years cohort accounts for 19.4% of the total population (4% are under 1 year). Those aged 65 years or older account for 4% of the total population. There were 516,629 children born in the 12 months prior to the 2008 census date. The capital city is Lilongwe which sits at the centre of the country. The country is divided into 3 regions, north, central and south. There are 27 districts (12 in the south, 9 in the centre and 6 in the north).

Malawi is among the world poorest nations. Its economy is heavily dependent on agriculture and aid from outside. Following a reduction in aid, the government faces challenges to meet development needs such as improving education and health care. Currently the GDP is around US\$ 900 per capita. Tobacco export is the mainstay of the economy, accounting for about 35% of GDP and providing more than 80% of employment. In 2011 the health expenditure per capita (USD) in Malawi was \$31, accounting for 8.4% of total percentage of GDP. This is the second lowest amount spent on health in the SADC region. This figure also demonstrates that the per capita spending on health falls short of the US\$ 54 recommended by the World Health Organization (WHO) in 2010 for an essential health care package (EHP) of cost-effective interventions with health systems strengthening components in developing countries (Ministry of Health, Malawi (2012)). Public health expenditure (% of total health expenditure) accounted for 73.4% in 2011, which is higher than Ghana. External resources through development partners contribute 52.4% of the total health expenditure, three times more than Ghana.

The health system is dependent on donor aid, signifying its un-sustainability if there was a sudden withdrawal in donor funding. The government contributes 18.5% of total health expenditure. Most of the contributions to private expenditure on health are “out of pocket” among households; this accounts for 14.2% of total expenditure on health. There is no social health insurance system. Private health insurance exists, but to a small scale due to free provision of health care and the high levels of poverty. Private health expenditure of GDP is

2.2%. As far as resources in the health sector are concerned, Malawi is doing poorly in terms of human resources compared to Ghana. There are only 0.02 physicians and 0.38 nurses and midwives per 1000 people in Malawi. The number of hospital beds per 1000 people in Malawi in 2011 was 1.3%, slightly higher than Ghana. In Malawi there is only 1 computed tomography (CT) scanner and 1 Magnetic Resonance Imaging (MRI). The expenditure in health supports curative, medical goods and preventive health services. The previous National Health Accounts (NHA) reports show that an average of 24.7% of total health expenditure is spent on preventive health services and 46% on curative care services (Ministry of Health, Malawi (2012)). The rest of the expenditure (27.3%) is spent on the provision and administration of health programmes. Due to a heavy burden of disease in Malawi, the total health expenditure is unable to meet the demands of the essential health services provided by the Ministry of Health. These appear to be a system of allocation of resources that don't seem to work, as one policymaker from the Ministry Health emphasized:

The rationing criteria are based on a number of people and facilities in the district playing down the epidemiological profile or desired outcome, even the prevailing poverty levels. (MoH-MW-02)

The above comment demonstrates the need to review a system of rationing resources that meets the burden of disease at different levels. The financial resources are not only inadequate; they are also inefficiently and inequitably allocated, particularly in the public health sector. Inadequate financial resources mean the government will only pursue health problems of immediate concern such as AIDS, Malaria and TB. The problem of inefficient and inequitable resource allocation can only be solved if health problems are identified and are prioritised not only based on burden of disease or effectiveness of the policies but also prioritised based on the disease needs the country aspires to address including rare diseases that are severe and unpredictable. Inadequate financial resources also highlight the need for additional revenues that should be established. The NHA propose social health insurance, additional taxes on tobacco and alcohol and a health fund levy for individuals and companies such as telecommunications. Even in the present health spending situation, some resources should be given to the pandemic influenza planning activities over other health issues because it is ethically right to reduce the total threats the country faces. Pandemic influenza has equally far-reaching consequences on human and economic wellbeing, as is demonstrated

by its history. There is a need for a comprehensive financing strategy that promotes better health and does not exclude health conditions.

6.1.3. Structure of Relevant Authorities in Ghana and Malawi

The Governments of Ghana and Malawi were responsible for managing, updating and evaluating all aspects of PRPI through their Ministries of Health. Ghana and Malawi's Ministries of Health (MoH) were lead by agencies on PRPI overseen by the National Disaster Management Organization (NADMO) and Department of Disaster Management Affairs (DoDMA) respectively. They monitored the spread of the disease and coordinated information with the WHO.

The Ministries of Health were supported by a number of key government departments at the frontline of PRPI. Tables 4 and 5 show the organizations involved in PRPI activities. The WHO recommends close collaboration with all relevant stakeholders to ensure strategic vision of response planning is achieved (WHO, 2005c). However, stakeholder representation from regional, district and local governments to aid in coordination of a national pandemic response was notably absent in Ghana and Malawi, thus weakening the command and management capacity.

In Malawi, preparations were led by a National Avian Influenza Task Force (NAITF) whose subcommittee constituted a Rapid Response Team (RRT). The RRT formed part of the National Avian Influenza Technical Committee (NAITC), drawing its participation at regional level with representation at the district level. The Office of the President (OP) had overseen NAITF and donor agencies (see appendix 8 for organizational and communication hierarchy in Malawi). In Ghana, an inter-agency Avian Influenza Working Group (AIWG) coordinated the development of the country's plans and actions to address the pandemic. Powers to develop core capacity for PRPI in Ghana and Malawi were conferred upon these committees, which primarily constitute policymakers representing governments, UN agencies and NGOs (Table 4).

During this study, I interviewed most of the officials and policymakers representing these governments, public and bilateral agencies, professional associations and intergovernmental international organizations. This involved technical experts, funders, advocates and those involved indirectly or directly in PRPI activities such as coordinating, updating and

Table 4: Authorities involved in PRPI by Organization, Position and Qualification

Ghana		Comments	Malawi	Comments
Organization	MoH/GHS/MoA/NADMO/WHO/FAO/USAID/Veterinary Services/Wildlife/Min of Land/NMIMR/Quality Partners	Part of the Avian Influenza Working Group (AIWG)/ NCC involved other professional expertise to coordinate and implement actions, which were not part of the committee but acted under its authority. These included positions from National and regional public health authorities such as the National Drug Regulatory Authority, Ghana Medical Association, the Red Cross and media relations experts.	MoH/CHSU MoA/Ministry of information/Parks and wildlife/Veterinary Services/Poultry Associations.	These formed the RRT, NAITC, and NAITF. RRT reported to NAITC and NAITC reported to NAITF. NAITF reported to OP. Agencies such as USAID/FAO/WHO were not part of the NAITF or NAITC. See appendix 8 for organizational and communication hierarchy.
Position	(AIWG)/ NCC was made up of technical heads of corresponding agencies. All were above the rank of Chief Director or equivalent from all relevant MDAs and development partners.	The purpose of this academically high-powered committee was to secure effective overall coordination of preparation for, and responding to, pandemic threat by providing policy direction and strategic planning. This was also to ensure that resources were reasonably and effectively used to implement response plans. It created confidence in the donors while also creating a high level of political support. Expertise was a must e.g. in virology, epidemiology, medicine, veterinary.	NAITF or NAITC composed of a veterinary officer, an animal health laboratory technician, a medical or clinical officer, a human health laboratory technician.	NAITF was headed by MoH/ MoA trained in preventive medicine and veterinary sciences respectively. RRT/ NAITC at district level were dysfunctional.
Qualification	Mainly PhDs and Medical Doctors.	Local experts on the ground, who would have benefited from the highly trained experts at the national level, were not involved.	Mainly diplomas with a few degrees.	Despite low qualifications, involvement and structure authorities were more effective in dealing with avian problem.

Source: Author's study of government authorities.

evaluating priority tasks and programmes. Policymakers held different positions. For example those I interviewed included veterinary officers, epidemiologists, laboratory technicians, medical or clinical officers, wildlife officers, UN representatives, politicians such as cabinet ministers and Principal Secretaries (PS) for Health and Agriculture and local NGO representatives such as the Red Cross.

The policymakers were drawn from national, regional and local level organizations to help provide performance insights into the public health functions of PRPI. As shown in table 4, Malawi's preparations lacked highly trained experts such as ethical experts, economists, virologists and epidemiologists to make judgements and maintain the best use of limited resources. In Ghana, technical human resources within NCC/AIWG were excellent; this partly contributed to stronger pandemic preparedness. However, not all essential experts such as bioethicists, economists or local experts were engaged.

NAITF (Malawi) and AIWG/NCC (Ghana) led the coordination and leadership of PRPI, particularly in the early detection and rapid containment of avian influenza. Their roles changed as they moved from avian preparedness to human influenza preparedness prior to 2009 pH1N1. The controversy over the respective roles of PRPI and decision-making in NAITF (Malawi) and AIWG/NCC (Ghana) has contributed to the lack of clarity on their role in policy formulation. PRPI was inherently fluid and lacked policy framework. Policymakers at the macro level (constituting government authorities) failed to coherently articulate basic policy on PRPI and delegate roles to micro policymakers (WHO, USAID etc.) that would strengthen and implement PRPI. What we see in Malawi and Ghana is that PRPI is not a government initiative even though the government owns it. PRPI in Ghana and Malawi was initiated by the WHO and delegated to the governments. According to Brown (2003), where national policymaking requires technical expertise and nuanced shaping, governments should delegate to independent policymakers at the micro level for their contribution, regardless. The real question is who are the policymakers? Since PRPI is a national matter, the logical sequence in the policymaking process must be regulated adequately and so full government involvement is critical to control all elements of dictation of PRPI policy by interested parties.

6.2.0. Planning for and Response to Pandemic Influenza in Malawi

6.2.1. Overview of the National Preparedness and Response Plan

The pandemic contingency planning process in Malawi began in 2006 after outbreaks of highly pathogenic avian influenza (HPAI) in poultry that began in Asia in mid-2003. The Malawi Pandemic Plan was developed by NAITF in collaboration with NAITC/RRT, a multi-sectoral team chaired by the Ministry of Agriculture (MoA), with the support of the Ministry of Health (MoH). Three Rapid Response Teams (RRTs) were put in charge of verifying and dealing with all aspects of suspected bird influenza outbreaks. An RRT was

established in the south, the centre and the north of the country and each had access to existing infrastructure, such as laboratories and the IDSR. The RRT members were predominantly MoA staff trained in all aspects of future rapid response at the national level so that they could also train trainers.

Preparedness in Malawi mainly involved active surveillance of animal diseases by monitoring animal traffic in and out of the country at the borders. Southern African Development Community (SADC) regulations require that movement of animals must be accompanied by legitimate permits, but stopping illegal transportation is impossible because of weak border controls and illegal animal trade in the region. The Malawi government attempted to deal with this problem by increasing human capacity at the borders and speeding up monitoring mechanisms of disease reporting. This exercise was accompanied by training that enabled the National Avian Influenza Technical Committee (NAITC) / RRT including Veterinary Assistants (VAs) and Health Surveillance Assistants (HSAs) to identify cases, conduct rapid tests and report all cases through the Integrated Disease Surveillance and Response (IDSR) system. Appendix 9 shows the disease reporting and coordinating system deployed to monitor disease outbreak.

As part of its preparations, the Malawi government established animal contact tracing and an animal identification system at the national level to aid track-back activities. Laboratories to aid active surveillance were identified. The Central Veterinary Laboratory (CVL) in Lilongwe and two satellite laboratories in the northern and southern parts of the country were identified to perform rapid tests. Through the Department of Animal Health and Industry (DAHI), a free animal vaccination campaign was carried out to tackle renewed concerns about Newcastle Disease (ND) and HPAI. ND is not considered a serious disease by smallholder chicken farmers, yet it cannot be clinically distinguished from HPAI without rapid tests. This has implications for public health considering the seriousness of HPAI.

The majority of these preparations were accomplished under the authority of the MoA and on a temporary basis. The contribution of the IDSR under the authority of the MoH extended preparedness for HPAI to humans. The MoH strengthened its capacity by integrating HPAI into the IDSR system. MoH sensitized all its health authorities on the method of implementing the IDSR using the simplified tools and response actions adopted in the resolution of IDSR (WHO, 1998). In addition to the IDSR providing timely information for

decision-making regarding HPAI, the Malawi Government signed an agreement of partnership with Kenya Medical Research Institute (KEMRI) to assist with laboratory confirmation of HPAI. Surveillance systems at international airports were set up, although these were not sensitive enough to pick up human cases.

Two points are observed from the preparatory activities in Malawi. First that although there was strong evidence to suggest the threat of the disease might be carried by migrating flocks, most of the work that was done in the first part of preparation was relevant to animals and only in the second part of the preparations was it relevant to humans. Second, preparations for the pandemic were unclear. It remained difficult to judge whether preparations were based on the influenza specific subtype H5N1, H1N1, both or others.

The Malawi Plan was ill prepared to respond to a modest influenza pandemic. Most respondents (N=22) cited the lack of planning in terms of surveillance, case management, infection control, social mobilization, communication and logistics. This lack of planning is believed to have affected the effectiveness of the response measures necessary to detect, manage and control the pandemic. As will be described in more detail in later sections, most public health activities were instigated during a relatively short period of time between April and May 2009. These mainly involved the conversion of the existing avian communication plan into a human pandemic plan. This suggests that more time was deployed putting together the plan than utilizing it to respond to the needs of the 2009 H1N1 pandemic influenza. More importantly, it raises important questions about whether such responses are effective without influenza drills, exercises and simulations.

6.2.2. Pandemic Plan Implementation: Operational Response

The Ministry of Health (MoH) led the coordination and execution of the pandemic plan at the national level, which was activated in April 2009. The response activities were supported by implementing agencies with different roles, shown in table 5. The implementation of the plan used the existing operational structures at national level, such as the health service infrastructure, health committees, surveillance networks and coordination and command structures.⁸⁴ District hospitals were designated to manage influenza cases. During the 2009 pre-pandemic period the national taskforce comprising technical experts met frequently to

⁸⁴ See appendix 9 for command structures.

discuss management strategies and operational emergency response to pandemic influenza should it affect local areas.

Table 5: Implementing Agencies in PRPI

Task	Responsible (Partners)
Technical assistance	World Bank/ FAO/OCHA/MoH/WHO
Advocacy	USAID/UNICEF/WHO
Funding	World Bank/ FAO/OCHA/WHO
Policy development	MoH/WHO/MoA
Implementation	MoH/WHO/Red Cross Society
Coordination, monitoring and evaluation	MoH/MoA/DoDMA/ CHAM
Logistics	MoH/UNDP/World Bank/FAO/OCHA

Source: Author’s study of operationalization of PRPI.

The role of a response strategy is to maintain and quickly restore the routines and functions of civil society. Even a carefully crafted plan will fall short if it does not span jurisdictions across its partners and local agencies. The majority of policymakers were concerned that the national implementation strategy lacked clear roles and responsibilities which should have been outlined to implementing partners, stakeholders and government departments. Policymakers also acknowledged that PRPI activities at the regional and local level fell short of the operational resources needed to effectively prevent and mitigate the impacts of influenza.

In other instances, respondents referred to the PRPI efforts, particularly guidance on pre-pandemic planning, as being fully committed to addressing the consequences and effects of the pandemic, rather than preventing it from occurring in the first place by keeping it out (border management) and stamping it out (cluster control). The implementation process lacked detailed assumptions and planning principles such as case scenarios to trigger responses and guide effective implementation of the plan. The plan was unclear on the broader concept of pandemic phases and their corresponding actions. This knowledge could have saved valuable time and money which was lost on unnecessary responses (e.g. delivery of risk communication messages and only targeting H5N1). Most policymakers (N=17) also said that no risk assessments were conducted to check for and mitigate social and economic disruptions if any existed.

Policymakers drew on diverse vocabularies to explain the implementation process of PRPI because of their varying roles: some focused on measures that were undertaken to reduce the effects of PI, such as immunization and antiviral drug treatment, others recounted that implementation failed to account for the delivery of effective risk communication to prepare the public to respond. The following is an extract of the interview data that summarizes how implementation of PRPI proceeded in Malawi, suggesting that it was clumsy and incomplete.

The implementation plan to enhance preparedness fell short on several important aspects needed to effectively respond to pandemic influenza. No risk scenarios of severity were forecast. It was not clear what type of people, cities and towns would be at risk of flu or how best these could be prevented. Under the most-likely scenarios the pandemic plan is expected to indicate what courses of action are expected to prevent and mitigate pandemic flu. The basic scenarios like how to increase service output in our health facilities was absent. Attempts to outline actions on how best to facilitate food security in an event of a pandemic so that there was no food shortages were not dealt with. It was not certain how the education system would be sustained so it continuously functions while water companies continue to provide clean water. It did very little to attract the support of the public. (COM-MW-31)

As clearly noted, there was no satisfaction from the planning and implementation. All of the respondents talked about how PRPI was affected in terms of critical infrastructure preparedness. Reviewing the data as a whole, I found that preparedness not only lacked operational resources but also that the national strategic plan on pandemic influenza was inflexible and unresponsive to many aspects of preparation such as ethical planning, the consideration of the public's perspective on the protective measures, and response recommendations that matched the level of threat.

Policymakers across the interviews were aware that the pandemic would likely make additional demands on health facilities, but response actions in the implementation plans did not take into consideration the best ways to minimize costs and maximize health service benefits. Policymakers suggested that the only way to achieve this would have been to improve the health service generally. Whilst some issues such as managing staff were an

important part of planning, policymakers remarked that little was stipulated in the plan on how best to deal with such a situation, or whether additional staff would be recruited. Similarly, it was often said that generic public health actions, such as distributing leaflets to inform and educate the public on infection control, were initiated but quickly dismissed, e.g. because there were no funds to print the materials.

Linked to this was the widely-expressed view that operational response structures, such as communication, surveillance, laboratory diagnostics and animal and human disease control, were weak, with limited details on how such resources could be applied to prevent and mitigate PI. These observations are consistent with discoveries in Europe during the 2009 pandemic influenza (Hashim et al., 2012). Prior to the pH1N1, the Malawi plan suggested the use of non-pharmaceutical interventions (NPIs), such as isolation, quarantine and hygiene measures, to delay the spread of influenza. Although these were the main interventions likely to be adopted, these plans were not communicated to the general population in order to maintain the day to day activities (social order). Communication helps overcome the problem of social order because people have the freedom to function as individuals as they choose, but they do not have the freedom to do things independent of society. It is this notion of organic freedom (unity between individuals and society) that allows people in society to be free to cooperate with the others. Individuals are a product of society; it is thus important that individuals and society coordinate their actions and cooperate with authorities in order to achieve public health goals peacefully.

The vaccine strategy was partially incorporated in the plan and several policymakers admitted that they were insufficiently informed about the epidemiological explanation as to why certain people should be prioritised while others should not. The issue of priority arose because NPIs, vaccines and antiviral drugs were scarce. Although scarcity was frequently cited, the plan did not directly address the logistics, storage and distribution of scarce vaccines, antiviral drugs and NPIs.

The rationale for the implementation of the plan was cited as being unfocused. Half of the policymakers interviewed pointed to the nature of preparedness. The implementation strategy leaned more towards preventing Avian Influenza (AI) through containment and mitigation of AI in domestic birds than the timely detection and prevention of influenza outbreaks in humans. An important theme was raised by a policymaker from the World Bank who

commented on the implementation strategy but made it clear that the problem of implementation was embedded in the decision-making process:

The problem is not that we did not implement responses effectively but that we were incapacitated by poor decisions regarding planning and what would trigger better responses. (WB-MW-43)

6.2.3. Prevention and Containment

Policymakers identified prevention and containment as one important indicator for ensuring that an influenza pandemic is fully addressed. Under these themes, most policymakers commented on preventive strategies such as hand-washing, quarantine, social distancing, and restriction of travel or trade as mechanisms that can minimize morbidity and mortality. While institutional closure, forced treatment and isolation topped the agenda, legal frameworks to support these enactments as required by the International Health Regulations (WHO, 2005a) were unavailable. The Malawi Public Health Act (1948)⁸⁵ was inadequate as it is outdated and unable to support important enactments and current best practices in preventing and managing emerging challenges of influenza. For example, there are legal considerations given on coordinated efforts of all levels of government and other contexts that arise in pandemic preparedness and response.

Pharmaceutical interventions were among the major strategies mentioned for preventing and managing pandemic influenza. Additional resources were mobilized from both government and donor budgets for training and remuneration of the work force managing temporary structures such as vaccine strategy. However, resource mobilisation did not result in permanent structures like Influenza Assessment Centres (IACs) to support the influenza sentinel surveillance system. In the country, IACs were unavailable to manage diagnosis and cases reporting influenza illnesses.

Through Central Medical Stores (CMS) a government department managed to procure pharmaceutical resources such as vaccines for vaccination of at-risk groups. CMS also procured influenza medications for treatment of the population. Through CMS, the MoH

⁸⁵ <http://faolex.fao.org/docs/pdf/mlw21328.pdf> (Accessed: April 3, 2014). The Act is under review since 2008 and the author has actively been involved in lobbying and advocacy.

received a donation of vaccines from the WHO to immunize 1.3 million people, mostly pregnant women, children and health professionals. Antiviral drugs were also donated to treat about 19,000 cases. 2000 sets of Personal Protective Equipments (PPEs) for health workers were also acquired. Antiviral drugs and antibiotics (for secondary infections as a result of influenza) were designated to major hospitals.

The first confirmed cases in Malawi were detected at a school in Ntcheu. The cases were confirmed in two girls without a history of international travel or contact with people who had recently travelled abroad. This suggests the need for disease surveillance within communities.

Practical challenges associated with prevention and containment were identified. For example, policymakers observed that implementation of immunization programmes runs the risk of stigmatising the very population they are meant to protect. They cite low uptake of influenza vaccines among high risk groups as being due to negative attitudes, health and safety concerns, cultural and religious beliefs. To overcome this, public health authorities at the national level imposed force in vaccinating high risk groups, particularly in vaccinating pregnant women and children against their will. This decision was made on the basis that people in Malawi are unwilling to participate in voluntary immunization and thus there is a guaranteed low uptake. This means that unused vaccines end up being thrown away. According to Garoon and Duggan (2008) such decisions may carry political ramifications; they may not be popular with the public but they do provide the populace with evidence that the government is taking steps to protect the public health. The use of force to influence people to comply, as discussed in the analytical framework (Chapter 4), raises significant ethical issues as is further presented and discussed in Chapter 7 (see 7.10.0) and Chapter 9 (see 9.6.0).

Talking to planners, it was clear that there were concerns about future policy directions in terms of prevention and containment. Interviewees demanded governmental involvement in determining ways of dealing with future complex pandemic situations. Most policymakers, especially those representing the MoH, spoke freely about the need to conduct a regular influenza vaccination campaign against seasonal influenza. They also mentioned procuring bio-security and bio-safety equipment, particularly influenza diagnostic equipment and reagents, which could be used to test influenza samples in local laboratories. Training of

specialized personnel, such as laboratory technicians, clinicians and epidemiologists, was needed for public health. For influenza prevention, mitigation and management, these specialists would be able to develop treatment protocol, strengthen the communication and networking system, implement pandemic plans and monitor and evaluate response actions.

6.2.4. Health System Response

The organization of the health service system in Malawi is based on the 1978 primary health care model of the Alma-Ata declaration. A detailed discussion on the ethos and structure of primary health care is covered elsewhere (Sambala et al., 2010). Based on the premise of PHC, the MoH has the responsibility of overseeing the basic elements or functions of the PHC, illustrated in appendix 2. A comprehensive approach to PHC requires the full participation of individuals and families in the community to achieve health for all i.e. quality of life and mental wellbeing. This is achievable if the MoH collaborates with various institutions, for example, the Ministry of Education essentially provides information on the prevention and control of endemic disease, appropriate treatment of common diseases and promotion of mental health (Tarimo and Webster, 1994). Appendix 10 is an organizational chart of the Ministry of Health depicting administrative structures of the public health system. It also depicts the line of command communication vertically and horizontally within the MoH.

The structural arrangements of the MoH is divided into six directorates: preventive health services, clinical services, nursing services, technical support services, planning and policy services and finance and administration. Each directorate is headed by a director and all these positions are deputised, supported by programme officers who have technical expertise in specific programmes. At the top of the hierarchy of the MoH is the Minister of Health and his/her deputy who reports to the President. The Secretary of Health oversees all the directorates in the Ministry of Health and reports directly to the ministers.

The directorate of preventive health services was the main overseer of pandemic preparations and coordinated responses to the 2009 pandemic influenza with support from other directorates. The planning for, and response to, pandemic influenza was minimally implemented at district level through the District Health Management Team (DHMT). The DHMT comprises different health professionals and administrators established at district level and all led by the District Health Officer (DHO). The DHMT established at district level

was frequently mentioned by interviewees as an organized structure for administering and translating response plans into actions that met the needs of the communities they represent. Appendix 11 shows a flow chart for managing an epidemic in the health sector and the role DHMT plays in mobilizing resources for PRPI at the district level. The DHMT is also part of the leadership team of the MoH. Although the DHMT is part of the strategic management team responsible for supervising health staff at the district level, its involvement in PRPI was very small. Most of the activities of the PRPI were coordinated at the national level by the Epidemiology Unit at the Community Health Sciences Unit (CHSU). Appendix 12 shows a strategic position of the DHMT within the MoH organization and in relation to other health services.

There are 26 DHMTs across the country, each representing a district. The team is established at a hospital. There are 26 government hospitals and several health centres established at the community levels. Among the hospitals, three serve as regional referral hospitals established in the south, centre and north of the country. The country has private health service outlets including faith based hospitals and clinics that offer their services at a fee. The health system in Malawi, through multisectoral collaboration initiatives, integrates the roles of complementary medicine and recognises traditional practitioners as part of the health service team.

Certain infrastructures, such as local health facilities and structures such as the Health Management Information System (HMIS), represent a vital role in PRPI (Appendix 12). HMIS is an IT system established to provide timely information on influenza outbreaks through the Integrated Disease Surveillance Response (IDSR) system. It is also intended to provide a policy and strategic framework for management of health information, use of information in planning and management of health services and monitoring health sector performance and periodic reviews.⁸⁶ HMIS has six core functions. The Health Information System (HIS) oversees utilisation of disease data. The Patient Records Management Information system (PRMIS) coordinates hospital data for admitted patients. The Personnel Pension and Payroll (PPP) oversee human resources and recruitment. The Integrated Financial Management Information System (IFMIS) is responsible for management of

⁸⁶http://www.who.int/healthmetrics/library/countries/2HMN_MWI_Assess_Final_2009_07_en.pdf (Accessed: May 12, 2013).

finances in the health sector. The National Health Account (NHA) manages estimates of expenditure in the health sector. The IDRS coordinates disease surveillance data. Although all of these are important in the national plan, emphasis on planning for, and response to, pandemic influenza is put on the IDRS at the national and district level through use of health facilities. The role of the IDRS is to assist with capacity building for surveillance activities and provide surveillance information necessary for decision-making.

Based on the interviews in Malawi, HMIS had no clear policy and agenda regarding PRPI. The health facilities at the district and local level, although equipped to deal with influenza patients in terms of beds and treatment, were not actively set up. In addition, the HMIS did not provide timely information on pandemic influenza although emphasis on PRPI was put on the IDRS at national level. One official from the MoH and CARE International described how the health service responded to the pandemic. They commented;

During the pandemic, we did not respond at all. I know this because I work at the district hospital which is designated to look after influenza patients. Although we did nothing, non-response does not mean we didn't have an influenza problem. In fact, the problem was apparent due to the high rise of outpatient visits. As far as I know the hospital did not plan for anything. We did not plan for loss of workforce and how to replace absenteeism or how to manage extended working hours in the event of severe pandemic. Furthermore, the hospital did not adopt infection control regulations that are effective for highly pathogenic influenza subtypes. We didn't respond to bed occupancy either because we didn't plan for it. We didn't plan to vaccinate health care staff and perhaps this is why they were reluctant to be vaccinated. No "at-risk groups" such HIV patients were targeted, yet these groups are more vulnerable to an influenza pandemic with a high morbidity and mortality. (MoH-MW-02; CARE INT-MW-37)

The above quotation reveals a number of ethical problems. For example, failure of policymakers to maximize preparedness and response such as surveillance (early warning system) to minimize illness and deaths mounted to an ethical problem. Another example, concerns the equitable access to health care resources in a pandemic. The failure to allocate

influenza vaccines and antivirals to risk groups such as HIV/AIDS patients and failure to prioritise hospital beds to patients in a pandemic amounted to serious ethical problems. Most importantly, it demonstrates that existing structures such as the HMIS were of little significance as far as the health response to influenza was concerned.

During the 2009 pH1N1, the health response capacity faced numerous challenges in the delivery of public health services. Within the structure of the MoH, there was no special advisory committee on pandemic influenza. Important structures such as national laboratory units and research institutes on pandemic influenza were unavailable to inform health responses on pandemic influenza.

Several policymakers admitted that the health response to the mild pandemic was poor. Despite years of planning, the resources for health service structures were lacking. Many policymakers testified that Malawi did not learn from its experience of the H5N1 threats, and thus the response to the pH1N1 presented several challenges.

Firstly, the health service in Malawi was taken unawares since it had not prepared for a pH1N1 outbreak. Due to scarce resources in the health system, strengthening the capacity of authorities and infrastructure was not possible. The readily available funds within the health system could only be used to maintain specific activities, such as raising awareness and strengthening the training of health-care workers on threats of pandemic influenza.

The everyday operations of the health service were beset with scores of operational and logistical problems. For example, health services such as the routine handling of laboratory specimens, hospital infection control policies, and pharmaceutical logistics, placed an extra burden on the already distressed health service operatives, thereby demoting influenza priorities. Major weaknesses were identified in the robustness of the surveillance systems needed to send early signals for health service response, such as containment, the resources to strengthen the health system response, and also the lack of efficient and timely decision-making from policymakers in the ministries in order to offer guidance on public health policy on influenza.

On many occasions, policymakers were concerned that the health service response to the pandemic depended strongly on resources if anything was to be done and this was interpreted

as indicating the need for a complete overhaul of the public health system in an attempt to strengthen it. This would bring about the changes needed to the public health infrastructure and increase capacity to respond to public health emergencies. Some policymakers cited seasonal influenza activities as measures of opportunity that could help build upon the public health infrastructure.

6.2.5. Influenza Surveillance, Assessment and Monitoring

Influenza surveillance and monitoring was one of the technical activities that formed part of PRPI in Malawi. According to respondents, the surveillance system was designed to detect the appearance of AI in migratory birds, domestic animals and human populations. Until recently, surveillance and monitoring techniques in Malawi were incorporated into the Integrated Disease Surveillance Response (IDSR) system supported by the World Health Organization (WHO). The IDSR system was established in Malawi in 2002 and has continuously been supported by the WHO. In Malawi, the Community Health Science Unit (CHSU) is now responsible for surveillance activities. Malawi lacks a national influenza centre (NIC) or IACs to carry out influenza monitoring and assessment. As one policymaker said:

To respond effectively, we need an influenza virology laboratory. This will assist with virus isolation and subtyping of the virus. Quick tests for determining influenza antigens are also much needed for confirming influenza outbreaks, but remain insufficient for confirming clinical diagnosis. (UNHCR-MW-04)

Due to the lack of technical capacity, the CHSU was unable to undertake response activities in the early phases of the pandemic, such as early detection of unusual outbreaks potentially caused by new subtypes of influenza virus. This includes routine surveillance of seasonal influenza, which is not currently a priority. Despite these failures, the MoH was able to register 4 confirmed cases through their reference laboratory in Kenya, none of whom died. Officials believe more unconfirmed cases and deaths could have occurred but there was no evidence to ascertain the figures since surveillance and laboratory diagnostic procedures for influenza in Malawi are nonexistent. Surveillance systems through the IDSR are established in certain parts of the country such as airports, where routine checks for suspected cases are

completed and suspected samples sent overseas for diagnostic confirmation. Suspected diagnostic laboratory samples that were sent to Kenya took 2-3 weeks to return.

The responses towards the 2009 H1N1 pandemic were, as described earlier, not ideal, despite some considerable preparation attempts prior to the pandemic. On asking an official from the Community Health Science Unit (CHSU) about how their organization responded to the 2009 H1N1, he noted:

To be honest our surveillance system was poor and unreliable so it's possible we missed a lot of cases. However, we had a few laboratory confirmed cases that were sent abroad for further analysis and returned within three weeks. On a general note, we were not prepared despite requisition of the material resources that were procured as part of surveillance preparations. Despite the fact that the pandemic was mild, I believe many people were affected or perhaps many died, as we may not have their records. Our hospitals were poorly coordinated, without enough staff, and many rural clinics lacked much-needed resources such as patient beds, medicines and nursing staff. (CHSU-MW-22)

The above quote suggests that Malawi's surveillance system was badly prepared and that this led to poor responses. Talking to other experts, I learned that Malawi lacked the operational capacity to assess, monitor and track surveillance data relevant to determine attack rates and admission rates. In general, Malawi had problems in obtaining real-time data or even hypothetical surveillance data because it was just not available. Hypothetical surveillance data is an example of seasonal surveillance system time series data that has been preserved. The hypothetical incidence, for example, is computed as the expected value using an estimated linear regression equation and the data from its independent variables. The existing systems, such as hospitals and laboratories, were unable to document stream data, which is useful for assessing the pandemic influenza situation. For example, patient samples in Malawi are not analyzed and consequently no vital information about any threat of pandemic is communicated to trigger effective response actions against threats.

Although a surveillance infrastructure demands laboratory, financial and human resources, policymakers suggested that something could still have been done. They mentioned creating

standard definitions of surveillance for reporting and monitoring antiviral, antimicrobial and other pharmaceutical usage to check the intensity of the pandemic. Most policymakers suggested alternatives to clinical and laboratory monitoring such as collecting data on media reports, rumours and absenteeism. Other quantifying influenza surveillance methods were mentioned such as determining the pyramid of severity, the spread of disease and risk factor determination, which do not require emphasis on viral culture and laboratory isolation.

Prior to the 2009 pandemic, Malawi did not have a surveillance and laboratory task group. Most policymakers felt that this would not have required huge resources to establish since the MoH have epidemiologists and laboratory technicians who could oversee the work on surveillance while operating within their existing roles.

6.2.6. Coordination and Partnership

Due to the persistent problems and constraints surrounding preparations for an influenza pandemic, the government of Malawi evaluated the public health situation through health response systems and identified a range of interconnected problems requiring integrated solutions. Using the existing infrastructure, the government appointed the Department of Disaster Management Affairs (DoDMA) under the Office of the President (OP), to be responsible for consolidating disaster contingency response plans by advocating and facilitating political and humanitarian awareness of disaster risks such as influenza.

Through the OP, the DoDMA cooperated with UN agencies and Non-Governmental Organizations (NGOs). The DoDMA was responsible for sourcing funds, enhancing and strengthening the existing capacity necessary for emergency preparedness, response, recovery and mitigation of disasters. Most policymakers commended DoDMA for its considerable collaboration and consultation regarding pH1N1 which, in my opinion, directly undermined the MoH's leadership role as a public health authority. Policymakers also described the MoH as having successfully allowed an unprecedented level of consultation and collaboration between the partners and local government. This was described by policymakers as providing the structure to facilitate a coherent response to the pH1N1, citing the HMIS and the involvement of the DHMT. Policymakers indicated that there were attempts to bring together clinicians, public health specialists and hospital care personnel during the pandemic period to discuss treatment options in order to improve clinical outcomes during the second wave.

There was confusion among organization players on a wider range of issues though; for example, the MoH as a key implementer did not outline prospective roles or assign responsibilities to guide partners on what or how they could assist. Structural co-operation within the health sector remained a problem, especially when it came to budgets. Additionally, although the planning and response emphasized ‘joined’ policymaking at the national level, no such relationship was visible at the international level; raising concerns over reciprocity and solidarity (see ethical issues in Chapter 7).

6.2.7. Communication Strategy

The response to the 2009 pH1N1 in Malawi was reflected in the level of communication of information about the disease. Several policymakers interviewed noted that unprecedented communication efforts were implemented during the H1N1 2009 pandemic. However, several other policymakers admitted that little was actually done to cover a large audience. Policymakers felt that the government and concerned organizations could have done more by explaining how the disease is caused, its pattern of transmission and its impacts. Officials never sufficiently stressed the likely nature or duration of the pandemic, its spread, its peak and decline, nor did they sufficiently inform the public on these issues. The message regarding ethical issues, such as who is eligible for limited vaccines and when a case can be quarantined, was not clearly defined or transmitted to the public. With regard to vaccine availability and efficacy, for example, officials were unclear as to how soon vaccines would be made available or how effective they would be against the virus. According to Kotalik (2005), more information on the benefits and burden of vaccines and antiviral drugs would set the stage for a more successful voluntary vaccination programme and thus avoid an ethically problematic mandatory programme. This also corresponds to the ethics of prevention that was presented in Chapter 4. On the other hand, an influenza vaccine offered too late in a post or free pandemic period does provide some benefits in terms of reducing illness, absenteeism, hospitalizations and deaths. The benefits will not be the same as they would have been had the vaccines been offered much earlier in the pandemic period. As such immunizing late would raise genuine ethical concerns because of the little achievable benefits and lost opportunities for disease prevention during the pandemic outbreak. There is a lot of demand for influenza protection during an outbreak and equally are more opportunities to mitigate and control the disease had the vaccines been used early enough than later. There is evidence that offering the vaccine well after the 2009 pandemic could provide some

benefit to individuals against influenza A virus (pH1N1) that caused the 2009 pandemic because this virus is now circulating as seasonal influenza. Thus, individuals who have not previously been infected with pH1N1 may have achieved personal protection. As will be discussed in Chapter 9, the public in Ghana and Malawi may have been right to be less than enthusiastic to receive a vaccine in March/April 2011 that was most needed in 2009. However, it is important to remember that the 2009 (pH1N1) virus that caused the pandemic is now circulating and is considered seasonal influenza.

The MoH sensitized the public to the risks of influenza and the means of prevention through national radio adverts and the use of Information Education and Communication (IEC) materials. Despite the controversy over whether the MoH performed the task well, it is evident in the interviews that the MoH and its implementing partners were committed to public awareness on pH1N1.

Those who criticized the handling of communication and messaging proposed new ways to improve IEC. For example, some policymakers suggested the use of multi-media communication, including newspapers, radio, TV, posters, magazines and social networking sites such as Facebook and Twitter. These methods of communication could be used to develop a key message and deliver it through other channels, such as press briefing or press releases, or through social mobilization campaigns at the local level. The role of two-way communication was emphasized, especially as pandemic influenza was a sensitive and controversial subject requiring consistent and carefully designed communicative strategies.

According to one policymaker (USAID-MW-41), vaccine uptake could have been improved if people had been assured that vaccines were safe to use. Providing information explaining inconsistencies could also have clarified the perception of the vaccines; for example, information could have been provided as to why the authorities took a long time to implement the vaccine strategy. The WHO delivered doses of A(H1N1)pdm09 vaccine to Malawi in November 2010 and implementation took place a couple of months later. While it took a few months for the government of Malawi to vaccinate, what is more shocking is that the WHO could not deliver vaccines until November 2010, arguably well into the post pandemic period. It could be argued that it was not morally right for the WHO to dump vaccine stocks on Malawi well beyond the pandemic period, and pressurize the Malawian Government to vaccinate when the rationale and time for immediate benefits to prevent

and mitigate the 2009 pandemic influenza had passed. As was noted earlier, immediate benefits in terms of managing the pandemic were no longer possible. If unvaccinated individuals who have not previously been exposed to 2009 pH1N1 (now circulating as seasonal influenza) become infected with the same strain they will not be protected. Only individuals vaccinated against 2009 pH1N1 without previous exposure after the pandemic outbreak may be protected from the current seasonal strain (2009 pH1N1) because they will have developed immunity from the vaccine.

Policymakers also noted that the communication strategy was restricted only to communicating with the public and it did little to establish links with its implementing partners inside and outside the health system. For example, one policymaker stated that:

There were no better linkages among structures at the national, regional and local level or between primary and acute care systems. (COM-MW-04)

The lack of coordination in the communication process caused conflicting messages, especially within the media. The reasons most policymakers gave for this discrepancy was embedded in the lack of Public Relations (PR) within the PRPI lead agencies.

6.3.0. Planning for, and Response to, Pandemic Influenza (PRPI) in Ghana

6.3.1. Drafting of the Pandemic Response Plan

As of 2006, Ghana had set up the Avian Influenza Working Group (AIWG) to be in charge of pandemic preparation needs and the delivery of public health and health promotion services at a national level. The drafted national pandemic plan was approved in December 2005 and revision of the second draft was completed in February 2006 with a great deal of involvement from the National Coordinating Committee (NCC). The draft of the plan was based on three hypothetical scenarios developed from the AIWG needs assessment, taking into consideration various factors such as the timing and the geography of the disease. The purpose of the draft was to identify any risks that needed to be addressed, and generally assist the country with PRPI.

According to the Ghana pandemic plan (Republic of Ghana, 2006), the first scenario in the AIWG needs assessment is a situation where Human and Avian Influenza (HAI) is brought

into the country either by migratory birds or humans and then quickly spreads between both groups. The second scenario depicts pandemic phase 4, where human-to-human transmission is declared, resulting in geographically localized clusters of human cases. The third scenario is phase 4 of the pandemic, progressing into phase 5, where the virus is capable of rapid and effective human-to-human transmission.

The course of action for each scenario was based on the six WHO pandemic response phases. Experts involved in the design of the national preparedness plan were aware of the implications of each pandemic scenario, but setting up a course of action that corresponded to the scenario of a modest pandemic was problematic. The pandemic plan and its subsequent revisions were not piloted to verify the appropriateness of identified actions, responsibilities, logistics and communication for different severities of the outbreak.

The New Zealand pandemic plan, for example, requires ongoing testing through exercises to ensure the plans will be effective when activated (Ministry of Health, New Zealand, 2010). According to the policymakers interviewed, exercising pandemic actions for each scenario demanded additional resources and infrastructure and thus was unrealistic and costly if applied under different scenarios of occurring pandemic influenza. Planning assumptions are not the prediction of what exactly will happen during the pandemic. They should be indicators of what could happen. Drawing on UK pandemic preparedness, lessons can be learnt that planning assumptions that are reasonable yet not clear may not be well understood. Pandemic influenza is unpredictable as such scenarios should be flexible and adaptable to a wide range of potential scenarios. The UK plan suggests that planning assumptions should be updated regularly in light of emerging evidence about the range of likely assumptions about the pandemic (Department of Health, 2011). Interestingly, the UK Department of Health plan developed in 2011 draws on lessons learned in 2009, but the 2009 plan was not so flexible or proportionate in its approach even though CEAPI had pointed this out to the UK Government before 2009.

Many policymakers recognized that the drafting of a national plan using a modest pandemic scenario would be the appropriate thing to do if Ghana was to prepare effectively for facing and containing the danger of an emerging pandemic. They made it clear that there was a need to consider implementing response actions that were reasonably proportionate to the threat of the pandemic. For example, wave 1 response and inter-wave planning phases would have

their own courses of action and budgets which would be implemented accordingly. However, most policymakers, especially those with economic backgrounds, could not agree on courses of action for different pandemic phases.

For most policymakers, plans that were being developed were inflexible. The interview data suggests that plans should include measurements of severity that could reflect escalating changes in the pandemic. The lack of a severity index in the pandemic plans may be justifiable on the basis of financial resources. There is no money to conduct influenza research that might determine a suitable severity index in the context of Ghana. Even if a severity index was determined, developing and using such an index is not straightforward and would demand an efficient operational health system that is practical. For example, would Ghana have the surveillance or patient data to make an accurate assessment of severity? Rapid research in this area of concern is needed to improve understanding of the level of planning and inform resource allocation.

Policymakers interviewed in Ghana appear to agree that the scenarios used in Ghana were lacking in various aspects, especially in clearly expressed assumptions about clinical attack rates, hospitalisation and death rates. For example, the National framework for responding to an influenza pandemic gave a range of case fatality of between 0.4 and 2.5%, for which the UK should be prepared (Department of Health, 2011), while the New Zealand preparedness plan prepares for up to 2% case fatality rate (Ministry of Health, New Zealand, 2010). One policymaker wondered how Ghana could claim full preparedness when its drafting of the national plan was inadequate and tabletop exercises that drew on these scenarios were not systematic. Notably, the drafting of the Ghana Pandemic Plan (GPP) did not fully acknowledge the processes involved in mobilizing resources, or scrutinize issues of resource allocation and priority setting, or the associated logistical challenges such as business continuity, surveillance, case examination, case management, disease prevention, monitoring and mitigation of the diffusion of the disease in the community.

6.3.2. Planning prior to the 2009 pH1N1

Preparation prior to the 2009 pH1N1 in Ghana evolved around risk assessment and communication regarding the pandemic. Early interventions, such as mounting surveillance to detect the threat or using surveillance data to determine human resource capacity,

including some of the operational activities, were in blueprint. The following quotation from a policymaker representing MOFA summarizes the surveillance preparations:

Prior to the pandemic, focusing on avian influenza, epidemiological and surveillance data was defined, tracked and shared among the developmental partners such as NADMO. (MOFA-Ghana-16)

As well as sharing surveillance data, a communication and reporting schedule was set up before the 2009 pandemic. This involved identifying leadership, partners and structures to implement the drafted plan. The process of implementing the new pandemic plan was centred on frequent interactions between lead agencies of the pandemic and stakeholders. A number of financial agreements with developmental partners were secured to help with strengthening capacity, such as influenza education and human resource laboratory surveillance. Non-health preparations, such as a business contingency plan and ethical plan (discussed further in Chapter 9), were not pursued.

The issue of research and development in the pre-planning stage is said to have been undermined during the drafting of the national plan, yet pandemic planners themselves knew it held the key to tackling the consequences of the pandemic. The lack of meaningful engagement with research and development was associated with the absence of research and leadership direction including a lack of resources and, in part, a lack of interest in pandemic preparedness.

The process of immunization in Ghana is practised regularly, but policymakers regretted not having launched similar campaigns for seasonal influenza which could have eased the pandemic campaign. In the UK, seasonal immunization targeting the elderly and vulnerable groups is taken seriously because it reduces morbidity and saves lives. There are no seasonal immunization campaigns in Ghana. Although, seasonal immunization was identified in the pre-planning stage of the pandemic plan as an important strategy, it was often overlooked including the process of ensuring vaccines are acquired on time. Even though the main beneficiaries (pregnant mothers and children) had been identified beforehand, there were no stockpiles of pharmaceutical products (including flu vaccines) for treatment of influenza in pharmacies in Ghana. A policymaker mentioned that there were no efforts to acquire vaccines

and antiviral drugs either for seasonal or pandemic influenza by buying or establishing vaccine and antiviral drug contracts and agreements with the pharmaceutical companies.

While the national plan considered various scenarios, policymakers were concerned that the planners did not consider specific issues, such as what would happen if there was a huge uptake of vaccines and antiviral drugs. In other words, what would happen if there was scarcity? Equally, there were no detailed plans for temporary health workers if needed. There was no consensus as to how the health care delivery systems would manage care in an extremely limited resource setting – for example, policymakers mentioned that it was not clear how they would maintain existing centres for immunization, especially when deciding when to close immunization clinics, since real-time information on supplies of and demand for vaccine doses was not available. Prevention and treatment guidelines were left open to the clinical judgment of the prescriber. For example, prophylactic use of antiviral drugs was allowed for health personnel in the pre-exposure stages of the pandemic, but this contradicted the policy that antiviral drugs were reserved for individuals with severe illness only.

6.3.3. Coordination

During my field visit, I was interested to know how responses to the 2009 pandemic were coordinated at the national, regional and local level. The findings suggest that coordination of roles and responsibilities to identify risks and implement mitigation strategies among stakeholder groups was deficient in many priority areas. The quality of support, according to most policymakers, exposed important structural weaknesses which seriously limited responses to the 2009 pandemic. Many policymakers mentioned that financial and technical support was mostly limited to a few PRPI entities, rendering governance of pandemic influenza inefficient, if not irrelevant.

Funders (appendix 13) frequently had the final say on what the money might be used for in PRPI strategies. Hence, gaining agreement on common multilateral approaches was beyond the control of key decision-makers. Development partners, predominately international donors, were reported to have had a greater voice on the role of PRPI in Ghana (GHS, 09). Thus policy decision-making and priorities of PRPI had to be repositioned with this in mind. This raises questions about who really was in control of PRPI. The playing field according to policymakers was complex, making it difficult to push forward any good PRPI policy

strategy against the proliferation of influential actors. The World Economic Forum⁸⁷ captures this shift by observing that collaboration is doctored by the corresponding interests of specialized agencies that are often segmented themselves.

Intergovernmental initiatives such as surveillance, communication and reporting were cited as being as highly prioritised on funders' agendas; it is believed that this is so because these bring immediate, tangible benefits that are globally visible. Solving transborder problems related to pandemic influenza was therefore prioritised over local challenges. For example, the emphasis was placed on surveillance rather than revamping and strengthening the health service response. Consequently, the health sector is poorly connected with other sectors, with businesses and civil society, resulting in major missed opportunities to improve health outcomes (Piot et al., 2010).

Although NADMO had overseen planning and coordination, implementation of most activities remained unfulfilled. NADMO's mobilisation of coordinated efforts was slow, raising huge worry about its capability to coordinate activities in the event there was a pandemic. Lack of communication about the disease among implementing agencies was singled out as a major barrier for initiation and coordination of influenza activities. However, the Ministries of Agriculture and Health provided timely critical political leadership that enabled execution of initial components of the pandemic plan (Republic of Ghana, 2006).

Leadership roles during the pH1N1 remained unclear. The GHS supported by USAID/Ghana took the lead in engaging the private sector. In Ghana the local offices of the WHO, USAID and FAO led the mobilization efforts among development partners (Republic of Ghana, 2006). The MOFA in collaboration with GHS and FAO continued to survey and monitor AI and PI while NMIMR provided laboratory support.

6.3.4. Influenza Surveillance and Monitoring

Like Malawi, Ghana relied on influenza assessments based on the Integrated Disease Surveillance Response (IDSR) system that was established in 2002, and has been continuously supported by the WHO. Surveillance and monitoring in Ghana was instituted in

⁸⁷ http://www.weforum.org/pdf/grs2010/GRI_Report_2010-web.pdf (Accessed: May 14, 2013).

three main ways. Firstly, surveillance of AI was monitored in migratory bird populations visiting the country in certain seasons. Surveillance activities involved monitoring the wetlands, routine counting of birds and reporting all dead birds to relevant officials. The purpose of monitoring birds was to paint a better picture of estimates of baseline risk associated to AI virus infections and provide a more sensitive indicator of the virus' arrival into Ghana via the birds (Republic of Ghana, 2006). Secondly, surveillance focused on domestic animal populations, allowing for the detection of unusual animal diseases. This was achieved through regular animal health checks. Thirdly, surveillance focused on human populations for rapid investigation of and response to rumours of suspected disease outbreaks (Republic of Ghana, 2006).

Each type of surveillance activity was overseen by a mandated and authorized organization. For example, surveillance in birds and animals was implemented by the MOFA, while surveillance activity in humans was organized by the GHS. Although surveillance activities were visibly delegated, there were overlapping roles among implementing agencies. Even with distinct surveillance roles, policymakers acknowledged that detecting influenza activity across the country was problematic and therefore not comprehensive:

The surveillance structures were in place to respond to the pandemic within our systems but the capabilities of getting the surveillance data and addressing the human influenza virus were insufficient. (WHO-Ghana-07; GHS-Ghana-36; FAO-Ghana-30)

IDSR is helpful in generating robust influenza surveillance data as it highlights the significance of utilizing a uniform approach and standardized definitions (such SARI and ILI) in conducting influenza surveillance activities. Policymakers were aware of the role of IDSR although very critical of the fact that implementation was being hindered by the lack of expertise and resources in the continuing monitoring, evaluation and interpretation of key data. None of the three areas of surveillance coordinated by the MOFA and GHS/UN agencies were integrated into the IDSR system. As one policymaker from the Red Cross noted:

I know there is a team involved with IDSR that submits weekly surveillance reports but I doubt the validity of this epidemiological data.

Influenza data is submitted in the absence of global standards for influenza surveillance definitions that reflect influenza like illness (ILI) and Severe Acute Respiratory Infections (SARI). Surveillance data mostly cultivated at the local level is too meagre and mostly non-standardized to permit a thorough examination of the disease. In presence of such data, it is difficult to calculate the burdens of the disease such as illness and death associated to SARI and ILI. Many of these limitations are associated with lack of expertise in surveillance. (GRCS-Ghana-05)

In response to the concerns noted above, the GHS attempted to strengthen its capacity by re-purposing the human influenza health sub-committee to oversee the active surveillance in designated areas. Noguchi Memorial Institute for Medical Research (NMIMR) was an appointed body overseeing the National Influenza Centre and two of their staff were trained in Cairo in influenza diagnosis and virus characterization. NMIMR identified 6 sites for sentinel surveillance of seasonal influenza viruses, although this was not a routine process. Real-time PCR machine and reagents were also procured to improve data reporting.

While Ghana mounted some surveillance measures, its responses were not comprehensive enough to continuously detect the H1N1 that was occurring in the human population. According to the pandemic experts, there was variation in the manner of collection, analysis and reporting of the influenza data because the IDRS was not utilized fully to help with standardization. The financial and human resources necessary to operate surveillance activities were inadequate to support regular diagnoses of influenza while keeping track of all seasonal influenza through laboratory tests. No tests other than suspected ones were sent to the NMIMR laboratory for confirmation. The outcomes of the laboratory investigations took a considerable amount of time to be confirmed because the influenza centre was overwhelmed with too many influenza samples from all over the country. Policymakers suggest that surveillance reporting can be improved by creating more laboratories.

The tenfold suspected influenza cases that NMIMR experienced raise serious and realistic concerns. In the future, NMIMR would not cope with a serious situation most needed to prevent and contain the disease. We need more laboratory centres to deal with surveillance matters in a more manageable manner. (NMIMR-Ghana-46)

However, a number of other types of surveillance were rarely mentioned despite prompts in the interview. For example, Outpatient Illness Surveillance was not fully emphasized in clinics or hospitals for influenza-like illness (ILI) and no information was stored or collected about visiting influenza patients prior to the pandemic. Ghana currently participates in the Influenza Surveillance Network (FluNet⁸⁸) and shares its limited influenza data electronically with the rest of the world. Although Ghana has embarked on FluNet activities, it is yet to plot an ILI Activity Indicator Map. The ILI Activity Indicator Map is used to determine site influenza activity but was unavailable in Ghana because vital registration of ILI outpatient during seasonal and non-seasonal outbreaks was yet to be accessible.

6.3.5. Prevention and Containment

Prior to the 2009 pH1N1 in the human population, avian H5N1 was central to prevention and containment in Ghana. This work ran throughout the 2009 H1N1 period. The GHS and MOFA were responsible for ensuring that H5N1 or any of its sub-types did not spread to the human population by utilising routine surveillance detection. Through this process, H5N1 cases were detected in the healthy human population but it is not clear how human cases contracted the virus. It is believed that people either ate meat that was infected, or came into direct contact with its secretions during the slaughtering, defeathering and eviscerating processes.

Exposure of the H5N1 influenza virus in humans remains unknown but we suspect the virus was inhaled through dust. It is also possible that humans came into direct contact with the infected animals or the infected surfaces in proximity to the contaminated animals. Although, there is no evidence yet to establish how the human population attracted the virus we suspect people ate dead birds or animals that were infected. This happens all the time because of the economic conditions that people experience-throwing out a whole diseased carcass of meat when people are hungry is insane here. (MoA/VS-Ghana-44; USAID-Ghana-06, FAO-Ghana-10)

⁸⁸ http://www.who.int/influenza/gisrs_laboratory/flunet/en/ (Accessed: April 13, 2013).

For this reason, the practice of eating already dead animals that were not butchered by slaughterhouses was discouraged and people were told not to risk their lives by eating diseased or dead birds.

Through surveillance structures that were instituted for H5N1, Ghana was able to detect the 2009 H1N1 virus and establish several response actions to prevent the disease. For example, prevention measures in the health facilities included appropriate use of quarantine procedures, treatment of patients with vaccines and antiviral drugs. Infected patients during the pH1N1 that developed secondary bacterial infections were treated with antibiotics (all the antibiotics donated were used). This finding is consistent with Myles et al. (2012) who noted that in wave 2 of the pandemic in the UK, GPs reverted to the use of antibiotics (increased prescription) rather than antiviral medication to treat patients who developed bacterial infections.

2.3 million doses of vaccines were made available for the vaccination programme by the WHO to address the 2009 pandemic problem in Ghana. Two antiviral drugs, oseltamivir and zanamivir, were used for the influenza H1N1. The vaccination programme was rolled out several months after the post-pandemic stage was declared.

The priority groups for the vaccination programme including the treatment regime, were health workers who were potentially at risk, pregnant women and young children were preferred group for immunization and anti-viral medication as directed. (GHS-Ghana-14)

It is also important to note that vaccinating seasonally is essential to prevent fatal outcomes of seasonal influenza. However, there is no vaccine strategy to protect against human influenza on a seasonal basis. Non-pharmaceutical interventions such as school closures were implemented in Ghana. For example, Lincoln Community School, the site of a localised outbreak with 2% of 700 students being identified as confirmed cases, was closed to break the cycle of transmission. Some boarding schools were quarantined during the outbreak of the H1N1 i.e. students were restricted from leaving the premises. Generic public health interventions such hygiene interventions were encouraged. Workers were encouraged to

report for work unless they were ill or suspected signs of fever or respiratory symptoms, such as coughing.

A prolonged response to the pandemic was anticipated in the planning process but it was not clear how they would sustain such response activities without facing capacity challenges or reduction in the provision of regular services. Critical care services, such as intensive care units and emergency department services were not overwhelmed during the pH1N1 period, suggesting that patient flow and load was low. Even so, significant additional capacity was required to improve responses. In Ghana, the plan to step up surge capacity was not activated. Ghana therefore did not purchase additional ventilators during the pandemic or even recognize the need for this critical equipment in treating patients infected with the H1N1 virus or experiencing respiratory complications.

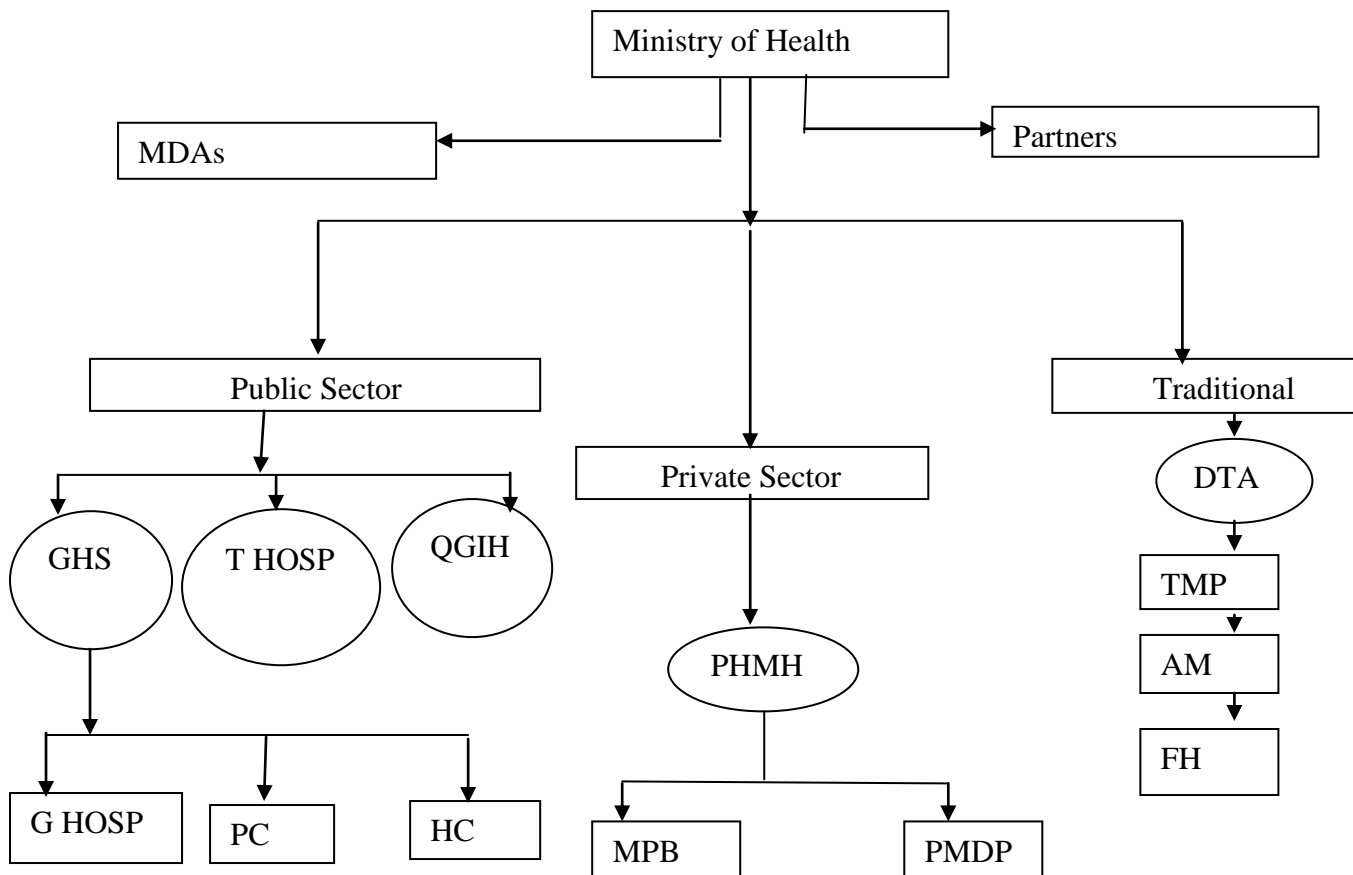
6.3.6. Health System Response

Compared to Malawi and several other health systems in Africa, Ghana has a strong primary health care system. However, the primary care services in Ghana remain unsatisfactory. A large population of people in the country do not have access to medication. On average a large proportion of people have to walk 16 km to a healthcare facility and they will be lucky to see a doctor. As a result, the majority of the population still relies on self-medication (van den Boom et al., 2004). The healthcare system is organised under four main arms of service delivery: public, private-for-profit, private-not-for-profit and traditional systems. Only two arms: public and private-not-for profit, were involved in PRPI. Figure 7 below shows the organization structure of the health sector of Ghana.

The Ghana Health Service (GHS) is part of the Ministry of Health in Ghana mandated to develop policies on influenza including managing the health service response, health information system, IDSR, financing, R&D, human resources and infrastructure. GHS through the Ministry of Health work in partnership with its implementing agencies and stakeholders (figure 7; also see appendix 13) with the aim of improving and promoting health and vitality through access to quality health for all people living in Ghana, and using motivated personnel.⁸⁹

⁸⁹<http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=172206> (Accessed: December 27, 2013).

Figure 7: Organization Structure of the Health Sector of Ghana



Legend:

- MDAs - Ministries, Departments and Agencies
- PC - Poly-Clinics
- GHS - Ghana Health Service
- HC - Health Centres
- MBP - Mission-Based Providers
- T HOSP - Teaching Hospitals
- TMP - Traditional Medical Providers
- AM - Alternative Medicine
- FH - Faith Healers
- PHMH - Private Hospitals and Maternity Homes Board
- DTAM - Department of Traditional and Alternate Medicine
- GHSP - Government Hospitals
- PMDP - Private Medical and Dental Practitioners
- QGIH - Quasi Government Institution Hospitals

Source: Abor et al. (2008).

The administrative structure of health operates at three administrative levels; national, regional and district level. The functional levels in the GHS are divided into five levels;

regional district, sub-district and community level.⁹⁰ GHS is governed by a 12-member Council: The Ghana Health Service Council, and supported by the Office of the Director General and 8 National Divisional Directors.

The administrative level structures at the regional level are headed by 10 Regional Directors of Health Services and supported by Regional Health Management Teams and Regional Health Committees. Administration of health at the district level constituting 110 districts is headed by District Directors of Health Services and supported by the District Health Management Teams (DHMT), District Health Committees (DHC) and Sub District Health Management Teams. All the levels of administration in the GHS are organised as Budget and Management Centres (BMCs) or cost centres for the purpose of administering funds by the Government and other stakeholders.⁹¹ There are a total of 223 functional BMCs and 110 Sub District BMCs. The Ghana Health Service (GHS) constitutes 10 Regional Health Administrations, 8 Regional Hospitals, 110 District Health Administrations and 95 District Hospitals. All of these are run as BMCs.⁹²

Spontaneous responses from the experts interviewed showed that the GHS was not prepared for the pandemic. The 2009 pH1N1 caught the pandemic planners by surprise. They were expecting highly pathogenic avian influenza H5N1, as one policymaker representing MLFM mentioned:

The influenza intervention programmes and disease surveillance systems were focused on the H5N1 and for this reason Ghana was yet to prepare and embrace fully any demands placed by a new subtype of influenza virus. (MLFM-Ghana-38)

Although the GHS was expecting the H5N1 to turn into a pandemic, its infrastructure, such as hospitals and surveillance structures, were not ready to deal with pandemic in the human population. Even so, Ghana was still committed to quickly recognizing and responding to such threats. Prior to the H1N1 pandemic, the GHS took part in planning, coordination and surveillance efforts, as noted earlier in this chapter. Ghana not only made efforts to integrate

⁹⁰ *ibid.*

⁹¹ *ibid.*

⁹² *ibid.*

surveillance and monitoring of a specific influenza virus type, they made further attempts to mobilize community actions, solicit international support and access resources to guard the health of the people. The policymakers representing the World Bank (WB) and the WHO emphasized Ghanaian commitment to preparing for health system response:

Ghana secured about USD 709,750 that could be used to maintain PRPI activities such as surveillance, prevention and treatment of AI cases. (WB-Ghana-20; WHO-Ghana-07)

Owing to scarce resources in the Ghanaian health service, strengthening its capacity to deal with an influenza outbreak was problematic. The money available could only be used to maintain selected activities, such as raising awareness and teaching primary care providers on managing pandemic influenza. The operational and logistical side of the health service's everyday activities were overwhelmed with scores of problems. Health services such as the routine handling of laboratory specimens, hospital infection control policies, safe transport and pharmaceutical logistics were yet to be streamlined to tackle influenza priorities.

A number of important weaknesses were identified in the lack of efficient and timely decision-making amongst policymakers in the GHS offering guidance on influenza. Policymakers interviewed in this study were quick to point out that approaches and guidelines proceeded in the face of incomplete information. They also suggested that there was a lack of coordination of existing data in order to assemble policy responses, and that this was due to lack of strategic direction at the top level of management within the health service. Solutions to influenza-related problems were therefore clumsy. It was also not clear how the influenza mitigation policies would be applied during and between the peaks of the H1N1 pandemic cycles. The policymaker from USAID said:

A pandemic is characterised by waves of high and lower peak activities of the disease that are observed over time. In Ghanaian plan, it is not clear what type of responses and resources are most needed to be applied towards the management of the pandemic activity when at its highest or lowest peak. Managing pandemic influenza require timely responses to the peak activity through surveillance, information, education and communication etc. For example, during lower peaks of pandemic

influenza, public health measures surveillance or education ought to continue even if the pandemic appears to be waning. (USAID-Ghana-06)

During the 2009 pH1N1, some health response actions came to a halt. These included the screening of possible cases at the borders of entry because pandemic influenza in Ghana had receded. Then, after several months the disease peaked remarkably. Towards the end of November 2009, the virus was increasingly reported in hospitals. A total of 345 specimens (294 suspected cases and 51 contacts) were investigated at the Noguchi Memorial Institute for Medical Research, with 38 confirmed as positive for the Influenza H1N1 2009 virus.⁹³

6.3.7. Information, Education and Communication (IEC)

The IEC relevant to H1N1 and H5N1 was coordinated by the GHS and MOFA/MLFM respectively, with a lot of overlaps in the implementation strategies between the coordinating bodies. Regardless of the organization coordinating the IEC, the purpose of activities was to raise awareness by communicating information to the general public on the dangers of the influenza, thus improving public trust in national health systems. According to policymakers, the IEC materials on the H5N1 prior to the emergency of 2009 H1N1, targeted poultry farmers, whereas during the 2009 H1N1 pandemic, the IEC focused more on health workers and the general population:

Initially, during the threats of H5N1, we advocated and campaigned tirelessly on how the poultry farmers could avoid avian influenza including those people in proximity to poultry. During the H1N1, the Health Promotion Unit (HPU) of Ghana Health Service coordinated the Information, Education and Communication (IEC) messages on H1N1 targeting the entire population. The IEC messages did not distinguish between H1N1 and H5N1, thereby leading to a confusion among the population. (GRCS-Ghana-05)

The above excerpt suggests that IEC materials only provided background on the H5N1 influenza situation in birds, while providing very little on how the general public could deal

⁹³<http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=172206> (Accessed: January 23, 2014).

with the disease once they experienced the signs and symptoms. Throughout the interview, it was clear that the NADMO and the GHS, although once involved in the H5N1, did very little to improve risk communication of influenza. The lack of coordination on major issues of avian and human influenza led to the disseminating of incoherent IEC messages to the general population.

Policymakers attribute much of the incoherence to the lack of useful research that was done on avian influenza. The rapid onset of the H1N1 pandemic had also limited the amount of information on the disease. The communication strategies that the MOFA and the GHS adopted could not be evaluated due to a time lag between the apparent need for policy changes and action being taken on it. Planning and communicating responses literally took place at the same time. Policymakers suggest that planning and response to pandemic influenza must be informed timely by research and values in order to generally improve communication, public knowledge and perception about the disease. The risk communication strategy was implemented through different channels but the popular medium was the media, using newspapers, TV and radio stations. The GHS established telephone hotlines to inform the general public further on issues relating to influenza, such as protocols and triage decisions as to who would get the limited vaccines in moderate and worst-case scenarios.

6.4.0. Conclusion: Comparison of Pandemic Planning and Response Experiences in Malawi and Ghana

There are assumptions within the pandemic plans of Ghana and Malawi that seem to take the position that planned interventions will address the pandemic outbreak in a straightforward manner, yet there are great discrepancies at the level of intelligence and key issues associated with pandemic preparedness. Discrepancies are expected in any pandemic planning at the national or international scene due to the uncertainty associated with pandemics. However, it is important to have a consistent basis for planning, especially if it is to be applied at the local and national level alike.

Study of the deployment of influenza policies has revealed some good outcomes, for example, it was widely acknowledged in the interviews across Ghana and Malawi that public health authorities worked extremely hard to strengthen capacity through a number of public health initiatives. There were variations in the planning for, and responding to, pandemic influenza in Malawi and Ghana, as demonstrated in table 6, in terms of preparedness

activities, strengths and gaps in the major themes of preparedness. Both Ghana and Malawi developed communication strategies, strengthened influenza surveillance and updated overall goals in PRPI. However, most of the response actions addressing the 2009 H1N1 pandemic failed to achieve the important public health goals reflected in the national preparedness plans.

Malawi's Ministry of Health and governmental policy structure for pandemic planning differs significantly from that of the Ghana Health Service, despite the fact that public health structures for Ghana and Malawi are both based on the PHC system delivering healthcare at the local level via health units. In Ghana, structures for PRPI were more organised, with the key scientific and professional organizations at the forefront of responding to the H1N1 pandemic influenza. For example, GHS took a leading role but worked closely with the NADMO, the MOFA/Veterinary Services, MLFM, FAO, WHO and USAID. In Malawi, similar structures were available, overseen by the DoDMA and the Ministry of Health as an implementing agency supported by key international partners (FAO, WHO and USAID). Ghana performed comparatively well in PRPI (Table 6). Ghana spent more on health, with health expenditure per capita (USD) of \$75, compared to Malawi who had an expenditure of \$31. The Commission on Macroeconomics and Health (2001) has concluded that US\$ 34 per capita on health is the minimum required for providing basic curative services to reach health related MDG goals. Higher health expenditure does not necessarily lead to better health outcomes, but a minimum level of resources is needed for a health system to fulfil its essential functions adequately. Viewed as a share of GDP, Malawi contributed about 8.4% to the health service compared to Ghana, whose share of GDP was 4.8%, meaning that Malawi was very committed to health care in the overall economy.

NADMO and the DoDMA are arm's-length government organizations dedicated to disasters in the two countries respectively. In contrast to DoDMA, NADMO have the infrastructure and technical expertise to organize early warning information systems and manage emergencies. However, it was observed throughout the interview data that NADMO and the DoDMA were passive because they lacked the scientific expertise to assist health providers and public health partners to make informed decisions about PRPI. Comparing the two, NADMO was better-placed to assist because it had a permanent structure within the government dedicated exclusively to planning and leading a response to a public health

emergency. Similarly, the GHS was more prepared and responded far better than their counterparts in Malawi.

In Ghana and Malawi pandemic plans are not updated regularly because dedicated personnel with expertise in emergency management are rarely consulted. As a result of this, a pandemic advisory group was established within the emergency management structure which assisted in managing the training of staff and overall preparedness efforts. The pandemic roles and responsibilities for Ghana and Malawi were similar as both fell under the obligations of the WHO. Pandemic roles and responsibilities were based on the WHO pandemic phases. These guidelines were heavily criticized by policymakers from both Ghana and Malawi, particularly on the poor timing of the 2009 release of pandemic phases as these would not be applied in the current pandemic. Additionally, both the MoH in Malawi and the GHS, fell short of implementing drills or test plans for an imminent threat because of a lack of resources.

Neither Ghana nor Malawi did well in preparing for surge capacity. This was demonstrated by the clinical situation in the Ghana Health Service and Malawi's MoH which lacked a good relationship with acute care and intensive care services. Similarly, there was a failure in engaging acute care units with PRPI. Because the pandemic was mild, preparation for acute care or procurement of intensive equipment was considered unnecessary – a sign that lessons have not yet been learnt. Looking at the broader picture, equipping intensive care units in the usual pathway of primary care is necessary for trauma care and treatment of other critical illnesses, and not only pandemic influenza.

Ghana had established Influenza Assessment Centres (IACs) at the national level supported by a laboratory unit, but there were doubts from policymakers in Ghana about how these would be operated. In Malawi, IACs were unavailable and influenza activities were dealt with by the Community Health Science Unit (CHSU), an epidemiological section of the MoH that handled influenza samples and made them ready to be tested abroad. Neither Ghana nor Malawi had ever considered establishing an ethical preparedness plan to support ethical considerations and there were no guidelines to support business continuity planning and surge capacity management with regard to local health organizations.

Table 6: Pandemic preparedness activities, strengths, gaps and comparison in which they are necessary, depending on major themes of preparedness

LEVEL OF PANDEMIC INFLUENZA PREPAREDNESS ACTIVITIES BETWEEN MALAWI AND GHANA					
Malawi			Ghana		Comparison
	Strengths	Gaps	Strengths	Gaps	
Command and management	Capacity setting, planning and command based on WHO recommendations. Capacity strategy was based on phase 1-3. High political will and strong focus on pandemic preparedness. There was financial and human resource planning with a budget provision for a year. Responsibilities defined to create awareness.	Coordination not embedded in existing structures. Local stakeholders not involved. MoH not very proactive public health authority. Strong leadership lacking. Need to replicate national structural at local areas. Need for IACs and labs. Phase 1-3 actions relate to avian and not Human influenza. Ethical consideration not considered. Development of command structures heavily relied on external funding. The lack of long term focus of operational plans. Lack of funds to build on operational structures. Responsibilities not clearly outlined and local agencies not involved. Responsibilities need to be defined phase by phase.	High capacity and capabilities with a wider multi-sectoral involvement. Response capacity strategy based on phases 3-5(These phases relate to both avian and human influenza). Highest level political support. Ghana had a one year budget plan to allow restructuring of the existing response strategies and acquire the capacity to monitor, prevent and treat influenza cases both avian and human pandemic influenza.	Ghana does not consider legislative and regulatory framework in influenza capacity and command systems. Ethical consideration not considered. Governance of pandemic influenza at the national level is inconsistency at local level. Development of command structures heavily relied on external funding. There is need for sustainable influenza funding. Need for external research cooperation and reinforce ongoing cooperation. Responsibilities and actions needs to be defined phase by phase.	Ghana had better command structures. It had more trained veterinary officers and public health experts involved in the PRPI. It had a good surveillance system. The National AI Coordinating Committee (NCC) was highly organised to provide policy direction, political will and strategic PRPI.
	Maintenance of essential services	There was a strategy to ensure essential services are provided continuously e.g. business contingency plans available among a few UN bodies.	Business and Family contingency lacking at the national and local level. Need for strengthening health services operatives. Need for making available pharmaceutical products for mitigating influenza. Need for Pharmaceutical contracts, regulation, distribution, storage and coverage of medicine. Need for more staff such as medical personnel, police, and ambulance. Plans needs to be developed to call up retired medical staff and request foreign support. Need for private and public partnership to continue providing essential services such as water, energy and safe transport.	Identifying leadership, partners and structures to implement pandemic influenza. Plan was partly to ensure maintenance of essential services. A number of financial agreements through their developmental partners were achieved to strengthen capacity such as education and resource lab surveillance.	No Business and Family contingency to ensure business run normally. No ethical considerations to ensure acceptable measures without adverse consequences. Non- health preparedness was lacking. Ghana did not learn from the historical past of pandemic influenza during the pandemic plan development. No logistical arrangements for distribution and provision of scarce resources are available yet these are important for timely responses.

Table 6 (Continued)

LEVEL OF PANDEMIC INFLUENZA PREPAREDNESS ACTIVITIES BETWEEN MALAWI AND GHANA

		Malawi		Ghana		Comparison
		Strengths	Gaps	Strengths	Gaps	
Communication	<p>Risk communication strategy available to inform public.</p> <p>Information exchange with stakeholders available.</p> <p>Good communication, accountability and relationship between DoDMA and MoH.</p>	<p>Communication strategy available but didn't widely inform authorities on task force activities and findings. Messages informing the public were about avian influenza and not human influenza. Messages didn't reach intended audience. No forewarning about the Mexico outbreak. Inform the public on the availability of vaccines and NPIs and their effectiveness.</p> <p>Lack of effective public relations. The lack of initiative to change public attitudes and perception influenza. Risk communication problematic due to poor messages on preventive measures and general hygiene. Need to strengthen communication by electronic means, phone, and meetings. Need for communicating real time and hypothetical surveillance data. Need for communicating the nature, spread, peak and decline of influenza(seasonal and pandemic)</p>	<p>Education and awareness of avian influenza was highly promoted through various communication channels such as radio, TV and leaflets.</p>	<p>IEC relevant to H5N1 and H1N1 had a lot of overlaps. Awareness was more focused on avian influenza and awareness messages were directed to poultry farmers. During the H1N1, it was difficult to switch messages to H1N1. Little networking to improve risk communication. Communication strategies need evaluation and feedback on public knowledge assimilation of the matter. Proposed communication strategy is top down and do not correspond with local capacities.</p>	<p>Ghana response on coordination was good compared to Malawi. The coordination between public and private sectors was well addressed. However, both need to improve on their failures of communication between national health authorities and hospital structures including involving experts at the local level. In Ghana, communication was more uniform and well managed. There were logistical problems in both countries. In Malawi, these problems were apparent leading to untimely communication from the MoH.</p>	
	Surveillance services	<p>Surveillance reporting system was in place i.e. in collaboration with overseas labs. Influenza is reportable condition in Malawi. Reporting of dead or dying birds and swine demonstrate good animal surveillance</p>	<p>No routine checks for human or avian influenza suspected cases. Lack operational capacity to assess, monitor and track suspected cases. Confirmation of influenza or sub-typing is not done within the country because of lack of labs, equipment and trained personnel. No monitoring of seasonal or influenza like illness (ILI). No hospital based and community reporting of ILI is available. Need for ILI case investigation by interviewing patient cases and carrying out surveys for possible sources. Make public aware that ILI is reportable. Need for surveillance working groups and need for reporting absenteeism.</p>	<p>Identified financial needs and gaps to support human and avian influenza. Upgraded laboratory networks and diagnostic capacity. Active surveillance through the IDRS and other operational structures like FluNet. Pursued influenza training and technical assistance. Influenza is notifiable disease. Need for scenario that considers that influenza outbreak can emerge within the country and measures for such cases must be considered.</p>	<p>Surveillance needs to be enhanced at the start of the pandemic for timely information and if needs of the health response are to be met. Sentinel surveillance system poorly resourced to assess the burden of seasonal influenza. Sentinel surveillance that is in place needs to expand to all areas in Ghana. National labs like Nangochi need to be expanded to other regions for isolation and typing of influenza. Other methods of surveillance can be instituted at the poultry retail outlets, on farms and border entries. Need for web reporting systems. Need for rapid test technology in rural areas.</p>	<p>Ghana is much better prepared compared to Malawi. Notably, Ghana has the infrastructure such as labs to test influenza samples within the country. Ghana has the surveillance links and networks- it shares influenza data with the rest of the world.</p>

Table 6 (Continued)

LEVEL OF PANDEMIC INFLUENZA PREPAREDNESS ACTIVITIES BETWEEN MALAWI AND GHANA

Malawi		Ghana		Comparison	
Strengths	Gaps	Strengths	Gaps		
Public health	<p>Plenty of debate on quarantine and institutional closures. Planning and stockpiling was active. Protocol for border control at airports in place. Vaccine protocol partially in place. Vaccine stockpile, drugs, gowns and masks were made available- a protocol for this available.</p>	<p>Health service not ready. The HMIS structure lacks the special advisory committee. Lack of public health policy to offer guidance on pandemic influenza. No quarantine facilities to house travellers or patients within the health facility. Persons with ILI are not encouraged to stay at home. Robustness of surveillance needed to send early signals for health service response.</p> <p>Lessons needs to be learnt from SARS, H5N1 and 2009 pandemic influenza including other pandemics outbreaks in the past. Need for pharmaceutical logistics and effective hospital control policies</p>	<p>A range of public health control strategies are indicated in the PRPI protocol for containment. Although untimely, Ghana implemented a vaccine strategy. Vaccine and antiviral strategy to offer guidelines to deploying them is available. Other drugs, gowns, and masks were made available in post pandemic phase.</p>	<p>There is confusion about institutional closures and it is not clear when public health measures such as quarantine are to be mandatory. Vaccine strategy was problematic as priority groups were unwilling to be vaccinated. In future Ghana has to envisage vaccinating its entire populace (seasonal and pandemic). Ghana need influenza R&D if it were completely to manage challenges of pandemic influenza and become self reliant. Border control was not fully emphasised such as screening and this needs to be improved. Need for pharmaceutical logistics and effective hospital control policies.</p>	<p>Ghana health service preparedness is much stronger when comparing with Malawi health service. In Ghana, management of patients was well defined and the structures were well coordinated to ensure health services are delivered.</p>
Patient management services	<p>Resources such as drugs and vaccines for treatment were acquired. Infection control policies were in place and consultations on the best practices to prevent and mitigate pandemic influenza were underway.</p>	<p>No contact management such as tracing cases was available. No protocol measures on isolation in the hospital wards or who benefits from ICUs were available. Designated camps and buildings for patients were mentioned but there were no agreements with owners or government departments to use their facilities when needed. Priority protocol was made available with high risk patients on the list (pregnant mothers, children) but this was not explained to the public. Vaccine uptake was low and improving uptakes require educating the public on attitudes and perceptions.</p>	<p>Hospital care was emphasised such as planning for number of beds. Infection control is highlighted such as use of PPEs.</p>	<p>Home care often ignored. Private hospital not involved. No agreed admission criteria in private and government hospitals. No designated medical facilities to deal with influenza patients. No medical stockpiles were planned to easy patient's demands due to influenza. Patient's needs such as priority setting needs to be investigated and balanced within public health interests. Mortality management such as the role of mortuaries are not addressed. IACs should be established and contact tracing activated to follow-up cases</p>	<p>Ghana was ahead as far as patient management was concerned. It had better hospitals and trained professionals than Malawi. Ghana has 1:13,000 doctors to patient level while Malawi has a ratio of 1:60000. The WHO recommends doctor-patient ratio of 1:5,000</p>

Source: Author's study analysis of pandemic influenza preparedness activities.

Implementation of the vaccination strategy in Ghana was seen to be more effective than in Malawi. Ghana administered 100% and Malawi administered 74% of their procured vaccines. Ghana had acquired more vaccines at the time of writing, due to the persistent H1N1 strain, and embarked on pandemic drills, simulations and response tabletop exercises. Coverage of immunization based on geography in Malawi and Ghana was unavailable, but the WHO officers representing both countries suggest that immunization was as effective in covering both rural and urban areas. In Ghana and Malawi, immunization clinics were used to implement the immunization programme but recipients were unwilling to receive vaccines due to a fear of the side effects. Ghana implemented an educational campaign to tackle this, whereas Malawi opted to use the police to force high-risk groups to be vaccinated. Both countries had a sanitation policy that focused on protecting the health workforce. As such, protective equipment was procured, despite the fact that this was in too short supply to cover the entire workforce.

In Ghana, communication was relatively uniform. In contrast, there were logistical problems in Malawi leading to untimely communication from the MoH. This was also true of decisions on key points within the communication plan. For example, publicity programmes for the public did not directly address the three-level response system and related preparedness measures. This includes obtaining feedback and comments necessary for improving the future communication plan. In order to better prepare themselves Ghana and Malawi have to expand their IEC strategies outside their working frameworks.

While the 2009 pandemic is behind us, there is a lot to learn from past experiences. The way planning and actual responses were rolled out throughout the pre and post pandemic period demand renewed strategies to improve PRPI activities for future outbreaks. A PRPI model needs to be developed to achieve meaningful responses against pandemic needs of the future. The goal of the new PRPI approach is to act as a policy tool that assists policymakers to take a proactive role in preparedness and response measures in a timely manner. A PRPI model that also takes into consideration the “prevention of ethical problems” will enable policymakers to evaluate interventions that may maintain operational readiness in the face of a pandemic. This chapter has explored the actions involved in PRPI in Ghana and Malawi in order to expose ethical problems encountered during the process. The next chapter will investigate these ethical issues in more depth.

CHAPTER 7: ETHICAL PROBLEMS AND DILEMMAS

7.1.0. Introduction

During a severe outbreak of pandemic influenza, medical practitioners and policy experts will be called upon to support the healthcare needs of those affected, not only in terms of ethical obligations to look after sick patients, but also to balance their obligation against the needs of population health. This is a difficult and challenging task to fulfil in a public health emergency response, but it remains a prominent issue that any healthcare service will have to deal with. However, addressing ethical issues arising from an influenza pandemic requires an understanding of how they emerge and how they are constructed. In this chapter, I examine the nature and types of ethical problems and dilemmas that might have been encountered during the planning for, and response to, pandemic influenza (PRPI) following the 2009 H1N1. The intention is to consider the real-life ethical problems and dilemmas as they are confronted by public health policymakers. The questions of how, when and what, with reference to the examples provided by the policymakers interviewed, are used to frame these issues in such a way as to gain deeper understanding of ethics and public health practice. By identifying ethical problems and their causes, it becomes possible to resolve them.

Ethical dilemmas and problems in the field of public health are documented in literature, particularly in textbooks of bioethics (Beauchamp and Childress, 2009). Most of this literature is based on anecdotal evidence (Clarke, 1992) and it is predominantly specific to the USA. Even so, most of these ethical issues emerge from interventionist public health policies, such as mandatory vaccinations, the relationship between duties of the state and individuals, and organizations affected by these policies and legislations. In Chapter 4, I showed that ethical problems may occur differently in the context of particular settings, cultures and values which are deeply rooted in the way that decisions are made and justified. Hoffmaster (1994) and Callahan and Jennings (2002) also suggest that ethical issues should be explicitly viewed and understood based on factual evidence rather than normative literature found in textbooks of bioethics. It was with this in mind that I considered ethical concerns in the context of public health practice and the settings of Ghana and Malawi.

In this chapter, it will be shown that ethical problems identified in PRPI, by policymakers in Ghana and Malawi, were significant compared to ethical issues caused by other infectious diseases. Pandemic influenza outbreak is unpredictable and often associated with panic, fear

and rumours thus the urgency associated with influenza pandemic creates exceptional ethical issues. All ethical problems are a concern to public health. However, some ethical problems are more significant than others due to the nature of the threats. For example, pandemic influenza in 1918 killed about 100 million people worldwide that year alone while HIV/AIDS has killed 36 million since 1989. While the 2009 pandemic was mild, most ethical issues cut in much earlier due to pandemic's unpredictability and seriousness. While HIV/AIDS is serious, it is a controllable disease and infected persons are now able to live much longer due to increased access to antiviral medications. Most of the ethical concerns emerged in the core tasks of public health, particularly in terms of how decisions are adapted and justified.

There is also evidence to suggest that ethical dilemmas are increasingly encountered at the top level of policy development and manifested in particular key tasks of PRPI. Just as the reasoning process takes centre stage at management level, most ethical problems occur at the grassroots level where such decisions are implemented. Ethical issues emerge when a decision is made to choose between competitive alternatives that are equally good. In short, an ethical issue involve choices between one good and another good. Sometimes decisions are made based on the need to act legally and in compliance with international guidelines and procedures. Thus, as will be demonstrated, the inherent ethical issues identified by policymakers in Ghana and Malawi are overtly practical, legal and procedural in nature. A number of ethical issues are raised in reference to the authorities' failure to act, acting inappropriately, lack of cooperation with global surveillance networks, unacceptable risks, disproportionate interventions, biased and sensationalist reporting of the media, and intrusive public health measures.

7.2.0. Role of Themes and Typology

As indicated in Chapter 5, the development of themes and typologies is commonplace in qualitative data analysis; the purpose is not only to reduce the amount of data but to identify the pattern of ethical problems and dilemmas more easily, while maintaining the analytic integrity of the research. The themes and typology will facilitate open discussion by re-grouping tacit knowledge and relevant interview data extracts on ethical issues. This will

leave behind an audit trail. The themes and typologies in this chapter were suggested based on what is termed “manifest effect sizes⁹⁴” of observable content underlying ethical issues.

As noted earlier (Chapter 5), analyses of ethical problems were based on PRPI activities. Mostly guided by the theoretical framework, I focused on ways that policymakers undertook key tasks to prevent, mitigate and manage the 2009 pH1N1. This was a daunting task; it was difficult to identify policymaker’s ethical experiences in PRPI activities because much of the policy decision-making processes were delegated to their subordinates. The grey area in this context is the responsibility for ethical concerns that might emerge, and the question of who resolves them. This typology led me to define what constituted policymakers, as is presented in Chapter 6. Similarly, this explains why I decided to have three separate data chapters: the first offers a descriptive account of what PRPI constitutes and the demands that are placed upon policymakers (Chapter 6). The second (Chapter 7) deals with why ethical issues arise, and the third (Chapter 8) addresses how to resolve them. The last two combine ethical description, ethical reasoning and justification. It can be argued that ethical description requires an understanding of the nature of reasoning in order to give insight into ethical recognition; otherwise it may be seen as limited.

The interview data presented in this chapter was analyzed using thematic analysis in which individual meaning units were identified and labelled. It is possible to describe ethical problems for policymakers in three distinct ways: in terms of the area of public health practice where ethical problems arise, in terms of how the problem is described by policymakers when applying PRPI activities, and in terms of countable themes.

7.3.0. Ethical Problems and Dilemmas: Meaning and Interpretation in Public Health

Planning for, and emergency response to, pandemic influenza is a relatively new challenge for African countries like Ghana and Malawi. The policymakers interviewed in Ghana and Malawi collectively agreed that the growing threat of influenza is yet to be over. They made this observation on the basis that from time to time influenza occurs with unpredictable frequency and the emerging strain is often different. The most worrying part, however, is the number of people it can affect and the ethical problems it causes when policymakers attempt

⁹⁴ The term is often used in descriptive statistics as a measure of the strength of a phenomenon- it has the same meaning in qualitative studies i.e. it conveys the magnitude of a relationship in a statement.

to prevent or manage the disease. The ethical issues observed during the 2009 H1N1 pandemic influenza reflect the manner in which PRPI is implemented. Policymakers had to make hard decisions and sometimes those that went against commonly held opinions on PRPI, such as neglecting empirical knowledge for moral grounding. For example, prior to the 2009 pandemic influenza, the World Bank gave money to the Ministry of Health and Ministry of Agriculture in Malawi amounting to about a million US dollars. This money was to be shared equally between the Ministry of Health and Ministry of Agriculture to be used towards human and avian influenza preparedness respectively. Once the money was received in the National Health Account (NHA) and overseen by the Ministry of Health authorities, they decided not to use any money on avian influenza preparedness; the World Bank was displeased and as a result requested the Ministry of Health return its money. This was justified at the time on evidence that the Ministry of Health focused efforts on human influenza preparedness which had received little attention, but this was rejected by the funder on the basis of fairness and resource priority setting.

This study provides evidence suggesting that ethical issues are facilitated at the practical stage of implementation and the decision-making level of policy. For most policymakers, ethical problems were originally attributed to ethical ignorance and neglect of relevant facts leading to muddled thinking, rationalization of self interest and unpopular professional actions. The analysis reported in this chapter concludes that policymakers had the ability to understand and articulate different types of ethical dilemmas and problems however. The moral reasoning in the formation of a moral judgment did not depend on technical knowledge of moral theory; rather it was based on policy demands, the individual's stage of moral reasoning, and attitudes. While the purpose of this chapter is initially to examine the ethical issues encountered, it is necessary to consider what policymakers meant by ethical problems and dilemmas.

In this study, the terms ethical problems and dilemmas, were often confused in policymakers' understanding and descriptions. For the most part though, the distinction between the two terms was difficult to grasp. An interpretation of dilemmas picked in the analysis suggests that policymakers would face a dilemma if presented with an unsolvable conflict between two equally important choices; both need to be done but only one can be done. The decision to choose one option over the other would lead to a moral wrong as both needed to be done. For Braunack-Mayer (2001), ethical dilemmas are situations in which, on moral grounds,

people ought both to do and not to do something. This was commonly observed in the interview data; policymakers narrated circumstances in which they had to choose whether to safeguard public health interest or protect the interests of individuals when the reasoning for both was equally strong. An ethical problem was understood to involve doubt or difficulty in choosing between the alternatives; either option would lead to a moral wrong. Both dilemmas and problems were observed when policymakers spoke about hard moral choices at the practical level of PRPI. From the perspective of the policymakers, dilemmas were synonymous with an ethical problem, but different from simply a difficult decision. This thesis applies the terms “dilemma” and “ethical problem” interchangeably; sometimes the term ethical issues or moral issues are used to denote a dilemma or problem, and vice versa.

7.4.0. Ethical Problems Related to the Unfair Distribution of Resources

The criteria or process for resource prioritization remains a major source of ethical problems in Ghana and Malawi. To make the best use of limited available healthcare resources and achieve cumulative benefits in these under-resourced countries requires adequate resources to neutralize the demand of priority settings, since all health conditions would have equal opportunities. Practically speaking, resources are never adequate; even in rich countries, resources are stretched. It is thus understandable that resource prioritization was challenging for these policymakers in healthcare management. The challenges appeared to be facilitated to the greatest extent by the lack of guidelines and reasoning, which underlies why certain health conditions receive priority for resources as opposed to others, when all are of equal public health importance (they all contribute to overall mortality). Broadly speaking, how and when to prioritize was one area that led to dilemmas and commonly cited examples of real-life ethical problems. There are a number of factors that led to the unfair distribution of resources regarding pandemic influenza in the health service however. Policymakers referenced the lack of funds in the health service, management skills in setting out priorities, knowledge of pandemic influenza, political will and a lack of international collaborative partnership.

There were long expressed factors explaining these difficulties, which all convened at one point: the poor performance of the health service response, including how to ration such inadequate resources. On occasion, policymakers insisted that government funding of the health service was insufficient. Even with donor complementary funds, the health budget was still inadequate to run health services. Policymakers argued that budget allocation to health

services is determined by politicians who have no idea of the challenges faced by the healthcare sector. These challenges are met by poorly set targets on resource prioritization within the health sector. Giving money to one health programme is not based on assessment of needs or scientific evidence, such as which health condition poses more of a threat than others, or why an education intervention might be more needed than a treatment protocol. Based on the social construct view of risk, policymakers viewed pandemic influenza as a risk that is relevant but not necessarily accepted, as it would be viewed by a statistical perspective (event occurring multiplied by its severity of its impacts). Policymakers were aware that increasing budgets to the healthcare service was necessary, but not an immediate solution to pandemic influenza:

Even with increased funding earmarked for use in the health service, allocation of resources to pandemic influenza planning is not a priority. (WI-MW-34; NADMO-Ghana-23; MoH-MW-11)

Ghana ranks pandemic influenza seventh on its list of urgent health conditions,⁹⁵ while Malawi ranks it eleventh (Bowie, 2007). Distribution of government resources tends to follow this pattern as far as morbidity and mortality burdens are concerned. Thus, the higher the morbidity or mortality of a certain condition, the more funding it gets; yet this pattern disregards emergency disease situations. Policymakers felt that there was no need to invest heavily in HIV/AIDS, underscoring the need to generally improve the condition of hospitals that can equally deal with HIV/AIDS, malaria and pandemic influenza. The failure to attract government funding to pandemic influenza indicates that the disease is not considered to be an important and urgent health threat.

7.5.0. Ethical Problems Related to the Health System Response

According to Braunack-Mayer (2001, 2005), ethical issues emerge more often in health care and remain the first challenge for any account of ethics. The purpose of PHC is to provide comprehensive and equitable healthcare to all. So far, the interviewed experts seem to agree with Braunack-Mayer that limited access to PHC has affected key themes addressing

⁹⁵ <http://www.worldlifeexpectancy.com/ghana-influenza-pneumonia> (Accessed: June 09, 2013).

influenza preparedness. One important example of this, echoing Braunack-Mayer's (2001) concerns, was given by a policymaker representing USAID in Malawi:

If you are talking about ethical issues, three quarters of such issues are at the heart of the health service.... the best achievable plan is to strengthen the ethics of the health system otherwise you have already lost the battle. (USAID-MW-41)

The Health Minister overseeing the Ministry of Health in Malawi suggested improving ethics to a more holistic approach so as to optimize the health service delivery on all health conditions, including influenza. The minister recognized that large funding allocations earmarked for addressing and treating specific diseases alone fell short of a well organized system. Expenditure responsibilities invoke large disparities in health and huge inequities in the provision and access to health services. The minister further reiterated that greater scope for inequities was the result of unfair distribution of primary healthcare resources. Some people consider that a system that distributes healthcare unevenly, and cuts out policy objectives, such as encouraging regular check-ups or providing greater protection for the poor, leads to an excessively unethical health system.

This is a growing problem in Ghana and Malawi as donors continue budgetary allocations financing vertical initiatives, rather than focusing on the health system as a whole. PHC budgeting and policy objectives of the health sector are often undertaken in parallel with the fundamental goal of equity. To date, the health sector has only minimally achieved (not only with regard to influenza but also in other areas, such as health expenditure), according to the tracking surveys which show that funds have had difficulty reaching the ground. Apart from poor organization of the health service, specific ethical issues were identified in relation to developing and maintaining the healthcare infrastructure. Most of the issues identified in the interviews originated in the particular tasks of public health and medicine. For example, several ethical problems were identified that, although broadly associated with the healthcare system, featured concerns that are similar to those encountered by other healthcare professionals, such as doctors and nurses. Some of these include lack of staff at hospitals and health centres, lack of laboratories and common ethical problems, such as treatment refusal, privacy, paternalism and confidentiality.

7.6.0. Ethical Problems Relating to the Relationship of Duties and Cost Saving Strategies

Apart from dilemmas and ethical problems as a result of under-resourcing, priority setting focusing on individual patients rather than a group of patients, leads to a discussion on how best to maximize the overall benefits of limited resources as far as pandemic influenza planning and response might be concerned. It has been acknowledged that pandemic influenza places an extra burden on healthcare resources. What is interesting as far as allocation of resources is concerned though is the fact that, during planning for pandemic influenza, policymakers were initially hesitant to allocate limited healthcare resources to planning and response in order to circumvent such responsibility, saving costs by neglecting the future benefits of planning. However, once there was an outbreak of the 2009 H1N1 pandemic influenza, international pressure and panic by government officials in Ghana and Malawi led to resources being pulled into influenza activities so as to facilitate the responses required in pandemic influenza mitigation. The cost-saving strategy was temporarily suspended when signs of an influenza outbreak were becoming prominent. The availability of resources at the last minute had consequences since quick planning led to poor development of pandemic influenza plans that had not considered ethical issues. Policymakers from Ghana and Malawi admit that the planning response resulted in unfocused pandemic responses for the 2009 H1N1 pandemic. The policymakers also found it unethical for a government to initiate the release of funds for response only at the event stage – they should have released money for planning at the pre-event stage:

Why take drastic actions when in dire situation only – everyone knows prevention is better than cure so is preparing for influenza at an early stage to avoid unbearable consequences... each stage of response plan presents its own ethical problems and these have to be carefully looked at critically without haste. (USAID-MW-41; GHS-Ghana-09)

Policymakers were equally concerned about the poor timing of the release of the WHO 2009 phases: half way through the unfolding pandemic crises. The WHO made things worse by the timing of its redefinitions of the phases and as such this raises ethical concerns about the manner in which duties were implemented.

7.7.0. Ethical Problems Related to Prioritization Protocol

Ghana and Malawi do not have comprehensive ethical protocols in line with the latest WHO guidance on prioritization. The interview data revealed that while there may be limited resources, utility consideration for the criteria to establish priorities and promote equitable access remains too weak to maximize substantial benefits, if not entirely non-existent. Yet a prioritization protocol is an important tool to ameliorate ethical problems in poorly resourced countries. Given that there is no prioritization protocol, the policymakers interviewed expressed that simply choosing who receives the limited influenza drug, who is hospitalized, who dies and who benefits from life-saving prophylactic measures as a process of rationing resources, were all areas that actually caused ethical dilemmas and problems.

It is widely agreed that to be considered moral, an action should have certain characteristics. According to Blasi (1999), a decision should be intentional and judgemental with moral understanding of good or bad, but not unconsciously produced. This prerequisite of consciousness is also presented by Markova (1990), who distinguishes between reflexive and non-reflexive ethics. Reflexive ethics are characterized by consciousness: people make ethical judgments deliberately, based on knowledge and critical evaluation of the matter. Non-reflexive ethics, in contrast, refer to obeying rules and applying them without individual thought, and, most importantly, ignoring societal and cultural values. The idea of simply taking orders from the WHO on priority setting in the absence of evidence based and cultural settings was mentioned as being a major ethical problem (and will be considered fully later).

7.8.0. Ethical Problems Related to Communication Strategy, Public Engagement and Media

Ghana and Malawi attempted to implement communication strategies, but information in these protocols was primarily about the dangers of pandemic influenza and how best to control the disease. However, communication relating to the priority setting of limited resources was overwhelmingly overlooked since no WHO indicator guidelines were publicized to ensure people were informed and made aware of what was expected of them in light of scarce resources and in the instance of a worst case scenario of pandemic influenza. The failure to take into account the need for communication not only produced non-beneficial judgement on the part of the policymakers, it significantly increased the errors which subsequently deprived the public of any control over their future. More importantly, people

could no longer make informed decisions or make decisions that they would otherwise not have made.

Many policymakers also noted that communication on the possible priority setting, or merely engaging the public, was necessary to raise awareness of the disease regarding the likely benefits of resource allocation; yet this could never be undertaken or attempted. Again, ethical issues were noted as surrounding policymakers' failure to set up advocacy committees to oversee, advocate and communicate matters relating to limited resources. A working group on H5N1 had existed since 2006; less was achieved however, with advocacy levels dropping back down prior to the 2009 H1N1 outbreak. Although the priority strategies set out rationing criteria based on the WHO guidelines on how to allocate resources, communicating this vital information lacked public consensus. Policymakers didn't consider the role of public voting as a mechanism for the inclusion about what, who, when and how the communication strategy was to proceed, or how the responses should be coordinated.

It is not necessary to go by the majority vote especially when determining resource allocation, because sometimes the public may express unethical preferences that may be discriminatory to religion and race... (GRCS-Ghana-05)

On the other hand, other policymakers justified the need for communication and public engagement to elicit the most favourable outcomes, since people would feel obliged to cooperate with the proposed resource allocation criteria if it was considered as fair, deserving and, most importantly, accepted as procedural justice taking place. This corresponds to Tyler's work on why people obey the law. Tyler suggests that lawmakers and law enforcers would do much better to make legal systems worthy of respect than to try to instil fear of punishment. He finds that people obey the law primarily because they believe in respecting legitimate authority (Tyler, 2006). Policymakers believed that in worst case scenarios, public engagement and timely and accurate information would play a vital role in maximizing resources for possible future health benefits.

Ethical problems relating to the media were shaped by cunning headlines and scare-mongering paragraphs in newspapers invoking public alarm and myths about pandemic influenza. The initial stages of the 2009 H1N1 pandemic influenza were of much interest to

journalists, who reported many of its stories. Due to fierce competition among the media, journalists laboured stories and sometimes reported news that sprang from “nowhere” or was non-evidenced based. A policymaker from World Bank in Ghana recounted that:

News media may present ethical problems if wrong information is covered to demerit the priority goals as set in the example of vaccination programme. This programme and many others in education had to pay their prices due to the negative effects of the news media. Prior to the pandemic vaccination, people digested a lot from the media much of which culminated into negative attitudes on risk perception. Can you imagine that some media reports were clearly suggestive that vaccines were more harmful and unsafe than the disease itself... yet they couldn't even provide readers evidence about their bold claims. (WB-Ghana-20)

Informed stories on pandemic influenza are vital and it is the responsibility of the media to ensure that public trust and transparency are maintained in all the news media undertakings. Both in Ghana and Malawi, the media rarely consulted expert opinion or clarification regarding pandemic influenza. Since the outbreak of swine influenza in Mexico, national governments have had an obligation to call press conferences, where they could inform the media and the public about the disease and assist with the shaping of the public risk perception as quickly as possible. The lack of mass coverage, especially in private media, was attributed to the poorly organized health information systems and partial failure by the government in its responsibilities. The failure by the government in Malawi and Ghana to provide timely information to the media derailed community participation. Media inattention on matters of national interest was sporadically suggested by policymakers to be an issue of ethical concern. In Ghana, balancing risks of action against inaction was also found to be a dilemma amongst policymakers, as one decision-maker illustrates:

It could also be said that the media efforts to investigate the stories on influenza professionally was a hurdle and this to me is inaction. Failure by the media is a serious error costing the society and its leader's huge burden of the disease... (NADMO-Ghana-21)

Policymakers also expressed great concern that inaction was exhibited on several fronts not only by the media, but also by health officials. For example, during the early part of the pandemic, officials discharged their duties whilst stories about influenza were highly featured in the global media scene, but such efforts relapsed as media attention dwindled. However, the policymakers interviewed in this study identified the “right-to-know” as solely the responsibility of the news media, since it is looked upon as the eyes and ears of the people.

7.9.0. Ethical Problems Relating to Transparency and the Role of Ethical Guidelines

It was widely agreed by the policymakers I interviewed in Ghana and Malawi that the 2009 H1N1 was a mild pandemic. However, the way policymakers defined mild cases of influenza was limited by lack of knowledge regarding asymptomatic cases, clinical cases and transmission rates. In addition, there was a lack of consistent clinical testing rates throughout the period of the H1N1 strain, thus cases would not truthfully reflect the severity index of PI, particularly whether the disease was mild or under-reported. This dilemma affected resource utilization, playing down urgent demands. For example, it was observed that policymakers were reluctant to enforce some of the interventions that would have promoted access to hospital admission. This theme of transparency arose repeatedly in policymakers’ activities, such as deciding on inclusive criteria for priority setting and establishing prioritization policies that provided sufficient passages regarding the need for fair and transparent distribution of resources. In many cases, policymakers made decisions without ethical consideration due to the absence of pragmatic ethical guidance which would point them towards better pandemic strategies. For example, policymakers were unable to treat comparable cases of influenza alike, thereby suggesting unfair distribution of benefits and burdens.

Throughout the interview data, I observed that the morale of the policymakers was lowered when there was no clarity regarding how transparency was to be attained, not only to satisfy the policymakers themselves, but also to satisfy the people they served in terms of productivity, quality and transparency of policy decisions. This led to usage of the WHO protocols on pandemic influenza being firmly embraced by policymakers. However, most pandemic planners felt it was not always necessary to adopt, import and implement WHO guidelines as alternative policy recommendations. The empirical evidence suggesting that imitating guidelines or frameworks works in real settings is unknown. One pandemic planner from the Malawi Red Cross said:

Nothing is wrong with referring to the WHO guidelines but they shouldn't replace country specific recommendations. They are simply guidelines designed to assist Member States in developing their own policies (ethical consideration) in more detail to suit country's needs and purposes. WHO recommendations cannot be fully embraced in their entirety. They are only meant to provoke [ethical] debate and remind policymakers to acquire the essential skills most needed when making the very best use of limited resources and on things that really matter. (MRCS-MW-39)

Most interviewees shared the view that the WHO guidelines were essentially vital when time and resources were limited in an emergency situation. Nevertheless, there was a consensus that such protocols are not well utilized unless they are incorporated based on newly established evidence pulled from their local context. It was noted by interviewees that the WHO guidelines say little to nothing about how and when primary care facilities should have access to limited resources, or whether geographical locations with large populations should have a clear mandate to receive priority over poor villages in rural areas with lower populations. Should geography determine allocation of resources? Ethical questions regarding whether it is appropriate to prioritize younger patients over older patients and family carers over single citizens in any primary care rationing strategy are yet to be addressed by the Government of Ghana and Malawi. An influenza pandemic will require countries to make difficult decisions regarding the allocation of therapeutic and prophylactic measures, but local governments, through the Ministry of Health, and major stakeholders, are yet to be supported in basic elements of establishing a process of promoting equitable access.

7.10.0. Ethical Problems and Dilemmas Relating to Vaccination Programme

The commonly cited ethical problems of the vaccination programme involved the technicalities and manner in which the programme was rolled out in communities. Following the 2009 pandemic of H1N1, Ghana and Malawi received a free consignment of vaccines from the WHO. The worldwide (H1N1)pdm09 vaccine became available in most countries six months after the initial Mexico outbreak. The efforts to develop the (H1N1)pdm09 vaccine began immediately after isolating the influenza virus but it took about six months to manufacture commercial quantities of influenza vaccine. Although no one expected a vaccine

to be available within five months, the timeline that was in place was further extended because of challenges associated with growing the initial seed virus (Mihigo et al., 2012). The (H1N1)pdm09 vaccine was made available to Ghana and Malawi in November 2010, nearly 13 months after its availability. (Most countries in Africa received vaccines 16 months after the pandemic outbreak.) The time lapse before vaccines reached Ghana and Malawi compared to high income countries was apparently longer than expected because of the delays in making these vaccines available to these countries.

During the 2009 pH1N1, the WHO strategy was to make the vaccines available first to countries that were in their seasonal influenza period in the northern hemisphere and those that were severely hit by the pandemic. The vaccine deployment to recipient countries required them to meet the preconditions for supply through the WHO Deployment Initiative. What is the role of preconditions to vaccine supplies in a global pandemic outbreak? The study by Borse et al. (2013), shows that influenza vaccine effectiveness (reduction in symptomatic cases at population level) is greatly influenced by the timing of vaccine availability in relation to the timing of disease activity. Policymakers considered the failure to make vaccines available on time to be an ethical problem. Policymakers said that the purpose of the pandemic influenza A(H1N1)pdm09 vaccine was to protect people from acquiring the disease during the pandemic period but this was not possible because the vaccines didn't arrive on time. They criticized the WHO for delays, particularly for not paying critical attention to impoverished countries despite their knowledge of the risks associated with the disease in countries like Ghana and Malawi. Most of the policymakers referred to principles of bioethics, particularly that of beneficence, as is emphasized in the following abstract:

The WHO had an ethical obligation to maximise benefits and minimise harm and failure by making available vaccines to vulnerable and clinical risk groups on time. (CHSU-MW-22; GHS-Ghana-36)

Policymakers were aware that vaccines are expensive to acquire and the earliest a vaccine can be received by any country is about six months after outbreak. Thus immunization is not the primary intervention method in dealing with pandemic influenza. In combination with other non pharmaceutical interventions, policymakers expected that the governments of Ghana and Malawi would have attempted to secure vaccines on time for their population by engaging in

contracts with pharmaceutical companies, however, this was not the case. A policymaker from the WHO Ghana reiterated this point:

**...if the government can't clearly demonstrate that it is trying to help its people... then how do you expect foreign partners to help you?
(GHS/NSU-Ghana-15)**

A few policymakers from Malawi, however, were adamant in saying that the WHO had promised such vaccines would be made available on time immediately after vaccine production. The lack of action to make available vaccines and distribute them fairly was essentially considered by policymakers as unprofessional and unwarranted, setting a bad precedent in PRPI for global pandemic.

The WHO gave vaccines to Ghana and Malawi, covering 10% of each population. After the pandemic period, policymakers in Ghana and Malawi choose to use the vaccines to protect high risk groups in case the 2009 A(H1N1) virus or similar virus strain re-emerged in the future and thus help in influenza reduction in the population. Policymakers suggested, but did not directly express, that the 10% vaccine coverage would be adequate to achieve herd immunity. As is discussed in Chapter 9, achieving herd immunity is not a feasible objective with vaccines for 10% of the population unless a large population of people are naturally immune. According to the definition of influenza pandemic, most people have little or no immunity. Key literatures support 75-90% vaccination coverage required to achieve herd immunity threshold for pandemic influenza. Personal protection benefits have been reported by vaccinating individuals, but this can be affected by timing of the vaccine administration, vaccine effectiveness, immunological status, setting and rate of prevalence of the protected population. Ghana and Malawi received A(H1N1)pdm09 vaccines in November 2010 and it took each of these countries another five months to vaccinate their population by which time the pandemic had run much of its course. Questions could thus be raised about whether these vaccines were effective in preventing clinical cases in the susceptible population. As suggested by policymakers, A(H1N1)pdm09 virus is now circulating as seasonal influenza, thus vaccinated groups who received A(H1N1)pdm09 vaccines can enjoy the protection from this virus once they are exposed to it. Policymakers noted that the governments of Ghana and Malawi failed to vaccinate their populations rapidly, and this not only caused ethical problems appended to responsibility, but

also deliberately ignored the opportunity to protect lives on time. Vaccines can save lives if used rapidly and widely at the beginning of a pandemic. Although immunization against the influenza virus is not a primary strategy in pandemic influenza, it is among the proven strategies to address an influenza pandemic if vaccines are made available on time, but both Ghana and Malawi never had a clear vaccination strategy upon which to embark with the vaccination programme against pandemic influenza. The current pandemic plans do not mention or indicate how best to target various programmes or give evidence of why some people should be prioritized over others or even how best to improve up-take targets.

There were more ethical dilemmas in Ghana and Malawi surrounding vaccination uptakes. For example, there were numerous difficulties in promoting uptake. One policymaker at CHSU Malawi emphasized the fact that:

...there are no debates on the best way to coordinate vaccination programmes. (CHSU-MW-22)

Ghana appears to have experienced fewer problems in rolling out the programme than Malawi, where they resorted to illegitimate strategies. The risks groups (pregnant women, children and frontline staff) were unwilling to be vaccinated in both countries. The reasons for refusal were that they didn't understand why they had to be vaccinated after the pandemic had ended. Other recipients refused to be vaccinated because there were a lot of uncertainties regarding the effects and safety of the influenza vaccine. Recipients who were healthy feared that if they got vaccinated they would fall sick, and there were rumours that the vaccine could lead to major complications such as infertility and sometimes insanity.

The uptake data provided by the WHO in Ghana indicates that its progress was slow but this was improved by switching resources to educate the masses about the safety of vaccines, while encouraging the target groups to come forward for vaccination without incentives. Consequently Ghana reached its vaccination target and used virtually all of the 10% of available vaccines. Malawi used about 74% of its supplies. The uptake in Ghana was voluntary while Malawi forced reluctant recipients, especially children, to take the vaccines. Through the Ministry of Health, the Malawian government rolled out the vaccination programme at the same time as a measles outbreak. I asked one policymaker why people,

such as those from the Zion and apostolic church, were forced to be vaccinated against their will.

We [Implementers] were just taking orders from the government. If the district health officer for instance discovered that some people were refusing to be vaccinated they could call the police to assist with the vaccination by gun point – it is in the newspapers⁹⁶ actually – nobody raised alarm about these issues. We really have to ask each other questions why the police have to intervene? Is this a security issue? What is the role of the government when it comes to these sensitive issues? Is the government supposed to implement or enforce? Who is supposed to enforce? What is the role of the church on immunization – I think there are quite a number of issues that need to be addressed... the answer to your question is education and nothing less as this will address attitudes and behaviours etc. (MoH-MW-11)

No incentives were offered in Malawi. The ethical issues presented here reflect a tension between individual right to choose to receive vaccination and the state responsibility to provide benefits and protect the public. The State has a responsibility to ensure that immunization achieves herd immunity (if that is the purpose of immunization) i.e. a level when the virus stops circulating in the population. This is possible but will require a lot of vaccines to go around and depends on whether the government can afford it. Most important, it requires everyone's cooperation in being vaccinated to stop the virus from circulating. If only some people are vaccinated, reductions in disease burden are possible, but not herd protection. In this situation where some are vaccinated, ethical problems arise if the non-vaccinated people benefit from protection by the actions of their vaccinated peers. For example, if A transmits the disease to B but B is unable to transmit to C because C is vaccinated, C can't transmit to D who is unprotected. In this case D benefits from C because C received a vaccine. In view of personal freedom, people have the right to choose whether to get vaccinated or not in life without regard for others. It is rare that

⁹⁶ <http://healthfreedom.org/2011/07/18/131-children-vaccinated-at-gunpoint-in-malawi/> (Accessed: June 09, 2013).

human beings fully embrace efforts that come with a price on their head or which impose personal harm for the benefit of others, thus it is necessary to focus on individual motivation to achieve a public health goal. This can be done through health education to achieve high levels of coordination and cooperation.

7.11.0. Ethical Problems and Dilemmas Relating to Epidemiology and Surveillance of Influenza

The concept of epidemiology and surveillance is important in understanding the disease of pandemic influenza. It is the core theme of the public health system, providing essential data on early warnings, transmission characteristics, incidence and prevalence. The epidemiology and surveillance of pandemic influenza, such as screening for possible patients, monitoring the public and reporting the disease to the WHO, is mandatory, necessary and a global responsibility. Nevertheless, some health systems are clearly unable to perform core surveillance tasks due to limited resources and technical incapacities. In view of observations which arose from my fieldwork, Ghana and Malawi fall within this category. In the stories they told, surveillance of influenza placed demands on busy, under-staffed and untrained human resources. Training survey assistants to help with the surveillance of influenza prior to the 2009 H1N1 outbreak was a daunting task that simply could not be undertaken due to lack of money. This may be interpreted as failing in the core task of disease control. Success in control strategies lies in true knowledge of the epidemiology of influenza. It is widely agreed that influenza viruses constantly evolve over time, suggesting that training in epidemiology should be offered regularly to correspond with the current epidemiological situation. Being expected to perform tasks of influenza surveillance without appropriate epidemiological training skills was viewed by the interviewed policymakers as unprofessional and unethical practice. One expert cited the problem:

A few staff I oversee still remains untrained in the epidemiology of the disease but I have no choice but to engage them with the role of surveillance yet I know that they encounter technical problems. I have staff with very little epidemiological knowledge but I keep them afloat to assist in anyway – imagine, some can't even monitor technical equipment, record and keep track of any changes of the threats of influenza. (COM-MW-31)

Lack of orientation on the epidemiology of influenza, including its surveillance, presents issues of false diagnosis. For example, misreading epidemiological data or sample tests to verify the causative agent of influenza may have dire repercussions on patient safety, especially if false diagnosis leads to the false prescription of medicines or errors in public policy. Indeed, errors of omission in the analysis of epidemiological data and surveillance activities posed ethical problems relating to a lack of training rather than a lack of ethical intention on the part of policymakers. It was widely accepted that examining the epidemiology of influenza using key indicators, such as infection rate, recovery rate, death rate, vaccination rate, vaccination efficiency, susceptibility and transmission rate, certainly gave better insights into managing the disease. However, these parameters could not escape the legal and ethical issues. Examples of legal issues surrounding vaccination efficiency most needed to reduce the risks that may occur, invoke liability for unforeseen adverse events attributed to anti-pandemic strain vaccine and antiviral use. In the case of transmission and infection rates, authorities can establish legal grounds for establishing travel restrictions, isolation, quarantine and prohibition of mass gathering. Examples of ethical issues that might arise on the basis of susceptibility include authorities allowing certain populations to benefit from prevention efforts (e.g. vaccination) while others are ignored or neglected. Ethical issues on the basis of rate of transmission might involve limiting personal freedom and movement, hoping to halt the disease.

Epidemiology and surveillance activities relate to enhancing alertness and preparedness; if these two fronts fail, early recognition of being able to quickly initiate better strategies to mitigate and prevent the disease may jeopardize the health and well-being of the populations. Failure to set early pandemic activity and criteria ahead of time to signal human-to-human transmission in the absence of adequate resources was raised as an ethical issue. Ghana and Malawi do not have an adequate capacity for animal and human surveillance to achieve the goal of pandemic planning. What this actually means is that it is impossible to impose restrictions either on trade or travel since such restrictions are not supported by epidemiological evidence.

Further in this discussion, policymakers mentioned the role of reporting the disease to authorities locally, nationally and globally as soon as there was epidemiological data on influenza, but this was often confounded by poor practices and sometimes by the lack of a public health infrastructure for monitoring and surveying the disease. The 2009 H1N1

pandemic influenza mortality and morbidity rate varied greatly and this was influenced by the presence of a public health infrastructure, such as laboratories and technical expertise. For example, South Africa registered a high rate of morbidity and mortality rates compared to Malawi, who registered nearly zero morbidity, suggesting that better infrastructure and technical expertise led to better reporting and record keeping. Dawood et al. (2012) estimated global mortality associated with the first 12 months of 2009 pandemic influenza A H1N1 virus circulation and found that respiratory and cardiovascular mortality associated with the 2009 pandemic influenza A H1N1 was 15 times higher than reported laboratory-confirmed deaths. Although no estimates of symptomatic case fatality ratios (sCFRs) were available from Africa, a disproportionate number of estimated pandemic deaths might have occurred in these regions.

Ethical problems relating to seasonal influenza involved limited understanding of the disease. The lack of connection between seasonal influenza and preparation for pandemic influenza in Ghana and Malawi contributed to ethical problems. It is widely acknowledged that reducing the seasonal influenza risk lowers the theoretic risk for a severe manifestation of a pandemic. Key infrastructure and capacities established to deal with seasonal influenza (e.g. surveillance) could as well be deployed to respond to the early warning signs of a new virus. This was reflected in comments made by policymakers representing the College of Medicine Research and Ethics Committee (COMREC) in Malawi and the National Surveillance Unit in Ghana:

Until we have optimized preparedness on seasonal influenza shall we then place ourselves and key infrastructure in the direction of responding to pandemic influenza (COMREC-MW-42; GHS/NSU-Ghana-15)

Seasonal influenza infections could also be used as a predictive indicator to aid estimates of additional capacities needed to detect increase in pandemic activity (WHO, 2013).

7.12.0. Ethical Problems and Dilemmas Relating to Pandemic Working Committees

Ethical concerns of PRPI were made the responsibility of the national working groups. The purpose of the working group was to coordinate, plan and respond rapidly to all aspects relating to influenza. The Working Groups (WG) comprised various experts from the fields of public health and veterinary medicine who had been well trained in their speciality.

However, the composition in speciality was not professionally representative of offering solutions that satisfied the highest degree of integrity and ethics. This shortfall specifically jeopardized ethical preparation thereby raising issues of incompetence. This is not to say that members of the working group were incapable, but rather inadequate as far as making full use of the most needed expertise in the fields of health and society. For example, the role and responsibilities of the WG were to provide leadership for the early detection of ethical issues and the rapid containment of influenza, yet most members had little knowledge of epidemiology and ethics.

Rapid response to pandemic influenza demands general knowledge of how to identify and resolve ethical issues. The ability to formulate strategic interventions using ethical standards is a minimal requirement for those sitting on the WG committee so they are able to manage public health issues and risks of harm. Responders for this study felt that pandemic planning was not fully informed by an ethical debate, despite policymaker's ability to identify them. One expert from the Ghanaian Health Service said:

As much as the avian and human influenza working group have the ability to identify ethical issues, it is also equally important to address them amicably and this corresponds to having essential skills. (GHS-Ghana-14)

Experts dispatched to perform specialist and influential work for which they are not fully qualified place burdens on an efficient planning system, as a representative from FAO, Malawi argued:

I think the committee was hastily instituted without bringing on board managers who know more, not only in ethics, but strategic management too. I can tell you this group has brought about renewed concerns for confidence and corrective decision-making..... A diverse working group comprising epidemiologists, bioethicist, public health, medical practitioners, community leaders, members of the public and all concerned parties in government or NGOs is a good beginning for an efficient and effective planning system. (FAO-MW-03)

7.13.0. Ethical Problems and Dilemmas Relating to the Decision-Making Process

While there may be many factors associated with ethical problems and dilemmas, clear cut causes for most of these stem from the decision-making process, i.e. selecting the best solution out of feasible alternatives. However, alternative decisions may not always be the correct ones. During fieldwork performed for this study, I observed that the decisions policymakers made were not widely accepted and were largely controversial as far as PRPI was concerned. It was also noticeable that decision-making processes were problematic among policymakers when dealing with issues relating to poor health infrastructure, vaccination programmes, lack of funding in the health sector and many other challenges faced by the health sector.

The decision-making models for ethical action, such as those advocated by Rest's (1986) model, were insufficiently considered for moral reasoning and judgement. Policymakers argue that the absence of a correct model for reasoning and justification reduced the means of appropriate ethical decision-making and consideration. For example, it was observed that policymakers attempted to justify some decisions based on the concept of international human rights principles whenever an ethical principle regarding individual rights and freedom came into conflict with other public health models, such as quarantine and public health law. Yet countries are permitted to apply health measures that may "limit" or "restrict" the right to freedom of movement (in the case of isolation or quarantine), the right to physical integrity (in the case of compulsory testing, screening, examination and treatment), or the right to privacy (in the case of compulsory contact tracing or patient retrieval), under certain conditions.⁹⁷ Reference was made to specific legal requirements regarding the restriction of personal liberties of populations without a reasonable relationship between the intervention and the objective of achieving a public health goal.

Under certain circumstances it is acceptable that public health risks downplay individual rights or concerns if such threats are of public interest. However, simply following international recommendations to respond either to individual or public health without validating what those actions mean particularly in the local context or interest of local

⁹⁷ See International Covenant on Civil and Political Rights (ICCPR), Articles 12 and 17 and also see CESCR General Comment No. 14, at paras. 28–29 and 34.

people pose grave public health risks. The scope and application of the IHR must be given a level of scrutiny in light of current evidence, people's values, character and available resources. (VS- Ghana-44)

As can already be seen, policymakers had to balance civil liberties and public interest which subsequently led to difficult ethical dilemmas. Most problems arose as a result of policymakers' inability to foresee different scenarios that arose, and identify the available options. Amongst decision-makers this was facilitated further by the presence of scientific uncertainty and other moral aspects, such as moral judgment or reasoning, moral motivation and moral character. Experts in Malawi and Ghana agree that some extreme public health interventions may ameliorate a public health threat, but these were disproportionately applied. Although the public health interventions mostly applied in infectious diseases are scientifically supported for reasonable chances to safeguard public health, Ghana and Malawi are yet to ascertain this evidence for their effectiveness in their local contexts. As the policymaker from the WHO, Ghana said:

Decision-making for pandemic influenza is marked by controversies about the best strategies of reducing the burden of disease, yet these strategies are not proven in the African context. These problems are located in the principles required to act based on the most commonly agreed-upon notions neglecting the essence of values for judgment and reasoning under conditions of limited and competitive resources. Ethical choices are reached automatically without thorough consultation and discussion with the concerned parties about the dilemmas or alternatives solutions. Through investigation of different choices, guided by the true nature of the situation about what others think, can contribute to better ethical choices. (WHO-Ghana-07)

7.14.0. Ethical Problems Related to Public Health Actions (Non-Pharmaceutical Interventions)

Several non-pharmaceutical (public health) interventions were used to respond to the 2009 influenza pandemic. These largely comprised social distancing measures, such as quarantine, closing schools, public closures, isolation and border control. The first steps of prevention, requiring Non-Pharmaceutical Interventions (NPIs) are ideal solutions for future influenza

problems, but these strategies are still underestimated. Governments and policymakers are still concerned with whether NPIs will ever work effectively in real pandemic scenarios. Because we cannot yet immunize the population against a future unknown virus, the most important lesson to apply with regard to the next pandemic, as with a decade ago, is to delay the disease from spreading widely using means that are ethically correct. Having asked policymakers what was the preferable intervention most likely to work in their local context, the majority felt that public health responses using two or more interventions, rather than relying on a single intervention, could be ideally effective. One policymaker from Ghana said:

There is no such thing as better intervention but in the absence of vaccines and following the H1N1 pandemic [2009] we promoted various simultaneous interventions such as hygiene, education, school closures and screening of the disease at border entries. (MoH-MW-02; GRCS-Ghana-18)

Although these methods are highly recommended, policymakers felt it was important to be cautious with regard to over-claiming the future benefits of some of the NPIs, such as social distancing measures, when these are largely unproven in Africa today, particularly in Ghana and Malawi. Quarantine and isolation were common measures that decision-makers identified as being efficient in mitigating influenza:

Our public health act for Malawi states that in an event of a threat of any infectious disease, infected suspect shall be quarantined or isolated to confined areas where this does not pose harm or pose risk to the outside contact.... this is the only way to win an epidemic or else the consequences of not doing so are regrettable economically. (CADECOM-MW-45)

This study has established why the law was a preferred basis for action in public health in Malawi and Ghana. In both countries public health law (e.g. statutes, regulations and protocols) are singled out as worthy of achieving successful public health outcomes. This study has also established that policymakers found it easy to follow guidelines or prescribe rules and laws to a public health problem. Although influenced by public health law, most policymakers lacked practical details on how much they could intrude on personal liberties and the beneficial effects these methods have in pandemic influenza. For example, what

preferences necessitate the greatest good and engage in the least harm? Other concerns were whether to impose similar restrictions on seasonal influenza, and, if so, how would these be justified? Although most policymakers identified ethical issues surrounding these interventions, not all evaluated their decision-making options. For some reason, policymakers were quick to conclude and implement restrictive measures, foregoing empirical facts and undermining the evaluation of some important, readily available options, such as voluntary restrictive measures as a first response decision-making policy. There is adequate evidence to suggest that voluntary quarantine and isolation is possible if requested by the populace. Gostin et al. (2007) have found that effective communication is critical for gaining public trust and participating in community containment measures.

School closures were implemented in Ghana and partly implemented in Malawi. This type of action was sought by many as one way that could lead to, or play a role in, preventing the transmission of the disease to a wider society. Several policymakers in Ghana and Malawi commented on this, but one policymaker from Ghana summarized it in the following way:

Some actions such as sending suspected students back in society was an uncalculated move by the Ghana Health Service driven by scare, fear and absence of scientific evidence. The hard facts were often overlooked. For example, decision-makers had no idea about the source of the outbreak or its transmissibility pattern. Aaah... The severity of flu we experienced surely shouldn't have warranted closures as this threat was very mild compared to loss of the education for the students. (GHS- Ghana-40)

The authors of a recent publication in the Lancet have explored whether school closure was effective in reducing the impact of influenza pandemics:

Closure of schools during the pandemic might break the chains of transmission, with the following potential benefits: reducing the total number of cases; slowing the epidemic to give more time for vaccine production; and reducing the incidence of cases at the peak of the epidemic, limiting both the stress on health-care systems and peak absenteeism in the general population, and thus increasing community-

wide resilience. However, decisions to close schools or similar institutions should be based on the severity of the pandemic. (Cauchemez et al., 2009)

School closures remain a controversial intervention. Literature reviews have strong arguments which suggest that school closures reduce transmission rates among school children. However, such arguments are not validated amongst adult students. Often, effective school closures refer to children rather than adults as being important vectors of transmission, because children are relatively unhygienic and mix more, thereby influencing the transmission pattern of influenza. In contrast, current evidence suggests that transmission may be related to virus shedding rather than poor hygiene. Nevertheless, school closures in Malawi and Ghana involved adults who had an average age of 16 years. Sending students home is actually believed to have encouraged risk behaviours such as unprotected sex and binge drinking, since education, the main focus of their daily activity, was abandoned. Berkman (2008) also discusses the risks associated with risk behaviours and refers to increased negative peer pressure, underage drinking and drug use.

7.15.0. Ethics in International and Local Relations: Partnerships and Coordination

Pandemic influenza is a highly contagious infectious disease. Rapid economic activities and increasing global travel means that the occurrence of the disease in one country exposes risks to other countries within a relatively short period of time. This is similarly true for countries where the appearance of the outbreak in one district or town means that it is expected to appear quickly within other locations of proximity. The unpredictable and fast transmissibility of influenza creates multiple demands from PRPI. Organized planning remains a national responsibility and also a local one. Broadly speaking, any well informed national plan is initially developed based on sound relations with others, i.e. international and local coordination and partnerships. While international and local support is primarily an endeavour to increase innovative and performance outcomes, it is interconnected with a range of problems. Problems involving the lack of cooperation and coordination were frequently mentioned by policymakers as making the task of planning and response very difficult. Policymakers often referred to circumstances where partnerships or support on influenza were not available, leaving most planning activities in a state of doubt. The governments of Ghana and Malawi were willing to implement pandemic responses to issues confronting local communities. However, without collaborative technical expertise and financial support, the scale of activity and level of response was bound to be inadequate.

A policymaker from UNDP Malawi commented that the national plan was not supported fully at the national level and cited weaker government ties with partners, especially those at the local level. The government failed to extend partnerships and the coordination of national response efforts to pandemic influenza to districts and towns that would meet both local and national interests. Another policymaker who worked for Ghana's health services recounted some ways in which policymakers like him felt that a wide spectrum of problems around influenza management could only be addressed through a wide cast of actors at the national and local level:

It is critically important to realise that most active partners such as the WHO and USAID are only concerned with mainstream issues at the national level. Our international partners support specific goals that have relevance to the global scene. In other words our partner's funds cannot be used for other unintended purposes though they yield similar goals. I personally think this is ridiculous. Honestly, we feel stuck by limiting our efforts and intended goals only at the national level yet we know that strategic direction is to target people likely to be affected heavily with flu. These people are located at the at the grassroots level... (GHS-Ghana-14; FAO-Ghana-10; MoD-Ghana-33; USAID-Ghana-08)

The above excerpt reflects the typical conflict between acting legally and in a way that pleases the international partner or funders. Successful international or local partnerships involve different organizations with diverse capacities coming together to sort their differences and unite their strengths to achieve the intended objectives (Griffiths, 2000). Indeed, to effectively manage a problem that is inherently global may require a global solution. Kleinman (1998) also suggests that a global problem cannot be supported by local initiatives alone and instead that it must be supported by the right kind of policies at the regional and national level.

7.16.0. Professionalism: Conflicts and Boundaries

Public health is broadly defined and its cut-off point is always open to a conflict of interest, negotiation and temporal division of labour. The policymakers interviewed had different educational backgrounds with different roles in public health pandemic management. I began this research with the original idea of interviewing strictly public health experts, such as

epidemiologists and medical professionals etc. However, it is difficult to structure or define the taxonomy of occupations; this explains why overlaps and tensions exist in inter-occupational boundaries. According to Dingwall (1977), inter-occupational boundaries are subject to some dispute since problems are generated due to very fluid taxonomy boundaries: inclusion, defining what properly falls within a profession's category; and exclusion, defining what properly falls outwith that profession's category. Public health embodies multiple roles and responsibilities, each with its own expertise, yet all serving one goal. Without defined taxonomy, it is expected that policy developments will call for increased negotiation between inter-professional boundaries within public health and elsewhere. Just as I proposed in the literature review (Chapter 4), the notion of a conflict of interest around pandemic influenza was more prominent than expected. The relationship between public health medicine and other professions, such as social sciences, was an eminent source of emerging ethical issues, due to increased policy negotiation, role-taking responsibilities and the blurred division of labour. The conflict of interest in professionalism was often and repeatedly mentioned as a source of ethical dilemmas and problems. The inherent conflicts between inter-boundary working organizations in Ghana and Malawi suggest the difficulties in the rhythm of activities, tempo and timing.

There are a number of factors that point to disputes and tensions within the organization and management of pandemic influenza in these countries. First, in the fact that the initial management of the pandemic switched hands in occupational jurisdiction overseeing pandemic influenza threats. For example, in Malawi, management and coordination of H5N1 was led by the department of veterinary services from the MoA, and the MoH was minimally involved. Prior to H1N1 threats, leadership switched to DoDMA. During the 2009 pandemic influenza, the MoH took charge of leading roles of pandemic responses. Leaders managing MoA, DoDMA and MoH are drawn from different backgrounds and, as would be expected, their views on the role of pandemic influenza are very different. The occupational task is "what one does" rather than "who does it", but even with this understanding, connections and interactions of public health technical tasks on influenza management are not occupationally comparable to those of MoA and DoDMA. Even the MoH, composed of public health experts, acknowledges that the team diversity of expertise is under-represented. A similar pattern was noted in Ghana and is fully discussed in Chapter 6.

Second, according to my field notes, tensions and disputes are embedded in the composition of policymakers who form and direct policy on the management of influenza. Broadly speaking, the tensions amongst policymakers may also be understood as a reflection of the difficulties practitioners face in reconciling professional boundaries of working relationships, which sometimes conflict due to ambiguous ideologies. At another level, this also indicates that the significant aspect of authoritative approaches to the decision-making processes used in pandemic planning, were sources of deep conflict and tension. Both in Ghana and Malawi, the Ministries of Health lacked relevant expertise and skills, such as those of bioethicists and social scientists, to assist with the resolution of moral conflicts.

In Ghana and Malawi, due to a lack of bioethicist participation in planning and response, it was found that most public health policies overshadowed the moral obligation to individuals in favour of the moral priorities of population health. The ethical claims to justify population or individual health are more likely to become policy if supported by the influential members belonging to an occupation in what constitutes the interests of population health or individual health. In literature, this kind of problematic ethical scenario is mirrored in relation to moral theories facilitated by disagreements and overlaps within the professionalism of public health.

As pointed out earlier in this chapter, most conflicts within public health practice recur because there is a stronger focus on public health law as the preferred basis for action to govern public health. Public health interventions involving the law are acceptable collective actions but sometimes fall short of the public good if they are against private interests. In Chapter 4, it was noted that prescribing actions such as legal interventions is far easier than seeking alternative strategies such as those that might require strong moral reasoning. Worse yet is that enforcing laws that go against individual interests may be frustrating and difficult to implement. Sometimes public health practitioners do not have enough intervening powers in most of the conflicts that arise. They lack sufficient interpretative reasoning for specific ethical problem solving and this may suggest why the public health laws (including rules and norms) are picked on and applied to achieve some kind of public health outcomes.

In sum, occupational skill-mix is necessary to produce high performance outputs to avert ethical conflicts. Although conflicts and tensions are inevitable in a multi-occupation team, their importance is to minimize ethical problems and promote ethical sensitivity through the handling of work with professionalism.

7.17.0. Conclusion

The purpose of this chapter has been to identify real-life ethical problems and dilemmas that policymakers encountered during the planning for, and response to, pandemic influenza. Ethical dilemmas and problems of pandemic influenza have been examined and moral reasoning has been proposed to resolve these ethical issues. This chapter has highlighted four key areas to look at how ethical issues emerge: the extent and role of resources in PRPI, the nature of Public Health Interventions (PHIs), the extent of the impact of PHIs and the extent and process of decision-making, reasoning and justification. In terms of the lack of financial resources and critical infrastructure to facilitate the influenza programme implementation, it has been observed that ethical problems are likely to emerge. Resources, particularly money, determined the capacity and capability to act towards PRPI. It was also observed that the actual process of applying interventions caused ethical problems, either because ways of intervening in the pandemic were applied in haste or they were misinformed. Further, it has been observed that well-informed applications of interventions were inadequate, the impact of which on PHIs was seen as problematic and of ethical concern. Similarly, the impact of PHIs collectively appeared to stem from professional demands about whether the measures they implemented increased economic benefits or pushed the health service operatives beneath the surface.

The ethical problems experienced by policymakers were structurally similar in Malawi and Ghana. This finding enables me to make evaluative and collective statements on how ethical problems emerge and are determined. The ethical issues encountered in Ghana and Malawi were highly contextual and practical in nature, mostly occurring at the level of decision-making, primarily as a result of inconsistent and conflicting demands and political pressures placed upon policymaking. Policymakers identified ethical problems in relation to the distribution of resources, competence, financing of PHIs, surveillance, media, and health system response, access to PHC, priority setting (immunization and NPIs), communication strategy, local and international cooperation, coordination and professional boundaries relating to policymaking.

In all these accounts, identifying and recognizing an ethical issue was more literally focused on the routine tasks and practical constraints of public health. There is evidence to suggest that the authorities involved in PRPI were more preoccupied with universal goals than local ones. For example, local preparedness was not sufficiently evaluated and specific measures in

containment plans to prevent the disease were more aligned to foreign policies and WHO guidelines. In future, the answers to the ethical concerns which this chapter raises should be dealt with by thorough consideration of sufficient moral theories that justify ethical reasoning and decision-making processes.

CHAPTER 8: DECISION-MAKING: ETHICAL REASONING AND JUSTIFICATION

8.1.0. Introduction

In the previous data chapter, I provided an account of how ethical problems are recognized and conceptualized within the profession of public health, using the case countries of Ghana and Malawi. Having painted this larger picture of ethical issues relating to the 2009 H1N1 pandemic influenza, the task is now to investigate how policymakers' moral reasoning and judgements are constructed in attempting to resolve ethical problems. Using empirical data, this chapter will look at how policymakers dealt with the ethical problems they identified or encountered. The objective is to grasp the nature of the decision-making processes that policymakers undertake in order to deal with the ethical problems and dilemmas of PRPI.

Solving ethical issues in a way that balances real-life situations demands the assessment and examination of individual cognitive styles and different ways of processing information. To determine moral reasoning, it is important to understand the role of moral thinking in policymaker's decision-making processes. However, as with most literature, the intention in this study is not to match empirical ethical reasoning to normative accounts; it is instead essential to determine how policymakers relate to, integrate into, and align their ethical reasoning to public health policy in Malawi and Ghana. As noted in Chapter 4, there has been attempts and desperate inquiry to understand the connection between moral reasoning and analytical public health decision-making. Analytical decision-making requires a cognitive process which largely involves choosing a course of action from several alternative scenarios. Individual cognitive style is useful for tacit moral understanding. It helps determine what moral consideration has priority over others; without this judgement even beneficial actions would not be moral.

Decision-making in Ghana and Malawi was assessed and measured using the approaches of Rest (1986) and Pellegrino (1981). Rest's model advocates four psychological processes: moral recognition, judging best action, commitment to moral values and persisting in a moral task, while Pellegrino (1981) advocates prevention to avoid ethical issues. By employing Rest's four components of moral behaviour and Pellegrino's ethics of prevention, it is possible to predict behaviour and ethical issues more precisely. As stated in Chapter 4, integration of these concepts is possible: morally motivated policymakers must be able to

identify and integrate public health needs within the context of civil liberties rather than merely apply rules and norms without flexible principle-driven thinking. Specifically, moral thinking to prevent or manage ethical problems demands reflexive ethics. The systematic analysis of moral reasoning among policymakers in Malawi and Ghana shows that ethical reasoning is both reflexive and non-reflexive based on the account they gave. Reflexive ethics refer to intentional and consciously produced ethical judgements. Normally, this will involve deliberation based on knowledge and critical evaluation of the matter. Non-reflexive ethics involve obeying rules and applying them unconsciously. This approach was commonly used as a model to resolve ethical issues. As will be observed, it had substantial effects on the role-taking and decision-making process. For example, policymakers' readiness to interpret meaning and scope, and identify legitimate and necessary measures to prevent or resolve ethical situations, was derailed by not engaging consciously with moral reasoning.

At the start of this study, it was asserted that the types of moral problems and dilemmas identified or perceived would elicit diverse reasoning responses and stimulate debate about the relative suitability of theories for Ghana or Malawi. My research instead indicates that policymakers considered few and sometimes no options for reasoning, thus creating a vacuum between moral judgments and moral actions. This study appreciates the process of ethical considerations and how appropriate decisions are reached. In Chapter 4 I argued that paternalism cannot be accepted as a discourse of public health ethics and prescribing principles: rules and laws may not necessarily be effective because ethical issues are contextual in nature and not universal. This chapter offers an empirical contribution to this debate, drawing upon data collected from, and analysis of, semi-structured interviews conducted with policymakers in Ghana and Malawi. The analysis indicates that real life moral decision-making in terms of style and content of reasoning contributes to important ways of dealing with ethical problems, particularly those pertaining to conflict and choice between competing alternatives. The overall process of decision-making was found to be very fluid and inconsistent across ethical situations. This was partly due to a dogmatic process characterized by moral judgement. Broadly speaking, dogmatic processes – in other words, non-reflexive ethics – do not assert any particular view of reasoning to reach a decision. This style of decision-making process bears little relationship to more rational and ordered accounts of the moral theorising we all undertake on a daily basis. It was evident among 16 (of 46) policymakers that they defined moral solutions without necessarily thinking through moral categories and in ways that were inconsistent with any ethical guidelines or

analytical ethical problems found in textbooks of bioethics. This will be fully explored in relation to commentaries provided by the policymakers interviewed for this study. Even in sporadic incidences where policymakers deploy reflexive ethics, the consequences are quite apparent in the decisions they make. In fact, what is clear from this study is that policymakers are not fully prepared, are less committed, and are yet to familiarize themselves with different kinds of ethical reasoning strategies. Sometimes their technical knowledge of ethics is inadequate to make hard pressed decisions that affect programmes and the lives of many people.

In the following sub sections, I will narrate the findings which demonstrate that non-reflexive ethical models result in ethical inattention. It will also be argued, drawing upon data collated from interviews that identification of ethical problems and dilemmas does not necessarily correspond to the ability to reason or make judgements as far as policy contributions are concerned. In the next section, I review the types of ethical problems and how they are resolved.

8.2.0. Understanding the Types of Ethical Issues in Public Health

Reviewing the ethical problems identified by policymakers (Chapter 7) clearly suggests that identification and description of ethical issues differ in nature considerably, even between Ghana and Malawi. Differing moral views of what constitutes an ethical problem may mean that policymakers vary in their capacity for moral recognition, sensitivity and aspects of moral commitment. It may also mean that policymakers have different moral perceptions and understanding of specific features of moral situations. Another explanation could be that moral differences among policymakers were closely tied to the various moral features of the situation that confronted them. However, in any given situation, as indicated in Chapter 7, the policymaker's moral perception comes first prior to moral judgement. This does not entail justification – although reasoning does. According to Blum (1991), moral perception is the setting for an action if informed by our general values and principles. It bridges the gap between moral rules and particular situations. It is the starting point for viewing the types of ethical problems that have been fragmented into different stories. Moral capacities in this study relate to six categories, as Armon (1995) has proposed in his study.

First, policymakers expressed ethical issues in terms of ethical dilemmas, i.e. taking actions that conflict with other people or empirical evidence. Second, policymakers expressed ethical

distress in public health practice, for instance ethically just or legally correct actions could not be pursued due to structural barriers or because some practices ran counter to deeply held values such as fairness and stewardship. Third, policymakers expressed ethical problems related to scarce resources arising as a result of difficulties in the actions they undertook, particularly on how to give equal consideration of interest and equal treatment. For example, to have an equal voice in the decisions about how to allocate public health resources between competing health conditions such as HIV/AIDS and TB or Malaria and influenza. Policymakers were faced with actions related to justice i.e. conflicts between fair distribution. Fourth, policymakers questioned the locus of authority, disproportionate use of force, and why the authorities were limited to regulatory roles. Conflict was found between those in charge, with rules being bent due to political pressure. Fifth, to some extent policymakers became non-partisan, taking no sides on moral considerations, i.e. policymakers appealed to the right to do nothing in response to a moral issue. Sixth, policymakers were able to perceive the balance between medicine and public health conflicts: i.e. who gains from the proposed action, who suffers and who loses out.

Ethical types categorized in this way have been classified slightly differently by various scholars. For example, ethical problems in moral psychology lean more openly towards those of dilemma and justice. Wark and Krebs (1996) classify ethical dilemmas into five categories: temptation, transgression, the needs of others, conflicting demands and social pressures. Ethical dilemmas as constituted by Wark and Krebs (1996) are framed within the three dimensional indexes of ethical problems, i.e. pro-social, social pressure and anti-social. Some ethical dilemmas faced by policymakers when rationing limited resources or balancing civil liberties against public health interests, replicate the dilemma types of Wark and Krebs' classification index. For example, conflicting needs of others, conflicting demands and conflicting social pressures were frequently observed in a large proportion of text, as reported in Chapter 7.

According to Armon (1995) and Wark and Krebs (1996), ethical issues are personal/interpersonal, societal and philosophical in nature or take the form of justice. Most ethical problems that arise in this study were consistent with the observations of Armon (1995) and Wark and Krebs (1996). When asked how the respondents in this study understood and interpreted the ethical issues they encountered, policymakers' frequently invoked moral language and concepts that revealed a number of ethically problematic

situations. These included conflicts between self or significant others, conflicts between self and social institution, the pressure to act ethically when their role-taking is perceived as moral free, and value priorities seemingly inclined to the public health security of society. Further, it was noted that practices to prevent or manage influenza did not employ science to determine effective actions. Although policymakers had the ability to perceive and identify ethical problems, they were powerless to resolve them. This was because policymakers were uncertain as to the definition of the problems they faced and what factors exacerbated them, leading to considerable misjudgement about the right course of action.

Detailed analyses of how policymakers seek moral answers, including arguments that justify the course of action, support the view that moral reasoning by policymakers was limited in terms of in-depth analysis of ethical types. Yet, solving ethical problems, especially those that are contextual in nature, requires an ability to identify ethical issues so as to help policymakers carry out the moral actions. Developing one's ability to thoroughly understand ethical types requires not only knowledge of ethical types in public health or medicine, but also those of social science. This can help develop ethical reasoning and prevent ethical errors. The notion that sensitivity should go beyond merely possessing principles (particularly the strength of will to act) is noted by Blum (1991). He states, commitment to principles, sense of duty and testing maxims for moral acceptability demands the agent to know specific features of moral significance. It requires judgement about the particularities of the situation (Blum, 1991).

Blum's statement suggests that policymakers should be able to think about the issues involved and select the best possible actions for putting principles or conceptual 'rules' into practice. Ethical reasoning is the process of moral thinking and action. It constitutes moral sensitivity, i.e. recognition of moral problems, moral judgment or reasoning, moral motivation and moral character. Indeed, facilitating a reflection of this entire process of ethical knowledge and decision-making must focus on several theoretical stages, as is argued in Chapter 9.

In this analysis, conceptualizing moral problems in public health without integrating the enterprise of the core values (such as what constitutes an ethical type), raises moral arguments as to whether ethical decisions are contextual, right or legitimate. Constructing or identifying ethical problems without understanding or delving into the process of moral

behaviour is cause for alarm as it is insufficient for justifying moral judgments and decision-making. Edwards and Delany (2008) emphasize that a complete process of ethical reasoning or moral judgement must not only be organized around Rest's framework of moral behaviour (moral sensitivity, moral judgement, moral motivation and moral character), but should also go beyond the reasoning and decision-making process. The process must include: first, knowledge of ethical theory; second, knowledge of the perspectives and values of those involved in the scenario; third, knowledge of self as health practitioner; and fourth, an ability to understand and articulate these different types of knowledge and associated values in the reasoning process (Edwards and Delany, 2008).

8.3.0. Quality of Moral Reasoning in Public Health

Public health ethics is still an undeveloped area of practice in Malawi and Ghana. This study has revealed that the majority of policymakers knew what was best for the society or individuals but failed to act appropriately due to external barriers. For example, policymakers had relative difficulty in grasping the general knowledge of moral theories and interpreting situations in moral terms. When asked how they would consider moral judgement, policymakers could only highlight a few reasons and most lacked motivation in their judgement. Ethical reasoning in public health involves specific orientation, tasks and moral commitments. Policymakers' moral orientation and commitment to ethical reasoning favoured both society and individual interests. In the narratives, policymakers attempted to justify their moral commitments by using the language and concepts of utility, solidarity, justice, respect and autonomy. However, reasons to justify the gap between moral judgement and moral action suggest that policymakers simply obeyed rules and applied them without delving into moral analysis or ethical considerations. Non-reflexive ethics, which are not based on knowledge and critical evaluation of the matter, cannot be fully applied to disaster medicine: including the worst case scenario of pandemic influenza. Policymakers' ethical problems are mostly facilitated by scarce resources for health, but also by their errors in policy judgments and actions that they perceive and seek as a better course of action.

Policymakers from either a developed or developing country often struggle with conflicting perspectives (ethics and social order) and values where there is a fierce scientific debate. For example, a policymaker may decide to vaccinate a particular age group against influenza yet there may be no evidence to justify doing so. After the 2009 H1N1 pandemic, the policymakers interviewed admitted to being presented with a series of ethical issues. For

example, they cited reacting in an untimely manner to an ethical issue (in the case of influenza surveillance) and sometimes admitted exhausting the possible avenues or options for avoiding unpleasant ethical issues (in the case where policymakers are preoccupied with universal goals rather than local ones, and where reasoning is limited). It was clear in the narratives that policymakers had little time to think through the decision-making process. Policymakers from Ghana and Malawi expressed their concerns as follows:

Policymakers in public health have value priorities, authority and greater responsibility towards public health. However, balancing these concepts has been problematic. For example, value priorities are paternalistic while greater responsibility brings with it greater authority and power to make their own decisions. These decisions by some individuals are not well thought out to reflect different needs and welfare. Their lack of communication affects their role taking too thereby invoking concerns that policymakers are not responsible for themselves or their actions. (CHAM-MW-26; UNDP-Ghana-29)

This indicates that policymakers often prescribed moral solutions either using the rule of law or their own empathy for justice in favour of others. Policymakers in Malawi and Ghana admitted using policy guidelines and rarely mentioned the code of ethics, such as the Medical Council of Malawi Code of Ethics and Ghana Medical Association Code of Ethics respectively, to ground their reasoning. Malawi and Ghana had no ethical plans to guide their decision-making. Even if they had ethical plans, policymakers would have found it difficult to reflect the context of moral thought with their limited knowledge of ethics. Practical ethics involve moral reasoning in recognizing ethical issues, being aware of ethical sensitivity and actions in terms of consequences, being judgemental and ready to act. In Malawi and Ghana, many barriers were identified that interfered with the practical ethics. For example, a poor infrastructure made it impossible to implement decisions. On the other hand, public health culture, its working conditions, intuition and communicative skills, pushed policymakers to the edge as far as reflecting on their actions was concerned. Krebs et al. (1991) have shown that a spectrum of barriers limit moral judgement and also that moral reaction to a problem tends to be inconsistent across situations. Barriers, if not the lack of knowledge to make decisions, disable a policymaker's ability to identify ethical challenges and solutions. For example, policymakers from Ghana and Malawi identified ethical problems which varied in

nature, but the response actions they applied lacked foresight in determining the most effective course of action.

The process of ethical reasoning and justification understood within the context of Rest's model and Pellegrino's ethics of prevention was used to examine the policymakers' ethical decisions. As previously suggested, policymakers intended to prevent and manage identified ethical issues, but their ability to structure ethical analysis and to judge actions fell short of both analytical and normative approaches. For example, I asked policymakers whether they had considered ethical theory as a frame for the ethical problems they faced, especially regarding balancing the conflicting needs of others. This question invoked unequivocal answers.

In this I was certainly asking the right question at the right time; this question was subsequently revised into two parts in the questionnaire. For example, every time the policymaker identified a problem, the description was followed by how they had resolved it. Even with prompts of ethical theory, it was hard to engage policymakers in debate on moral philosophy and moral justification of their choice of action though. To support this question, I also presented the policymakers with a hypothetical situation in an attempt to elicit a rich account of how they resolved an ethical issue (see case study on ethical reasoning section 8.5.0). The following quotation illustrates a typical situation where justification could not even be given for a particular course of action. I had asked the policymaker from Malawi to explain why the ethical decisions they had made had prioritized pregnant women, children and health workers to receive the limited vaccines. He said:

Prior to receiving the H1N1 vaccines from the WHO, it was made clear to us through their guidelines that these [donated] vaccines are only suitable for pregnant women, children and health workers. (MoH-MW-11)

In terms of policymakers who provided any form of justification, their ethical arguments leaned towards the philosophical literature but revealed little about the subjective nature of the ethical problem they had to justify. Ethical reasoning was primarily based on the four principles of biomedical ethics, a derivative of bioethics despite this study being concerned with ethical reasoning styles in population health. For example, a policymaker representing the Quality Health Partners (QHP) in Ghana had to justify why scarce vaccines had to be

given to pregnant women and children by citing beneficence, i.e. actions that promote the well-being, and non-maleficence, i.e. intent not to do harm, to the pregnant women and their foetus. She said:

Protecting pregnant women and children can be understood in two converging aspects. First, women's life and that of a foetus can be simultaneously saved, assuring ourselves of the generation of tomorrow. Second, protecting children secures long-term economic prospects because of their life span – it is an economic objective while a health one all embodied in having a generation of tomorrow. (QHP-Ghana-32)

In contrast, other policymakers were quick to cite epidemiological reasons, explaining that pregnant women and children were more vulnerable to disease not only because they were exposed to the spectrum of biological processes as women and children, but also because this group experience more negative social factors which may affect their health than ordinary men and women. Even with these objective arguments, policymakers run short of justification in terms of a decision-making process that basically involves identifying and evaluating harms and benefits, opportunities and cost, and strengths and weakness. Despite prompts, justice was not mentioned by most policymakers except in the above quotation that addressed it indirectly by pointing out the role of justice in terms of the economic importance of pregnant women and children.

Basic ethical concepts, such as justice, virtue and human rights, were often used to justify conflicting interests, such as those of an individual and population health. For example, justice was used when safeguarding public health, whilst human rights were used when directly protecting individual interests. In many instances, building and maintaining public trust in these ethically justified courses of action was lacking, since most ethical codes were cultivated in a vacuum and not necessarily within a body of ethical theory. The sparsely cited moral guidelines, as noted in this study, underpin themes relating to public-health discourse. These comprise communitarianism (which asserts the universality of a good society), and utilitarianism (which asserts the need for measures of utility). Other approaches, such as

Kohlberg's theory of justice⁹⁸ were overlooked despite the researcher's efforts to prompt the interviewer for responses relating to this area. Even when supplied with questions well in advance of the interview, almost none of the moral theories were elicited in the conversation, suggesting that professionals had little training in moral analysis and its usage.

Most policymakers were uncertain as to how they would transform moral theories into policy practice on pandemic influenza. The lack of training and inadequate experience explains why decision-making at the national and local level was inconsistent in Malawi and Ghana. Although policymakers in Ghana and Malawi had the ability to identify what were (more or less) similar and consistent ethical problems, establishing a platform to align and enact the best policies to deal with these problems was daunting. As has been emphasized, policymakers do not necessarily structure their ethical reasoning as proposed in textbooks of moral theory, nor simply make logical sense of the moral empirical evidence that is already established and has been shown to be effective. In this study, decision-making processes were not structural and most policy commitments among pandemic planners were more concerned with ticking boxes to simplify their role whilst adhering rigidly to written texts, such as those of the WHO guidelines.

8.4.0. Passivity and Ethical Inattention

This study has established that identifying ethical problems promptly does not necessarily guarantee a justified ethical solution in return. Instead, it is part of the active beneficial process that helps policymakers be aware of, and begin a deliberation process that generates, alternative actions and enables choosing the right actions over others. According to Jones (1991), identification of a moral issue is the first stage in decision-making that should come to the fore for every agent. Although policymakers in this study were attentive to ethical issues in their vicinity of work, acting on these problems in a timely manner was affected by a variety of operational variables such as moral pressure, doubt and uncertainty, and the lack of a common pattern of reasoning in relation to justification. An agent may be simultaneously attentive and passive simply because attention does not entail justification. According to

⁹⁸ Kohlberg's six stages are grouped into three levels. Level one - Pre-conventional (1. Obedience and punishment orientation. 2. Self-interest orientation), Level two - Conventional (3. Interpersonal accord and conformity. 4. Authority and social-order maintaining orientation). Level three- Post-conventional (5. Social contract orientation and 6. Universal ethical principles).

Rest's key psychological components,⁹⁹ attention must focus on several theoretical stages for a person to be morally mature and make correct decisions or even move from one stage to another. Holms (1997) points out that recognizing and describing ethical issues reflects ethical attention, but framing effects (bias and false positives) may sometimes occur other than the operational variables this study identified in undermining ethical intent. This study method (particularly the study setting) could possibly have influenced passive actions in the decision-making process. If not, why do policymakers' capabilities in identifying ethical issues tell us about their inability to act? Could it be that policymakers identified ethical situations simply to respond to the research questions?

Policymakers from Ghana and Malawi were able to identify ethical issues and give insights into their construction of the problem, but failed to reason their problems in terms of the response actions. This missing link between policymakers' ethical thoughts and moral actions, despite the methodological flaws, can be explained further by examining the moral-perceptual capacities and psychological capacities essential to the moral life. Iris Murdoch, drawing heavily from the book of Professor Hampshire "thought and action", suggests we should abandon the image of man as detached observer and should picture him instead as an object moving among other objects in a continual flow of intention into action (Murdoch, 2001). Murdoch further argues that touch and movement, and not vision, should supply our metaphors since simply touching, handling and manipulating things are misrepresented if we follow the analogue of vision. Understood this way, this study supports the view that policymakers' ability to recognize ethical situations is genuine. The failure to act stems from the inability to see beyond their perceptions of ethical situations, even if they are not truly acquainted with an ethical situation. Analysis of ethical inaction in this study suggests that behaviour, particularly moral incompetence, slows down policymakers' moral action. Unless the moral behaviour of policymakers adopts a systematic approach, as proposed in Rest's model (moral recognition, moral judgment, moral focus and moral character), their actions may lead to incompetent judgements.

⁹⁹ The four key psychological components include moral sensitivity, moral judgment, moral motivation, and moral character. These would allow the person to be able to recognize the issues at hand, make correct and intelligent judgements, have the motivation to take action and the character to maintain good morality throughout the person's life.

This study has also found that policymakers stop their intent of moral thought from progressing into moral actions because of the doubt and uncertainty they experience. There are various descriptions of ethical inaction evidenced in the narratives. For example, patterns of reasoning involving determining an action by an experience of another, such as a hypothetical situation, were lacking. Policymakers found it easy to recognize ethical issues by employing common sense; however, acting on an ethical issue may not be so easy. The lack of narrative thinking using objective data also overshadowed proactive ethics. The role of communication was found to be “withheld” amongst policymakers due to lack of resources, and sometimes communication was inadequate in influencing or provoking debate on ethical perceptions. Policymakers’ behaviours were influenced by character, which in turn overlooked the context in which the ethical situation arose. Policymakers also often overlooked moral voices advocated in ethical theories. For example, there was a tendency towards passive reflection of moral thought, suggesting that policymakers did not adequately understand the underlying concepts of ethical decision-making.

In this study, some ethical problems arising as a result of conflicts between medicine and public health turned to rhetoric, or just became a salient part of policymakers’ lives. Rhetoric becomes inattentiveness since these ethical concerns are not new. For example, policymakers frequently highlighted ethical problems, yet were unable to specify them, weigh them up and take appropriate actions. Such neglect may be interpreted as an area that hinders alternative ways of resolving ethical problems. It is also true that the mildness of the pandemic influenza (H1N1) reinforced the “cry wolf” syndrome about the disease, subsequently reinforcing the idea that pandemic influenza does not deserve any special ethical deliberation in framing ethical problems. Policymakers are aware of the importance of moral considerations as strategies to solve moral problems, but may be lacking the necessary tools. The field of public health ethics is insufficiently developed to enable and facilitate adequate understanding and coordination of moral reasoning across different moral situations.

This section has attempted to offer insights into the relationship between ethical attention and ethical passivity noted in the interviews. Ethical attention demonstrated in this study is relevant to understanding the best approach to ethical passivity in decision-making. Next, I consider how policymakers resolved ethical problems given that moral reasoning was partly lacking.

8.5.0. Ethical Reasoning

As previously noted in Chapter 7, policymakers were aware of what they considered as an ethical situation. They articulated different ways of seeing or describing an ethical problem. Some policymakers could in fact see numerous ethical problems while other policymakers considered non-ethical aspects of situations. Non-ethical situations, for some policymakers were merely technical, economic, administration, procedural and legal problems. According to Murdoch, some people will see differently while others look without seeing; as such, ethical variation can be attributed to the analogy of “seeing” and “looking”. Despite variation in ethical identification, policymakers demonstrated ethical activity; to paraphrase Blum (1991), the policymakers had the ability to perceive ethical situations. Blum argues that ethical perception is valuable in itself; he notes that awareness of salient ethical features of a situation provides the setting for subsequent moral action (Blum, 1991). Yet, policymakers’ awareness in this study did not necessarily lead to action, raising questions about policymakers’ interpretation of situations. For policymakers though, what entails justification through reasoning? When asked specifically how they resolved ethical problems, a few policymakers demonstrated greater abilities to reason and figure out issues involved and to choose the best alternative course of actions. Eliciting detailed and rich accounts of reasoning was difficult; sometimes open questions resulted in closed responses. A hypothetical case study captioned below was used to capture how policymakers resolved an ethical situation.

Case study

Pandemic influenza has been ravaging the country for 6 months, with over half a million deaths so far, at all age groups. The World Health Organization has now developed a strain-specific vaccine, which has been tested and declared safe and effective for people over the age of 12. However, it is confirmed that the vaccine is not safe if used on those under 12 years, but data to support this is not available. The WHO has donated enough vaccine to cover 3% of country’s population. Who should receive this? Who decides?

8.5.1. Measurement of consequences

Given the grounds that vaccines are safe and effective for people over the age of 12 years, the policymakers interviewed considered giving these vaccines to older children (those above 12 years age) if they were truly convinced of a highly probable beneficial outcome. One policymaker from Kamuzu College of Nursing in Malawi said:

Giving vaccines to children under age of 12 years is unsafe based on the data given and I am assuming it is driven by the clinical trials. There are clinical risks and issues of efficiency since it may not yield the greatest good. (KCN-MW-27)

This statement illustrates that the policymaker's reasoning values are based on the overall utility by referring to efficiency that is fully fixed on the consequences of an action and not the consideration of an act itself. The refusal to assign the vaccines to those below 12 years of age according to the policymaker would be harmful to children's health because the vaccines are unsafe. The fact that vaccine given to under 12 years could lead to serious brain damage cannot be excluded thus giving the vaccines to those under the age of 12 is not only unsafe but also non-cost effective. I further asked whether not allocating vaccines to children under 12 will compel the health organization to provide alternative benefits to protect the interests of the children in question.

It is good practice to engage in other methods of calculating what should be done to balance goals and resources while considering the needs of everyone, including those children under 12 years of age. In the case where everyone is eligible, the triage model becomes useful. In the example, vaccines can only be rationed to those in greatest need, if that need is determined by considering various rational knowable components of wellbeing, for example, medical and social utilities. (COM-MW- 31)

Policymakers adopting utilitarian reasoning support this model of decision-making on account of its perceived successful implementation in chaotic environments and the belief that it can be fully supported by the community if such values are shared.

8.5.2. Means to an End

Consequentialist ethical theory and its appeals to utility and maximizing value was not well-received by one bioethicist and policymaker representing UNESCO, Ghana. He said:

Utilitarianism is currently insufficient to deal with experiences and debates over individual rights, for example, whose rights take precedence in the hypothetical scenario on pandemic vaccines, those of infants or

**grandparents, and what is the validity and reliability for these conditions?
(UNESCO-Ghana-12)**

The policymaker considered his reasoning based on Kantian ethical theory and argued that moral reasoning should not be based on the consequences, but rather it should attempt to ground reasons of moral worth of the individual, including moral acceptability on which the person acts. For this policymaker, effectiveness and safety of vaccines is important but not entirely crucial to determine who gets the limited vaccines. According to the Kantian approach, moral judgment is based on reason that also applies to others who are similarly situated. Critics of deontology question the capacity of personal choice in reasoning.

8.5.3. Rights of all Parties

The controversy between self-interest and regard for the rights of others is managed based on formal principles of procedural justice (Neal, 1990; Rawls, 1971). Some policymakers in this study attempted justifying their course of actions based on moral theories as the Liberal Individualist. They considered the rights of all parties in order to make their decisions. Utilizing the appeals of autonomy, privacy and confidentiality as part of ethical reasoning, policymakers vowed to protect individuals from interference from others. One policymaker said:

If the ethical strength supports that these children (under the age of 12 years) receive vaccines, then these vaccines should be allocated to those under 12 years of age. (DoDMA-MW-01)

The basis of this decision focuses upon the idea that the rights of children outweigh the strength of the rights of any other individuals, such as adults or those over 12 years. Another policymaker further said:

If all the population had equal rights, then moral judgment regarding rationing inadequate vaccines could only be settled by moral principles and rules embedded within the legal rights such as public health law or trade intellectual property rights. (MOFA-Ghana-16)

So far, in the mainstream of this ethical analysis, the language of effectiveness is far less important.

8.5.4. Communal Values and Good of Society

In the hypothetical scenario, policymakers' reasoning revolved around enacting policies, laws and acts, and how these promoted communal values, especially at the family level. In addition, the rights of children and the clinical effectiveness of vaccines are taken into account. Policymakers from Ghana and Malawi commented that:

If the community values children under 12 years of age more than anyone else in the society, then vaccines should definitely be allocated to this age group regardless. Similarly, if the community values the elderly more than anyone else then vaccines can be allocated to the elderly. (DHO/LL-MW-17; UNICEF-Ghana-28)

We can see that the policymakers suggest vaccines should be given to those under 12 years despite the fact that vaccines are not safe for this age group as is indicated in the case study. This problematic statement illustrates the fluidity of reasoning about right and wrong. Here, policymakers' interests are not about safety of the vaccines but about particular values. This type of reasoning and justification is at the heart of communitarianism where an individual's values do not matter. Communitarianism is about a social relationship and network of interdependence, but never an isolated person. This means that every community will define its own norms and by contrast, a single form of good society may serve as a reference for all communities (Petrini, 2008).

8.5.5. Autonomy, Justice, Beneficence and Non-Maleficence

The principlist considers all of the four principles in ethical reasoning. Interview analysis revealed that reasoning was random although the principle of autonomy seemingly to be highly and often cited. A policymaker from Ghana attempted to bring the four principles together in response to the hypothetical vaccine example in Ghana. She said:

I will consider respect of all pending recipients, and the decision to be made will have to be free from harming anyone yet increase benefits and

ensure the end results produce happiness for all the victims i.e. all should be satisfied whether they received the vaccines or not. (UNDP-19-Ghana)

Thus, evidence for deference to non-maleficence is twofold. Firstly, in the policymaker's recognition of the importance of respecting recipients whilst allowing them autonomy; secondly, in the clear concern for beneficial, rather than harmful outcomes. Seeking to ensure universal satisfaction, the policymaker exhibits a responsible and just attitude. Even with such justification as is reiterated in literature, the use of beneficence is unclear even in how to ration the inadequate vaccines though, since it does not determine what is 'good' or who benefits. As the principle of non-maleficence requires actions that avoid harm, giving vaccines to those under the age of 12 years will accordingly mean harming those older than 12 years. Autonomy based on this understanding will imply that the patient receive vaccines since their wishes are to be followed, while in rationalistic terms, rationing of these inadequate supplies of vaccines can go against other patients' wishes. The requirements of the principle of justice are also unclear and give rise to completely different practical conclusions. Justice asserts fairness, equitable, and appropriate treatment in light of what is due to persons. In the case analysis, the principle of justice entails that vaccines be distributed equally in society. The problem with this principle is that it does not define what 'just' is and what a person is entitled to (Petrini, 2008).

8.6.0. Ethical Decision-Making and Behaviour

The responses to the case study (section 8.5.1-8.5.5) suggest that there are different or alternative ways of reasoning and justifying a decision. For example, a decision-maker may choose to completely ignore scientific evidence in the body of reasoning if such evidence does not yield benefits. Any course of action or choices does proceed from premises of reasoning dictated by an agent's beliefs and desires. For example, Kantians will justify moral actions based on motivation of an act while utilitarian actions depend on producing maximum gain or good. What it means to produce most gain or good is situationally-dependent. In the present study, doing "good" the "Malawian way" was completely different from that in Ghana; different decisions were made in each country on the management of the 2009 H1N1 outbreak. Although policymakers in these countries reached different decisions, one thing they had in common was that they all made alternate decisions every time about their work. Some decisions were simply a matter of preference for attracting less moral interest. For example, in their daily routines policymakers had to decide upon what type of

vehicles or motorcycles to use in the prevention programmes, and the type and colour of paper to buy for their printing purposes. Logistical questions on whether to allocate financial resources to influenza prevention over the HIV/AIDS programme cannot be a choice of preference but one that is both technical and moral. Having said this, it was common for policymakers in Malawi and Ghana to make choices based on technical preferences without moral consideration of the implications.

Policymakers were seemingly sceptical in framing ethical considerations or seeking justified ethical solutions to the moral problems they encountered. For example, policymakers in Malawi were pessimistically concerned with action-orientated decisions that focused on outcomes rather than the emotions and feelings these caused. In a conversation with one senior policymaker at the Ministry of Health in Malawi, I asked him how they made their decisions.

Once there is an agenda, it is written down and circulated to all the concerned parties. A board meeting is called with all representatives to discuss the agenda and rectify it. Members are free to contribute but often decisions would have already been made by the top official. If acceptable, which is often the case, through my office I instruct the concerned parties to implement the policy depending on the availability of the funds. Our decisions are solely based on the technical knowledge and we believe they are the decisions our communities would like to be part of. Nevertheless, it is difficult to address each and every need. Participatory decision-making process is just impossible in the environments we work in. We work with limited materials and decisions are in line with those needs. (MoH-MW-35)

The policymaker recognized the various points of decision-making in terms of need for community participation, despite justifying why the decision-making process proceeded that way. This conversation suggests a couple of things. First, policies are regulated under the authority of another. This raises questions as to whether decisions are legitimate or the problems are posed correctly. Not considering what others have to say limits the exploration of alternative decisions and implementation of an improved course of action. Second, the above excerpt shows that decisions tend to be more influenced by the needs of self than the needs of others. Decisions should acknowledge the feelings and emotions of others. A study

by Bechara et al. (2000) using somatic markers suggests that individuals make judgements not only by assessing the severity of outcomes and their probability of occurrence, but also, and primarily, in terms of emotional quality. In addition, decisions are generally biased and risky since their development does not consider all possible outcomes.

The way agendas are drafted and presented to elicit comments fails to expand on alternative and acceptable courses of action. Decisions about whether an agenda is or is not acceptable and about what can and should be done about it requires the normative judgments of decision-makers, informed by the preferences of affected parties and society as a whole. Another way to critically consider and make a fair judgment on a particular course of action is to ensure that moral, in preference to other, personal values are prioritized as much as possible so that decisions are made with an intention to be morally right. A conversation with the Ghanaian Ministry of Interior, captured below, suggests that the ethical decisions they make are not consistent, and inherently, ethical problems are solved by political behaviour or principles:

It is usually a very good idea to consider each ethical issue independently of the other. Resolving any ethical problems requires the most relevant concept to address it. Personally, I consider the four principles of biomedical ethics to resolve a moral dispute. I know my colleagues rely on legislation or simply adopting the WHO policies. For example, we made decisions to give vaccines to pregnant women and children. (MoI-Ghana-25)

The above quote is important as it represents an attempt by the policymaker to reason through an ethical issue using concepts. With reservations in mind, it is very clear that ethical reasoning as observed in that context fits in well with the work of Beauchamp and Childress (2009), whose ethical reasoning tends to be more closely allied to biomedical ethics. As noted above and in quotations recorded elsewhere, ethical reasoning was often interpreted in terms of rule of law, mostly embedded in policies with a legal bearing. It can also be said that the decisions policymakers made were procedural in nature, manifested by WHO concepts and instructions. Whilst there is nothing wrong with such an approach, a number of issues can be raised. Legal and procedural decision-making leads to unconvincing ethical decisions leaving a trail of doubt and concern. A well-reasoned argument can be characterized by facts,

concepts and morality. LaBossiere (2004) argues that without facts assembled together, it is irrational to form moral judgments on a subject matter. However, LaBossiere emphasizes that sometimes facts are too complex to provide grounds for dispute. In such cases, the facts can be fully considered along with the concepts to reach a reasonable moral judgment on the ethical situation. He defines the term “concept” as a key idea or term that is relevant to the moral issue. Having considered factual and conceptual issues, LaBossiere (2004) maintains that these should be subjected to moral principles, standards and theories. Rest (1986) suggests that well thought out ethical decisions occur when decision-makers have the perseverance, ego strength and implementation skills to be able to follow through their intention to behave morally, to withstand fatigue and flagging will, and to overcome obstacles.

In sum, this study has established that part of the decision-making process, especially that of recognizing ethical problems, was completed. Other aspects, such as moral commitment and implementation, were inadequate, suggesting real concern about skills and interpretation of ethical issues, including how to resolve them. In the next section, I explore these lacking parameters in light of emerging empirical data.

8.7.0. Moral Competence among Policymakers

The moral sensitivity among policymakers was incredibly high (Chapter 7). Policymakers appeared to recognize ethical issues and their true causes. Policymakers were competent in moral recognition, as advocated by the Rest model, but not conversant with the other three components of moral analysis. To successfully resolve an ethical issue, a complete analysis underpinning all stages of the Rest model for ethical reasoning is essential for finding acceptable decisions. Recognizing a moral problem is one such important component in moral analysis since subsequent scrutiny of other moral stages depends on it when attempting to completely resolve ethical problems.

**We can't solve a moral dilemma unless we know that one is present.
(QHP-Ghana-32)**

There are a number of factors that enabled policymakers' capacity to be sensitive to ethical issues. For example, policymakers had some formal knowledge of ethical problems and how they arise. A lot of policymakers mentioned having briefly learnt about ethics, in particular

ethical considerations, when undertaking a research module as part of their respective degrees. Most other policymakers admitted having been engaged in ethical issues with hands-on experience when facilitating a research protocol. One policymaker from Ghana observed:

Prior to doing research, it is a norm to deliberate conflicts of interest, what may likely harm the research participants supposedly by undertaking that research. This is all documented before it is presented to the ethics committee. The assertiveness not to do wrong basically led to the understanding of how moral problems are constituted so as to avoid them completely. (GHS-Ghana-09)

Another policymaker from Malawi commented:

I first heard about ethical issues when I was training in medicine. We were taught how to conduct ourselves, listen more to what others had to say and ensure the consequences of our decisions didn't fire back. (DHO/LL-MW-17)

The above quotations illustrate that the assertiveness of policymakers was associated with knowledge gained from previous qualifications and experience in conducting research studies. Knowledge of how moral problems are constructed aided a policymaker to recognize real-life ethical issues without difficulty during the course of the pandemic. The ability of policymakers to identify moral issues can be said to make them actors of moral agency. This, according to Kakes (1989), gives choice a pivotal role, because choice is what one faces when a question has to be answered. The finding of this study is consistent with Kakes' argument:

In the usual course of events, motives are mixed and a person is by no means aware of all the forces yanking him one way and another. To a very large extent, thinking about what to do involves trying to become aware of the considerations inclining one in different directions and in trying to sort out the elements composing one's mixed motives. The moral task facing is not to make a commitment, but to reflect and come to understand what reason he has for his commitments. If someone achieves

this understanding what he ought to do becomes much clearer. (Kakes, 1989)

8.8.0. Conclusion

The decision-making process regarding pandemic influenza in Ghana and Malawi has a top-down approach. No public consultations are held to reach decisions. Finances and moral competence among policymakers limit the essence of ethical decision-making processes. While ethical reasoning to identify a moral problem is impressive, other stages of basic decision-making were underdeveloped. The decision-making process varied according to the ethical problem type. Formal ethical guidance was elicited from the WHO/USAID policy guidelines. For the most part, it can be concluded that the decision-making process was greatly influenced by international policies which subsequently affected informal role-taking in policymakers' everyday work. The analytical themes considered in this chapter also indicate that moral judgment tends to be structured around themes of foreign policy – yet these are unproven in the case of Ghana and Malawi. Policymakers made different decisions across Ghana and Malawi, their reasons for doing so were different and their expected actions varied considerably. For example, some decisions were influenced by scientific evidence, values, preferences, and circumstances of individuals and the communities they represent. The difference in decision-making may be due to different approaches to reasoning and justification processes. The decision-making process observed in Malawi and Ghana is not consistent with the moral process of decision-making; i.e. analysis of the problem using key concepts of moral judgement, moral motivation and the moral character to reach a moral goal.

In this study, moral reasoning and judgement can be seen as contributing to action, such as whose needs should be prioritized or how needs should be balanced, but the connection between current knowledge in ethics and “role taking” as public health experts is a matter for concern. Ethics were perceived as a specialist profession and a non-entity for public health practice. This study also found that moral reasoning is influenced by recommendations and moral choices derived from the WHO texts; this finding was consistent in Malawi and Ghana, disrupting situational factors such as moral attention to planning and response. The atmosphere surrounding vaccines often influenced moral reasoning, downplaying the reasoning process – this may be significant to collective norms that are somewhat distinct from the individual's moral stages.

CHAPTER 9: DEVELOPING ETHICS IN GHANA AND MALAWI

9.1.0. Introduction

I now intend to examine the extent to which an effective ethical framework can be considered in developing a public health response to pandemic influenza. This thesis argues that in order to better understand ethical considerations, Planning for, and Response to, Pandemic Influenza (PRPI) should be understood and conceptualised within the paradigm of Contextual Public Health Ethics developed in Chapter 4. The key finding that has emerged in this study is that PRPI determines and provides a platform within which policymakers identify, perceive, justify and resolve ethical issues. It was also found that policymakers encountered various ethical problems and the ways in which these manifest are embodied within the activities of PRPI, particularly in the way that national influenza policies are formulated and implemented. Ethical problems they encounter are highly contextual and practical in nature, mostly occurring as a result of practical constraints. Policymakers identified ethical problems in relation to four key areas: the extent and role of resources in PRPI, the nature of public health interventions (PHIs), the extent of the impact of PHIs and the extent and process of decision-making, reasoning and justification. Policymakers considered that solving ethical problems simply involves applying rules, using norms and common sense without moral and flexible principle-driven thinking. Policymakers' technical knowledge of ethics is inadequate to create a balance between the hard pressed moral needs of civil liberties and public health. The empirical evidence from this thesis unpacks the relationship between PRPI and moral discourse, not only in terms of their respective meanings and conceptualizations, but also in the context of understanding ethical issues and how they emerge and are resolved. The thesis provides empirical evidence on the systemic shortfalls and constraints of PRPI which generally affect the policymaker's ability to make judgements and to respond effectively. This thesis reveals some key policy implications at the level of decision-making and offers several conclusions on how PRPI can be improved.

9.2.0. The Role of Historical Inquiry in Developing Pandemic Response Strategies for the Twenty-First Century

Any decision is influenced by its relevant history. How the 2009 influenza prevention activities were coordinated cannot be disconnected from past responses. Present and future influenza prevention or mitigation is a direct outcome of past and present learning and experience. The historical data reviewed in Chapter 3 notes the relevant features of morality.

Ethical issues arose as a result of powerful public health countermeasures that were deployed in an attempt to mitigate the spread of the disease. While actions and responses were proportionate, little was achieved. The 1918 pandemic was so severe that over 50 million people died worldwide and many others were abused or mistreated with nasty interventions (e.g. forced quarantine and isolation) to stop the disease. Public health practitioners and colonial administrators lacked proper knowledge of influenza. As noted in the historical analysis of pandemic influenza in Chapter 3, decisions made by colonial administrators were based on the urgency and the disease severity, yet according to Nicoll (2011), the severity matrix cannot prescribe actions. Responses should be informed by scientific knowledge, guidance, options and cultural norms. Unfortunately, decision-making in Ghana and Malawi, although facilitated by scientific knowledge at the time of the 1918 pandemic, was not based on locally developed guidelines, cultural norms or effectiveness of the control measures. This study provides evidence (Chapter 3) that most decisions on risk management relating to the 1918 pandemic influenza emerged from the colonial office in London. In modern day Ghana and Malawi, most recommendations now emerge from Geneva through the WHO. International recommendations are acceptable in epidemics that are global and usually affecting a large population of people but caution should be taken to ensure such recommendations are evidence based. The key to responsible policymaking according to Kelly (2011) is not bureaucracy but accountability and independence from interest groups.

Lessons can be learnt on how ethical problems are caused. As noted in the historical chapter, ethical problems, for example, were caused by the lack of resources and inadequate infrastructures, including the weak public health services and the lack of knowledge and perceived low risk of the disease, including native pre-existing beliefs (mistrust in the colonial administration). Furthermore colonial administrators in 1918 moved resources and prioritized the white people, while doing little to convince the natives of the reasons for their actions. Even so, the treatment given to white Europeans was equally ineffective. The colonial administrators used all the political and economic muscle available to them but these also failed to stop or even limit the spread of influenza. Colonial administrators underplayed things in terms of communicating the disease to the natives, including why the disease could not be eradicated in the same way as polio. According to Macleod and Lewis (1988), influenza threatened the wellbeing and status quo of European power. Influenza outbreak, just like yellow fever and polio, was an opportunity for imperial government to show off medical and political power by controlling the spread of

influenza. The failure of communication about influenza could be interpreted as a safeguard to past medical successes and imperialist strategy.

Just as happened in the USA, when officials gave false information about the disease and underplayed it, they made it more terrifying by belittling it, (CDC, 2006)¹⁰⁰. In the USA, communication was also rarely honest because honesty would hurt morale (CDC, 2006). Journalists in the USA were jailed for telling the truth and public gatherings and public funerals were banned, yet authorities claimed that such sanctions were not public health measures (CDC, 2006). It is important to understand that during the 1918 outbreak there was little understanding of ethics and the human or constitutional rights were lacking, thereby affecting the way actions were undertaken. In Ghana and Malawi, the colonial authorities were doing their best from a state of considerable ignorance. In Ghana and Malawi, authorities offered impractical advice and sometimes forced the natives to adhere to quarantine, a measure that did not work for influenza. For example, in the towns of Larwa, Tumu and Wa in the Gold Coast, authorities clearly abused patients by removing them from their homes and isolating them to inhabitable huts on the fringes of the infected villages, and the larger towns and villages were completely sectioned off (Grischow 2006). Food, water and necessary supplies could only be placed outside the camps and the attendants could only come out to collect these items for the patients inside (Grischow 2006). The colonial authorities were not necessarily knowingly and intentionally forcing local populations to adhere to quarantine since no one in 1918 knew what was effective. Authorities' emphasis on quarantine is embedded in the fact that the method was known to be effective in containing other infectious diseases, even if we now know that it does not work for influenza. Is it not natural for a colonial administration to try things that might work rather than doing nothing? Today, the danger of trying something new in the absence of empirical evidence is wrong and fundamentally hard to justify, thus it raises ethical issues.

When the history of the 1918-19 pandemic influenza was reviewed, it was possible to compare events to the recent 2009 pandemic influenza. For example, during the 1918 pandemic influenza, people were restricted to inhabitable huts while during the 2009 pandemic influenza high risk groups of primarily pregnant women and children were forced

¹⁰⁰ John Barry's work on 1918 influenza is very critical about the way communication was handled in America. He writes that intimidation and propaganda were part of the communication culture during the pandemic. Also see CDC (2006).

to be vaccinated against their will. Other similarities in terms of planning and responses between the 1918 and 2009 pandemic influenza have been noted. For example, the responses to both the 1918 and 2009 pandemic influenza were based on precautionary measures, but most precautionary responses such as isolation in 1918 and disease surveillance in 2009, failed to yield reasonable chances of success of mitigating the disease. What happened in the 1918 and 2009 pandemic in Ghana and Malawi reflects the activity of the virus running its course, and by implication, that the intervention was ineffectual. For both the 1918 and 2009 pandemics, real time reliable data such as case fatality rates in Ghana and Malawi were hard to obtain in the early part of the influenza activity. The need to diagnose influenza rapidly, to treat it or activate public health measures to mitigate the pandemic was a daunting task.

From this, it can be argued that pandemic influenzas are lived forwards and understood backwards. We now know that historical considerations under colonial administration, particularly lessons on the rapid diffusion and progressive changes of the disease are uniquely important in further defining and evaluating the disease as well as implications for ethical issues and policymakers' response. Chapter 3 brings this into focus by arguing that through understanding the 1918 and 2009 pandemic influenza, we can learn lessons for studying future pandemic influenza and most importantly find ways to manage and control a pandemic outbreak. Influenza can start anywhere, although in Ghana and Malawi the disease is often imported from abroad through ports and harbours and makes its way into the interior facilitated mainly by communication routes, rainy weather, poor sanitation and chaos such as civil conflicts. Thus it is important to develop policy relevant to border control, heighten sanitation levels and promote peace.

Identifying the source or point where the diseases are being introduced is important to allow mitigation of the disease at the source and more importantly signal warnings and appropriate intervention. Documenting the diffusion of the disease is important for record keeping. The demographic spread of influenza is relevant for current debate especially when flagging up issues about where the focus should be when planning (the borders or the centres of cities) and how fast responses can be implemented. The diffusion of the disease reveals that influenza spread can be global and that it can extensively manifest itself at a national and local level. The actions and responses that were deployed during the 1918 pandemic also reveal huge limitations. As noted earlier, interventions to mitigate the spread of influenza were confined to quarantine, but on a large scale this intervention was impractical and

provoked ethical issues. On the other hand, this has important relevance on the role of social order, which is arguably closely related to ethical issues.

The historical account of influenza pandemic under colonial administration (Chapter 3) and the conceptual discussion (Chapter 4) contribute enough details that maintenance of social order does not necessarily outweigh public health ethics. In fact social order sharpens ethics. According to North et al. (2009) social orders structure social interactions and social transmission. For example, societies craft institutions that support the existence of specific forms of human organization and limit competition amongst individuals. Institutions frame rules that deter most ethical issues related to unethical behaviour. People are more likely to obey rules, even at considerable cost to themselves, if they believe that other people will also obey the rules (North et al., 2009). This is particularly true of the required activities of PRPI, which demands good communication, cooperation and partnerships to support the existence of society.

During the 1918 pandemic, it was found that staffing levels to coordinate PRPI were close to zero and recruitment of health practitioners during the pandemic was impossible. This is an important issue of social order and ethics. The pandemic staffing levels in Ghana and Malawi at the present remain low, posing a serious concern to future preparedness and response. The staffing situation needs to be improved. A volunteer database needs to be developed where officials can tap into a workforce when necessary. Clearly, during the 1918 pandemic, efforts lacked decentralization in administering control measures. Chiefs were not engaged in managing and controlling the disease. Decentralized planning for and response to the pandemic during the 2009 pandemic was not imminent in Ghana and Malawi. It is suggested here that chiefs and local people should get involved and one way of doing this is to introduce decentralization as a way of governance. Traditional healers are part of the health system response in Ghana and Malawi, thus future pandemic planning should utilise this arm of the health service as an alternative to offset the shortage of medical staff and ineffective drug therapy. North et al. (2009) highlight the need for natural states to make a transition to open access societies. Ghana and Malawi can be described as natural states. According to North et al. (2009), open access demands political and economic development in the form of economic growth with vibrant civil societies with lots of organizations. It also demands bigger, more decentralized governments with widespread impersonal social relationships,

including rule of law, secure property rights, fairness, and equality (North et al., 2009) – all aspects of treating everyone the same.

In general, the history of pandemic influenza reveals the implications of a health system that is dysfunctional and dislocated. For example, responses to the pandemic tend to be poor and large groups of people suffer the consequences such as death and illness. Good responses require good planning in terms of making medicines and human resources available to hospitals and making necessary information available to the public. All information about the pandemic, either mild or severe, is important for use in the next wave of the pandemic. This will prepare people for the worst scenario allowing them to respond accordingly, securing food and ensuring that funerals are arranged. This knowledge can be applied to the management of people affected by inter-pandemic influenza. Inappropriate communications and insufficient planning can greatly compromise risk reduction (Vaughan and Tinker, 2009).

Similarly, pessimistic statements that experts make, including a lack of responsibility towards moral considerations within public health actions, have ethical implications. As pointed out earlier, during colonial administration ethical issues were exacerbated because there was no legal understanding of privacy, civil liberties and constitutional rights including cultural customs and beliefs as they related to public health. A few mistakes in public health actions can trigger loss of trust in the government's ability to manage serious public health threats, leading to unexpected and highly undesirable outcomes for vulnerable populations (Vaughan and Tinker, 2009).

9.3.0. Seasonal Influenza as an Indicator of Ethical Preparedness: Knowledge and Practice of Control Strategies

Human seasonal Influenza (HSI), as noted in Chapter 2, is a public health problem (Nguyen-Van-Tam, 2010) responsible for 250,000-500,000 deaths worldwide and causing severe illness in about 3 to 5 million people of the total world population each year (WHO, 2014). According to the literature, influenza is one of the most common respiratory illnesses affecting people of all age groups worldwide. In the tropics, influenza occurs throughout the year, although it intensifies during the rainy season. A geographical area where influenza is not fixed to time or season provides an opportunity for health authorities to examine the outcome of influenza in more depth and respond rapidly in the detecting and reporting of suspect cases. In the presence of inadequate resources, little is done to respond to influenza

cases (normal and unusually high numbers) in Ghana and Malawi. This study has also revealed that authorities lack interest in the subject of influenza and their knowledge of seasonal influenza is not up to par. Performance indicators on the current practice of PRPI show, for example, that there is no influenza testing among patients admitted in hospital with SARI or ILI during periods of influenza activity and influenza vaccines (seasonal) are not offered to risk populations. This study did not intend to measure influenza knowledge per se; however, it is clearly illustrated that knowledge about seasonal influenza among policymakers, particularly in Malawi, was suboptimal.

Policymakers were technically unaware of the most effective strategy for preventing seasonal influenza in relation to preventing pandemic influenza. It is important to coordinate responses of any threat of influenza strains to avoid a possible pandemic threat from a new reassortment of influenza virus. According to the WHO, an influenza pandemic occurs when a new influenza virus appears against which the human population has little or no immunity, resulting in community-wide outbreaks. For example, the new strain of 2009 A(H1N1) virus, although similar to novel A(H1N1) previously determined in swine, caused a pandemic outbreak. In fact, the 2009 pandemic influenza A(H1N1) virus remained in circulation among people worldwide after the pandemic period following a pattern similar to seasonal influenza A and B virus strains. As we now know, the 2009 H1N1 virus is antigenically unchanged, still affecting young adults (as in the 2010/11 season), but now called seasonal influenza (Mytton et al., 2012). The majority of policymakers from both countries had a basic knowledge of seasonal and pandemic influenza, although a few were unable to distinguish between the symptoms of human seasonal influenza and pandemic influenza as defined by the WHO. A top government policymaker commented:

I don't notice the difference between the two strain types- perhaps I don't know enough yet. What I know though is that the pandemic can result in a major disaster. (MoH-MW-02)

A study by Carcione et al. (2010) tells us that it is difficult to differentiate between the pandemic and seasonal influenza infections as they are substantially similar in terms of patients' symptoms, risk factors, and the proportion of hospitalized cases. It is often forgotten that seasonal influenza can be used as an indicator to aid estimates of additional capacities needed to detect increases in the pandemic activity by collecting up to date virological,

epidemiological and clinical information on human seasonal influenza (WHO, 2013). Although we are unable to predict a future pandemic directly from a specific strain (because by definition a pandemic is new), we know that an extent of antigenetic shift or resort (gene swap) of influenza viruses can lead to a pandemic i.e. new emerging and severe virus. This study (as indicated in Chapter 6) has established that most policymakers could not critically appraise the understanding of the concepts of immunization (see section 9.70 and 9.7.1) and sentinel surveillance of ILI/SARI and their application in the prevention, and control, of seasonal and pandemic influenza.

The methods of controlling influenzas such as monitoring influenza strains, developing vaccines for each strain and enhancing communication plans for influenza outbreaks remain the same for any type of influenza. For example, collection of sentinel surveillance data is possible for any type of influenza that can be collected at a hospital site. However, this type of work will depend on the existing knowledge, commitment and competence of those authorities tasked to carry out influenza surveillance. Those in authority should be able to define cases of ILI and SARI. Adherence to a case definition for ILI/SARI is essential and must be complemented with reference to protocols and procedures developed with appropriate knowledge in order to ensure a well run sentinel site. If not, ethical problems may occur, affecting public health and individuals. In this study, I found that the lack of understanding of seasonal influenza among policymakers was similar to the experience of colonial administrators in 1918 (Chapter 3). The level of understanding of seasonal influenza may influence specific policy seeking behaviour (Tan et al., 2010), particularly the need for an effective pandemic plan. Research into knowledge, attitude and behaviour in the context of a seasonal influenza can not only guide communication and mitigation strategies during the event, but can also inform future pandemic preparedness planning (Walter et al., 2012).

Based on this platform, this study suggests that increasing prevention efforts against seasonal influenza is equally beneficial to preventing pandemic influenza. For example, routine surveillance activities such as sentinel reporting of influenza-like illness (ILI) using RT-PCR machines, or a rapid influenza diagnostic test (RIDT) is vital in providing early warning signs of new events (Liljeqvist, 2011). Public health measures such as the use of antiviral medication and non-pharmacological interventions, built around a stronger health system and planned for use against seasonal influenza, can also be used against pandemic influenza and can save thousands of lives each year.

According to Lipsitch et al. (2009), early action is required in uncertain situations where greater harm from a widespread outbreak is more likely. The control of seasonal influenza in Ghana and Malawi is near zero despite the hugely adverse effects of seasonal influenza on health. Ghana and Malawi still don't have enough epidemiological and laboratory surveillance systems specifically for seasonal influenza. Other influenza surveillance methods such as burden of the epidemic, pyramid of severity, spread of disease, and risk factor determination of seasonal influenza are not deployed to reduce the risk of transmission. Sentinel systems are important in determining which antiviral drugs are insensitive to circulating seasonal viruses and when primary care services might come under strain. As was indicated in chapters 2 and 6, seasonal influenza has implications for health and non-health sectors, yet Ghana and Malawi have never had a communication system for seasonal influenza, let alone coordinated messages on seasonal and pandemic influenza.

Sharing information and learning from others about planning and policy development is rare. Relatively recently Ghana has begun to participate in the FluNet programme¹⁰¹ while Malawi remains in a total blackout on influenza data sharing. These are probable causes of solidarity concerns at the global level (Gadd, 2010). The lack of information about the impact of seasonal influenza such as attack rates, susceptibility and hospitalization in Ghana and Malawi, affects how vaccination programmes are implemented. In the absence of clinical attack rates and data on hospitalization, either on seasonal or pandemic influenza, it is difficult for policymakers to forge response plans in terms of where to allocate the limited material resources. Dilemmas and ethical problems arise due to under-resourcing. Priority settings focusing on public health, rather than a group of patients, leads to ethical issues associated with individual autonomy. In the presence of many ethical issues associated with seasonal influenza, public health authorities should develop an ethical framework that will guide them to PRPI.

Neglecting to find ways to deal with seasonal influenza would suggest that not enough is being done to protect the individual, and especially the vulnerable, many of whom die every year due to seasonal influenza. This supports the idea of a new paradigm discussed in Chapter

¹⁰¹ FluNet is a global tool for influenza virological surveillance. See http://www.who.int/influenza/gisrs_laboratory/flunet/en/ (Accessed: May 01, 2014).

4 that attempts to negotiate concern for the individual with the social concerns of public health. This account is important; it not only includes the aims of public health, but also focuses on health and determinants of health, including individual interests. According to Mann et al. (1994), civil liberties and public health must be fundamentally linked to realize policy goals in a non-discriminatory manner. This fits with the proposed conceptual framework in Chapter 4 which reveals three key underlying causes of ethical problems: human behaviour (lack of knowledge), environment (lack of infrastructure such as laboratories) and technicality (identified within the way ethical reasoning and justification is pursued). According to this approach, decision-making processes taking the form of reasoning and justification should not only consider the epidemiology of influenza advocated in public health or medicine, but should consider the ethics reasoned within the socio-cultural and political setting supported by facts and values of all concerned.

As will be proposed, developing an ethical framework to guide policy decisions in Ghana and Malawi would assist in mitigating and preventing ethical problems. However, there is a need for pandemic plans in Ghana and Malawi to integrate planning for and response to seasonal influenza and for plans to be publicly available and widely accessible. The current pandemic plans of these countries need to be developed into an operational platform. However, this is only possible if funds continue to be committed. Training amongst policymakers should be offered to address the lack of knowledge about influenza and its theory of transmission. This can be done by offering policymakers formal management training that emphasises rapid decision-making while preparing them for the extensive management role required (Gadd, 1990; Gadd and Fletcher, 1992).

9.4.0. Planning Prior to the 2009 H1N1 Pandemic

In 1999 the WHO drafted and published national and regional planning guidelines to help Member States develop their pandemic plans. The purpose of the guidelines was to assist with prevention and mitigation of the challenges a pandemic would present. These have since been revised in 2005, 2009 and 2011, incorporating recent developments learned from outbreaks of avian and human influenza. The revisions are too superficial though and gloss over the fundamental differences in phase changes/definitions between 2005 and 2009 and the extremely poor timing of the 2009 release (halfway through an unfolding pandemic crisis). In the new guidelines, pandemic phases 4 to 6 were changed significantly from the 2005 guidelines, thus generating confusion and communication difficulties. While the WHO

guidelines make clear what Member States should prepare for, this thesis found that preparedness was contrary to the best practices that the WHO cite. For example, due to new guidelines issued at short notice, Ghana and Malawi did not consider all the newly proposed phases to respond effectively to the pandemic outbreak. These countries did not consider the required interventions part of their response to threats of influenza. Furthermore critical decisions should take place in the context of their country specific situations, needs, priorities and actions. These can be considered when developing or updating the national plan. Evidence suggests that the most appropriate control strategies in any given area depend on the nature of the local population and environment (Bolton et al., 2012). Policymakers from Ghana and Malawi noted that;

Risk scenarios and general preparedness are based on H5N1 and most measures relate to prevention and control of avian influenza ignoring humans as main targets. (GHS-Ghana-05; MoH- Malawi-11)

Planning for and response to pandemic influenza are only as satisfactory as the assumptions on which they are proposed. While the Ghana and Malawi preparedness plans claim to be based on the WHO universal guidelines, some assumptions according to Auf der Heide (2006) are derived from conventional wisdom rather than empirical and contextual findings. Adopting the guidelines without using planning assumptions from a local context may have huge repercussion and limitations in the event of a pandemic. You cannot simply apply a graded series of responses to emerging pandemic viruses as this requires the Pandemic Severity Index (PSI) to be calibrated to the case fatality ratio to determine actions ranging from limited to stringent measures (Lipsitch, 2009).

Ghana and Malawi preparedness plans, from inception to implementation, fall short on a number of specific issues of PRPI and all carry ethical and economic implications. Foremost there is a lack of local epidemiological knowledge to ameliorate the impact of pandemic influenza. Local expertise in PRPI is limited. Throughout the pandemic development, planning and implementation strategies are found to be dependent on foreign expertise and external funding. Targeted support to countries can help strengthen national influenza surveillance, but long-term sustainability can only be achieved with strong local leadership (Steffen et al., 2012).

Chapter 6 reported that several problems emerged due to the WHO planning conditions. Although the WHO does not have the legal power to dictate policy to Member States, some do not have a choice but to voluntarily adopt such policies. Ghana and Malawi proceeded with preparedness in such a way as to satisfy WHO specifications, not necessarily making important specific modifications or contributions to the strategy. In effect, WHO funding dictates budgets, discouraging creativity, initiatives and mobilisation of activities that are restricted by external funds. Auf der Heide (1989) found that important planning priorities in preparedness are missed out because funding does not mirror country specific needs, priorities and actions required to develop and update the national plans. Due to a lack of, or sporadic funding, Ghana and Malawi become passive responders unable to update national plans regularly. An editorial in *Nature* (2012) has observed that one-off projects such as funding allowances, is an unsustainable way to address pandemic threats of the 21st century.

In Chapter 6, preparedness indicators were indicated but remain incomplete and several others are missing completely. While the planned roles and responsibilities were to ensure advanced preparations were timely and consistent in responding to a pandemic, the communication strategy used in both Ghana and Malawi was yet to be formally approved. It is important to note that preparation was for avian influenza and remained so prior to the 2009 pandemic outbreak; due to this its completeness and clarity was unclear especially if applied to human influenza.

Chapter 6 identified a number of issues in the initial draft of the preparedness plans. The AI Working Group (AIWG) lacked financial resources for an effective planning process. Leadership roles to support pandemic preparedness needs were not well defined and the future for the pandemic was not well forecast. In Malawi, development of pandemic preparedness failed to use probable scenarios. In Ghana, scenarios such as rapid and efficient human-to-human transmission were suggested but even these were inadequate to deal with a pandemic. Preparedness scenarios that identify planning gaps can reduce ethical problems (Auf der Heide, 1994; 2006). Chapter 6 discussed serious shortcomings which emerged in the data involving unclear lines of authority and confusion about leadership. Attempts to coordinate preparedness through a leading agency didn't work as there were too many and it was unclear who was in command and control. Even though initial plans strictly focused on avian H5N1 there was no mention of the integration of human and animal influenza surveillance data, or the use of "syndromic surveillance" to track influenza.

By not taking necessary measures in preparedness, ethical problems are most likely to occur as Chapter 7 identified. The lack of straightforward assumptions about clinical attack rates, morbidity and mortality rates raised questions of how preparedness would proceed. What quantity of resources was required? How much bed space or how many ventilators may be required? Notably, the drafting of the Pandemic Plans did not fully acknowledge the processes of mobilizing resources, or identify difficult issues of resource allocation and priority setting, or the associated logistical challenges such as monitoring, prevention, surveillance and case management of the disease in the community. Eight years on, after drafting the pandemic plans, officials from Ghana and Malawi openly acknowledge that despite progress in developing plans, the countries are still unprepared for a new influenza pandemic. The plans lack clarity in terms of how to reduce morbidity and mortality. The plans fail to promote appropriate preventative measures, surveillance or increased access to care and treatment. A lack of clarity in pandemic goals is ultimately the source of ethical problems. Identification of clear overall goals for pandemic planning is essential for making difficult choices and this has been regarded as a general ethical issue by the Ethics Subcommittee of the Advisory Committee of the Director at Centers for Disease Control and Prevention (Kinlaw et al., 2009).

Ethical problems that were encountered reiterate concerns in the theoretical framework (Chapter 4), that too many mistakes in public health operations not only causes tension but brings society into disequilibrium. Societies ought to be treated as systems whose parts should be examined in terms of their interrelationships and their contribution to society in general (Cotterrell, 1992). The failure of a public health system raises major ethical concerns. This study is concerned with ethical issues, how they can be prevented before they emerge and what are the best ways to mitigate and resolve them in an accepted manner. The work of Mann et al. (1994) and Pellegrino (1981) suggest the ethics of prevention as another way of addressing ethical issues. Preventing ethical problems before they arise is the best answer to the controversial problems of public health and pandemics. It is also more cost effective in resource poor countries like Ghana and Malawi.

9.5.0. Role of Science, Policy Process and Politics in PRPI

In order to gain perspective on narratives that shaped PRPI, I asked the respondents how PRPI was influenced. Three core narratives emerged (illustrated in Chapter 6): the influence of politics, the science of pandemic planning and the strategic policy process related to

pandemic preparedness. The comments that politicians, scientists and policymakers (macro and micro) made on how the pandemic unfolded suggest there were conflicts in pandemic plan production and application. Politicians wanted to tackle problems on the political agenda without the best available knowledge. Micro policymakers demanded high-quality knowledge in the policy planning process. Scientists were concerned about evidence based operational tasks to elicit the maximum rational judgment of all those involved. Throughout the pandemic development the “blame game” was apparent: policymakers at the macro level viewed micro policymakers as highly influential, dominating preparedness at all levels of government; politicians blamed micro policymakers as passive decision-makers and scientists claim they were not involved at all, yet pandemic solutions lay within scientific knowledge, norms and research. Scientists cited political approaches as being based on notions of re-election while policymakers simply lacked the scientific advice necessary. Indeed, decision-making at the macro level was political because the governments of Ghana and Malawi authorised micro policymakers to make policy on PRPI. Thus there was a lot of flexibility allowing micro policymakers to bring everything to the table. There was no prescriptive policy from the government side. Although this was done to achieve transparency and integrity in the decision-making process, it is important that the macro policymakers (government) ensure that micro policymakers neither exceed their legal authority nor violate what they are obliged to be doing. Brown (2003) comes to the same conclusion, that the policy process must be internally open and completely free from politics and blame games.

Political commitment to tackling pandemics is generally seen as a key role in optimising the control and management of pandemics (Hunsmann, 2012). According to Harper et al. (2008), scientific evidence should inform and strengthen policy options, particularly where timing and precise nature of risk of the disease are unknown. The intermixing of science, politics and policy is, according to Weingart et al. (2000), important for discovering a problem and options for the problem’s potential solution. Scientists create public awareness to foment political and policymaking pressures. Drawing on lessons in Chapter 6, we can appreciate that institutions (scientists and politicians etc.) play an important role in PRPI in organising individuals in their social functions such as behaving ethically. Institutions and organization involved in surveillance or health systems will provide technical expertise on influenza in the form of policies, laws, skills, training, resources and leadership. The more institutions and organizations in a country that are big and powerful means the more public goods i.e. more services, including influenza surveillance, disease mitigation, health education and social

insurance programmes. The system of government of Ghana and Malawi needs to be moved away from what North et al. (2009) call natural states, to something simpler: open access. Open access governments strive for high incomes and promote a much denser network of impersonal relationships between people in government and organizations.

9.6.0. Operational Response and Organization of Infrastructure and Services: Responses to the 2009 pH1N1

As is evident from the findings, Malawi and Ghana did anticipate an outbreak of pandemic influenza. The 2009 H1N1 pandemic influenza arrived sooner than expected, before sufficient drills, exercises and simulations had been enacted, but it was widely acknowledged that public health authorities demonstrated a strong desire to prevent and mitigate the effects of the pandemic by strengthening public health initiatives and contingency operations such as communication strategies, strengthening influenza surveillance and updating overall goals in pandemic training and education.

Planning for, and coordination of, pandemic influenza was influenced by broader factors such as authorities being passive agents, and preparedness activities being constrained by various social structures. According to Parsons (1965), social agents and social structures may be important determining factors for action. Holm (1997) reiterates the point that decision-making does not occur in a vacuum; it is influenced by social agents in society at large, by the general social environment, and by the organizational features of the health care institution. In this study the same was observed. Policymakers were ethically passive, influenced by the social environment and organizational structures, and as such their attentiveness was affected. Few changes were made to the health infrastructure in readiness for the pandemic. Even during the pandemic, makeshift control strategies, such as establishing port health facilities or isolation for cases awaiting treatment, were not attempted. Some of these decisions could have been vital in complying with infection control standards, assuming the pandemic moved from mild to severe in neighbouring countries. Surveillance response activities for the 2009 pH1N1 were incomplete, characterised by lack of timeliness of reporting due to inadequacies and poor coverage in telephone networks and sub-standard transport networks, which rendered most health facilities' ability to communicate and establish a strategy at a local level virtually impossible.

Although issues of priority setting were a major concern in Ghana and Malawi, due to scarce resources for intervention, such as vaccination, none of the response strategies' plans directly addressed the logistics, storage and distribution of scarce vaccines, antiviral drugs and non-pharmaceutical interventions. Despite Ghana and Malawi possessing personal protective equipment for use during the pandemic, response time and access was deliberately limited to ensure continuous supply over time. Response strategies within health care systems were weak because of the pressure the pandemic exerted on the regular operation of the health service. Not strengthening the health system raised questions on how national governments could go about treating patients or simply how containment and prevention of the disease could be accomplished. The findings correspond to what Breiman et al. (2007) found on the level of response preparedness in African countries: that there was no capacity (laboratory, communication, health infrastructure etc.) to deal with health disaster in an event of a pandemic.

Pandemic responses in Ghana and Malawi took place at a national level, but without the participation of those at regional, district and community levels. The lack of involvement of local communities was a setback in combating the pandemic. Ghana and Malawi laid out their response plans using one off budget systems which favoured cheap options and did not effectively allocate funds to facilitate response implementation. The 57th WMA General Assembly held in South Africa found that "political will" to continually fund public health preparedness is of paramount importance in dealing with pandemic threats (WMA, 2006). Being prepared for, and responding to, influenza pandemic requires having well-trained epidemiologists, a functional public health service, reliable laboratories and communication channels and all these can only be enhanced by being financially supported whilst appropriately managed.

While Ghana and Malawi achieved significant milestones in pandemic planning and response, the elicited actions failed to achieve important public health goals most needed to respond effectively and efficiently to the impacts of pH1N1. This study has found that PRPI activities in Ghana and Malawi were weak in areas such as surveillance and monitoring of the disease and updating overall goals in pandemic training, communication and education. These two sub Saharan African countries experienced limitations in the governance of 2009 pH1N1 in terms of practical and operational problems. This is typical and congruent with the operational problems found in a study by Ortu et al. (2008), who found that pandemic plans

in Africa are characterised by serious gaps and mistakes in government efforts, priorities and service objectives. Apart from practical and operational problems such as lack of finances to aid in coordination of PRPI activities and operational strategies, this study found that responses were also influenced by serious incompetence among authorities who had the power to develop core capacity for PRPI.

The responses to leadership in this study corroborate the current view (Moore and Dausey, 2011) that through strong leadership, effective PRPI activities are retained. Strong leadership not only demands evidence based decision-making but also enables planning for a correct and timely response in the case of an outbreak. In the absence of specific knowledge of PRPI and ethics, a pandemic influenza agenda will lack information updates and regular reporting. Yet knowledge and expertise is key to the National Taskforce supporting training and resource mobilization. Having interviewed key pandemic positions of authority, it was found that some authorities downplayed the responses to the 2009 pH1N1 not because it was non-existent but because the recorded mortality was far too low to cause alarm. This does not suggest that pandemic influenza is of little public health importance, rather, that the 2009 pandemic influenza was considered too mild for alarm. In fact, it was considered a lower priority than other competing public health priorities such as HIV/AIDS, TB and Malaria.

Lessons have to be learnt from history regarding pandemics if Ghana or Malawi is to move quickly and decisively to address a severe pandemic that could emerge in the future. Such lessons will benefit technical activities in influenza surveillance, situation monitoring and assessment, and can be learned at local, national and global levels. Having enough effective and efficient laboratories in the country can improve surveillance activity, situation monitoring, assessment and reporting. Viral surveillance is considered an important category that assists and facilitates prompt detection of influenza A viruses and accelerates the implementation of effective public health responses (WHO, 2010).

Like human surveillance, preventing and controlling influenza outbreaks in domestic animal populations is critically important. The principal preventive and therapeutic measures in avian influenza involve strict control of movement of potentially infected domestic animals. Domestic animals diagnosed with a HPAI virus are often culled and their carcasses destroyed followed by disinfection of the area. Early diagnosis, quarantine and rapid culling of infected animals were the principal control measures deployed by both Ghana and Malawi (FAO,

1998). Where influenza cases are detected in the human population, implementation efforts should be directed towards non-pharmaceutical interventions such as quarantine, closing schools and hygiene promotion, good options for poorer countries. However, although these methods are recommended, it is important to be cautious of over estimating the benefits, which are largely unproven in Africa. There are also concerns about how much they intrude on personal liberties, whether similar restrictions should be imposed for seasonal influenza, and how this would be justified in the long term.

Although Ghana and Malawi identified ethical issues around these interventions beforehand, they did not evaluate their decision-making options with an aim to avoiding them. During the 2009 H1N1 pandemic, restrictive measures such as quarantine and policing vaccination programmes were implemented, foregoing better and readily available alternative options such as those that promoted voluntary participation. Gostin et al. (2007) have found that effective communication is critical for gaining public trust and participation in community containment measures but that voluntary quarantine and isolation is possible. They cite the recent SARS outbreak and maintain that these measures were effective in Toronto when over 27,000 affected persons were asked by public health officers to accept quarantine measures and the populace cooperated.

While immunization is useful in managing and mitigating influenza, it is also to be regarded not primary intervention method in dealing with pandemic influenza. The earliest vaccine can be received by any country is about six months after a pandemic virus has emerged and been isolated. In the absence of vaccines, non pharmaceutical interventions become the first line methods to deal with pandemic influenza. Infected or suspected patients with H1N1 in Ghana and Malawi were treated with antiviral medications and antibiotics in the case of secondary infections. These medications, including influenza vaccines, were donated by the WHO (WHO, 2012; Mihigo et al., 2012). Priority groups for the treatment and vaccination programme were high risk groups such as frontline health workers, pregnant women and young children and the vaccines available were administered to targeted groups despite numerous problems. The vaccination programme did not take place until several months after the initial pandemic and voluntary vaccinations during the period were close to zero, forcing the authorities to use drastic measures. Ghana intensified its education about the role and importance of vaccination with the hope of improving uptake, while Malawi used the police to force pregnant mothers and children to take the vaccines. This justification aimed at

producing the largest possible reduction in the burden of disease, but disregarded the balance between goals of the individual and the State. According to Peny (2012), the approach adopted in Malawi is unacceptable, not only raising ethical concerns and tarnishing the reputation of law enforcement officers but also damaging the public trust of police and health specialists. Only information and IEC strategies that address rumours, fears and myths can avoid the pandemic placing further gratuitous burdens on health care systems.

9.7.0. Vaccine use and role of herd immunity in control of influenza

The findings presented in Chapter 6 and 7 show that the WHO donated pandemic vaccines to Ghana and Malawi, each country receiving 10% vaccine coverage of the country population. The pandemic vaccines arrived in Ghana and Malawi in November 2010 and the target groups (children, pregnant mothers and health workers) were vaccinated after April 2011, nearly two years after the 2009 pandemic influenza virus was first identified in Mexico. The policymakers were aware of the direct benefits associated with immunizing the susceptible population against influenza during the pandemic period. It was apparent that through vaccination, the target population would be protected leading to a reduction in the symptomatic cases and deaths. According to policymakers, reduction in serious morbidity and mortality through the use of vaccines was undermined by late arrival of the vaccines and the fact that they were immunizing the recipients against a virus that had already abated in its serious form.

Although it was too late for the pandemic influenza A(H1N1)pdm09 vaccine to yield some kind of protection against the influenza A(H1N1) virus during the pandemic period, policymakers in Ghana and Malawi still chose to vaccinate the targeted risk groups. The use of vaccines was intended to help protect target groups against the matched viral strain in the event that it re-emerged. The decision by policymakers to vaccinate was technical and influenced primarily by the perceived indirect risk reduction associated with herd immunity. Although policymakers didn't explicitly mention herd immunity, the 10% vaccine coverage was related to it and policymakers loosely claimed as though it was adequate in achieving herd protection or immunity.

The concept of herd immunity takes place when enough people are vaccinated to be rendered immune and thus deprive the virus of the opportunity of spreading from one person to another; the virus cannot circulate and the entire population is thus protected. In public health

literature, herd immunity is understood in various ways. For example, according to Fine et al. (2011), experts refer to herd immunity as a point estimate or threshold of immune individuals whose protection from becoming infected leads to a decline in incidence of infection. A number of experts will also refer to herd immunity as a distinctive type of immunity whose presence protects a population from invasion of a new infection (Fine et al., 2011). Other experts understand herd immunity simply as the proportion of immune individuals in a population (Fine et al., 2011).

The use of these terms describing herd immunity, such as “indirect protection”, “herd effect”, “herd protection” or “herd immunity threshold” can also be confusing. For example, herd immunity threshold is indicative of the proportion of immunized population needed to stop an organism from circulating when such an organism is introduced into the population. As opposed to herd immunity threshold, indirect protection is a situation where the incidence of disease is reduced but the organism may still be circulating in the population. In other words, indirect protection are secondary effects which cut in much earlier but do not amount to herd immunity unless the causative organism is completely stopped from circulating. Based on this understanding, policymakers’ decision to vaccinate 10% of the population in Ghana and Malawi would have leant towards indirect protection or herd effects in the target groups, and not herd immunity.

There are two scenarios for achieving herd immunity. The first requires a large population to be vaccinated so that the causative organism cannot circulate. The second requires a combination of vaccination coverage and prevalence of natural immunity in the population so that the causative organism is stopped from circulating. According to these scenarios, by definition, Malawi and Ghana either needed a lot of vaccines for coverage or a combination of low vaccine coverage and a high background of individuals with natural immunity. In the former case, 10% vaccine coverage is below the threshold to obtain herd immunity. The latter also falls short of a big population enjoying a prevalence of natural immunity because by definition pandemic influenza is caused by a new virus which people may have little or no immunity to, thus the prevalence of natural immunity is very low.

There is a wide variance in the thresholds needed to confer herd immunity, but a standard coverage that might be required by any disease is 90%. For example, the herd immunity threshold for diseases is well established in literature; pertussis for example, will require

vaccination coverage of 92-94%, whereas diphtheria requires 85% (Fine, 1993). The herd immunity threshold for smallpox is between 80% and 85% while measles requires about 94% vaccination coverage (Fine, 1993).

There is little data on the herd immunity threshold against influenza and that which is available is not as adequately defined as compared to well established literature for diseases that have a demonstrable herd immunity threshold. Most of these studies on herd immunity have been conducted in controlled settings and within a small population of people, thus we cannot be precisely sure as to the exact threshold value for vaccine coverage that might be needed against influenza.

Key literatures on herd immunity, however, support 75-90% vaccination coverage to achieve herd immunity against influenza. For example, one study has reported a herd immunity for influenza to be 85% and the authors proved this by immunizing school children with a single dose of a monovalent A(H3N2) inactivated vaccine thereby reducing the disease burden in the unvaccinated population (Monto et al., 1970). In the US, Arden et al. (1995) studied nursing homes and their findings suggest that vaccinating more than 70% of residents resulted in herd immunity. This corresponds to a study by Reichert et al. (2001) that administered more than 80% vaccination coverage in school children between 1962 and 1987 and the results were a significant reduction in mortality in the elderly and adults. This study by Reichert et al. (2001) provides exceptional evidence to prove that the concept of herd immunity against influenza would require high vaccination coverage. The Reichert et al. (2001) study was conducted on a large-scale population, publicly funded and run over several years. The study by Loeb et al. (2010) suggests that if 61% of children and adolescents aged 3 to 15 years are immunized with the trivalent influenza vaccine it will create a situation where the virus stops circulating among the unvaccinated persons.

A study employing a mathematical model has also suggested that interrupting the spread of influenza would require a relatively high immunization coverage (>60%) in healthy populations who react favorably to vaccines, in addition to periodic re-immunization due to evolving viral antigens and waning population immunity (Chowell et al., 2008). Another modeling study by Plans-Rubio (2012) shows that 80% vaccination coverage proposed in the US in healthy persons and 90% in high risk persons is sufficient to establish herd immunity against influenza.

Based on the limited data reviewed, the vaccine rationale for vaccinating 10% of the population in Ghana and Malawi falls well under the required threshold of achieving herd immunity. High levels of vaccination coverage above 70% may be required to establish herd immunity. It can thus be said that the 10% vaccine coverage could only achieve indirect (secondary) protective effects that constitute personal protection against influenza strain matched to the vaccine. Personal protective benefits can sometimes amount to herd immunity, thus we do need to vaccinate as many people as possible. A conjunction of non pharmaceutical interventions is also necessary to disrupt the spread of influenza, especially now that we know that groups vaccinated very late in an outbreak may experience declined vaccine induced antibody titres, thus may not be well protected in the future.

9.7.1. Vaccine use and role of indirect (secondary) protective effects in control of influenza

As illustrated above, policymakers' decisions to vaccinate 10% with the pandemic influenza A(H1N1)pdm09 vaccine after the pandemic period was to provide protective effects in susceptible persons against the viral strain of influenza matched to the vaccine. The 2009 H1N1 virus is now circulating as seasonal influenza and antigenically it is still almost identical to the virus that first emerged in 2009; thus the susceptible groups that were offered vaccines may well now be enjoying the protective effects of the 2009 vaccination, at least to some extent.

A recent study highlights the importance of vaccinating against influenza on time and achieving high vaccination coverage rates among the at-risk population to maximize the public health benefits (McNeil et al., 2014). The study by Borse et al. (2013) also shows that influenza vaccine effectiveness (reduction in symptomatic cases at population level) in the US was greatly influenced by the timing of vaccine availability in relation to the timing of disease activity. The data modeled in Borse et al. (2013) shows that had the vaccine been available in the first wave of the pandemic influenza outbreak in spring, for example, it would have had a very dramatic effect on cases averted; by October when the influenza activity peaked, cases averted would have been modest; and by January 2010 the cases averted would have been close to non-existent.

By November 2010, when the vaccines arrived in Ghana and Malawi, the pandemic had abated and thus the goal of reducing serious morbidity and mortality as a result of the pandemic by using vaccines would have been minimal to zero. The effects of the earlier vaccine administration as presented in the Borse et al. (2013) study show that if vaccines were administered in the US two weeks earlier than the actual date of the 2009 vaccination administration, the number of cases prevented would have been 59% (1,633,200 clinical cases prevented) greater than the base estimate of 1,029,157 when the vaccine programme started. Apart from the timing of the vaccine administration, the actual vaccine effectiveness was also crucial. According to Borse et al. (2013), the vaccine effectiveness in the US was 62%, thus it was able to prevent about 1,000,000 (range 712,908-1,458,930) clinical cases. However, if the vaccine had been more effective, say 85% effective, then a range of 983,671-2,004,053 clinical cases would have been prevented.

No studies exist that have evaluated the effects of the vaccine programme against the 2009 pandemic influenza virus in Ghana or Malawi. However, what can be drawn from the role of vaccines in relation to their use is that indirect protective benefits are possible and this will lead to disease reduction in the vaccinated group. The success of vaccine use will depend on different variables such as age, setting and the prevalence of already protected persons in the population. Vaccinating the elderly and at risk adults, for example, is unlikely to establish indirect protective effects because these groups represent a small percentage of the population among whom the virus spreads. The attack rates for the elderly or at risk adults are relatively low and ineffectiveness of the vaccine may be due to the waning of the immune system due to age (Kim et al., 2011) or due to declining vaccine induced antibody titres. The efficacy of the vaccine in high risk populations such as the elderly or at risk adults is low because vaccines often do not match very well with the immunological status of these groups. As a result, vaccines may not protect the elderly or at risk adults very well. The Cochrane systematic review also confirms that there are no indirect effects of immunization that target health workers who look after the elderly in nursing homes (Thomas et al., 2013). Vaccinating the healthy adults has also shown very modest effects in reducing influenza symptoms and working days lost in the general population, including among pregnant women (Demicheli et al., 2014).

Children over 2 years will respond better to the vaccine than the elderly who have a declining immunological function due to aging. It is thus important to target children for vaccination

coverage in order to establish secondary effects in the population, that way the elderly can enjoy protection offered by the children's role in vaccination. Children often have a high attack rate and play an important role in influenza transmission at the household level: schools and communities. A Cochrane systematic review that pooled data from randomized controlled trials (RCTs), cohort and case-control studies of any influenza vaccine in healthy children under 16 years suggests that influenza vaccines are efficacious and effective in preventing cases of influenza in children older than two years (Jefferson et al., 2012). Another study that determined indirect benefits in adults against influenza showed that vaccinating 20-25% of children with a trivalent-live attenuated influenza vaccine resulted in a secondary protection of 8-18% against medically attended acute respiratory illness in adults (Piedra et al., 2005; Glezen, 2006).

9.8.0. Understanding Ethical Issues in PRPI

Ethical problems and dilemmas are often cited in public health but very few are empirically determined and the majority of others are quasi ethical, determined by hypothetical situations using the normative accounts discussed in Chapter 7 and 8. In other instances, according to Hibbert et al. (2000), ethical issues are determined by comparing between empirical ethical reasoning and normative ethical accounts. In this study, ethical issues were investigated using normative principles as the point of departure in Chapter 4 and an emphasis on an empirical method and its results is made, offering descriptions of how policymakers reason ethically. I argue that a combination of empirical and normative ethical reasoning is suitable for making decisions that are ethically acceptable. Ebbesen and Pedersen (2007) illustrate a similar approach, integrating empirical research into formulation of normative ethical principles and also using normative principles as a guide and inspiration for interpreting the empirical findings of their qualitative study. They have found that using normative principles helps tailor empirical studies to examine ethical issues. By contrast, most bioethical research tends to focus on theoretical discussion of the principles on which the analyses of ethical issues are based, not its empirical results (Ebbesen and Pedersen, 2007). The implication of this is that normative descriptions may not be the true representation of reality, thus they cannot be rationally defended in practical reasoning where ethical issues bear contextual meaning and vary depending on beliefs, values and cultures. Most studies investigating empirical ethics tend to be more concerned with implicit processes such as ethical attention being determined by choosing between conflicting outcomes.

Ethical issues are context-sensitive and connected with specific propositions in contextualist theories in moral philosophy (Musschenga, 2005). Adopting both approaches in this study, it was found that most ethical problems are attributable to a lack of good reason, sound judgement and material resources. Ovadia (2006) has found that ethical problems in real life are constructed in thinking of, and dealing with, the ins and outs of ethical argument. As such, ethical reasoning and the manner in which ethical issues are identified should bear the understanding that empirical research that utilises normative principles is as important in organising, identifying and resolving ethical problems. According to Kohlberg et al. (1983), a normative-ethical claim is the primacy of moral domain indirectly based on the empirical evidence that has not yet falsified this claim. Empirical studies can never verify normative-ethical claims, but instead falsify them suggesting moral constructivism is not prescriptive. In cognitive psychology, Kohlberg illustrated his theory of the “Heinz Dilemma”¹⁰² by conducting interviews with groups of young children, predominantly boys, to determine the moral reasoning behind their judgments. Unsatisfied with Kohlberg’s moral claims of justice, Carol Gilligan conducted a similar empirical study involving both girls and boys, to understand care development in consideration of gender opposed to justice. Given that morality is constructed based on different normative claims and depending on the contextual and influential elements of moral philosophy, Gilligan’s views suggest that judgement is guided by the assumptions of constructivism, phenomenism and structuralism.

The findings from this research clearly indicate that policymakers had their own way of communicating their reasoning. On several occasions, moral reasoning and justification was inconsistent and varied significantly even when policymakers were presented with exactly the same spectrum of evaluation and probes. Critical analyses of moral philosophy in the interview data suggest ethics was not of any practical use; it didn’t inform public health practice. Moral philosophy can aid informed and measured dialogue between people about morality, an essential feature of moral life and of the decision-making processes in public health (Nuffield Council on Bioethics, 2006). While the existing approaches in moral philosophy such as Kantianism, Liberalism, Communitarian, Ethics of care, Four Principles of Biomedical Ethics and Utilitarianism offer a theoretical starting-point for policymakers to reason and justify decision-making, their normative use in Ghana and Malawi was lacking,

¹⁰² The “Heinz Dilemma” is defined as a series of moral dilemmas presented to participants interviewed to determine the reasoning behind their judgments of each scenario. It is an example that is used to illustrate Kohlberg’s theory of moral development.

even after prompts with hypothetical scenarios about how they would ration limited resources when many people were eligible.

The lack of engagement with moral theories explains why problem-solving of the ethical issues encountered was problematic. Callahan and Jennings (2002) have recently observed how moral reasoning and decisions are considered in public health: proper framing of ethical problems is lacking and for the most part intellectual characteristics of ethical analysis which focus on the multifaceted nature of problems is far-reaching and under developed. The difficulty in finding definitive solutions to complex problems such as analogies, narratives, or dilemmas is partly attributed to the lack of sufficient training courses in public health ethics in medical and public health institutes. Callahan and Jennings (2002) for instance, attribute the narrow application of public health ethics to the fact that there are too many moral theories, making it difficult for public health professionals to apply the right discourse. Beauchamp and Childress (2001, 2009) have attempted to limit moral discourses for biomedical moral reasoning and decision-making to the Principles of Biomedical Ethics. Using the four principles in their book, they argue that their concept can be applied to public health.

Analysis of policy responses reveals that ethical reasoning among policymakers is generally weak, as noted in Chapter 8. Krebs et al. (1997) consider that inconsistent reasoning in a real-life context is embedded in methodological concepts, particularly in the manner that the interviewer probes ethical questions. According to Kohlberg's theory of cognitive moral development, every decision is developed through constructive stages (Kohlberg, 1984). Therefore, for Kohlberg, handpicking a predetermined course of action or proposing a completely new action revolves around six stages of moral reasoning. Level 1, often referred to as pre-conventional, constitutes the first stage of obedience and punishment orientation; the second stage refers to self-interest orientation. Level 2, normally known as conventional, constitutes the third stage, i.e. interpersonal accord and conformity. The fourth stage is authority and social order maintaining orientation. Level 3 is post-conventional and includes stages 5 and 6, social contract orientation and universal ethical principles respectively.

Moral reasoning observed in Ghana and Malawi resembles Kohlberg's moral stages of reasoning. Policymakers tend to fall at stages 1, 4 and 6, suggesting that moral reasoning is authoritative and does not allow policymakers to develop well ordered reasoning.

Recognizing and prescribing ethical solutions to ethical problems without giving much attention to others' needs raises a number of questions about whether this type of ethical reasoning may provide the best way forward in resolving pandemic ethical problems in Malawi and Ghana. The fact that experience and knowledge of moral theories is insufficient, especially regarding public health ethics, tends to lead to self-serving judgments that are classified as lower stages of moral reasoning. Drawing on the account of James Rest's Four Component Model of moral decision-making, it is clear that policymaker's analysis and interpretation could not be identified with this four model approach. Moral sensitivity, such as policymakers identifying ethical problems in Ghana and Malawi, was high, but making moral judgments, establishing moral intent and acting on moral concerns was a difficult task.

Although moral judgement was committed to the course of action within the rules, moral motivation and character such as norms, values and cultures were not taken into consideration in the logical analysis of moral behaviour of the policymakers. Coughlin (2008) emphasizes that moral reasoning in public health should seek ethical decisions with the help of judgment and rational analysis through ethical deliberations and actions justified by ethical theory, rules and principles. De Melo-Martín et al. (2007) reiterate this point that even epidemiologists and other scientists who neglect ethical values in conducting epidemiological research, require engagement in ethical evaluation to avoid bias.

9.9.0. Ethical Considerations in Developing a Public Health Response to Pandemic Influenza

The present findings indicate that policymakers involved in PRPI lack knowledge of methods available for ethical analysis. Ethical analysis helps with ethical reasoning in determining right and wrong and creating an ethical world not only within population health but also within the context of human rights. To gain insight into moral reasoning, I presented policymakers with a hypothetical scenario of ravaging influenza in their respective countries, with all age groups being affected equally. A strain-specific vaccine becomes available and is safe and effective for use in people over the age of 12 years. Who should receive this? Who decides? From spontaneous comments that were solicited, it is difficult to evaluate whether policymakers were drawing on any specific knowledge of moral theories or any field of ethics. Some considered giving limited vaccines to those over 12. There were no apparent

grounds to support allocating vaccines to those under the age of 12. Other responses were entirely based on procedural rules set by the WHO guidelines.

The definitive tasks of bioethics are to determine good and right actions for an individual. The concept of bioethics is often in conflict with the idea and meaning of public health. It is within the controversies of who gets ethical priority between an individual and society that the field of bioethics is widened to incorporate public health. Even so, bioethics has not done enough in its moral justification to defend public health, especially in the context of pandemic influenza which requires the intersection of clinical ethics (individual interests) and public health ethics (public interests). In an effective health system, these interests are in a dynamic balance. Mann (1998) advocates the combination and synergy of public health ethics, medical ethics and human rights which are connected by the goals of improving health and well-being. It is hoped that these findings contribute by valuing better ways of engaging moral analysis. As Rest (1986) suggests, having a good knowledge of moral reasoning gives necessary insights into ethical behaviour and moral judgement. Accordingly, this study suggests the advantages of engaging and learning from particular ethical problems as opposed to hypothetical ethical scenarios or ethical considerations proposed in literature. One principle that this study advocates is the need for consideration, not only to protect and promote public health, but also so it is just and respectable. To do this without failing the goals of public health, one must ensure all parties affected are fully involved; all those that are affected need to be informed accordingly and cared for in a way that is respectful.

Equally important is to understand the meaning of individuals and society, particularly in terms of social order. In this case, policymakers will begin to understand what determines good and right actions for an individual or society, or why bioethics is concerned about the individuals and not the society. Further, why public health pandemics draw on notions of prioritising society and focus less on individuals. As observed in the reasoning of policymakers in Ghana and Malawi, it is at this point that things start to go wrong. Indeed, the relationships between an individual and society appear to be misunderstood. According to Cooley (1902), the individual is not separable from the human whole, but a living member of it, deriving his life from society as a whole through social and hereditary transmission as truly as if men were literally one body. This is true of society in that large sense which embraces all humanity and any specific social group (Cooley, 1902). The same holds true of any social aggregate, big or small, a population, town, community or family. According to Cooley

(1902), a thousand persons are just as truly individuals as one, and the man who seems to stand alone draws his being from the general life.

9.10.0. Problem of Social Order

In Chapter 4, 7 and 8, I showed that during a pandemic influenza emergency, policymakers experience tension and disputes, and that they struggle to balance public health decisions between what is best for the individual and society as a whole. These conflicts arise because policymakers are confronted with the difficulties of how to allocate scarce resources fairly to those that need them given the competing interests between individuals and society. Due to the risk of acquiring infectious diseases through caring for influenza patients, policymakers may be faced with more challenges of convincing health care personnel to report to work. Although health care personnel have the obligation and duty to care for the patients during the pandemic, most of them may be naturally inclined to stay away from such nasty working conditions due to fear of contracting the disease. In Ghana, for example during the 1918 pandemic influenza, health authorities including nurses were so afraid of contracting the disease that the sick were left uncared for and others were stigmatized. In any devastating communicable disease outbreak, civil liberties come under threat if people's freedom and movement are restricted. Again, during the 1918 pandemic influenza, policymakers restricted people's freedom and movement in an attempt to prevent the disease, while local people defied this kind of arrangement. People notoriously disobeyed the requirements of quarantine and isolation by hiding early symptoms of the disease and serious cases. In other instances, fear of catching the disease and efforts to avoid it led to the native population moving away from most populated towns and cities back to remote and sparsely populated areas. Some people were forced to move in search of shelter because their homes were destroyed once authorities deemed them unsanitary and unsuitable for habitation. In Nyasaland, now Malawi, people ran away from the vicinity of the authorities simply to avoid racial segregation (Hokkanen, 2004).

During the 1918 and 2009 pandemic influenza, the problem of social order was imminent, not only identified within the conflicting roles played by the policy administrators during the pandemic but also in the way individuals demonstrated their self interest against values and norms popularly held by society. In the 1918 and 2009 influenza pandemic, it can be said that fear and panic among people and authorities led to the disorder, for example, in how the

health services and society functioned. The breakdown of order particularly in the health system is evidenced in the poor performance of critical services needed to respond effectively to the pandemic influenza outbreak. In the case of 2009 pandemic influenza, this can also be seen in the dysfunctional vaccine procurement strategy, for example, Ghana and Malawi were unable to secure vaccines early enough to mitigate and control the disease. Apart from disorder apparent in the health systems, individuals and pandemic administrators could not cooperate and coordinate activities regarding the control of the disease. During the 2009 pandemic influenza in Malawi and Ghana, the authorities preferred to mitigate the disease using societal approaches, neglecting individuals in the process. For example, individuals were stripped off their civil liberties by simply forcing them to be vaccinated with the influenza vaccine against the recipient's wishes. Most importantly, the public health actions towards influenza pandemic disregarded the balance between the individual and the State. While such actions may produce the largest possible reduction in the burden of disease, it can also break down the arrangement of social order due to conflicting interests. This has the potential to create a Hobbesian nightmare: "the war of all against all" which Strong (1990) refers to as the epidemic psychology. Hobbes (1651[2009]) notes that "people living in a state of nature without a common power over them to keep them in awe, are in a state of war of every person against every other". According to Hechter and Horne (2003), these kind of social problems occur because the interest of the individuals and the groups are at odds, therefore, a problem of social order arises. Hechter and Horne (2003) illustrate the problem of social order by arguing that it requires two things for the problem to arise: first, if people fail to coordinate their actions; second, if people do not cooperate with other peoples' actions to attain common goals.

According to Hobbes, in the state of war or where people are willing to fight each other, there is little security of life, all live in constant fear and productive work is pointless (Hobbes, 1651[2009]). This is equally true as has been observed in a severe pandemic influenza whose consequences are fatal; such a situation will prompt people to fight over limited medical resources which might prolong survival. In the case of quarantine in 1918, people ran away from colonial administrators because their social wellbeing had been threatened, thus people infected with influenza spread the disease further in remote areas. According to Kavka, (1983), the Hobbesian version of the war of all against all is created because of five assumptions which can also be applied to pandemic influenza. First, natural equality implies that people are equal mentally and physically in their power, thus each has the capability to

destroy the other. Applied to pandemics, natural equality means that I am just as likely to give you “flu” as you are to give me “flu”. Second, conflicting desires simply refers to people at odds with the other over inadequate resources to satisfy the desires of those who want them. Chapter 8 identified conflicting desires as a source of ethical problems arising from pandemic influenza. For example, conflict between individual choice over receiving vaccination and the State responsibility to provide benefits and protect the public. Third, as forward looking people we tend to care a lot about the future including possessing a strong desire to prolong our lives. This is well illustrated in the roles of bioethics and public health. For example, bioethics is concerned with individual interests (liberty and privacy) while public health is concerned with population health (isolation and quarantine). Fourth, advantage of anticipation refers to people often striking first or gathering power so that one is in a stronger relative position when the battle erupts. In a pandemic outbreak, this is often demonstrated when the State impose travel sanctions or quarantine in the hope to prevent the disease. Finally, individuals may have limited altruism i.e. value their own survival and wellbeing much more highly than the survival or wellbeing of others. This is demonstrated in the case where people refuse to be vaccinated or move away temporary from the areas being targeted to avoid being vaccinated.

During the pandemics of 1918 and 2009, we see people function as individuals free to choose their self interests and choose to do whatever is their determination regardless of others. Individuals are social and not separate entities from society and as such individuals are a product of society whose actions cannot be independent of societal interests. According to North et al. (2009), social orders structure social interactions and social transmission. For example, societies craft institutions that support the existence of specific forms of human organization and limit competition amongst individuals. Institutions frame rules that deter disorder related to unexpected behaviour. As was shown in Chapter 4, people are more likely to obey rules, even at considerable cost to themselves, if they believe that other people will also obey the rules.

9.10.1. Solutions of Social Order

Hobbes’ five assumptions about human beings have contemporary relevance about the conflicts that were observed in this study, particularly between individual choice over receiving vaccination and the State responsibility to provide benefits and protect the public. Hobbes gives insightful ways of solving the problem where people would live without the

protection of the State and its laws. Hobbes' solution to problems posed by a state of war against all is that everyone else obeys the laws created by a State with absolute power or a sovereign. Hobbes' solution to social order can be interpreted as an order that rests upon command of what individuals should do and to libertarians this is authoritarian. For Hobbes, social order is achieved by a form of trade-off where individuals give up their rights in return for peace and security. While this can be applied to social order during pandemic influenza, not all people are willing to trade off their freedom to directly benefit others, as in the case of quarantine and banning of meetings. Interpretation of Hobbes' work on social order aims to create a society that is highly controlled, that is, a high level of social order.

If Hobbes argument of order is applied to crime and violence, incidences rates can be brought under control. Similarly, enacting laws that limit freedom of movement and congregation during a pandemic outbreak, assuming the intervention works, is capable of managing a pandemic and improving public health generally. While this may be true for reducing violence, it is not true for communicable diseases in public health because of its complicated nature. Too much social order in public health enforced coercively may not necessary be better if we take the simple example of contact tracing. Contact tracing of suspected cases may be required by law to be followed and the patient may be required to disclose the suspected contacts they have mingled with prior to the illness. However, the patient may believe that disclosing a list of suspected people or any such information is unnecessary and it will only create economic hardships to families and friends; as a result the patient may decide not to cooperate at all with the authorities.

Indeed, social disorder can be overcome if we uncover the role of coordination and cooperation as is proposed in Hechter and Horne (2003; 2009). Coordination requires that people's tendencies and behaviours develop into stable expectation of others and this is not enough unless people also cooperate with activities that help rather than hurt others (Hechter and Horne, 2003; 2009). While sovereign power imposes social order as proposed by Hobbes, it also requires people cooperate with what is being imposed.

Generally speaking, in contemporary societies self regarding people will be willing to disobey the law to satisfy their desires especially if threatened by the pandemic of fear and suspicions, and they are forced to take action against their will. Laws of punishment and penalties in public health demonstrate that they may have limitations. Absolute power of the

State possesses a far greater threat to individual freedom and liberty. Thus Locke (1690[1821]) is keen to provide an alternative solution to the problem of social order by believing that all people are free, equal and independent. According to Locke, people will voluntarily give a degree of liberty through the contract which they accept as binding. For Locke, no one is naturally in authority over any one else unless people voluntarily put themselves in that position by giving their consent, an approach pursued in the analytical framework in Chapter 4. In other words, most people are likely to obey the law if such laws are agreed upon between the people and the authorities prior to enforcement. In Chapter 4, the power relationship was a key factor to the policy process; if we are to achieve any meaningful policy outcome, a compliant must be able to choose what to do, and not be forced to do what the authorities choose as the course of action. This is an important argument for advancing planning and collaboration between governments and populations in relation to pandemic management. Historically, African governments in particular, Malawi and Ghana haven't been very good at this - Hobbesian models of autocracy have survived decolonization so that leadership styles perpetuate colonial models.

Hayek's (1968[2009]) solution to social order offers an interesting account because it begins by describing the two kinds of social order that exist, namely "made" and "grown". Hayek defines made orders, also known as taxis, as an arrangement or planned order often taking place, for example, at the battle front of the war. "Made orders are relatively simple or at least necessarily confined to moderate degrees of complexity and remain concrete in their existence, thus they can intuitively be perceived by inspection, and finally having been made deliberately, they invariably do serve the purpose of the maker" (Hayek (1968[2009])). Hayek describes grown orders, also known as cosmos or spontaneous orders, as orders that have a degree of complexity and are not limited to what the human mind can master (Hayek (1968[2009])). Their existence needs not manifest itself to our senses but may be used as purely abstract relations which we can mentally reconstruct. "And having been made they cannot legitimately be said to have a particular purpose although our awareness of their existence may be extremely important for our successful pursuit of a great variety of different purposes" (Hayek (1968[2009])). According to Hayek, order is a design of the thinking mind that exists as an imagination, although it is not readily recognised. Such order is manifested in society and determined by individual actions by matching intentions and expectations of other individual actions that may not be known by everybody.

The implications that can be drawn from Hayek's conceptualisation of spontaneous order to pandemic policy is that an order originates freely from the interactions of individuals and in such unplanned orders, abstract procedural rules facilitate voluntary agreement leading to the rise of increasingly complex patterns of human cooperation, dwarfing in intricacy any that had previously existed.

Like Locke's solution to social order, Hayek's spontaneous order can be interpreted as a basis for bargaining power. This has immediate implications for Hobbes' account of social order which relies on power to enforce rules. Hayek makes it clear to us that society reliance on spontaneous order means reduction on the degree of power to control. In other words, we may know the determining factors that shape an order or their abstract features but what induces or forms an order may depend on spontaneous ordering forces that we might not know. Spontaneous ordering forces to which an individual will react or prompt certain behaviour or action will only be known to that individual. This argument is critical in discussing the chaotic public health condition such as pandemic influenza whose overall order is unpredictable, and yet an overall pattern emerges and is systematically noticeable. For example, spontaneous ordering forces that cause chaos may not be made known to policymakers or authorities. Thus Dingwall et al. (2013), although not directly commenting on Hayek's idea of the spontaneous ordering processes, attempt to elaborate that the creation of actor-networks that are primed for rapid mobilisation to manage "known unknowns" are necessary through a concerted effort to constrain the possibilities for future disorder. Dingwall et al. (2013) call this "stabilisation in advance" and it involves adaptation to a large number of facts which may not be known in the totality to anyone. This is consistent with the idea of this thesis that only being able to plan effectively for all unknowns, by reconstructing the relationship between self interested individuals and social values, may give rise to an order of meaningful action. Planning for, and Response to Pandemic Influenza (PRPI) is thus an important structure to preserve and maintain order because it is through these elements comprising communication, health system, coordination, partnerships, surveillance and ethics that order manifestation will depend, including the development of rules that govern individual actions or reactions. Dingwall et al. (2013) point out that considerable investments into surveillance at supranational, national and subnational levels give rise to "early warnings" of new diseases and that in itself is a symbolic indication that pandemic planners, through the application of science, are in constant work to deter the threat of disorder that may arise from the waves of fear, panic and stigma.

As proposed in Chapter 4, to achieve pervasiveness in modern thinking well beyond science, we need open societies such as those proposed by North et al. (2009): those concerned with denser networks that promote the impersonal relationships between people in government and organizations. According to this interpretation, order in society rests on the relation and coordination of all elements within the hierarchical structure that form society as a whole, thus individuals will be expected to follow the rules imposed by authorities. However, for the resulting order to be beneficial, people must not only observe the conventional rules that apply to their desires or in relation to cause and effect, but also those that are normative in nature, such as what individuals ought to or ought not to do – a departure for virtue ethics. The solution of social order, in short, requires a thorough understanding of the mechanism that aspires to achieve the intended purposes through cooperation and coordination, and all these require individual communication. Individuals are social, thus the way they understand things decides their behaviour and if there are problems, they do not arise from human failings or selfishness. Instead misbehaviour must be due to a lack of shared understanding (Hechter and Horne, 2009).

Parsons (1965) argues on social order that individuals are social beings and thus will internalise social values and feel a need for social approval in an attempt to reduce conflict between self interest and social values. For Parsons, order is produced from a combination of three sources; explicit social control (as in Hobbes), implicit social control (various sources) and internalised values (as in Feud). Parsons' approach has received some criticism because the proposed solution to social order fails to integrate the mechanism of norm internalization and the need for social approval into a coherent model of individual choice and social interaction (Fehr and Gintis, 2009). For example, people will cooperate with social obligations, thus they are in principle willing to generate social order, but if some individuals in that society are willing to disobey the rules and go unpunished, the means of cooperation of others will stop too (Fehr and Gintis, 2009). This observation is consistent with what was found in Malawi where people would fully embrace efforts that benefit them as individuals but were sceptical of actions that came with a price on their head, such as personal harm for the benefit of others. This reminds us that selection of rules will operate in society because individuals are willing to obey certain rules in a manner which makes social life possible but also that they may be willing to disobey the rules and stop cooperating if they see that certain individuals (free riders) do not comply with similar rules that apply to them.

As far as PRPI is concerned, any public health intervention such as quarantine or organization of the health response, must aim to promote order and not to disrupt it. Pandemic management is more effective conducted with the consent of citizens than at gunpoint. This involves engagement, accurate and truthful information, and persuasion rather than coercion. In terms of quarantine, it is essential that policymakers communicate effectively about the role of quarantine or travel restrictions, including how they would address the affected individual and their hardships while in confinement – power must be given to the individuals because the order of quarantine is dependent on the active participation of individuals. Individuals should be encouraged to rely more upon themselves as consumers of health (Shaw and Aldridge, 2003). It is through this understanding that individuals will begin to share common social values and obligations. This will help change how people think about certain things such as individual liberty and self-determination.

9.11.0. A Case for an Ethical Framework within Pandemic Influenza Policy

Ghana and Malawi are yet to develop their ethical plans, although this remains a useful platform for improving policy success in planning for, and response to, pandemic influenza. Thompson et al. (2006) advocate an ethical framework as an instrument to guide decision-making, which helps to mitigate some of the unintended and unavoidable collateral damage from an influenza pandemic. Having an ethical framework in place can make a significant contribution to the way policymakers address ethical issues, for example, when vaccine supplies are limited.

According to this study, planning for and response to pandemic influenza involved huge financial budgets, yet no one knew exactly what, how and when the next pandemic would occur. Planning in the face of uncertainty and responding to an unknown epidemiological profile is costly for Ghana and Malawi, especially when they are already faced with large health issues such as HIV/AIDS. This raises questions as to whether pandemic preparations could be relaxed to allow a shift of limited financial resources to other urgent public health challenges (Sambala, 2011). Ghana and Malawi planned for an influenza pandemic over a few years and these plans were tested during the 2009 pandemic influenza. Due to the very mild 2009 pandemic and the fact that the disease has no known markers that herald the start of a new pandemic, Ghana and Malawi is now experiencing the “cry wolf” syndrome; little is being done to re-develop their planning strategies. Although Ghana and Malawi encounter unique and difficult challenges in preparing for imminent severe pandemics, discontinuity of

response plans could jeopardize the already established progress to mitigate, and optimally reduce future deaths (Sambala, 2011).

While it is expected that funding pandemic influenza would reduce the number of deaths during the pandemic, there has been some controversy about whether the emphasis on PRPI was in proportion with the perceived risk. In the presence of other diseases, shifting resources from other disease conditions such as TB and HIV/AIDS to influenza or moving other resources to PRPI is a pressing ethical issue. Any pandemic influenza outbreak, mild, moderate or severe can lead to an intense pressure on the health service due to the high number of sick people needing attention. It is therefore justifiable to invest in PRPI to meet the needs of public health. Indeed, critics of vertical funding agree that doubling funds on HIV/AIDS programmes leads to reduction cases of HIV/AIDS, but more lives could be saved by combating simple illness such as respiratory diseases. Denny and Emanuel (2008), point out that focusing heavily on HIV/AIDS treatments misses huge opportunities, particularly to save young lives. Extending funding to simple but more deadly diseases such as seasonal influenza and diarrheal illness through generic public health interventions such as hygiene interventions can save more lives at a substantially lower cost. Pandemic influenza must still be recognized as one of the greatest threats these countries must face. When an influenza pandemic occurs, a large population of people maybe become infected in a relatively short period of time. Mild to moderate illness in the population can significantly disrupt the normal functioning of society. A WHO study in Thailand, Uganda and South Africa suggests that the 2009-2010 pandemic influenza contributed to a GDP loss (% change) of up to 0.05% of these countries (Department of Health, 2011). Other studies suggest that pandemic influenza alone could reduce GDP by 0.5-4.3% (Smith et al., 2009). For these reasons, scarce resources can be justified collectively to manage the impact of a pandemic. In many respects, where resource limits are a concern, pandemic influenza can be responded to in the same way as seasonal influenza and other respiratory infections such as TB. Virtual planning for unpredictable frequency, uncertainty and speed at which pandemic can develop, entails improving the health service, surveillance mechanism, research and development and managing staff absences, all of which are beneficial to other health conditions such as HIV/AIDS and Malaria.

Indeed some resources, such as influenza vaccines, are unavailable in the early months of the pandemic outbreak but something needs to be done, such as R&D in these countries, to speed

up vaccine production. The concern about how much Ghana and Malawi should spend on pandemic influenza that is proportionate to the perceived risk needs scrutiny. This was not fully explored in the interviews but it does highlight whether the health budget for Malawi and Ghana should be based on epidemiological profile of diseases. If so, many ethical issues are likely to emerge in addition to those covered in Chapter 7 unless the balance in allocating and distributing resources are met. Based on the contextual approach developed in Chapter 4, it is justifiable that health resources are given to pandemic influenza in the presence of other health conditions because the very same limited resources are prioritized to the vulnerable sick, such as those affected by HIV/AIDS. I suggest the answer to the ethically charged question of “whether poor countries like Malawi and Ghana should spend their scarce resources on pandemic influenza or HIV/AIDS or TB” can be arrived at by financing preparedness that uses generic approaches that will respond to all infectious disease events.

PRPI is not just about huge budgets. It is about maximizing and creating resources to work in such a way that addresses the pandemic problem and other emergencies. It is about revamping the roles of primary health care (PHC). Good PRPI is important to increase access to medicines through maintaining stockpiles and distributing antiviral medicines and antibiotics necessary for functional public health systems. Unless the roles and fundamentals of PHC are overhauled, poor access to medicines in the health service will remain problematic in years to come, consistent with concerns expressed by the World Health Organization (Sambala et al., 2010). Revamping the role of PHC will serve not only to optimize access; it will also ensure a stable and reliable way of dealing with the resilient underlying causes of inadequate access to medicines (for example, health innovation and economic challenges) (Sambala et al., 2010). Critical examination of the role of PHC demonstrates its ability as a primary care model that offers leverage and ensures fair, affordable, and sustainable access to essential medicines across populations (Sambala et al., 2010).

As noted so far in this discussion, PRPI should take account of many tough decisions that concern conflicts between individual needs and population health. Resources need to be balanced with uncertainty, unpredictability and the speed profile of the pandemic influenza, against the existing health conditions affecting the countries. The UK, Canada and New Zealand pandemic plans have begun to address unpredictability and uncertainty as major reasons to prepare. They all allude to scarcity of resources and the need for an ethical

framework for guidance to assist policymakers and others in developing policies that might help sort out problems during a pandemic outbreak. They don't suggest how much to invest in PRPI, but rather where policymakers could be helped to make rational ethical decisions and apply them to practice within their specific context. As was suggested in Chapter 3, ethical framework can reduce ethical problems if policymakers begin to think about pandemic influenza within a bigger picture. They should improve the health service by augmenting resources: this can be done by increasing the number of beds, staff and medicines as opposed to rationing resources more likely to cause ethical problems in the end.

Having an appropriate ethical framework will guide policy by closing gaps that constitute ethical problems. The purpose of any ethical framework is to consider broad issues of concern while building the basis or platform upon which an issue may be justified and resolved. There are a number of strengths in an ethical framework, the most important, however, is the recognition that having an ethical framework to guide pandemic plans would avert not only ethical concerns but also cost since advanced methods such as containment and mitigation would be screened. Only actions that are acceptable in society and strengthen surveillance, communication and community awareness, intersectoral collaboration, and community mobilization would be promoted.

Analysis of pandemic plans in Ghana and Malawi supported by interview data suggest that pandemic phases are major contributory factors to ethical issues. For instance, in the context of epidemiology, tracing contacts with pandemic influenza subtypes or quarantining cases unlawfully without a well informed procedure invokes conflict between the rights of individual privacy and public health while unlawful public health actions lead to rebellion and co-operative failures between individuals and authorities. A number of ethical issues identified in Ghana and Malawi occur at any level of the pandemic planning phase period. The majority, however, were identified at phase 6 of the pandemic period. Phase 6 is often regarded as a critical time of panic and fear, thus managing these risks often demands actions that bypass either individual or societal interests. A study by Rogers (2004) concerning public health practice in Scotland identified paternalism, responsibility and decision-making discourse as major actions that prompted ethical dilemmas. Similarly, in a pandemic setting, paternalism may involve failure by the public health authorities to negotiate community consultation, obtain consent or provide information about the disease.

9.12.0. Towards an Ethical Framework's Development

In order to achieve better public health practice in the preparation for, and response to, pandemic influenza, it is important to revisit the basic principles that constitute good technical skills, good intentions and good will to others, mapped out in Chapter 4. The Triangle Interfaith Alliance (TIA) refers to an ethical framework as a foundation on which to build daily behaviours.¹⁰³ An ethical framework is often defined as a set of one or more ethical guidelines which are designed to be applied concurrently to make an ethical decision (Krause and Voss, 2007). In public health practice, ethical frameworks serve to help those who face dilemmas in their decision-making processes.

Recently, ethical guidelines have been proposed that are specifically designed to offer guidance in the planning for, and response to, ethical issues arising as a result of difficult decisions that have to be made regarding pandemic outbreak combined with scientific uncertainty. At the beginning of an influenza pandemic, little will be known such as how many people are to be affected and how to minimize the burdens on individuals and society as a whole. Thompson et al. (2006) illustrate how values in an ethical framework can help guide decision-making in pandemic influenza preparedness. They cite the values of solidarity and protecting the public as imperative but insist that there are priorities to maximize the capacity to ensure the ill are cared for during a public health emergency. The ethical framework by Thompson et al. (2006) is intended to inform decision-making and was developed based on the "accountability for reasonableness" that applies deliberative theories of democratic justice to the specific problem of health care priority settings. The ethical framework is further enhanced by key lessons from SARS and "emergency ethics" literature, drawing on experts in clinical, organizational, and public health ethics. Thompson et al. (2006) claim that their methodology of developing an ethical framework was based on a number of identified key ethical processes and values that are relevant for health care organizations; the product of an iterative and inclusive process.

Kass (2001) has also suggested ethics for public health based on a 6 step framework derived from an analytic tool designed to help public health professionals consider the ethical implications of proposed interventions and policy proposals. Kass' 6 step framework asks:

¹⁰³ Triangle Interfaith Alliance <http://www.interfaithalliance-nc.org/images/stories/download/ethicalframework.pdf> (Accessed: March 17, 2013).

what are the public health goals of the proposed programme? How effective is the programme in achieving its goals? What are the known or potential burdens of the programme? Can burdens be minimized? Are there alternative approaches? Is the programme implemented fairly? How can the benefits and burdens of a programme be fairly balanced? Kass (2001) maintains that engaging in the 6 proposed steps of an ethics analysis makes policymakers meticulous in their reasoning, requiring that they advocate interventions based on facts and not merely belief. Similar to this is the UK ethical framework developed by CEAPI (Department of Health and Cabinet Office, 2007), based on the eight key principles of equal concern and respect: respect, minimizing harm, fairness, working together, reciprocity, flexibility, proportionality and good decision-making. According to this, the harm that might be experienced by every individual is important to society and so reducing the anguish that an influenza outbreak might cause is a vital concern. Decisions within the UK ethical framework are based on the “principles” designed to assist policymakers make decisions on different types of harm and context of particular circumstances. In situations where principles come into conflict with each other, such as minimizing harm in society affecting treating individuals fairly, judgement may be applied in accordance to fundamental principles of equal concern and respect. Such judgement may involve prioritising the principles such as using the principle of good decision to determine the rights and respect of individuals against those of society.

So far, it has been seen that most of the frameworks strive to be simple and legitimate in their ethical and moral focus, however, what becomes apparent are their complexities when applied to mitigating and preventing ethical problems. For example, a fundamental principle of the UK ethical framework is equal concern and respect; this means that everyone matters equally. Even so, the framework stipulates that everyone cannot be treated the same. In other words, the principle of good decisions can be used to defend moral positions by arguing for restrictions on civil liberties in order to minimise harm in society. This may create conflicts between individual needs and population health.

For most ethical frameworks, decisions of right or wrong, appropriate or unnecessary, have to be judged in relation to rules embedded in the ethical framework rather than real life and variable scenarios. These rules are necessary, but there should also be appropriate flexibility built into the system. For example, epidemiological modelling and new emerging knowledge on the virulence of influenza will constantly change the direction of ethical focus, potentially

causing a metamorphosis of the scope of ethical concerns. The PRPI in the UK, Canada and New Zealand, mostly guided by ethical frameworks, execute PRPI based on the “reasonable worst case” and planning assumptions informed by evidence and analytical work, but inevitably all decisions are elements of judgement. Respective plans of the UK, Canada and New Zealand are not a strictly scientific and administrative task. In these countries, preparedness plans have always made it clear that pandemic planning and response are not just tasks for scientific experts; they involve everybody including politicians and lay people. For example, politicians have legitimate functions in delegating policymaking responsibilities to experts who also have a responsibility to be part of a successful pandemic response. In Ghana and Malawi, new ways of thinking are required, and I argue that established frameworks require regular focussed reform, given the ever changing subject.

9.13.0. Developing Ethics in the Context of Ghana and Malawi

Commitment to ethics in developing countries is a relatively new scientific inquiry in the west. While the broader agenda in bioethics is to address ethical issues in new technologies and new issues in biomedicine, most substantive ethical issues such as poverty and inadequate resources in healthcare are often inadequately addressed or even neglected in sub Saharan Africa (particularly Ghana and Malawi). Scholars and researchers examining ethical issues in medicine and public health in Africa rarely engage with ethical issues relating to health, illness, economics and social conditions underlying the poverty of poor communities. Turner adamantly suggests that the bioethicist would rather address global ethical concerns embedded in a global economic system than issues relating to poverty and economics of poor communities (Turner, 2004). The consequences of inadequately addressing these issues contribute to the morbidity and mortality rates in these poor countries. For bioethicists involved in transnational ethical issues, the majority are inclined to engage in research relating to developed and more affluent countries, since wages and work conditions are often far more comfortable.

Developing public health ethics and bioethics for Africa involves complex challenges to newly trained experts. The role of ethics in understanding the meaning of health and application of ethical theories is problematic, even among experienced moral philosophers. Local ethical experts are not actively involved in prescribing, negotiating and interpreting moral decisions that could pose ethical challenges in public health. During the 2009 pandemic influenza outbreak in Ghana and Malawi, local ethical specialists were rarely

consulted by policymakers. This is noted within pandemic planning systems like the UK where those dealing with pandemic ethics (CEAPI) at the national level were generally involved in the response to the 2009 pandemic in their employing organization. Some members such as the Secretary to CEAPI were part of the Department of Health response team at the national level to discuss ethical issues.¹⁰⁴ CEAPI created an ethical framework shared by hospitals, primary care, public health and social care. An agreed framework reduces the risk of future conflict between people using different frameworks. Strengthening and reinforcing the practice of ethics, precisely public health ethics and bioethics, to address concerns that poor countries experience can guide the direction of health care and promote acceptable decisions. The scarcity of resources in Africa offers an opportunity for developing ethics scholarship, new challenges, and opportunities for visionary solutions among specialists. It is my view that newly trained specialists should be encouraged in these countries by being awarded internationally recognised scientific credentials and accolades for their successes.

Resolving ethical dilemmas and problems in public health, especially those yet to arise, will require ethical professionalism, but unless communication is improved between policymakers and local ethical specialists, the current status quo is anything but professional. It is vital that ethical and bioethical frameworks in these countries acquire specialist communication and logistics planning and application which, as mentioned earlier, should undergo regular reform. In addition, the attraction of new specialists in new ways should be incorporated into both framework and policy.

9.14.0. Suggestions for an Ethical Framework on Pandemic Influenza

The idea of an ethical framework to guide planning for, and response to, pandemic influenza is not new. As deliberated earlier, some countries have proposed their national ethical framework alongside their national pandemic response plans. Ideally, parallel but converging policy documents complement each other through particular set tasks: national pandemic plans set out policy actions including how to proceed during a pandemic while using an ethical framework to check the moral balance. These are of course reiterative cycles that

¹⁰⁴ Following examiners comments made available to the author after the viva held on February 21, 2014, E. Gadd and I. Shaw confirmed that the Secretary to CEAPI was embedded in the Department of Health response team where meetings could be convened to discuss ethical issues.

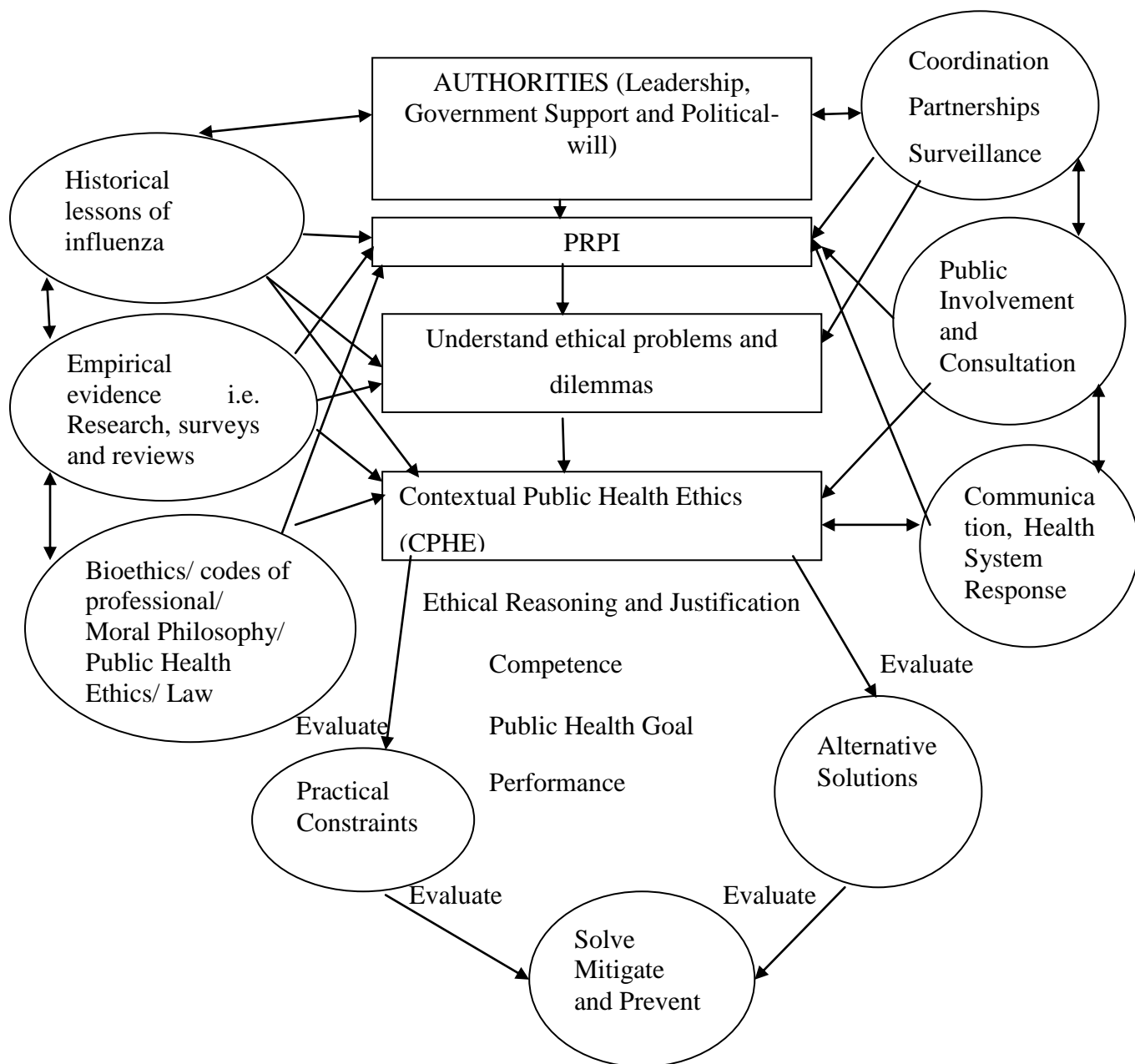
ought to be implemented simultaneously, feeding each other. Arguably, for most countries, development and implementation of pandemic plans has been put forward in public health without an ethical framework to guide and help professionals think through their actions in light of ethical issues. Kass (2001) points out that parallel roles not converging leaves public health professionals to muddle through most other situations on their own; at worst, leading them to turn to inappropriate codes for professional moral direction.

Figure 8 below demonstrates how an ethical framework for pandemic influenza could be synthesized based on the findings of this study. There are three major components contributing to the development of an ethical framework: understanding how ethical problems arise, screening for public health goals and resolving ethical problems based on reasoning and judgement while retaining moral values and respect for human rights and civil liberties. Identifying ethical problems can be done in various ways, such as conducting informal talks with all concerned, carrying out a literature review for indicative ethical problems or using methodology that involves looking at the ethical past of pandemic influenza.

The historical account of 1918 pandemic was particularly chosen for study because it was the worst global influenza pandemic of the last century. Considering this level of pandemic not only prepares public health professionals but also reassures them, as they are prepared for the worst. Further insights into the other pandemic influenzas such as the 1957, 1968 and 2009 suggest that planning and response should be in phases according to severity. Having an ethical framework guiding all these stages is more than desirable. Not only will it help with cost effective measures but also clear controversies and strengthen meaningful responses. Lessons can be learned from the ongoing lack of understanding, including control strategies and treatment as well as understanding the lack of vaccines in the early months of the pandemic (Sambala, 2011). Learning the history of pandemics necessitates ways of addressing ethical disparities and most importantly bridges the culture of preparedness within the health system not only elevated to disasters but to all determinates of health. An ethical framework remains relevant to make planning easier and respond fully to adjusted anticipated scenarios while allowing public health professionals to identify gaps or weaknesses in the plan. This is possible if public health goals are identified. The first step to any decision-making is to identify goals. The goals of public health advancement in terms of reduction of illness or death must be aligned to everyone's needs, and the balance of individual needs,

civil liberties and human rights. This is achievable if there is the widest possible involvement of people who are constantly informed about such decisions. In the presence of ultimate goals, for example, to mitigate and prevent pandemic influenza, it is important to realize that means of achieving this are critical. For example, immunization might be vital to reduction of influenza risk in general; however, this is not enough if individuals refuse vaccines. In this case, an option is to implement an education programme that will change people’s negative behaviour. Simply forcing people to be vaccinated or restricting their liberty on the basis that you are protecting them or protecting others poses ethical and legal burdens.

Figure 8: Process of Developing an Ethical Framework



Resolving ethical problems based on figure 8 emphasizes a number of options. For example, making ethically appropriate decisions in relation to a context in which the issue is emerging and judged in reference to facts around public health and individual needs. Good PRPI is of paramount importance. It involves strengthening the health care system so everyone has access, collaboration, partnerships and solidarity, to help minimize harm. There is a need for disease communication, monitoring and surveillance and the required capability and capacity. There is a need for strong leadership and decisions based on reasoning and judgement. This suggests a need for training in public health ethics and bioethics so that moral values and respect for human rights and civil liberties are retained. The Contextual Public Health Ethics proposed in Chapter 4 is a useful starting point in considering how an ethical framework may be developed. It attempts ways to reason and make decisions in which everyone matters.

The process of developing the framework proposed here has limitations since it does not provide a definitive, ready to use ethical framework. Nevertheless, it makes clear how countries like Ghana or Malawi could develop one that ensures these advances of PRPI are harnessed in the interest of all citizens. Since ethical frameworks are a platform upon which policy can be developed, taking careful account of the methodology, particularly oversight of scientific and technical aspects of ethical frameworks, is important for helping countries or stakeholders participate in the development of their ethical frameworks. Figure 8 is the process proposed for development of an ethical framework with a deliberate intention to show factors that ought to be considered if a country like Malawi and Ghana were to develop an ethical framework. The suggested process takes into account a pluralistic society influenced by different cultures, religion, politics and economies. Thus any proposed process should be prepared for different moral appeals that often come into conflict and should be able to initiate ethical reasoning and performance to resolve them. As illustrated in figure 8, an ethical framework requires various factors including government structures that fully support all aspects of pandemic preparedness and response. The ethical framework, inspired by moral theories including those of public health ethics, bioethics, public health law, codes of professional practice and common sense, needs to be advocated to help identify ethical problems or dilemmas. At best, this paints a picture of how ethical reasoning should proceed.

Using the conceptual framework in public health ethics advocated in this thesis helps to focus the most needed public health goals on pandemic influenza. Public and stakeholder involvement is necessary and should be advocated to steadily increase the acceptability and

adaptability of an ethical plan. Through public health ethical leadership, reasoning and decision-making, it is hoped that policymakers can come up with practical constraints and alternative solutions prior to solving, mitigating and preventing an ethical problem or dilemma. Based on the findings of this thesis, I further suggest that a dimension of ethical reasoning such as identifying and providing answers should be a reiterative process that is well connected to principles, values and medical codes and guidelines. This contrasts with other ethical frameworks on the grounds that it avoids prescriptive ethical reasoning based on given values in decision-making. There are distinctions between the process proposed here and other frameworks like that of the UK ethical framework. The process being proposed in this thesis highlights the need to consider all the rational decisions that will have to be made, for example, on how to allocate the limited resources or balance the wishes of the people without favour or exclusion. The proposed process of an ethical framework in this thesis is open, thus it does not reject or accept specific moral arguments as criterion for prioritization or decision-making. Part of the process in the proposed framework is the consideration and integration of evidence and norms that should be interconnected as head and heart. While the UK ethical framework considers the principle of fairness, it strongly rejects the fair innings approach on the basis that age should not be a criterion for prioritization. The fair innings argument promotes the egalitarian concept of equal opportunities, which implies that a child or young adult has a stronger claim to protection than an elderly person who has been able to live a full life-span, so that vaccination should prioritize younger people.¹⁰⁵ The UK ethical framework promotes an equal chance of benefits using the medical criteria opposed to age to access mechanical ventilation, for example. Good reasons are needed to treat some people differently from others (Department of Health and Cabinet Office, 2007), and it could equally be argued that age may be an important decision-making criteria or defining characteristic. While the UK ethical framework may cover the need to balance civil liberties with population needs, the decision-making process is not explicit on the issue.

The UK ethical framework encourages the use of principles in decision-making but the one proposed here attempts to apply Hoffmaster' (1994) approach that move away from a theory-

¹⁰⁵ http://www.euro.who.int/__data/assets/pdf_file/0008/90557/E91310.pdf (Accessed: May 12, 2013).

driven “applied ethics” to a more situational, contextual approach that opens the way for conception of empirical dimensions of ethical problems.

9.15.0. Conclusion: Validity and Reliability

Qualitative researchers have a responsibility to make their epistemological position clear, conduct their research in a manner consistent with that position, and present their findings in a way that allows them to be evaluated properly (Madill et al., 2000). Following that understanding, I wanted to delineate the research process in order to permit research replication if anyone decided to study the ethics of PRPI. In order to allow the reader to assess the quality and rigour of a dissertation, Hammersley and Atkinson (1983) recommend that the researcher reflect on developing analysis as part of the research process.

Before undertaking fieldwork to explore the perspectives of others and going through social facts, time was spent developing the theoretical and analytical framework. I also explored both historical and extant literature before carefully evaluating who to talk to in the field, what questions to ask and how to interpret events. Rigour of data collection methods and analysis has roots in quantitative research and is one of the most challenging tasks in qualitative research. To ensure credibility and transparency of the research outcomes of this thesis, I attempted to demonstrate the step-by-step process in the methodology leaving an audit trail. I have also presented the findings with evidence in the form of verbatim quotations and used bold type text and indent paragraphs to present them. The quotations were edited minimally for the purpose of legibility and confidentiality but kept a delicate balance to maintain the scientific goal. A small amount of editing involved the removing of repetitions and correcting punctuation including the removal of unnecessary spoken words (such as ahh and ums, I mean, yeah etc.) to improve readability. The interviewee’s identifying names were substituted with the respondent institution, country name they represent and an interview code within brackets after the quotation in order to enhance privacy. Corden and Sainsbury (2006) note that editing verbatim quotation is acceptable in applied social research that does not take a narrative approach in which the absolute content of speech, and the length and type of verbal hesitations are material for analysis. In Malawi, some responses from the respondents’ quotations were translated into English and I made an effort to mirror the words as spoken. In other quotes where two or more respondents expressed the same ideas or the same thing, a single quote of multiple participants’ spoken words was developed and combined to reflect what the respondents said.

There is a danger that without this type of editing, people's voices may not be heard or taken seriously (Corden and Sainsbury, 2006). Finlay (2006) suggests that the reader can only be persuaded if the researcher shows that their work is "trustworthy" and credible, making a case firmly rooted in theory.

To build value and integrity in qualitative research during my fieldwork, I reported data on a regular basis to my supervisors. This approach not only informed my supervisors of the nature of the data I was collecting, it assisted in identifying concerns in the methods of data collection. For example, observational data presented ethical dilemmas and, although generally an important tool for data collection, was not included in the data analysis schedule. Observation data also presents reliability problems since researchers observe events differently. Finlay (2006) firmly asserts that what emerges in an interview should be contingent on the researcher's approach and the specific interviewer-participant relationship and context. This suggests that the same interviewer or a different interviewer, interviewing the same interviewee repeatedly, at a different time or place would not elicit exactly the same "story" (Finlay, 2006). This is understandable when qualitative positivists argue that reliability has no place in qualitative research, although it aims for consistency in data collection. The only way to convince sceptical audiences and peer-reviewers is to pursue what Savin-Baden and Fisher (2002) call honesties in research.

Although validity and reliability were once rejected by traditional positivists, qualitative experts cite evidence supporting different methods of judging the quality of research. Seale (1999) reconsidered rigour and quality in the qualitative research paradigm by offering explicit criteria as a way to examine the strengths and limitations of the research. According to Silverman (2001), research findings are credible and reliable if interpretations and conclusions arising from the research are valid and this is possible if the researchers are able to demonstrate that appropriate methods of data collection and analysis used were accurate and transparent. Seale (1999) pays particular attention to the role of counting, the use of computer programmes for data analysis and the use of transcription techniques that improve the accuracy of data. This study considered these perspectives and went further, triangulating the research process to reflect the accounts of interviewees.

Triangulation is not a common process in thematic analysis but was applied in this thesis to check the complex interpretation and re-interpretation necessary to substantiate validity

claims (Denzin 1970). For Silverman (2001), triangulation is not a conclusive way of validating qualitative data, since persons validating data may not be conversant with the analytical stage of the research process and theory used in interpreting the data. Bearing that in mind, my other efforts were directed at establishing credibility; carrying out member checks or peer-review to instil trust in the “truth” of the research outcomes. Lincoln and Guba (1985) have encouraged this by the use of “member checks” in which, in my study, my supervisors played a role. In relation to issues of reliability, data chapters attempted to present as much accurate and representative data as possible about what policymakers said in interviews, without distorting quotations or their meaning. Interviews were recorded so that the captured data can be kept and referred to later. This process is helpful in data analysis because recorded interviews can be probed for deeper meaning and understanding, which is impossible without records.

Selecting who to interview was based on the researcher’s questions, theoretical argument and my own personal reflections. Being clear and explicit about my research process not only adds to the trustworthiness of the study, it also enables scholars to gain insights into how the researcher undertook the research and contributed to the scholarship. LeCompte and Goetz (1982) tell us that reliability allowing others to replicate the study design and samples may be addressed by overall transparency about the research process. This study has provided an audit trail (reliability and validity of the data) which has been laid bare to external scrutiny. While methodological auditing is a difficult process, considering analytical theory, themes and coding of data could be a very good way to start. An attempt was made to secure credibility of research findings dependent on a representative sample; this was achieved through an analytical framework that demanded recruitment until saturation was reached. Spending enough time in the field to become familiarized with the study settings and prolonged engagement with the data increased the study’s rigour, providing better understanding of the local perspective as well as a chance for more interviews.

9.15.1. Ethical Consideration

This study was conducted in developing countries, where ethical issues in research and public health practice concerning privacy, informed consent and data protection are still issues of controversy. To ensure integrity and quality throughout this research, consent was sought through email or fax from the participants prior to conducting the interviews. The interview purpose and criteria intended to elicit information were fully explained to the participants.

The nature and scope of the interview deliberation was also clearly explained, including the right to withdraw without penalty. This was particularly pertinent given the potential for the participants to feel over-researched as a result of probing and difficult questions on restricted areas of interactions that the researcher posed. Although respondents gave their written consent to precisely what the study involved, I was often confronted with ethical dilemmas regarding other matters essential to the study which I didn't immediately observe. For example, there were times when I caused inconvenience to some respondents by needing more time to talk with them when clearly they were supposed to be working. During interviews, I observed objects and behaviours that formed important data that would influence my interpretation of findings, but which were rejected partly because this was similar to covert research. I did not get any consent for an observation study, thus could not use the data. Murphy and Dingwall (2001) make the distinction between covert and overt research. For example, in complex and mobile settings, it may be simply impractical to seek consent from everyone involved. Unlike experimental researchers, ethnographers typically have limited control over who enters their field of observation and all research lies on a continuum between overtness and covertness (Murphy and Dingwall, 2001).

In another study, Dingwall (1980) highlights the difficulties of implied informed consent to circumstances normally being studied when research interests' shift outside permitted consent and the respondent is not informed about this shift. In general, all participants were reassured about confidentiality regarding all the information they supplied to support this research. In addition to the ESRC six key principles of ethical guidelines, the researcher made further attempts to encourage informants to voluntarily participate without any coercion. The participant consent form shown in Appendix 6 was required to be read and signed before the interview could be carried out. In addition to this, the participant information sheet (appendix 5) providing information about the study was emailed to the participants several days before requesting consent. Ethical approval was sought from the Ethics Committee of the University of Nottingham and was approved (appendix 15) although interviews considered in this research did not necessarily require ethical approval from the committee.

Despite the ethical approval, other measures were put in place for the conduct of interviews without evoking levels of exploitation or unusual anxiety. Issues of privacy, particularly on the use, storage and archiving of data which individuals may be identified with, were practical and important to address in the interview. To ensure the research process was free

from exploitation and erosion of privacy and was not deliberately misleading, attempts were made to assure the respondents that interview notes, written documents from the interview and audio recordings would be kept in secure locations. Keyed data will be de-identified, including the discussion scripts. The use of pseudonyms involves real difficulties in maintaining anonymity, particularly when a policy or organization is identifiable with knowledge of the field setting. It was, therefore, important to make every effort to safeguard organizational identity by use of generic categorizations. After the study, only de-identified data would be archived for 7 years after the completion of the interview before being destroyed, as required by the University of Nottingham. Data protection is within the UK data storage guidelines of the Data Protection Act, 1998.

9.15.2. Limitations of the Study Design

There are many challenges to conducting data collection and analysis. For example, on reflection, lay people, although not policymakers could have been included in this research. I believe that the study would certainly have been improved had I interviewed local people. However, it is questionable as to how this would have contributed to policy practice of this particular project. Furthermore, not only would including lay people increase the labour intensiveness of data collection, it could also have delayed the study, since new ethical approval would be sought from the ethics committees. It takes a long time for ethics approval to be granted. Having said that, it would have been a particularly interesting topic to investigate how lay people make sense or think of policies on ethics of PRPI.

Another limitation of this study was recruitment. I attempted to recruit a representative sample for interview but I ran short of some crucial policymakers because I did not receive a signed consent form from them. A few agreed verbally to be interviewed but I couldn't proceed as the study required a written agreement – this was necessary not only for respondents to understand what the study involved, but to protect them from harm and intrusiveness. Only policymakers who agreed to participate with a written consent were recruited. This study did not make an effort to solicit informal consent through emails, telephone or informal interactions. As this thesis is about ethics, I had to take recruitment criteria very seriously – not only to demonstrate the researcher's values, but also to show that there are no shortcuts in research. I had to adhere to the selection protocol for ethical reasons, and this limitation is acceptable in research. Dingwall (1974) avoided using specific and

important quotations in his PhD thesis because such data was observed outside the study setting and because his respondents were under the influence of alcohol.

Those who consented in writing to be interviewed were happy to do so, but on many occasions they were slightly unsure and concerned whether they were the right candidates, or if they “knew enough” about the topic under discussion. It proved difficult for me to convince them that this study was not about testing their knowledge, but rather learning from their experiences and stories about ethics of PRPI.

Another limitation of this study was in aiming for breadth data rather than depth data. Silverman (2001) suggests that data analysis is more effective if there is limited data to work with. However, he does not tell us the significance of “depth data”, or how to progress in working with it to achieve more meaning and the reality of key events and activities in the study. Narrowing the methodological focus to obtain manageable data has complex implications for the study findings, especially if the process of data saturation misled the researcher by collecting unrepresentative or less data than in purposively sampled interviews, where sample size is pre-determined before interviews. Morse (1995), cited in Guest et al. (2006), observes that “saturation is an excellent qualitative method of determining sample size but can be misleading since there are no practical guidelines to test adequacy or when sample size required reaching saturation”.

Duration of stay was another issue. I did not stay any longer in the field because I had collected vast data that satisfied not only the point of saturation, but also me as the researcher. Critics could argue that eight months in the field was inadequate. Although Lacey (1976) observes that field researchers are everywhere at once (e.g. researcher engaging in data collection and at the same time engaging in sustained data analysis and producing reports) and thus are likely to stay in the field setting for as long as possible, leaving less time for theoretical reflection. Time spent in Ghana and Malawi was enough to enable me collect and reflect on the significance of the data and conduct preliminary data analysis thus leaving me enough time to examine the interaction between the theory and data analysis and findings as all these are time consuming.

9.15.3. Suggestions for Future Research

In order to be fully effective, future research should concentrate on the gaps between a proposed process for an ethical framework's development and the real life context of these two countries' situations, attempting to close or at least narrow that gap. Indeed, future research should consider the proposed process of developing an ethical framework. Areas of concern most effective and possible to implement in these regions, can be summarised thus:

- Focus on integration between different relevant parties.
- Focus on communication support at ground level between different areas or zones.
- Focus on attracting new skilled specialists, and integrating them effectively once they are there.

It is my assertion that the developed world has the skills, power, technical knowhow and infrastructure to deal with a pandemic effectively. For these regions of Africa to match, in their own context, research and reform in all three primary focuses identified are necessary and I believe, possible. We are not talking about advanced expensive super cures that are the monopolies of the elite, or billion dollar enterprises; the above points can be condensed to a core trio of integration, skills, and communication. All are possible, realistic areas of improvement, and I believe it is these that should be pursued as appropriate and realistic goals. An effective ethical framework in this area of the world is all the more possible if realistic goals are administered, and adjusted for further positive benefit via regular reform as and when each prior goal is achieved. This dissertation has hopefully contributed new knowledge on how policymakers should resolve ethical problems. It is also my hope to continue this type of research in sub Saharan Africa.

REFERENCES

- Abor, P.A., Abekah-Nkrumah, G. and Abor, J. (2008) "An Examination of Hospital Governance in Ghana", *Leadership in Health Services*, vol. 21, no. 1, pp. 47-60.
- Acheson, D. (1988) *Public Health in England: The report of the Committee of Inquiry into the Future Development of the Public Health Function*, HMSO, London.
- Alexander, G.C. and Wynia, M.K. (2003) "Ready and willing? Physicians' sense of preparedness for bioterrorism", *Health affairs (Project Hope)*, vol. 22, no. 5, pp. 189-197.
- Arden, N., Monto, A.S. and Ohmit, S.E. (1995) "Vaccine use and the risk of outbreaks in a sample of nursing homes during an influenza epidemic", *American Journal of Public Health*, vol. 85, no. 3, pp. 399-401.
- Armon, C. (1995) "Moral judgment and self-reported moral events in adulthood", *Journal of Adult Development*, vol. 2, no. 1, pp. 49-62.
- Auf der Heide, E. (1989) *Disaster response: principles of preparation and coordination*, Mosby, St. Louis.
- Auf der Heidi, E. (1994) *Designing a disaster plan: important questions*, National Emergency Training Center, Emmitsburg, MD.
- Auf der Heide, E. (2006) "The importance of evidence-based disaster planning", *Annals of Emergency Medicine*, vol. 47, no. 1, pp. 34-49.
- Babbie, E.R. (1992) *The Practice of Social Research*, 6th edn, Wadsworth Publishing Company, Belmont, CA.
- Bachrach, P. and Baratz, M.S. (1963) "Decisions and Nondecisions: An Analytical Framework", *The American Political Science Review*, vol. 57, no. 3, pp. 632.
- Baker, E.S. and Edwards, R. (2012) How many qualitative interviews is enough?. Available at: http://eprints.ncrm.ac.uk/2273/4/how_many_interviews.pdf (Accessed: July 31, 2013).
- Ballinger, C. (2006) "Demonstrating rigour and quality?" in *Qualitative Research for Allied Health Professionals: Challenging Choices*, eds. L. Finlay and C. Ballinger, Wiley Publishers Limited, West Sussex, England.
- Barry, J.M. (2004) *The great influenza: the epic story of the deadliest plague in history*, Penguin Books, New York.
- Barry, J.M. (2005) "The Story of Influenza- 1918 Revisited: Lessons and Suggestions for Further Inquiry" in *The Threat of Pandemic Influenza: Are We Ready? Workshop Summary*, eds. S.L. Knobler, A. Mack, A. Mahmoud and S.M. Lemon, The National Academies Press, pp. 60-61.

- Bayer, R. (2007) "The continuing tensions between individual rights and public health. Talking Point on public health versus civil liberties", *EMBO reports*, vol. 8, no. 12, pp. 1099-1103.
- Bayer, R. and Fairchild, A.L. (2004) "The genesis of public health ethics", *Bioethics*, vol. 18, no. 6, pp. 473-492.
- Beauchamp, T.L. and Childress, J.F. (2001) *Principles of Biomedical Ethics*, 5th edn, Oxford University Press, USA.
- Beauchamp, T.L. and Childress, J.F. (2009) *Principles of biomedical ethics*, 6th edn, Oxford University Press, New York.
- Bechara, A., Damasio, H. and Damasio, A.R. (2000) "Emotion, Decision Making and the Orbitofrontal Cortex", *Cerebral Cortex*, vol. 10, no. 3, pp. 295-307.
- Bentham, J. (1970) "An Introduction to the Principles of Morals and Legislation" in *The Collected Works of Jeremy Bentham*. eds. J.H. Burns and H.L.A. Hart, Athlone Press, London.
- Berkman, B.E. (2008) "Mitigating pandemic influenza: the ethics of implementing a school closure policy", *Journal of Public Health Management and Practice*, vol. 14, no. 4, pp. 372-378.
- Bertino, J.S. (2002) "Cost burden of viral respiratory infections: issues for formulary decision makers", *The American Journal of Medicine*, vol. 112, no. 6, pp. 42-49.
- Bierstedt, R. (1974) *The social order*, 4th edn, McGraw - Hill, New York.
- Blasi, A. (1999) "Emotions and Moral Motivation", *Journal for the Theory of Social Behaviour*, vol. 29, no. 1, pp. 1-19.
- Blum, L. (1991) "Moral Perception and Particularity", *Ethics*, vol. 1, no. 4, pp. 701-725.
- Bolton, K.J., McCaw, J.M., Moss, R., Morris, R.S., Wang, S., Burma, A., Darma, B., Narangerel, D., Nymadawa, P. and McVernon, J. (2012) "Likely effectiveness of pharmaceutical and non-pharmaceutical interventions for mitigating influenza virus transmission in Mongolia", *Bulletin of the World Health Organization*, vol. 90, no. 4, pp. 264-271.
- Borse, R.H., Shrestha, S.S., Fiore, A.E., Atkins, C.Y., Singleton, J.A., Furlow, C. and Meltzer, M.I. (2013) "Effects of vaccine program against pandemic influenza A(H1N1) virus, United States, 2009-2010", *Emerging infectious diseases*, vol. 19, no. 3, pp. 439-448.
- Bowie, C. (2007) "The burden of disease in Malawi", *Malawi Medical Journal*, vol. 18, no. 3, pp. 103-110.
- Braun, V. and Clarke, V. (2006) "Using thematic analysis in psychology", *Qualitative Research in Psychology*, vol. 3, no. 2, pp. 77-101.

- Braunack-Mayer, A.J. (2001) "What makes a problem an ethical problem? An empirical perspective on the nature of ethical problems in general practice", *Journal of Medical Ethics*, vol. 27, no. 2, pp. 98-103.
- Braunack-Mayer, A. J. (2005) "What makes a good GP? An empirical perspective on virtue in general practice", *Journal of Medical Ethics*, vol. 31, no. 2, pp. 82-87.
- Breiman, R.F., Nasidi, A., Katz, M.A., Njenga, M.K. and Vertefeuille, J. (2007) "Preparedness for Highly Pathogenic Avian Influenza Pandemic in Africa ", *Emerging Infectious Diseases*, vol. 13, no. 10, pp. 1453-1458.
- Brown, A. (2003) "Regulators, Policy-Makers, and the Making of Policy: Who Does What and When Do They Do It?", *International Journal of Regulation and Governance*, vol. 3, no. 1, pp. 1-11.
- Buchanan, D.R. and Miller, F.G. (2006) "A public health perspective on research ethics", *Journal of medical ethics*, vol. 32, no. 12, pp. 729-733.
- Callahan, D. (2003) "Principlism and communitarianism", *Journal of Medical Ethics*, vol. 29, no. 5, pp. 287-291.
- Callahan, D. and Jennings, B. (2002) "Ethics and public health: forging a strong relationship", *American Journal of Public Health*, vol. 92, no. 2, pp. 169-176.
- Cannell, J.J., Zasloff, M., Garland, C.F., Scragg, R. and Giovannucci, E. (2008) "On the epidemiology of influenza", *Virology Journal*, vol. 5, no. 29.
- Cao, B., Li, X.W., Mao, Y., Wang, J., Lu, H.Z., Chen, Y.S., Liang, Z.A., Liang, L., Zhang, S.J., Zhang, B., Gu, L., Lu, L.H., Wang, D.Y., Wang, C. and National Influenza A Pandemic (H1N1) 2009 Clinical Investigation Group of China (2009) "Clinical features of the initial cases of 2009 pandemic influenza A (H1N1) virus infection in China", *The New England Journal of Medicine*, vol. 361, no. 26, pp. 2507-2517.
- Carcione, D., Giele, C., Dowse, G.K., Mak, D.B., Goggin, L., Kwan, K., Williams, S., Smith, D. and Effler, P. (2010) "Comparison of pandemic (H1N1) 2009 and seasonal influenza, Western Australia, 2009", *Emerging Infectious Diseases*, vol. 16, no. 9, pp. 1388-1395.
- Cauchemez, S., Ferguson, N.M., Wachtel, C., Tegnell, A., Saour, G., Duncan, B. and Nicoll, A. (2009) "Closure of schools during an influenza pandemic", *The Lancet Infectious Diseases*, vol. 9, no. 8, pp. 473-481.
- CDC. (2006) *Pandemic Influenza - Past, Present, Future: Communicating Today Based on the Lessons from the 1918-1919 Influenza Pandemic*, U.S. Department of Health & Human Services, Washington, D.C.
- CDC. (2010) Updated CDC estimates of 2009 H1N1 influenza cases, hospitalizations and deaths in the United States, April 2009 – April 10, 2010. Available at: http://www.cdc.gov/h1n1flu/estimates_2009_h1n1.htm (Accessed: July 30, 2012).

- Childress, J.F., Faden, R.R., Gaare, R.D., Gostin, L.O., Kahn, J., Bonnie, R.J., Kass, N.E., Mastroianni, A.C., Moreno, J.D. and Nieburg, P. (2002) "Public health ethics: mapping the terrain", *The Journal of Law, Medicine & Ethics*, vol. 30, no. 2, pp. 170-178.
- Choi, S.M., Boudreault, A.A., Xie, H., Englund, J.A., Corey, L. and Boeckh, M. (2011) "Differences in clinical outcomes following 2009 influenza A/H1N1 and seasonal influenza among hematopoietic cell transplant recipients", *Blood*, vol. 117, no. 19, pp. 5050-5056.
- Chowell, G., Echevarria-Zuno, S., Viboud, C., Simonsen, L., Tamerius, J., Miller, M.A. and Borja-Aburto, V.H. (2011) "Characterizing the epidemiology of the 2009 influenza A/H1N1 pandemic in Mexico", *PLoS Medicine*, vol. 8, no. 5, pp. e1000436.
- Chowell, G., Miller, M.A. and Viboud, C. (2008) "Seasonal influenza in the United States, France, and Australia: transmission and prospects for control", *Epidemiology and Infection*, vol. 136, no. 06, pp. 852-864.
- Chowell, G., Nishiura, H. and Bettencourt, L.M. (2007) "Comparative estimation of the reproduction number for pandemic influenza from daily case notification data", *Journal of the Royal Society*, vol. 4, no. 12, pp. 155-166.
- Clarke, M.J. (1992) "Ethical influences on community health" in *Nursing in the Community*, ed. M.J. Clarke, Appleton and Lange, Norwalk, CT, pp. 264-276.
- Cliff, A.D., Haggett, P. and Ord, J.K. (1986) *Spatial aspects of influenza epidemics*, Pion Limited, London.
- Coffey, A. and Atkinson, P. (1996) *Making sense of qualitative data: complementary research strategies*, Sage Publications, Thousand Oaks.
- Cohen, D. and Carter, P. (2010) "Conflicts of interest. WHO and the pandemic flu "conspiracies"", *BMJ*, vol. 340, pp. c2912.
- Coker, R., Atun, R. and McKee, M. (2008) "Contemporary emerging and re-emerging communicable diseases: challenges to control " in *Health Systems and the Challenge of Communicable Diseases: Experiences from Europe and Latin America*, eds. R. Coker, R. Atun and M. McKee, 1st edn, Open University Press, Maidenhead, England, pp. 1-20.
- Commission on Macroeconomics and Health. (2001) *Report of the Commission on Macroeconomics and Health: Investing in Health for Economic Development*, World Health Organization, Geneva.
- Cooley, H.C. (1902) *Human Nature and the Social Order*, Charles Scribner's Sons, New York.
- Corden, A. and Sainsbury, R. (2006) *Using verbatim quotations in reporting qualitative social research: researchers' views*, University of York.
- Cotterrell, R. (1992) *The Sociology of Law: An Introduction*, 2nd edn, Oxford University Press, Oxford.

- Coughlin, S.S. (2008) "How Many Principles for Public Health Ethics?", *The Open Public Health Journal*, vol. 1, pp. 8-16.
- Coughlin, S.S. and Beauchamp, T.L. (1996) *Ethics and epidemiology*, Oxford University Press, New York.
- Cowling, B.J., Chan, K.H., Fang, V.J., Lau, L.L., So, H.C., Fung, R.O., Ma, E.S., Kwong, A.S., Chan, C.W., Tsui, W.W., Ngai, H.Y., Chu, D.W., Lee, P.W., Chiu, M.C., Leung, G.M. and Peiris, J.S. (2010) "Comparative epidemiology of pandemic and seasonal influenza A in households", *The New England Journal of Medicine*, vol. 362, no. 23, pp. 2175-2184.
- Cox, N.J. and Subbarao, K. (2000) "Global epidemiology of influenza: past and present", *Annual Review of Medicine*, vol. 51, pp. 407-421.
- Creswell, J.W. (1994) *Research Design: Qualitative and Quantitative Approaches*, Sage Publications, Thousands Oaks, CA.
- Crosby, A.W. (1989) *America's forgotten pandemic: The Influenza of 1918*, 2nd edn, Cambridge University Press, Cambridge.
- Dahrendorf, R. (1987) "Ch. 37, Max Weber and his Contemporaries" in *Max Weber and Modern Social Science*, eds. J.M. Wolfgang and O. Jorgen, 1st edn, The German Historical Institute/Allen & Unwin, London.
- Daniels, N. (1985) *Just Health Care*, Cambridge University Press, Cambridge.
- Daniels, N. (2000) "Accountability for reasonableness: Establishing a fair process for priority setting is easier than agreeing on principles", *BMJ*, vol. 321, no. 7272, pp. 1300-1301.
- Darlington, Y. and Scott, D. (2002) *Qualitative research in practice: Stories from the field*, Open University Press, Buckingham.
- Davidson, A. (1918) "Alkalis in the treatment of influenza", *JAMA (The Journal of the American Medical Association)*, vol. 71, no. 19, pp. 1603-1603.
- Dawood, F.S., Iuliano, A.D., Reed, C., Meltzer, M.I. and et al., (2012) "Estimated global mortality associated with the first 12 months of 2009 pandemic influenza A H1N1 virus circulation: a modelling study ", *The Lancet Infectious Diseases*, vol. 12, no. 9, pp. 687-695.
- Day, T., Park, A., Madras, N., Gumel, A. and Wu, J. (2006) "When is quarantine a useful control strategy for emerging infectious diseases?", *American Journal of Epidemiology*, vol. 163, no. 5, pp. 479-485.
- De Melo-Martin, I., Palmer, L.I. and Fins, J.J. (2007) "Viewpoint: developing a research ethics consultation service to foster responsive and responsible clinical research", *Academic Medicine*, vol. 82, no. 9, pp. 900-904.

- De Vries, R., Turner, L., Orfali, K. and Bosk, C. (2006) "Social science and bioethics: the way forward", *Sociology of Health & Illness*, vol. 28, no. 6, pp. 665-677.
- Demicheli, V. (2001) "Mass influenza vaccination in Ontario: is it worthwhile?", *CMAJ*, vol. 164, no. 1, pp. 38-41.
- Demicheli, V., Jefferson, T., Di Pietrantonj, C., Rivetti, A., Bawazeer, G.A., Al-Ansary, L.A. and Ferroni, E. (2014) "Vaccines for preventing influenza in healthy adults", *The Cochrane database of systematic reviews*, vol. 3, pp. CD001269.
- Denny, C.C. and Emanuel, E.J. (2008) "US Health Aid Beyond PEPFAR: The Mother & Child Campaign", *JAMA*, vol. 300, no. 17, pp. 2048-2051.
- Denzin, N.K. (1970) *The Research Act in Sociology*, 1st edn, Butterworth, London.
- Dey, I. (1993) *Qualitative Data Analysis*, Routledge, London.
- Department of Health. (2011) *UK Influenza Pandemic Preparedness Strategy 2011*, Department of Health, London.
- Department of Health and Cabinet Office. (2007) *Responding to pandemic influenza: The ethical framework for policy and planning*, Department of Health, London.
- Dingwall, R. (1974) *Social Organization of Health Visitor Training*, University of Aberdeen.
- Dingwall, R. (1977) "'Atrocity Stories' and Professional Relationships", *Work and Occupations*, vol. 4, no. 4, pp. 371-396.
- Dingwall, R. (1980) "Ethics and Ethnography", *The Sociological Review*, vol. 28, no. 4, pp. 871-891.
- Dingwall, R. (1997) "Accounts, Interviews and Observations" in *Context and Method in Qualitative Research*, eds. G. Miller and R. Dingwall, Sage Publications, London, pp. 51-65.
- Dingwall, R., Hoffman, L.M. and Staniland, K. (2013) "Introduction: why a Sociology of Pandemics?", *Sociology of health & illness*, vol. 35, no. 2, pp. 167-173.
- Dingwall, R., Murphy, E., Watson, P., Greatbatch, D. and Parker, S. (1998) "Catching goldfish: quality in qualitative research", *Journal of Health Services Research & Policy*, vol. 3, no. 3, pp. 167-172.
- Dingwall, R. and Watson, P. (2002) *Small Pharmacies and the National Health Service*, Trent Institute for Health Services Research, Sheffield.
- Doshi, P. (2011) "The elusive definition of pandemic influenza", *Bulletin of the World Health Organization*, vol. 89, no. 7, pp. 532-538.

- Draper, H. and Ives, J. (2007) "An Empirical Approach to Bioethics: Social Science of, for and in Bioethics Research", *Cognition, Cognition, Brain, Behavior*, vol. 11, no. 2.
- Durkheim, E. (1953) *Sociology and Philosophy*, Free Press, New Jersey, USA.
- Dushoff, J., Plotkin, J.B., Viboud, C., Earn, D.J. and Simonsen, L. (2006) "Mortality due to influenza in the United States--an annualized regression approach using multiple-cause mortality data", *American Journal of Epidemiology*, vol. 163, no. 2, pp. 181-187.
- Dworkin, R.M. (1986) *Law's empire*, Belknap Press, Cambridge, Massachusetts.
- Ebbesen, M. and Pedersen, B.D. (2007) "Using empirical research to formulate normative ethical principles in biomedicine", *Medicine, Health Care, and Philosophy*, vol. 10, no. 1, pp. 33-48.
- Edwards, I. and Delany, C. (2008) "Ethical reasoning" in *Clinical reasoning in the health professions*, eds. J. Higgs, M.A. Jones, S. Loftus and N. Christensen, 3rd edn, Elsevier, Boston, MA, pp. 279-289.
- Eide, P. and Kahn, D. (2008) "Ethical issues in the qualitative researcher--participant relationship", *Nursing Ethics*, vol. 15, no. 2, pp. 199-207.
- Engelhardt, H.T., Jr (1986) *The Foundation of Bioethics*, 1st edn, Oxford University Press, New York.
- Engelhardt, H.T., Jr (2011) "Confronting moral pluralism in post traditional Western societies: bioethics critically reassessed", *The Journal of Medicine and Philosophy*, vol. 36, no. 3, pp. 243-260.
- Faden, R.R. and Faden, A.I. (1978) "The Ethics of Health Education as Public Policy", *Health Education Monographs*, vol. 6, no. 2, pp. 180-197.
- FAO. (1998) First report of the FAO/OIE/OAU-IBAR Consultative group on contagious bovine pleuropneumonia. Available at: <http://www.oie.int/doc/ged/D6290.PDF> (Accessed: April 02, 2013).
- Fehr, E. and Gintis, H. (2009) "Human Motivation and Social Cooperation" in *Theories of Social Order: A Reader*, eds. M. Hechter and C. Horne, 2nd edn, Stanford University Press, California, pp. 26-34.
- Fine, P.E. (1993) "Herd immunity: history, theory, practice", *Epidemiologic reviews*, vol. 15, no. 2, pp. 265-302.
- Fine, P.E., Eames, K. and Heymann, D.L. (2011) "'Herd immunity': a rough guide", *Clinical Infectious Diseases: an official publication of the Infectious Diseases Society of America*, vol. 52, no. 7, pp. 911-916.
- Finelli, L. and Chaves, S.S. (2011) "Influenza and acute myocardial infarction", *The Journal of Infectious Diseases*, vol. 203, no. 12, pp. 1701-1704.

- Finlay, L. (2006) "'Rigour', 'ethical integrity' or 'artistry'? reflexively reviewing criteria for evaluating qualitative research", *British Journal of Occupational Therapy*, vol. 69, no. 7, pp. 319-326.
- Fleming, D. (2005) "Influenza pandemics and avian flu", *BMJ (Clinical research ed.)*, vol. 331, no. 7524, pp. 1066-1069.
- Ford, R.C. and Richardson, W.D. (1994) "Ethical decision making: A review of the empirical literature", *Journal of Business Ethics*, vol. 13, no. 3, pp. 205-221.
- Francis, L.P., Battin, M.P., Jacobson, J.A., Smith, C.B. and Botkin, J. (2005) "How infectious diseases got left out and what this omission might have meant for bioethics", *Bioethics*, vol. 19, no. 4, pp. 307-322.
- Friedman, A. (2008) "Beyond accountability for reasonableness", *Bioethics*, vol. 22, no. 2, pp. 101-112.
- Frost, W.H. (1919) "The Epidemiology of Influenza", *JAMA*, vol. 73, no. 5, pp. 313.
- Gadd, E.M. (1990) "Extending management training for senior registrars", *Psychiatric Bulletin*, vol. 14, no. 8, pp. 482-484.
- Gadd, E.M. (2010) "Ethical issues related to pandemic preparedness and response" in *Introduction to pandemic influenza*, eds. J. Nguyen-Van-Tam and C. Sellwood, 1st edn, CAB International, Wallingford, pp. 171-181.
- Gadd, E.M. and Fletcher, M.F. (1992) "Do senior registrars have adequate management training?", *BMJ*, vol. 304, no. 6826, pp. 546-547.
- Gahagan, J., Sweeney, E., Worthington, C., Perry, D., Satzinger, F. and Rogers, E. (2008) "Ethics issues for HIV/AIDS researchers in international settings - perspectives from the Canadian experience", *International Journal of Infectious Diseases*, vol. 12, no. 6, pp. 569-572.
- Gale, T.S. (1973) "Sir Gordon Guggisberg and his African Critics", *Transactions of the Historical Society of Ghana XIV*, vol. 14, no. 2, pp. 271-275.
- Garoon, J.P. and Duggan, P.S. (2008) "Discourses of disease, discourses of disadvantage: a critical analysis of National Pandemic Influenza Preparedness Plans", *Social Science & Medicine*, vol. 67, no. 7, pp. 1133-1142.
- Garrard, E. and Wilkinson, S. (2005) "Mind the gap: The use of empirical evidence in bioethics" in *Bioethics and Social Reality*, eds. M. Hayry, T. Takala and K. Herissone, Rodopi, Amsterdam, pp. 77-92.
- Garret, L. (1994) *The coming Plague: Newly Emerging Diseases in a World Out of Balance*, Farrar, Starus & Giroux, United States of America.
- Geertz, C. (1973) "Thick description: Toward an interpretive theory of culture" in *The interpretation of cultures*, ed. C. Geertz, Basic Books, New York, pp. 3-30.

- Gessner, B.D., Shindo, N. and Briand, S. (2011) "Seasonal influenza epidemiology in sub Saharan Africa: a systematic review", *The Lancet Infectious Diseases*, vol. 11, no. 3, pp. 223-235.
- Gewald, J. (2007) *Spanish influenza in Africa: Some comments regarding source material and future research: ASC Working Paper*, African Studies Centre, Leiden.
- Ghana Statistical Service. (2011) *2010 Population and Housing Census: Provisional Results*, Ghana Statistical Service, Accra.
- Glaser, B.G. and Strauss, A.L. (1967) *The discovery of grounded theory*, Aldine, New York.
- Glass, K. and Barnes, B. (2007) "How much would closing schools reduce transmission during an influenza pandemic?", *Epidemiology*, vol. 18, no. 5, pp. 623-628.
- Glezen, W.P. (2006) "Herd protection against influenza", *Journal of clinical virology : the official publication of the Pan American Society for Clinical Virology*, vol. 37, no. 4, pp. 237-243.
- Glezen, W.P. and Couch, R.B. (1989) "Influenza Viruses" in *Viral Infections in humans - Epidemiology and Control*, eds. A.S. Evans and R.A. Kaslow, 3rd edn, Plenum Medical Book Company, New York, pp. 419-449.
- Gostin, L.O. (2010) *Mapping the Issues: Public Health, Law and Ethics*, University of California Press and Milbank Memorial Fund, Berkeley.
- Gostin, L.O. (2004) "Pandemic Influenza: Public Health Preparedness for the Next Global Health Emergency", *The Journal of Law, Medicine & Ethics*, vol. 32, no. 4, pp. 565-573.
- Gostin, L.O. and Berkman, B.E. (2007) "Pandemic influenza: ethics, law, and the public's health", *Admin. L. Rev.*, vol. 59, pp. 121-175.
- Government of Malawi. (2005) *Malawi Country Profile*, Ministry of Health, Lilongwe.
- Government of Malawi. (2006) *Avian Influenza Implementation Plan for 2006*, Ministry of Health, Lilongwe.
- Government of Malawi. (2006a) *Bird Flu Rapid Response Training Workshop Proceedings and Training Manual*, Ministry of Agriculture, Lilongwe.
- Griffiths, M. (2000) "Collaboration and partnership in question: knowledge, politics and practice", *Journal of Education Policy*, vol. 15, no. 4, pp. 383-395.
- Grischow, J. (2006) *Globalization, Development and Disease in Colonial Northern Ghana, 1906-1960: WOPAG-Working Papers on Ghana: Historical and Contemporary Studies*, Wilfrid Laurier University, Waterloo, Canada.
- Groom, A.V., Jim, C., LaRoque, M., Mason, C., McLaughlin, J., Neel, L., Powell, T., Weiser, T. and Bryan, R.T. (2009) "Pandemic influenza preparedness and vulnerable

- populations in tribal communities", *American Journal of Public Health*, vol. 99, no. S2, pp. S271-S278.
- Guest, G., Bunce, A. and Johnson, L. (2006) "How Many Interviews Are Enough?: An Experiment with Data Saturation and Variability", *Field Methods*, vol. 18, no. 1, pp. 59-82.
- Hamel, J., Dufour, S. and Fortin, D. (1993) *Case Study Methods*, Sage Publications, Newbury Park, CA.
- Hammersley, M. (1992) *What's Wrong with Ethnography? Methodological Explorations*, Routledge, London.
- Hammersley, M. and Atkinson, P. (1983) *Ethnography: Principles in Practice*, Tavistock Publications, London.
- Harper, D.R., Davies, L.M., Gadd, E.M. and Costigan, S.C. (2008) "Science into policy: preparing for pandemic influenza", *Journal of Public Health*, vol. 30, no. 4, pp. 373-374.
- Harrist, R.S. and Richardson, F.C. (2006) "Self and Other: Tensions within Modern Liberal Individualism and Moral Education", *Forum on Public Policy*, [Online], vol. 1. Available online: <http://forumonpublicpolicy.com/archive06/harrist.pdf> (Accessed: April 03, 2014).
- Hashim, A., Jean-Gilles, L., Hegermann-Lindencrone, M., Shaw, I., Brown, C. and Nguyen-Van-Tam, J. (2012) "Did pandemic preparedness aid the response to pandemic (H1N1) 2009? A qualitative analysis in seven countries within the WHO European Region", *Journal of Infection and Public Health*, vol. 5, no. 4, pp. 286-296.
- Hashimoto, S., Murakami, Y., Taniguchi, K., Shindo, N., Osaka, K., Fuchigami, H. and Nagai, M. (2003) "Annual incidence rate of infectious diseases estimated from sentinel surveillance data in Japan", *Journal of epidemiology / Japan Epidemiological Association*, vol. 13, no. 3, pp. 136-141.
- Hayek, A.F. (1968 [2009]) "Cosmos and Taxis" in *Theories of Social Order: A Reader*, eds. M. Hechter and C. Horne, 2nd edn, Stanford University Press, California, pp. 140-153.
- Häyry, M. (2007) "Utilitarianism and bioethics" in *Principles of health care ethics*, eds. R.E. Ashcroft, A. Dawson, H. Draper and J.R. McMillan, 2nd edn, Wiley Online Library, Chichester, pp. 57-64.
- Hechter, M. and Horne, C. (2003) "Problem of Social Order" in *Theories of Social Order: A Reader*, eds. M. Hechter and C. Horne, 1st edn, Stanford University Press, California, pp. 27-32.
- Hechter, M. and Horne, C. (2009) "Individuals" in *Theories of Social Order: A Reader*, eds. M. Hechter and C. Horne, 1st edn, Stanford University Press, California, pp. 41- 45.

- Heymann, A.D., Hoch, I., Valinsky, L., Kokia, E. and Steinberg, D.M. (2009) "School closure may be effective in reducing transmission of respiratory viruses in the community", *Epidemiology and Infection*, vol. 137, no. 10, pp. 1369-1376.
- Hibbert, D., Rees, J.A. and Smith, I. (2000) "Ethical awareness of community pharmacists", *International Journal of Pharmacy Practice*, vol. 8, no. 2, pp. 82-87.
- Hobbes, T. (1651[2009]) "Leviathan" in *Theories of Social Order: A Reader*, eds. M. Hechter and C. Horne, 2nd edn, Stanford University Press, California, pp. 88-98.
- Hoffmaster, B. (1994) "The forms and limits of medical ethics", *Social Science & Medicine*, vol. 39, no. 9, pp. 1155-1164.
- Hoffmaster, B. (2000) *Bioethics in a Social Context*, Temple University Press, Philadelphia.
- Hokkanen, M. (2004) "Scottish Missionaries and African Healers: Perceptions and Relations in the Livingstonia Mission, 1875-1930", *Journal of Religion in Africa*, vol. 34, no. 3, pp. 320-347.
- Hokkanen, M. (2007) "Quests for Health and Contests for Meaning: African Church Leaders and Scottish Missionaries in the Early Twentieth Century Presbyterian Church in Northern Malawi", *Journal of Southern African Studies*, vol. 33, no. 4, pp. 733-750.
- Holm, S. (1997) *Ethical Problems in Clinical Practice: The Ethical Reasoning of Health Care Professionals*, Manchester University Press, Manchester.
- Holstein, J.A. and Gubrium, J.F. (1995) *The Active Interview: Qualitative research methods*, series 37, Sage Publications, Thousand Oaks.
- Hope-Simpson, R.E. (1981) "The role of season in the epidemiology of influenza", *The Journal of Hygiene*, vol. 86, no. 1, pp. 35-47.
- Hoy, C.D. (2004) *Critical resistance: from post-structuralism to post-critique*, MIT Press, Cambridge, MA.
- HPA. (2009) *Pandemic (H1N1) 2009 in England: an overview of initial epidemiological findings and implications for the second wave*, Health Protection Agency, England.
- Hunink, M.G.M., Glasziou, P.P., Siegel, J.E., Weeks, J.C., Pliskin, J.S., Elstein, A.S. and Weinstein, M.C. (2001) *Decision making in health and medicine: integrating evidence and values*, Cambridge University Press, Cambridge.
- Hunsmann, M. (2012) "Limits to evidence-based health policymaking: policy hurdles to structural HIV prevention in Tanzania", *Social Science & Medicine*, vol. 74, no. 10, pp. 1477-1485.
- Institute of Medicine. (1988) *The Future of Public Health*, National Academy Press, Washington, D.C.

- Jefferson, T., Rivetti, A., Di Pietrantonj, C., Demicheli, V. and Ferroni, E. (2012) "Vaccines for preventing influenza in healthy children", The Cochrane database of systematic reviews, vol. 8, pp. CD004879.
- Jennings, B., Kahn, J., Mastroianni, A. and Parker, L. (2003) *Ethics and Public Health: Model Curriculum*, Association of Schools of Public Health, Washington, DC.
- Johnson, T.V. and Mikler, A.R. (2011) "Chasing R0: Understanding the effects of population dynamics on the basic reproduction number", *Journal of Biological Systems*, vol. 19, no. 04, pp. 577-589.
- Johnson, N.P. and Mueller, J. (2002) "Updating the accounts: global mortality of the 1918-1920 "Spanish" influenza pandemic", *Bulletin of the history of medicine*, vol. 76, no. 1, pp. 105-115.
- Jones, T.M. (1991) "Ethical Decision Making by Individuals in Organizations: An Issue-Contingent Model", *The Academy of Management Review*, vol. 16, no. 2, pp. 366-395.
- Jordan, E.O. (1927) "Epidemic influenza. A survey", *American Medical Association*, pp. 251-271.
- Kakes, J. (1989) *Moral tradition of individuality*, Princeton University Press, Princeton New Jersey.
- Kalantri, S. (2003) "Ethics in clinical research", *Indian Journal of Anaesthesia*, vol. 47, no. 1, pp. 30-32.
- Kant, I. (1998) *Groundwork of the Metaphysics of Morals*, Cambridge University Press, Cambridge.
- Kass, N.E. (2001) "An ethics framework for public health", *American Journal of Public Health*, vol. 91, no. 11, pp. 1776-1782.
- Kass, N.E. (2004) "Public health ethics: from foundations and frameworks to justice and global public health", *The Journal of Law, Medicine & Ethics*, vol. 32, no. 2, pp. 232-42, 190.
- Katz, M.A., Schoub, B.D., Heraud, J.M., Breiman, R.F., Njenga, M.K. and Widdowson, M.-. (2012) "Influenza in Africa: Uncovering the Epidemiology of a Long-Overlooked Disease", *Journal of Infectious Diseases*, vol. 206, no. suppl 1, pp. S1-S4.
- Kavka, G.S. (1983) "Hobbes's War of All Against All ", *Ethics*, vol. 93, no. 2, pp. 291.
- Kazatchkine, M., and Hirsch, E. (2000) "Ethical Issues related to clinical research in developing countries: The approach of ANRS, The French Agency For Research on AIDS", 13th International AIDS Conference, Durban, South Africa.
- Kelly, H. (2011) "The classical definition of a pandemic is not elusive", *Bulletin of the World Health Organization*, vol. 89, no. 7, pp. 540-541.

- Kilbourne, E.D. (1973) "The Molecular Epidemiology of Influenza", *Journal of Infectious Diseases*, vol. 127, no. 4, pp. 478-487.
- Killingray, D. (1999) *The Wind of Death: Mortality in Africa During the Influenza Pandemic 1918-19*. Available at: <http://www.docstoc.com/docs/26543456/THE-WIND-OF-DEATH-MORTALITY-IN-AFRICA-DURING-THE-INFLUENZA> (Accessed: May 02, 2013).
- Kim, T.H., Johnstone, J. and Loeb, M. (2011) "Vaccine herd effect", *Scandinavian Journal of Infectious Diseases*, vol. 43, no. 9, pp. 683-689.
- Kinlaw, K., Barrett, D.H. and Levine, R.J. (2009) "Ethical guidelines in pandemic influenza: recommendations of the Ethics Subcommittee of the Advisory Committee of the Director, Centers for Disease Control and Prevention", *Disaster medicine and public health preparedness*, vol. 3 Suppl 2, pp. S185-92.
- Kleinman, M. (1998) *Include me out? The new politics of place and poverty*. CASEpaper 11, Centre for Analysis of Social Exclusion, London School of Economics and Political Science, London, UK.
- Kohlberg, L. (1984) *Essays on moral development: Vol II. The psychology of moral development*. Harper & Row, San Francisco.
- Kohlberg, L., Levine, C. and Hewer, A. (1983) *Moral stages: A current reformulation and response to critics*, Krager, Basel.
- Koniak-Griffin, D., Nyamathi, A., Vasquez, R. and Russo, A.A. (1994) "Risk-taking behaviors and AIDS knowledge: experiences and beliefs of minority adolescent mothers", *Health Education Research*, vol. 9, no. 4, pp. 449-463.
- Kotalik, J. (2005) "Preparing for an influenza pandemic: ethical issues", *Bioethics*, vol. 19, no. 4, pp. 422-431.
- Kotalik, J. (2006) *Ethics of planning for and responding to pandemic influenza: Literature Review*, Swiss National Advisory Commission on Biomedical Ethics, Swiss Federal Office of Public Health, Bern.
- Krause, T.R. and Voss, P.J. (2007) *Building an Ethical framework*, CR Magazine, Edison, New Jersey.
- Krebs, D.L., Denton, K.L., Vermeulen, S.C., Carpendale, J.I. and Bush, A. (1991) "Structural flexibility of moral judgment", *Journal of Personality and Social Psychology*, vol. 61, no. 6, pp. 1012-1023.
- Krebs, D.L., Denton, K.L. and Wark, G. (1997) "The Forms and Functions of Real-life Moral Decision-making", *Journal of Moral Education*, vol. 26, no. 2, pp. 131-145.
- Kuczewski, M. (2002) "Two models of ethical consensus, or what good is a bunch of bioethicists?", *Cambridge Quarterly of Healthcare Ethics*, vol. 11, no. 1, pp. 27-36.

- Kvale, S. (2006) "Dominance Through Interviews and Dialogues", *Qualitative Inquiry*, vol. 12, no. 3, pp. 480-500.
- LaBossiere, M.C. (2004) *Ethical Reasoning: Moral Issues*. Available at: <http://mclphilosophy.files.wordpress.com/2011/08/ethicsreadingsp08.pdf> (Accessed: May 02, 2013).
- Lacey, C. (1976) "Problems of sociological fieldwork: a review of methodology of Hightown Grammar" in *The Organization and Impact of Social Research*, ed. M. Shipman, Routledge & Kegan Paul, London.
- Lachmann, P.J. (1998) "Public health and bioethics", *The Journal of Medicine and Philosophy*, vol. 23, no. 3, pp. 297-302.
- Lagace-Wiens, P.R., Rubinstein, E. and Gumel, A. (2010) "Influenza epidemiology--past, present, and future", *Critical Care Medicine*, vol. 38, no. 4 Suppl, pp. e1-9.
- Last, J. (2001) *A dictionary of epidemiology*, 4th edn, Oxford University Press.
- Lavanchy, D. (2001) "The importance of global influenza surveillance for the assessment of the impact of influenza", *Options for the Control of Influenza IV: Proceedings of the World Congress on Options for the Control of Influenza IV*, Crete, Greece, 23-28 September 2000, ICS 1219 (International Congress), eds. A.D.M.E. Osterhaus, N. Cox and A.W. Hampson, Elsevier, Oxford.
- Lazzari, S. and Stöhr, K. (2004) "Avian influenza and influenza pandemics", *Bulletin of the World Health Organization*, vol. 82, no. 4, pp. 242-242.
- LeCompte, M.D. and Goetz, J.P. (1982) "Problems of Reliability and Validity in Ethnographic Research", *Review of Educational Research*, vol. 52, no. 1, pp. 31-60.
- Liljeqvist, G.T., Staff, M., Puech, M., Blom, H. and Torvaldsen, S. (2011) "Automated data extraction from general practice records in an Australian setting: trends in influenza-like illness in sentinel general practices and emergency departments", *BMC Public Health*, vol. 11, pp. 435-2458-11-435.
- Lincoln, Y.S. and Guba, E.G. (1985) *Naturalistic Inquiry*, Sage Publications, Beverly Hills, CA.
- Lipsitch, M., Riley, S., Cauchemez, S., Ghani, A.C. and Ferguson, N.M. (2009) "Managing and reducing uncertainty in an emerging influenza pandemic", *The New England Journal of Medicine*, vol. 361, no. 2, pp. 112-115.
- Locke, J. (1690 [1821]) *Two Treatises on Government*, Whitmorrb and Fenn, London.
- Loeb, M., Russell, M.L., Moss, L., Fonseca, K., Fox, J., Earn, D.J., Aoki, F., Horsman, G., Van Caesele, P., Chokani, K., Vooght, M., Babiuk, L., Webby, R. and Walter, S.D. (2010) "Effect of influenza vaccination of children on infection rates in Hutterite communities: a randomized trial", *JAMA : The Journal of the American Medical Association*, vol. 303, no. 10, pp. 943-950.

- Lu, C.Y., Shao, P.L., Chang, L.Y., Huang, Y.C., Chiu, C.H., Hsieh, Y.C., Lin, T.Y. and Huang, L.M. (2010) "Immunogenicity and safety of a monovalent vaccine for the 2009 pandemic influenza virus A (H1N1) in children and adolescents", *Vaccine*, vol. 28, no. 36, pp. 5864-5870.
- Macleod, R. and Lewis, M. (1988) *Disease, medicine and empire: perspectives on Western medicine and the experience of European expansion*, Routledge, London and New York.
- Madill, A., Jordan, A. and Shirley, C. (2000) "Objectivity and reliability in qualitative analysis: realist, contextualist and radical constructionist epistemologies", *British Journal of Psychology*, vol. 91, no. Pt 1, pp. 1-20.
- Malinowski, B. (1922) *Argonauts of the Western Pacific*, Routledge & Kegan Paul, London.
- Mann, J. (1998) "Universal Declaration of Human Rights", *JAMA*, vol. 280, no. 5, pp. 469-470.
- Mann, J.M., Gostin, L., Gruskin, S., Brennan, T., Lazzarini, Z. and Fineberg, H.V. (1994) "Health and human rights", *Health and Human Rights-An International Journal*, vol. 1, no. 1, pp. 6-23.
- Markova, I. (1990) "Medical ethics: A branch of Societal Psychology" in *Societal Psychology*, eds. H.T. Himmelweit and G. Gaskell, Sage Publications, Newbury Park, pp. 112-137.
- Maxwell, J.A. (2005) *Qualitative research design: An interactive approach*, 2nd edn, Sage Publications, Thousand Oaks, CA.
- McNeil S, Shinde V, Andrew M, et al. (2014) "Interim estimates of 2013/14 influenza clinical severity and vaccine effectiveness in the prevention of laboratory-confirmed influenza-related hospitalisation, Canada", *Euro surveillance*, vol. 19, no. 9, pp. 20729.
- Mihigo, R., Torrealba, C.V., Coninx, K., Nshimirimana, D., Kieny, M.P., Carrasco, P., Hedman, L. and Widdowson, M.A. (2012) "2009 Pandemic influenza A virus subtype H1N1 vaccination in Africa--successes and challenges", *The Journal of infectious diseases*, vol. 206 Suppl 1, pp. S22-8.
- Mill, J.S. (1969) "Utilitarianism" in Volume 10 of the collected works of John Stuart Mill, University of Toronto Press, Toronto.
- Ministry of Health, Malawi. (2012) *The Malawi National health Accounts with subaccounts for HIV and AIDS, Reproductive and Child Health for financial years 2006/07-2008/09*, Department of Health Planning and Policy Development, Lilongwe.
- Ministry of Health, New Zealand Influenza. (2010) *New Zealand Influenza Pandemic Plan: A framework for action*, Ministry of Health, Wellington.
- Ministry of Health, UK. (1920) *Report on the pandemic Influenza, 1918-19*, Her Majesty's Stationary Office, London.

- Molinari, N.A., Ortega-Sanchez, I.R., Messonnier, M.L., Thompson, W.W., Wortley, P.M., Weintraub, E. and Bridges, C.B. (2007) "The annual impact of seasonal influenza in the US: measuring disease burden and costs", *Vaccine*, vol. 25, no. 27, pp. 5086-5096.
- Monto, A.S., Davenport, F.M., Napier, J.A. and Francis, T., Jr (1970) "Modification of an outbreak of influenza in Tecumseh, Michigan by vaccination of schoolchildren", *The Journal of infectious diseases*, vol. 122, no. 1, pp. 16-25.
- Moodley, K., Pather, M. and Myer, L. (2005) "Informed consent and participant perceptions of influenza vaccine trials in South Africa", *Journal of Medical Ethics*, vol. 31, no. 12, pp. 727-732.
- Moore, D., Shiell, A., Noseworthy, T., Russell, M. and Predy, G. (2006) "Public health preparedness in Alberta: a systems-level study ", *BMC public health*, [Online], vol. 6, no. 313. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1779785/pdf/1471-2458-6-313.pdf>. (Accessed: April 25, 2013)
- Moore, M. and Dausey, D.J. (2011) "Response to the 2009-H1N1 influenza pandemic in the Mekong Basin: surveys of country health leaders", *BMC Research Notes*, vol. 4, no. 1, pp. 361.
- Morse, J.M. (1995) "The Significance of Saturation", *Qualitative Health Research*, vol. 5, no. 2, pp. 147-149.
- Mounier-Jack, S. and Coker, R.J. (2006) "How prepared is Europe for pandemic influenza? Analysis of national plans", *Lancet*, vol. 367, no. 9520, pp. 1405-1411.
- Müller, B. (2001) "Varieties of Distributive Justice in Climate Change", *Climatic Change*, vol. 48, no. 2/3, pp. 273-288.
- Murdoch, I. (2001) *The Sovereignty of Good*, 2nd edn, Routledge, London.
- Murphy, E. and Dingwall, R. (2001) "The Ethics of Ethnography" in *Handbook of Ethnography*, eds. P. Atkinson, A. Coffey, S. Delamont, J. Lofland and L. Lofland, Sage Publications, London, pp. 339-351.
- Murphy, E. and Dingwall, R. (2003) *Qualitative Methods and Health Policy Research*, Aldine de Gruyter, New York.
- Murphy, E., Dingwall, R., Greatbatch, D., Parker, S. and Watson, P. (1998) "Qualitative research methods in health technology assessment: a review of the literature", *Health Technology Assessment*, vol. 2, no. 16, pp. 1-294.
- Murray, C.J., Lopez, A.D., Chin, B., Feehan, D. and Hill, K.H. (2006) "Estimation of potential global pandemic influenza mortality on the basis of vital registry data from the 1918-20 pandemic: a quantitative analysis", *Lancet*, vol. 368, no. 9554, pp. 2211-2218.
- Musschenga, A.W. (2005) "Empirical ethics, context-sensitivity, and contextualism", *The Journal of Medicine and Philosophy*, vol. 30, no. 5, pp. 467-490.

- Myles, P.R., Semple, M.G., Lim, W.S., Openshaw, P.J., Gadd, E.M., Read, R.C., Taylor, B.L., Brett, S.J., McMenamin, J., Enstone, J.E., Armstrong, C., Bannister, B., Nicholson, K.G., Nguyen-Van-Tam, J.S. and Influenza Clinical Information Network (FLU-CIN) (2012) "Predictors of clinical outcome in a national hospitalised cohort across both waves of the influenza A/H1N1 pandemic 2009-2010 in the UK", *Thorax*, vol. 67, no. 8, pp. 709-717.
- Mytton, O.T., Rutter, P.D. and Donaldson, L.J. (2012) "Influenza A(H1N1)pdm09 in England, 2009 to 2011: a greater burden of severe illness in the year after the pandemic than in the pandemic year", *Euro Surveill*, [Online], vol. 17, no. 14, pp. 10/02/2013. Available from: <http://www.eurosurveillance.org/images/dynamic/EE/V17N14/art20139.pdf>. (Accessed: September 02, 2013).
- NACI (National Advisory Committee on Immunization) (2011) "Statement on Seasonal Influenza Vaccine for 2011–2012", *Canada Communicable Disease Report*, [Online], vol. 37, no. ACS-5. Available from: <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/11vol37/acs-dcc-5/index-eng.php>. (Accessed: September 02, 2013)
- Nature Editorial. (2012) "Under surveillance", *Nature*, vol. 483, no. 7391, pp. 509-510.
- Neal, P. (1990) "Justice as Fairness: Political or Metaphysical?", *Political Theory*, vol. 18, no. 1, pp. 24-50.
- Nguyen-Van-Tam, J.S. (1998) "Epidemiology of Influenza" in *Textbook of Influenza*, eds. K.G. Nicholson, R.G. Webster and A.J. Hay, Blackwell Science Ltd, Oxford, pp. 182-206.
- Nguyen-Van-Tam, J.S. (2006) "Influenza related hospital admissions in children: evidence about the burden keeps growing but the route to policy change remains uncertain", *Archives of Disease in Childhood*, vol. 91, no. 1, pp. 5-7.
- Nguyen-Van-Tam, J.S. (2010) "Seasonal influenza: epidemiology clinical features and surveillance" in *Introduction to pandemic influenza*, eds. J. Nguyen-Van-Tam and C. Sellwood, 1st edn, CAB International, Wallingford, pp. 1-13.
- Nguyen-Van-Tam, J.S. and Hampson, A.W. (2003) "The epidemiology and clinical impact of pandemic influenza", *Vaccine*, vol. 21, no. 16, pp. 1762-1768.
- Nguyen-Van-Tam, J.S., Openshaw, P.J., Hashim, A., Gadd, E.M., Lim, W.S., Semple, M.G., Read, R.C., Taylor, B.L., Brett, S.J., McMenamin, J., Enstone, J.E., Armstrong, C., Nicholson, K.G. and Influenza Clinical Information Network (FLU-CIN) (2010) "Risk factors for hospitalisation and poor outcome with pandemic A/H1N1 influenza: United Kingdom first wave (May-September 2009)", *Thorax*, vol. 65, no. 7, pp. 645-651.
- Nguyen-Van-Tam, J.S. and Sellwood, C. (2007) "Avian influenza and the threat of the next human pandemic", *The Journal of Hospital Infection*, vol. 65 Suppl 2, pp. 10-13.

- Nicholson, K.G., Webster, R.B. and Hay, A.J. (1998) *Textbook of Influenza*, Blackwell Science Ltd, Oxford.
- Nicholson, K.G., Wood, J.M. and Zambon, M. (2003) "Influenza", *Lancet*, vol. 362, no. 9397, pp. 1733-1745.
- Nicoll, A. (2011) "Planning for uncertainty: a European approach to informing responses to the severity of influenza epidemics and pandemics", *Bulletin of the World Health Organization*, vol. 89, no. 7, pp. 542-544.
- Nolan, T., McVernon, J., Skeljo, M., Richmond, P., Wadia, U., Lambert, S., Nissen, M., Marshall, H., Booy, R., Heron, L., Hartel, G., Lai, M., Basser, R., Gittleson, C. and Greenberg, M. (2010) "Immunogenicity of a monovalent 2009 influenza A(H1N1) vaccine in infants and children: a randomized trial", *JAMA (The Journal of the American Medical Association)*, vol. 303, no. 1, pp. 37-46.
- North, C.D., Wallis, J.J. and Weingast, R.B. (2009) *Violence and Social Orders: A Conceptual Framework for Interpreting Recorded Human History* Cambridge University Press, New York.
- Nuffield Council on Bioethics (2006) *Critical care decisions in fetal and neonatal medicine: ethical issues*, Nuffield Council on Bioethics, 28 Bedford Square, London.
- Ohadike, D.C. (1981) "The influenza pandemic of 1918-19 and the spread of cassava cultivation on the lower Niger: a study in historical linkages", *Journal of African History*, vol. 22, no. 3, pp. 380-391.
- Ohadike, D.C. (1991) "Diffusion and physiological responses to the influenza pandemic of 1918-19 in Nigeria", *Social Science & Medicine*, vol. 32, no. 12, pp. 1393-1399.
- Ortiz, J.R., Lafond, K.E., Wong, T.A. and Uyeki, T.M. (2012) "Pandemic influenza in Africa, lessons learned from 1968: a systematic review of the literature", *Influenza and other Respiratory Viruses*, vol. 6, no. 1, pp. 11-24.
- Ortu, G., Mounier-Jack, S. and Coker, R. (2008) "Pandemic influenza preparedness in Africa is a profound challenge for an already distressed region: analysis of national preparedness plans", *Health Policy and Planning*, vol. 23, no. 3, pp. 161-169.
- Oshitani, H., Kamigaki, T. and Suzuki, A. (2008) "Major Issues and Challenges of Influenza Pandemic Preparedness in Developing Countries", *Emerging Infectious Diseases*, vol. 14, no. 6, pp. 875-880.
- Ovadia, E. (2006) *Moral Dilemmas in Real Life: Current Issues in Applied Ethics Series (Law and Philosophy)*, 1st edn, Springer, Dordrecht, The Netherlands.
- Page, M. (1977) *Malawians and the great war and After, 1914-1925*, MA edn, Michigan State University, Michigan.
- Page, M. (1980) "Malawians and the Great War: Oral History in Reconstructing Africa's Recent Past", *Oral History Review*, vol. 8, no. 1, pp. 49-61.

- Parsons, H.F. (1893) *Further reports and papers on epidemic influenza, 1889–1892*, Local Government Board, Eyre & Spottiswoode, London.
- Parsons, T. (1965) "An outline of the social system" in *Theories of society: Foundations of modern sociological theory*, eds. T. Parsons, E. Shils, K.D. Naegele and J.R. Pitts, Collier Macmillan Limited, London.
- Pasma, T. and Joseph, T. (2010) "Pandemic (H1N1) 2009 infection in swine herds, Manitoba, Canada", *Emerging Infectious Diseases*, vol. 16, no. 4, pp. 706-708.
- Patrozou, E. and Mermel, L.A. (2009) "Does influenza transmission occur from asymptomatic infection or prior to symptom onset?", *Public Health Reports*, vol. 124, no. 2, pp. 193-196.
- Patterson, K.D. (1983) "The influenza epidemic of 1918-19 in the Gold Coast", *Journal of African history*, vol. 24, no. 4, pp. 485-502.
- Patterson, K.D. and Pyle, G.F. (1983) "The Diffusion of Influenza in sub Saharan Africa during the 1918-1919 pandemic", *Soc Sci Med*, vol. 17, no. 17, pp. 1299-1307.
- Patterson, K.D. and Pyle, G.F. (1991) "The geography and mortality of the 1918 influenza pandemic", *Bulletin of the History of Medicine*, vol. 65, no. 1, pp. 4-21.
- Patton, M.Q. (2001) *Qualitative evaluation and research methods*, 3rd edn, Sage Publications, Inc., Thousand Oaks, CA.
- Pellegrino, E.D. (1981) "Health promotion as public policy: the need for moral groundings", *Preventive Medicine*, vol. 10, no. 3, pp. 371-378.
- Pellegrino, E.D. (1984) "Autonomy and coercion in disease prevention and health promotion", *Theoretical Medicine*, vol. 5, no. 1, pp. 83-91.
- Peny, L.J. (2012) "Technology Ethics for Law Enforcement", *American International Journal of Contemporary Research*, vol. 2, no. 2, pp. 124-133.
- Peterson, A. (2011) *The Politics of Bioethics*, 1st edn, Routledge, NY.
- Petrini, C. (2010) "Theoretical models and operational frameworks in public health ethics", *International Journal of Environmental Research and Public Health*, vol. 7, no. 1, pp. 189-202.
- Petrini, C. and Gainotti, S. (2008) "A personalist approach to public-health ethics", *Bulletin of the World Health Organization*, vol. 86, no. 8, pp. 624-629.
- Phillips, H. (1987) "The local state and public health reform in South Africa: Bloemfontein and the consequences of the Spanish 'flu epidemic of 1918", *Journal of southern African studies*, vol. 13, no. 2, pp. 210-233.
- Phillips, H. (1988) "South Africa's worst demographic disaster: The Spanish influenza epidemic of 1918", *South African Historical Journal*, vol. 20, no. 1, pp. 57-73.

- Phillips, H. (1990) "Black October": The impact of the Spanish influenza epidemic of 1918 on South Africa, Government Printer, Pretoria.
- Phimister, I.R. (1973) "The "Spanish" influenza pandemic of 1918 and its impact on the Southern Rhodesian mining industry", *The Central African Journal of Medicine*, vol. 19, no. 7, pp. 143-148.
- Piedra, P.A., Gaglani, M.J., Kozinetz, C.A., Herschler, G., Riggs, M., Griffith, M., Fewlass, C., Watts, M., Hessel, C., Cordova, J. and Glezen, W.P. (2005) "Herd immunity in adults against influenza-related illnesses with use of the trivalent-live attenuated influenza vaccine (CAIV-T) in children", *Vaccine*, vol. 23, no. 13, pp. 1540-1548.
- Piot, P., Bloom, E.D. and Smith, C.P. (2010) "Ensuring health for all" in *Everybody's business: strengthening international cooperation in a more interdependent world: report of the Global Redesign Initiative*, World Economic Forum, Geneva, pp. 347-384.
- Plans-Rubio, P. (2012) "The vaccination coverage required to establish herd immunity against influenza viruses", *Preventive medicine*, vol. 55, no. 1, pp. 72-77.
- Pope, C., Ziebland, S. and Mays, N. (2000) "Qualitative research in health care. Analysing qualitative data", *BMJ (Clinical research ed.)*, vol. 320, no. 7227, pp. 114-116.
- Potter, C.W. (1998) "Chronicle of influenza pandemics" in *Textbook of Influenza*, eds. K.G. Nicholson, R.G. Webster and A.J. Hay, Blackwell Science Ltd, Oxford, pp. 3-18.
- Potter, C.W. (2001) "A history of influenza", *Journal of Applied Microbiology*, vol. 91, no. 4, pp. 572-579.
- Potter, V.R. (1970) "Bioethics, the Science of Survival", *Perspectives in Biology and Medicine*, vol. 14, pp. 127-153.
- Potter, V.R. (1971) *Bioethics, Bridge to the Future*, Prentice-Hall Inc, Englewood Cliffs, NY.
- Pyle, G.F. and Patterson, D.K. (1984) "Influenza Diffusion in European History: Patterns and Paradigms", *Ecology of Disease*, vol. 2, no. 6, pp. 173-184.
- Qureshi, K., Gershon, R.R., Sherman, M.F., Straub, T., Gebbie, E., McCollum, M., Erwin, M.J. and Morse, S.S. (2005) "Health care workers' ability and willingness to report to duty during catastrophic disasters", *Journal of Urban Health*, vol. 82, no. 3, pp. 378-388.
- Ranger, T. (1986) "The Influenza epidemic in Southern Rhodesia: a crisis of comprehension" in *Imperial Medicine and Indigenous Societies*, ed. D. Arnold, Imperial Medicine, New York, pp. 210-233.
- Rawls, J. (1971) *A theory of Justice*, Harvard University Press, Cambridge, MA.
- Reed, C., Angulo, F., Swerdlow, D., Lipsitch, M. and Meltzer, M. (2009) "Estimating the burden of pandemic influenza A/H1N1–United States, April–July 2009", *Emerg Infect Dis*, vol. 15, no. 12, pp. 2004-2007.

- Reichert, T.A., Sugaya, N., Fedson, D.S., Glezen, W.P., Simonsen, L. and Tashiro, M. (2001) "The Japanese experience with vaccinating schoolchildren against influenza", *The New England journal of medicine*, vol. 344, no. 12, pp. 889-896.
- Republic of Ghana. (2006) Avian Influenza Preparedness and Response Plan Ghana. Available at: http://www.ghanahp.org/fileadmin/user_upload/QHP/AI_Preparedness_and_Response_Plan_Ghana_FINAL.pdf (Accessed: August 02, 2013).
- Rest, J.R. (1986) *Moral Development: Advances in Research and Theory*, Preager Publishers, New York.
- Rest, J.R. and Narvaez, D. (1994) *Moral development in the professions: Psychology and Applied Ethics*, Lawrence Erlbaum, Hillsdale, New Jersey.
- Richardson, F. and Zeddies, T. (2001) "Individualism and modern psychotherapy" in *Critical issues in psychotherapy: Translating new ideas into practice*, eds. B.D. Slife, R.N. Williams and S.H. Barlow, Sage Publications, Thousand Oaks, CA, pp. 147-164.
- Roberts, M.J. and Reich, M.R. (2002) "Ethical analysis in public health", *Lancet*, vol. 359, no. 9311, pp. 1055-1059.
- Robson, C. (1994) *Real World Research: A resource for Social Scientist and Practitioner-Researchers*, Blackwell, Oxford Press.
- Rogers, W.A. (2004) "Ethical issues in public health: a qualitative study of public health practice in Scotland", *Journal of Epidemiology & Community Health*, vol. 58, no. 6, pp. 446-450.
- Rothberg, M.B. and Haessler, S.D. (2010) "Complications of seasonal and pandemic influenza", *Critical Care Medicine*, vol. 38, no. 4 Suppl, pp. e91-7.
- Ryan, G.W. and Bernard, H.R. (2000) "Data management and analysis methods" in *Handbook of Qualitative Research*, eds. N.K. Denzin and Y.S. Lincoln, 2nd edn, Sage Publications, Thousand Oaks, CA, pp. 769-802.
- Sambala, E.Z. (2011) "Lessons of pandemic influenza from sub Saharan Africa: experiences of 1918", *Journal of Public Health Management and Practice*, vol. 17, no. 1, pp. 72-76.
- Sambala, E.Z., Sapsed, S. and Mkandawire, M.L. (2010) "Role of Primary Health Care in Ensuring Access to Medicines", *Croatian Medical Journal*, vol. 51, no. 3, pp. 181-190.
- Savin-Baden, M. and Fisher, A. (2002) "Negotiating 'Honesties' in the Research Process", *British Journal of Occupational Therapy*, vol. 65, no. 4, pp. 191-193.
- Schuklenk, U. (2003) "AIDS: Bioethics and public policy", *New Review of Bioethics*, vol. 1, no. 1, pp. 127-144.
- Seale, C. (1999) *The quality of qualitative research*, Sage Publications, London.

- Seale, H., Leask, J., Po, K. and MacIntyre, C.R. (2009) "'Will they just pack up and leave?' – attitudes and intended behaviour of hospital health care workers during an influenza pandemic", *BMC Health Services Research*, vol. 9, no. 1, pp. 30.
- Shaw, I. and Aldridge, A. (2003) "Consumerism, Health and Social Order", *Social Policy and Society*, vol. 2, no. 1, pp. 35-43.
- Shore, N., Brazauskas, R., Drew, E., Wong, K.A., Moy, L., Baden, A.C., Cyr, K., Ulevicus, J. and Seifer, S.D. (2011) "Understanding community-based processes for research ethics review: a national study", *American Journal of Public Health*, vol. 101 Suppl 1, pp. S359-64.
- Silverman, D. (2001) *Interpreting Qualitative Data: Methods for Analyzing Talk, Text and Interaction*, 2nd edn, Sage Publications, London.
- Simonsen, L., Viboud, C., Taylor, R.J. and Miller, M.A. (2011) "The Epidemiology of Influenza and its Control" in *Influenza Vaccines for the Future*, eds. G. Del Giudice and R. Rappuoli, 2nd edn, Birkhauser Advances in Infectious Diseases, Springer Basel AG.
- Singer, P.A., Benatar, S.R., Bernstein, M., Daar, A.S., Dickens, B.M., MacRae, S.K., Upshur, R.E., Wright, L. and Shaul, R.Z. (2003) "Ethics and SARS: lessons from Toronto", *BMJ (Clinical research ed.)*, vol. 327, no. 7427, pp. 1342-1344.
- Smith, R.D., Keogh-Brown, M.R., Barnett, T. and Tait, J. (2009) "The economy-wide impact of pandemic influenza on the UK: a computable general equilibrium modelling experiment", *BMJ (Clinical research ed.)*, vol. 339, pp. b4571.
- Snacken, R., Kendal, A.P., Haaheim, L.R. and Wood, J.M. (1999) "The next influenza pandemic: lessons from Hong Kong, 1997", *Emerging Infectious Diseases*, vol. 5, no. 2, pp. 195-203.
- Srivastava, A. and Thomson, S.B. (2009) "Framework analysis: a qualitative methodology for applied policy research", *JOAAG*, vol. 4, no. 2, pp. 72-79.
- Stake, R. (1980) "The case method inquiry in social inquiry" in *Towards a science of the singular*, ed. H. Simons, CARE, Norwich.
- Starfield, B., Hyde, J., Gervas, J. and Heath, I. (2008) "The concept of prevention: a good idea gone astray?", *Journal of Epidemiology & Community Health*, vol. 62, no. 7, pp. 580-583.
- Steffen, C., Debellut, F., Gessner, B., Kasolo, F., Yahaya, A., Ayebazibwe, N., Bassong, O., Cardoso, Y., Kebede, S., Manoncourt, S., Vandemaele, K. and Mounts, A. (2012) "Improving influenza surveillance in sub Saharan Africa", *Bulletin of the World Health Organization*, vol. 90, no. 4, pp. 301-305.
- Stephenson, I. and Zambon, M. (2002) "The epidemiology of influenza", *Occupational Medicine*, vol. 52, no. 5, pp. 241-247.

- Strong, P. (1990) "Epidemic psychology: a model", *Sociology of Health and Illness*, vol. 12, no. 3, pp. 249-259.
- Tamerius, J., Nelson, M.I., Zhou, S.Z., Viboud, C., Miller, M.A. and Alonso, W.J. (2011) "Global influenza seasonality: reconciling patterns across temperate and tropical regions", *Environmental Health Perspectives*, vol. 119, no. 4, pp. 439-445.
- Tan, E.K., Lim, L.H., Teoh, Y.L., Ong, G. and Bock, H.L. (2010) "Influenza and seasonal influenza vaccination among diabetics in Singapore: knowledge, attitudes and practices", *Singapore Medical Journal*, vol. 51, no. 8, pp. 623-630.
- Tarimo, E. and Webster E.G. (1994) *Primary Health Care Concepts and Challenges in a Changing World: Alma-Ata Revisited*, WHO/SHS/CC/94.2, WHO-Division of Strengthening of Health Services, Geneva.
- Tate, S. (2011) *Using critical reflection as a teaching tool*. HSAP Repository. Higher Education Academy, Health Sciences and Practice, London.
- The Times Newspaper (25/06/1918) *Influenza*, The Times, London.
- Thomas, J.C., Sage, M., Dillenberg, J. and Guillory, V.J. (2002) "A code of ethics for public health", *American Journal of Public Health*, vol. 92, no. 7, pp. 1057-1059.
- Thomas, R.E., Jefferson, T. and Lasserson, T.J. (2013) "Influenza vaccination for healthcare workers who care for people aged 60 or older living in long-term care institutions", *The Cochrane database of systematic reviews*, vol. 7, pp. CD005187.
- Thompson, A.K., Faith, K., Gibson, J.L. and Upshur, R.E. (2006) "Pandemic influenza preparedness: an ethical framework to guide decision-making", *BMC Medical Ethics*, vol. 7, pp. E12.
- Tomkins, S.M. (1994) "Colonial Administration in British Africa during the Influenza Epidemic of 1918-19", *Canadian Journal of African Studies*, vol. 28, no. 1, pp. 60.
- Trevino, L.K. (1986) "Ethical decision making in organizations: A person-situation interactionist model", *Academy of Management Review*, vol. 11, no. 3, pp. 601-617.
- Turner, L. (2004) "Bioethics needs to rethink its agenda", *BMJ (Clinical research ed.)*, vol. 328, no. 7432, pp. 175.
- Tyler, T.R. (2006) *Why People Obey the Law*, Princeton University Press, New Jersey.
- Vaillant, L., La Ruche, G., Tarantola, A., Barboza, P.(2009) "Epidemiology of fatal cases associated with pandemic H1N1 influenza 2009", *Euro Surveillance*, vol. 14, no. 33, pp. 19309.
- Van den Boom, G.J.M., Nsowah-Nuamah, N.N.N. and Overbosch, G.B. (2004) *Healthcare Provision and Self-medication in Ghana*. Available at: <http://web.archive.org/web/20070625163825/http://www.saga.cornell.edu/images/vandebnboom.pdf> (Accessed: July 05, 2013).

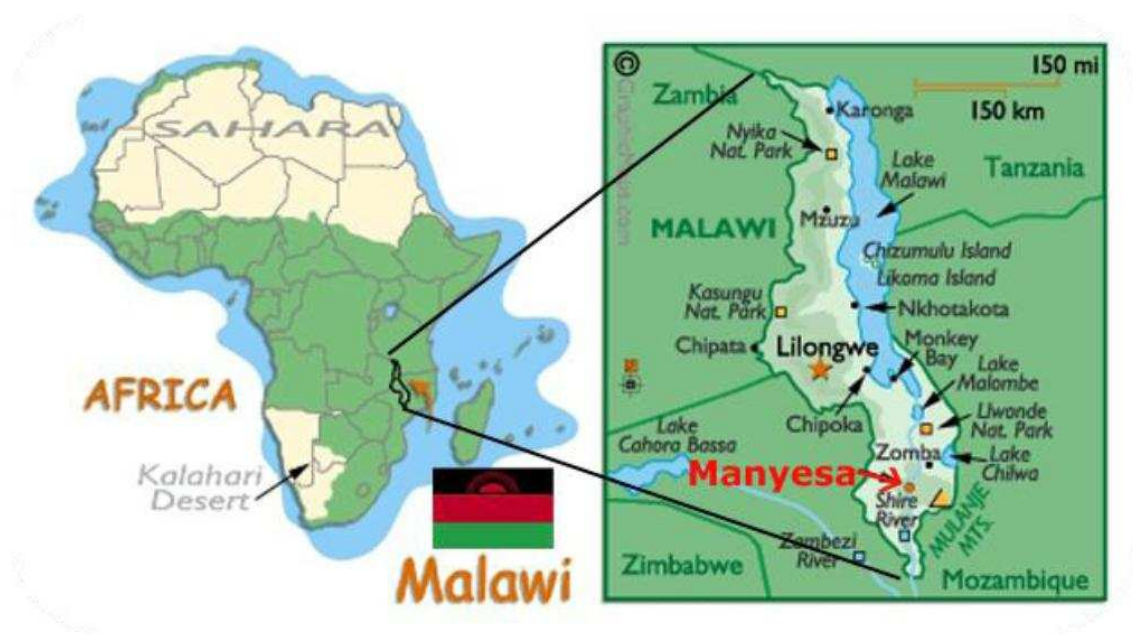
- Vaughan, E. and Tinker, T. (2009) "Effective health risk communication about pandemic influenza for vulnerable populations", *American Journal of Public Health*, vol. 99 Suppl 2, pp. S324-32.
- Viboud, C., Alonso, W.J. and Simonsen, L. (2006) "Influenza in tropical regions", *PLoS Medicine*, vol. 3, no. 4, pp. e89.
- Walter, B. (1969) "Thesis on the Philosophy of History" in *Illuminations: Essays and Reflections*, eds. H.A. Trans and H. Zohn, Schocken, New York.
- Walter, D., Bohmer, M., Reiter, S., Krause, G. and Wichmann, O. (2012) "Risk perception and information-seeking behaviour during the 2009/10 influenza A(H1N1)pdm09 pandemic in Germany", *Euro Surveillance*, vol. 17, no. 13.
- Wanless, D. (2004) *Securing good health for the whole population: final report*, Department of Health, London.
- Wark, G. and Krebs, D.L. (1996) "Gender and dilemma differences in real-life moral judgment", *Developmental Psychology*, no. 2, pp. 220-230.
- Weber, M. (1946) *Essay in Sociology: Bureaucracy*, Oxford University Press, New York.
- Weingart, P., Engels, A. and Pansegrau, P. (2000) "Risks of communication: discourses on climate change in science, politics, and the mass media", *Public Understanding of Science*, vol. 9, no. 3, pp. 261-283.
- WHO. (1998) *Forty-eighth session of the WHO Regional Committee for Africa held in Harare, Zimbabwe from 31 August to 4 September 1998*, World Health Organization Regional Office for Africa, Harare, Zimbabwe.
- WHO. (2004) *WHO guidelines on the use of vaccines and antivirals during influenza pandemics*, World Health Organization, Geneva.
- WHO. (2005a) *International Health Regulations of 2005*, World Health Organization, Geneva.
- WHO. (2005b) *WHO checklist for influenza pandemic preparedness planning*, World Health Organization, Geneva.
- WHO. (2005c) *WHO global influenza preparedness plan, the role of WHO and recommendations for national measures before and during pandemics*, World Health Organization, Geneva.
- WHO. (2007) *Ethical considerations in developing a public health response to pandemic influenza*, World Health Organization, Geneva.
- WHO. (2009) *Pandemic influenza preparedness and response: WHO guidance document*, World Health Organization, Geneva. Available at: http://whqlibdoc.who.int/publications/2009/9789241547680_eng.pdf (Accessed: July 23, 2013).

- WHO. (2009a) WHO Pandemic Influenza Phases. World Health Organization, Geneva. Available at: <http://www.who.int> (Accessed: April 27, 2009).
- WHO. (2010) Pandemic (H1N1) 2009 - update 104. World Health Organization, Geneva. Available at: http://www.who.int/csr/don/2010_06_11/en/index.html (Accessed: August 02, 2013).
- WHO. (2010a) Report of the 3rd meeting with National Influenza Centres (NICs) held in Hammamet, Tunisia, 30th November to 3rd December 2010, World Health Organization, Geneva, Switzerland.
- WHO. (2012) Report of the WHO Pandemic Influenza A(H1N1) Vaccine Deployment Initiative, World Health Organization, Geneva.
- WHO. (2013) Pandemic Influenza Risk Management WHO Interim Guidance, World Health Organization, Geneva.
- WHO. (2014) Influenza (Seasonal): Fact sheet N°211, World Health Organization, Geneva. Available at: <http://www.who.int/mediacentre/factsheets/fs211/en/> (Accessed: April 3, 2014).
- Wijnans, L., Lecomte, C., De Vries, C., Weibel, D., Sammon, C., Hviid, A., Svanström, H., Mølgaard-Nielsen, D., Heijbel, H., Dahlström, L.A., Hallgren, J., Sparen, P., Jennum, P., Mosseveld, M., Schuemie, M., van der Maas, N., Partinen, M., Romio, S., Trotta, F., Santuccio, C., Menna, A., Plazzi, G., Moghadam, K.K., Ferro, S., Lammers, G.J., Overeem, S., Johansen, K., Kramarz, P., Bonhoeffer, J. and Sturkenboom, M.C.J.M. (2013) "The incidence of narcolepsy in Europe: Before, during, and after the influenza A(H1N1)pdm09 pandemic and vaccination campaigns", *Vaccine*, vol. 31, no. 8, pp. 1246-1254.
- Winslow, C.E.A. (1920) "The untitled field of public health", *Modern Medicine*, vol. 2, pp. 183-191.
- WMA. (2006) WMA Statement on Avian and Pandemic Influenza: Adopted by the 57th WMA General Assembly, Pilanesberg, South Africa, World Medical Association Inc, Paris, France.
- World Organization for Animal Health (OIE) (2009) WHO/FAO/OIE Consultation on potential risks of pandemic influenza A (H1N1) 2009 virus at the human animal interface, Available at: <http://www.oie.int/doc/ged/D6592.PDF> (Accessed: April 3, 2014).
- Writing Committee of the WHO Consultation on Clinical Aspects of Pandemic (H1N1) 2009 Influenza et al. (2010) "Clinical aspects of pandemic 2009 influenza A (H1N1) virus infection ", *The New England Journal of Medicine*, vol. 362, no. 18, pp. 1708-1719.
- Wynia, M.K. (2005) "Oversimplifications II: Public health ethics ignores individual rights", *The American Journal of Bioethics*, vol. 5, no. 5, pp. 6-8.

Yang, Y., Sugimoto, J.D., Halloran, M.E., Basta, N.E., Chao, D.L., Matrajt, L., Potter, G., Kenah, E. and Longini, I.M. (2009) "The Transmissibility and Control of Pandemic Influenza A (H1N1) Virus", *Science*, vol. 326, no. 5953, pp. 729-733.

APPENDICES

Appendix 1: Geographical Map of Malawi



Source: <http://www.odfl.org/article.php/2009Malawi> (Accessed: April 23, 2014).

Appendix 2: Basic Elements of Primary Health Care (PHC)

•Health education
•Identifying and controlling prevailing health problems
•Food supply and proper nutrition
•Provision of safe water and basic sanitation
•Maternal and child health care including family planning
•Immunization
•Prevention and control of endemic disease
•Appropriate treatment of common diseases and injuries
•Promotion of mental health
•Provision of essential drugs

Source: Tarimo and Webster (1994).

Appendix 3: Interview Guide (Questionnaire)

Section 1: These questions explore the 2009 pandemic influenza

1. Could you please describe how you had prepared for an influenza pandemic before 2009 in your country? (Explore how the countries responded during the 2009 pandemic)
 2. How would you describe the plan for your country? (Explore how plans were developed and whether such plans considered the history of 1918 pandemic influenza)
 3. What were the main operational problems faced during the 2009 pandemic? (Explore collaborations between the ministries of health and other parties involved in the response to the 2009 pandemic and also surveillance, health service and communication)
 4. What are the challenges and lessons learnt from the 1918 and 2009 pandemic outbreaks? In an event of another pandemic, how is your plan going to respond?
-

Section 2: These questions explore Government policy on pandemic influenza

5. I have seen your pandemic plan. How would you describe your government's policy and political will on pandemic influenza? (Explore if the plan is designed to cope or reduce impact or meant to address everything).
 6. What issues are being addressed or taken into consideration to ensure quality and effective policies on pandemic planning and response?(Explore how is the National Health System structured to deal with pandemic influenza).
-

Section 3: These questions explore ethics of planning, for and response to, pandemic influenza

7. Do you have an ethical plan to guide the planning for, and response to, pandemic influenza?
8. Can you please describe any ethical problem(s) that you encountered at the level of planning for, or response to, 2009 pandemic influenza? (Explore the factors that cause ethical problems/dilemmas)
9. What do the ethics of planning for, and response to, pandemic influenza actually mean to you?

10. What ethical values do you think are important to consider when planning for, and responding to, pandemic influenza?

Case study

Pandemic influenza has been ravaging the country for 6 months, with over half a million deaths so far, at all age groups. The World Health Organization has now developed a strain-specific vaccine, which has been tested and declared safe and effective for people over the age of 12 years. However, it is confirmed that the vaccine is not safe if used in under 12 years, but data to support this is not available. The WHO has donated enough vaccine to cover 3% of country's population.

11. Who should receive this? (Explore who decides the allocation of resources and how decisions are justified including the appropriate approach of ethical reasoning they use in achieving widely held and acceptable ethical values)
12. What are the ethical considerations in decision-making processes?

Section 4: These questions conceptualize ethical dilemmas and how they are managed

13. What are the criteria in place for rationing and prioritising of limited resources?
Explore the constraints and how the poor organization of the health service including the procurement and allocation of resources, and rationing cause ethical dilemmas)
14. What resources should be devoted to fighting influenza in the presences of other urgent public health needs? (Explore the types of dilemmas they face when allocating resources or when dealing with pandemic influenza?)
15. Do you see restricting freedom and movement of people including the media during a pandemic influenza as an ethical dilemma?
16. What is the role of the government in obligating unwilling health professionals to provide care during pandemic influenza?

Section 5: These questions explore the relationships between institutions involved in ethics of planning for, and response to, pandemic influenza

17. What is the role of the international organization and international donor agencies with regard to ethical pandemic preparedness? (Explore global or regional partnership on influenza network)
18. Are financial or commercial pressures ever a problem to support a comprehensive ethical plan and its implementation strategy? (Explore how the relationship between the government and the international community contribute to ethical dilemmas. Also explore political will on PRPI)
19. In what ways do does the government collaborate with the international and local partners on ethical planning for, and response to, pandemic influenza?

Thank you for taking part in this interview

Appendix 4: Request Letter for Interview

From: <evanson_sambala@yahoo.com>

To: Respondent's email address

Cc: mcxes2@nottingham.ac.uk

Subject: Ethics of Planning for, and Responding to, Pandemic Influenza in Malawi/Ghana

Dear Sir/Madam,

I would like to book a face to face interview with you. The interview is on "Ethics of planning for, and responding to, pandemic influenza in Malawi and Ghana. Before you agree to the interview, it is important you understand why the research is being done and what it will involve. Please find attached an information sheet about the research including possible questions that you will be asked. Please take time to read it. You can discuss it with friends and relatives if you wish. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether you wish to take part or not -if you decide to take part let me know and I will arrange to meet you for the interview at your convenience. The interview is likely to take 60-90 minutes.

First and foremost, let me assure you that you will remain completely anonymous and no records of the interview will be kept with your name. All information which is collected about you during the course of the interview will be kept on the password protected database and is strictly confidential.

I am a PhD student studying Public Health and Epidemiology at the University of Nottingham and my study is expected to be complete in 2013. My research looks at the ethics of planning for, and responding to, pandemic influenza in Africa. I use Malawi and Ghana as my two case study countries. The purpose of the study is to gain insights on how pandemic planners perceive and deal with ethical dilemmas/problems of influenza within public health and medicine.

My academic background is quite multidisciplinary. I trained as an Environmental health scientist at the University of Malawi. I had an opportunity of working with the Malawi Red Cross Society for two years in a management position. After years of experience at the Malawi Red Cross, I decided to embark on postgraduate studies. In 2006, I joined the University of Bedfordshire for a Masters Public Health and in 2007 went to Brunel University to pursue another postgraduate course in epidemiology. In 2008, I joined the University of Nottingham in the school of Community Health sciences for a PhD focusing on ethics and public health.

If you decide to take part you will be given a full information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason.

Regards,

Evanson Zondani Sambala.

Appendix 5: Information Sheet

TITLE OF RESEARCH: ETHICS OF PLANNING FOR, AND RESPONDING TO, PANDEMIC INFLUENZA IN SUB SAHARAN AFRICA

Name of investigator: Evanson Zondani Sambala- University of Nottingham

Name of Supervisors: Prof. Robert Dingwall and Prof. Jonathan Nguyen-Van-Tam

Preamble

You have been invited to take part in a research study. Before, you decide to take part, it is necessary that you understand why the research is being done and what it will involve. Please take time to read the information provided here before you decide to take part in the study. In the meantime, I will tell you briefly about myself and my research.

Information about the Investigator

I am a PhD student studying Public Health and Epidemiology at the University of Nottingham and my study is expected to be complete in late 2013. My educational background is quite multidisciplinary. I first trained as an Environmental health scientist at the University of Malawi. I then had the opportunity of working with the Malawi Red Cross Society for two years in a management position. While with the Red Cross, I became interested in public health issues focusing on Africa. This led me to the idea of doing a postgraduate course in Public Health. In 2005, I joined the University of Bedfordshire and in 2007 I obtained a Masters in Public Health with commendation. Later in 2008, I enrolled for a PhD at the University of Nottingham in the School of Community Health Sciences where I am currently based.

My research interests

My research looks at the ethics of planning for, and responding to pandemic influenza in Africa. I am using Malawi and Ghana as my two case studies. It is hoped that using Malawi and Ghana will help describe ethical experiences and inform policy on the planning for, and response to, pandemic influenza.

During my fieldwork in Ghana and Malawi, I would like to talk to you about the ethics of planning for, and response to, pandemic influenza. The interview with you will help me gain

insights about your work and how you perceive and deal with ethical dilemmas/problems of influenza within the profession of public health and medicine.

Research as part of the PhD

The aim of this PhD project is to investigate the ethics of Planning for, and Responding to, Pandemic Influenza (PRPI). During the interview, we will discuss the characteristics of pandemic influenza. This will include the history of events following the 1918 pandemic influenza and how that reflects on current policy. I will further draw your attention to different ethical dilemmas you may have experienced or faced during the current pandemic influenza pandemic. I will also attempt to gain understanding of how you dealt with such ethical problems using ethical theories commonly used to structure, explain and resolve ethical dilemmas in public health and medicine.

What does the study involve?

The study involves the use of semi-structured interviews. This type of methodology will involve the investigator asking you open ended questions and you will have the opportunity to talk about different issues within the research topic using your own words without the hindrance of the interviewer. You have the freedom to critique, comment, explain, and share experiences, opinions, and attitudes as you may wish in the line of enquiry. The study under investigation involves the ethics of planning for, and responding to, ethical dilemmas for pandemic influenza in your country. A suitable location will be identified where we could meet to discuss this topic. I suggest talking to you at your work place or any other venue that is quiet, safe and convenient to carry the interview. This interview is informal. It will involve exchanging views, clarifying questions and answers. The conversation between us will be tape-recorded. However, before taping the interviews, you will be asked to sign the consent form. It is essential to have a full record of the interview in order to allow a full and accurate transcription.

Why have you been chosen?

You are chosen to participate in this study because you are involved in planning for, and responding to, pandemic influenza. You are also among the several policymakers I have asked to help with this study to provide a representative sample of participants in Malawi and Ghana.

Do you have to take part?

It is important that you take part in this study because your responses and understanding of ethics of PRPI in your country will help advance public policy around pandemics in Africa, where such information is currently inadequate. If you decide to take part you will be given this information sheet to keep including a consent form for you to sign to confirm your participation. You may decide to withdraw from the study at any time without having to give reasons for withdrawing.

What you required to do?

This is an informal discussion and as a participant you will be required to engage in a conversation that will usually last 60-90 minutes. The investigator will ask you several questions about your work and in particular ethical issues around pandemic planning and response. As mentioned earlier, this interview is informal and is not meant to test your knowledge. Nevertheless, you can tell me more about what you know. Prior to the interview, I will give you a skeleton of the questions that will be asked. This will help you prepare for the discussion and hopefully level the playing field of the interview. You may choose to skip questions that you feel obliged not to answer. For the sake of confidentiality and anonymity, please avoid identifying individuals or persons but you can give working examples where it is appropriate.

What are the advantages and disadvantages of taking part?

The interviews considered in this research do not necessarily require approval from the ethics committee, but measures have been put in place for the conduct of interviews without evoking levels of exploitation or unusual anxiety. In general, I feel there are no disadvantages or risks in assisting in this research but if you feel that interview is affecting you or in any other issues raised, please bring it forward and discuss it with the investigator. To ensure integrity and quality throughout this research, consent will be sought from the participants prior to the conduct of the interviews. The interview purpose and criteria intended to elicit information will be fully explained to the participants. The nature and scope of the interview deliberation will be clearly explained, including the right to withdraw without penalty. This is particularly pertinent given the potential for the participants to feel over-researched as a result of the discussions. This study follows the ESRC six key principles of ethical guidelines that attempts to encourage informants to voluntarily participate without any form of coercion.

Will my participation in this study be kept confidential?

All information you supply in the course of the interview will be protected. The issues of privacy obviously arise around the use, storage and archiving of the data which individuals may be identified with. Interview notes and written documents from the interview and audio recordings will be kept in secure locations. Keyed data will be de-identified, including the discussion scripts. Similarly, only de-identified data will be archived on the completion of the interview. The University of Nottingham require me to hold on to your data to at least a maximum of 7 years. You may request a copy of the interview if necessary.

What will happen to the rest of the research study?

This study is part of a PhD which is expected to complete by end of 2013. However, results of the interview will subsequently be analyzed and published or presented at conferences as part of the PhD requirement at the University of Nottingham. No names or identifiable characters will be published.

Who is funding and organising research?

The study is funded by Manolo Enterprise and supported by the School of Community Health Sciences of the University of Nottingham. I have also obtained additional funding from various organization numerous to mention.

Contact for further information

Should you require any further information or you want to discuss any aspects of this study, please contact the researcher on the following address:

Evanson Zondani Sambala

Division of Epidemiology & Public Health,
Clinical Sciences Building, City Hospital, Nottingham, NG5 1PB

You can also get in touch with my supervisors

Prof. Jonathan Nguyen-Van-Tam

Room A40d Division of Epidemiology and Public Health, Clinical Sciences Building
City Hospital, Nottingham, NG5 1PB

Prof. Robert Dingwall

Room A40d Division of Epidemiology and Public Health, Clinical Sciences Building
City Hospital, Nottingham, NG5 1PB

Appendix 6: Study Participant Consent Form

STUDY PARTICIPANT CONSENT FORM

Study Volunteer number: _____ **Name of investigator: Evanson Zondani Sambala**

You are invited to take part in this research study. If you decide to take part please read this form and ensure you have read the information sheet provided, and sign the consent form once the designated investigator named above has fully explained the aims and procedures of the study to you. Please tick the following pointers if you agree to confirm your participation.

- I have read and understood the information sheet which is attached for the above study.
- I understand that I have the opportunity to ask questions and discuss all aspects of this study, and that I can ask for further instructions or explanations at any time.
- I have the opportunity to authorise the investigator to disclose the results of my participation in the study but not my name.
- I understand the information recorded about me during the study will be kept in a secure database and if data is transferred to others it will be made anonymous.
- I agree to take part in this study and understand that I am free to withdraw from the study at any time without having to give reasons for withdrawing.

Name:.....

Address:.....

Telephone:.....

Date:.....

I hereby confirm that I have fully explained the purpose of the study including sharing their answers with my supervision team and other responsible individuals involved in this research. A copy of this consent form together with information sheet will be kept by the participant and the other by the researcher.

Investigator

Signature:.....Name.....

Appendix 7: Role Profile Form

Role Profile Form

We would appreciate if you would fill in this form. It helps us describe who we interviewed for the project. However please be assured that this information will be held in confidence. No individual persons will be identified in the final report

1. Name:

2. Gender:

3. Age:

4. Job title:

5. Department:

6. Role played in pandemic planning:

7. Role played in pandemic response:

8. Work phone:

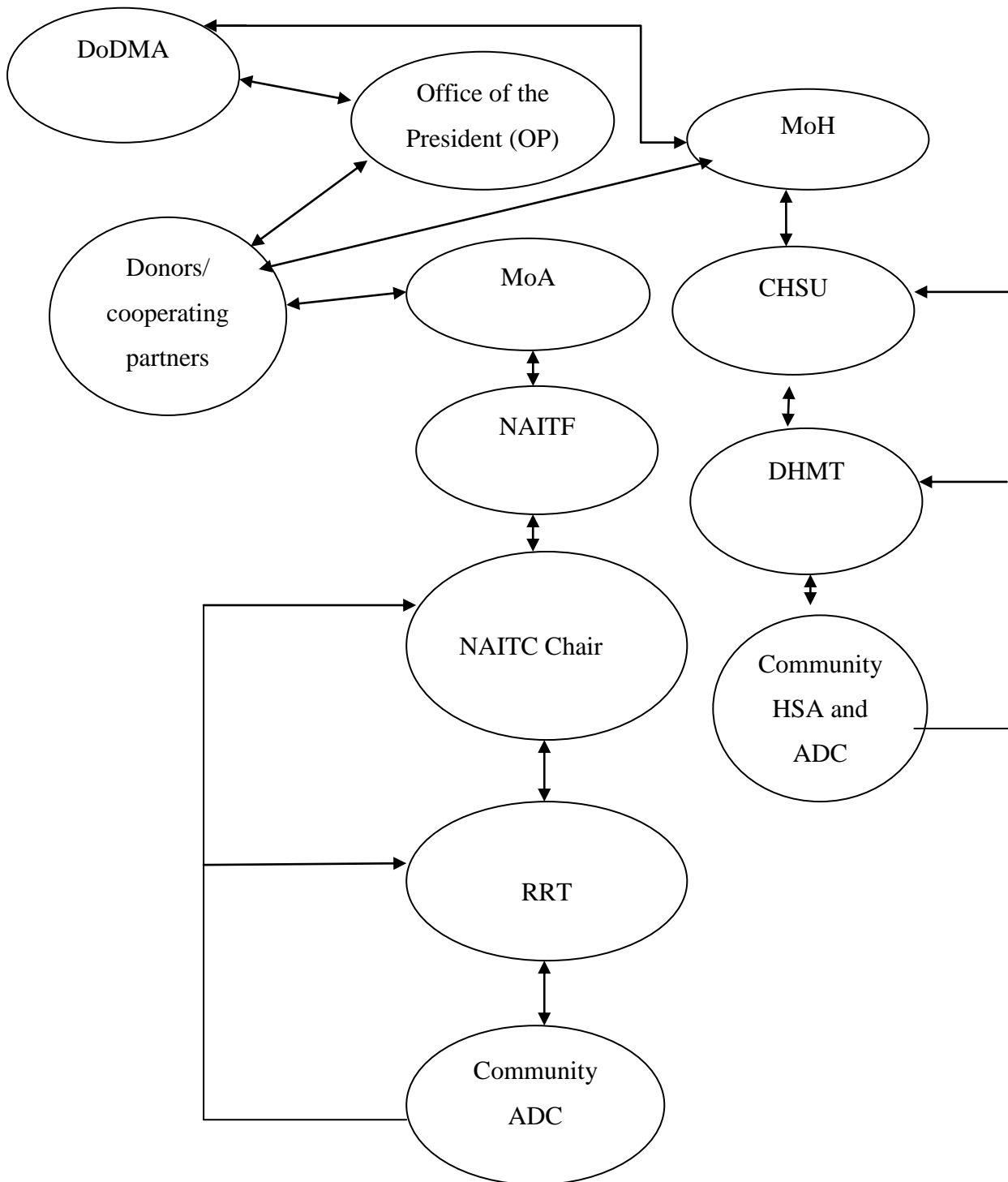
9. E-mail:

10. Additional notes:

Signature

Date

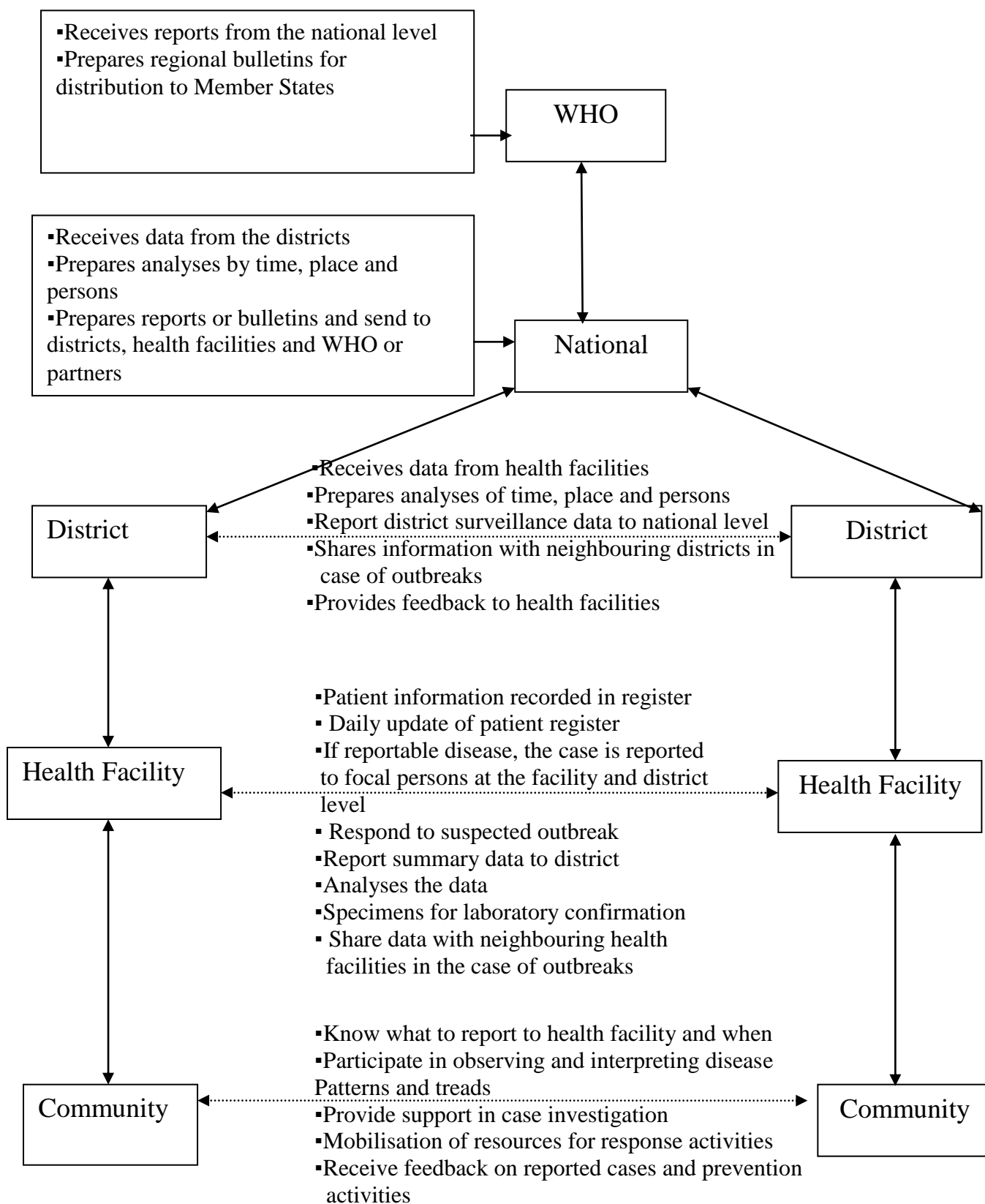
Appendix 8: Organizational and Communication Hierarchy in Malawi



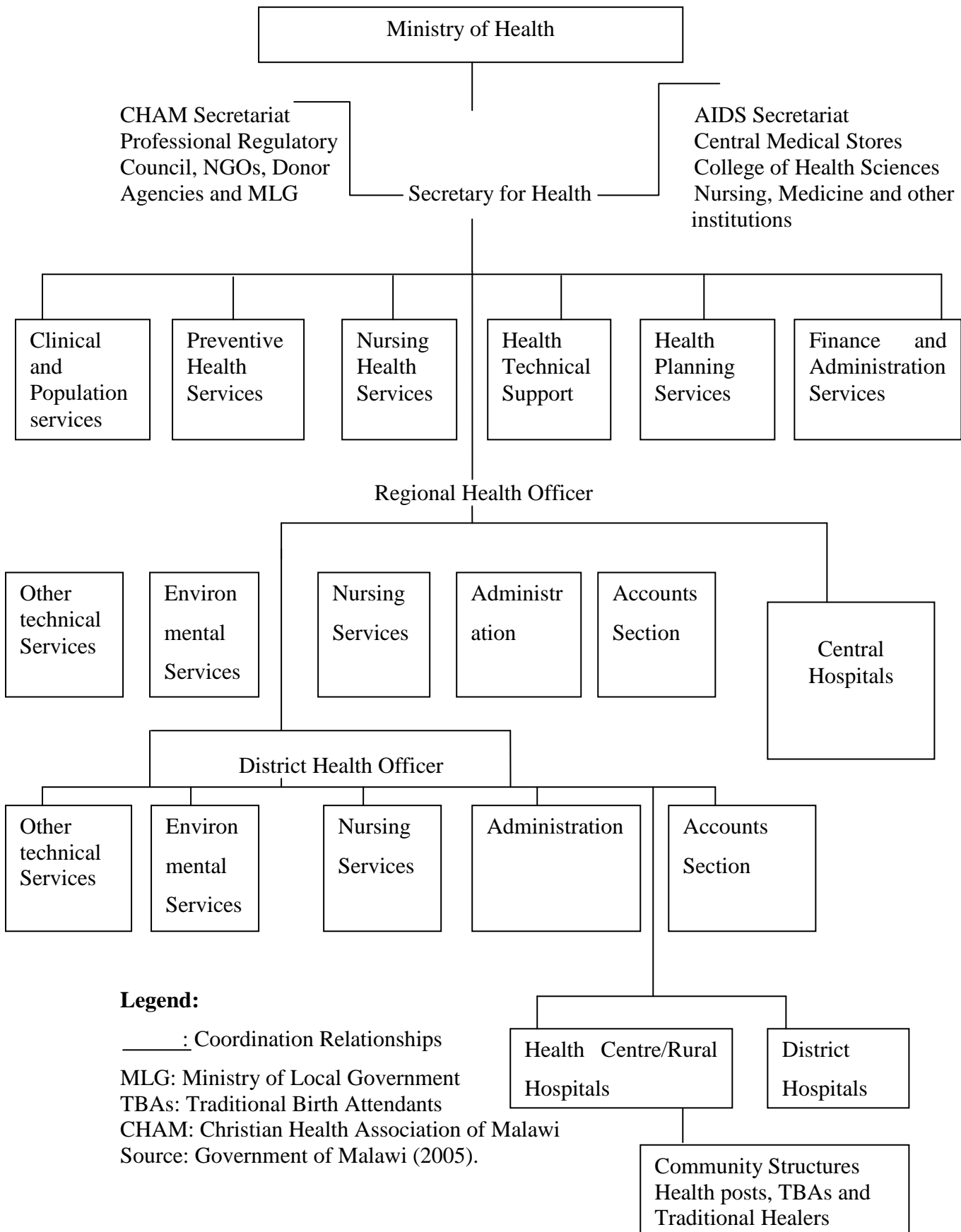
Notes: The RRT members were predominantly MoA staff trained in all aspects of future rapid response at the national level so that they could also train trainers. The ADC (Area Development Committee) included the police and defence force. Communication between MoA and MoH was problematic.

Source: Government of Malawi (2006a).

Appendix 9: Flow chart at various institutional levels (Government of Malawi, 2006a).



Appendix 10: Organization and Management Structure of the National Health System of Malawi



Legend:

_____ : Coordination Relationships

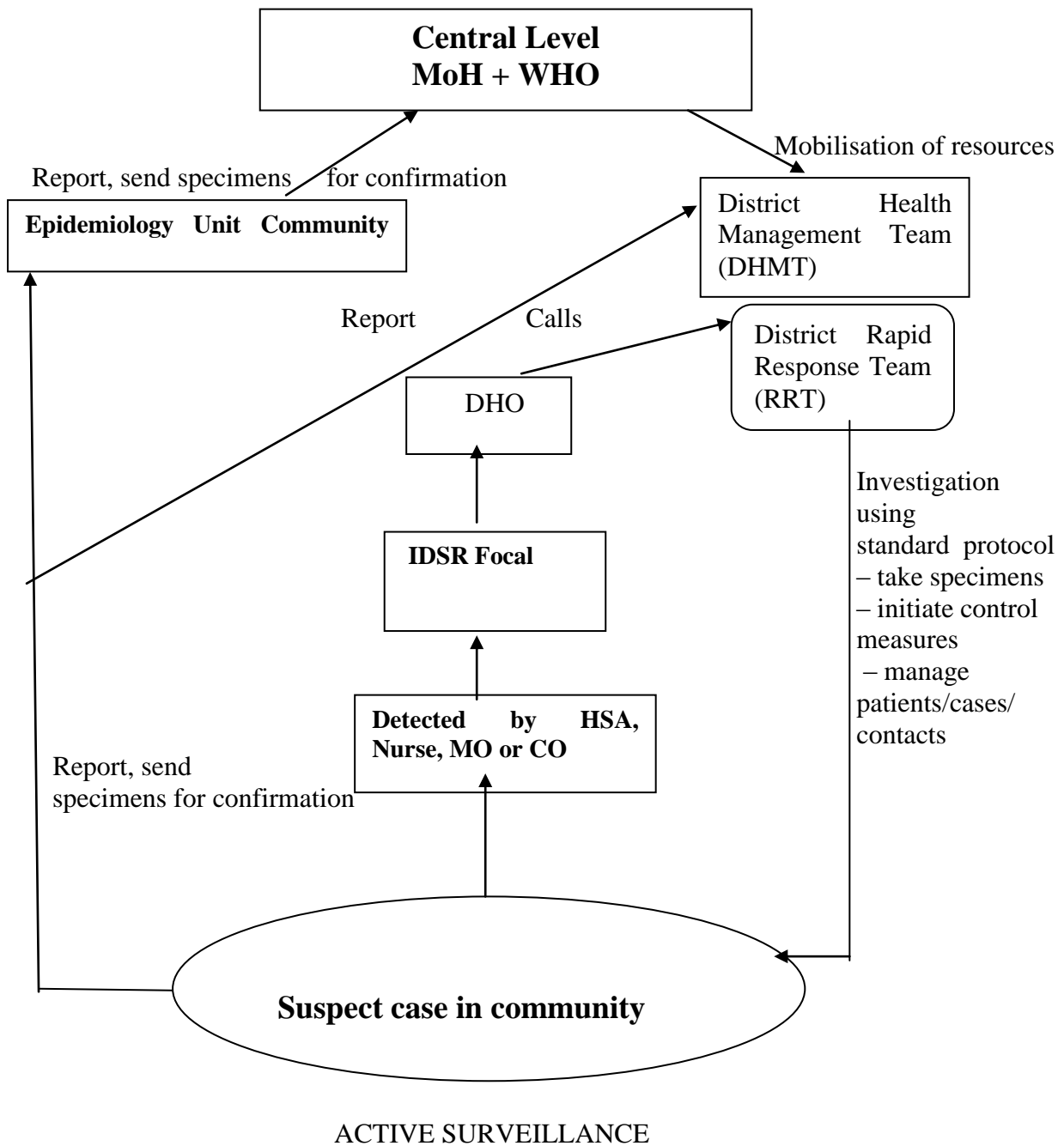
MLG: Ministry of Local Government

TBAs: Traditional Birth Attendants

CHAM: Christian Health Association of Malawi

Source: Government of Malawi (2005).

Appendix 11: Management of Outbreak

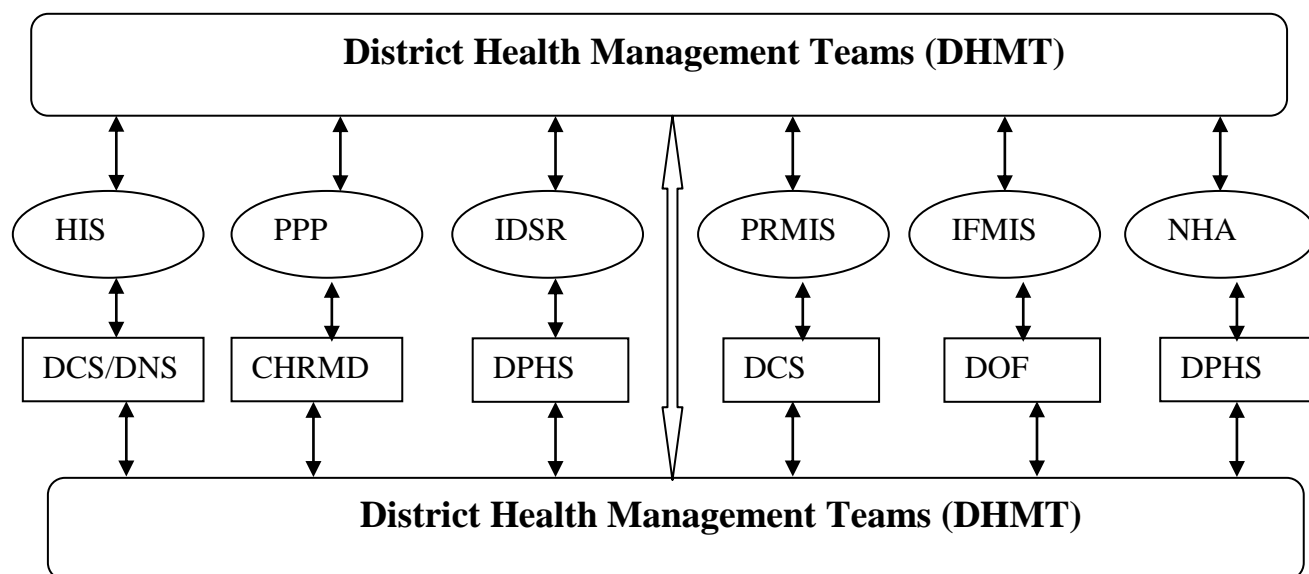


Legend:

- CO Clinical Officer
- DHO District Health Officer
- HSA Health Surveillance Assistant
- IDSR Integrated Disease Surveillance Response
- MO Medical Officer
- MoH Ministry of Health

Source: Government of Malawi (2006a).

Appendix 12: Health Management Information System (HMIS)

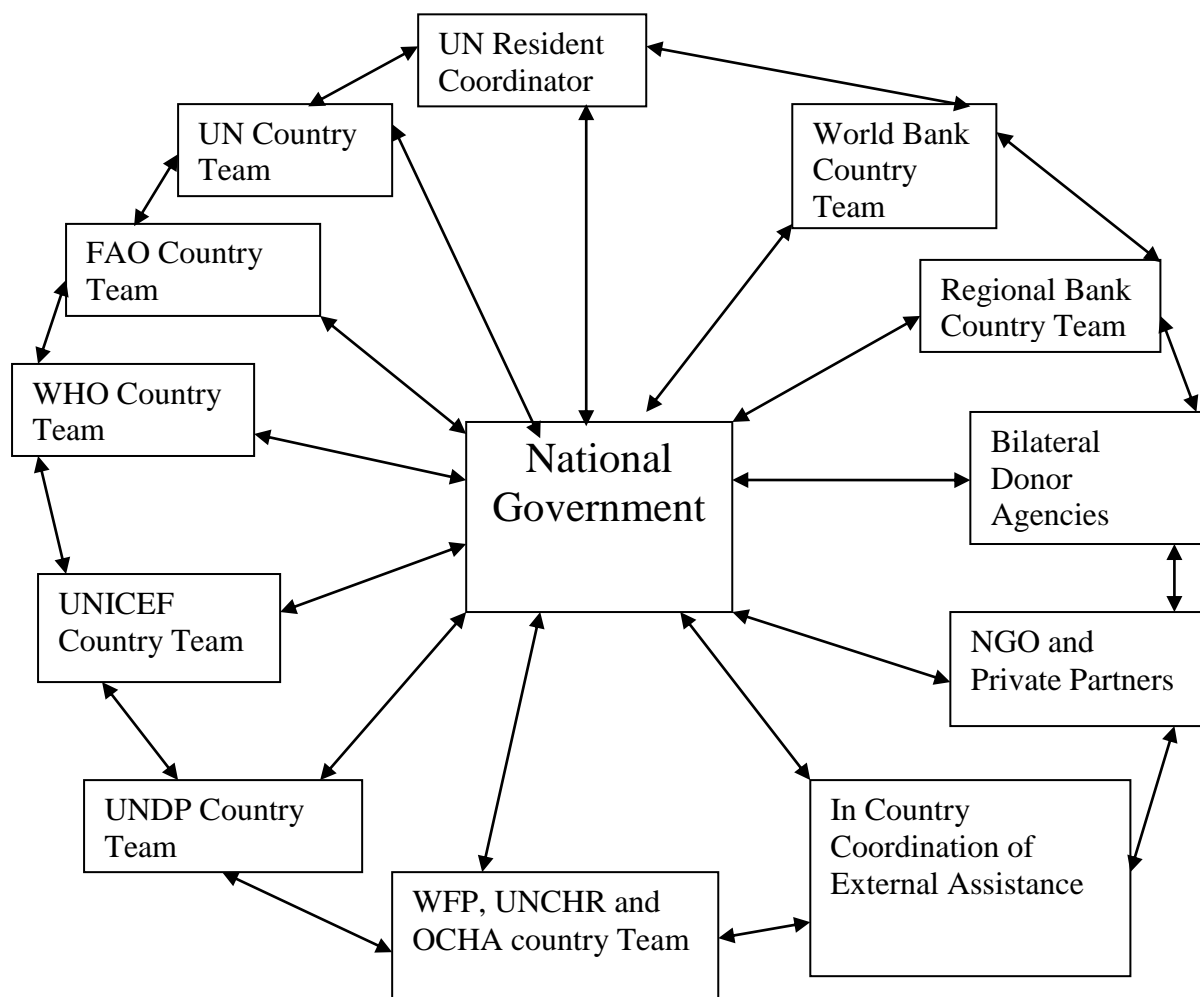


Legend:

PPP	Personal Pension and Payroll
IDSR	Integrated Disease Surveillance Response
PRMIS	Patient Records Management Information System
IFMIS	Integrated Financial Management Information System
NHA	National Health Account
DPHS	Directorate of Preventive Health Services
DCS	Directorate of Clinical Services
DNS	Directorate of Nursing Services
DOF	Directorate of Finance
CHRMD	Controller of Human Resources Management and Development

Source: Government of Malawi (2006a).

Appendix 13: Collaboration and Partnership in Ghana



Source: Authors Analysis of collaboration and partnership between Government of Ghana and Stakeholders.

Appendix 14: Planning Assumptions for Future Influenza Pandemic in Ghana

Scenario 1: In this scenario, the current strain of the virus arrives in Ghana via migratory birds and quickly infects local domestic bird populations in specified geographic foci. Due to the low rate of bird-to-human transmission of the virus, relatively few human cases are detected (and only among those living/working closely with infected birds). This would mark the arrival of pandemic Phase 3 in Ghana.

Scenario 2: In this scenario, the world has progressed to pandemic Phase 4; the virus is now capable of human-to-human transmission. The virus would arrive (as in scenario 1) via migratory birds and rapidly infect domestic bird populations in specified foci. Bird-to-human transmission and subsequent human-to-human transmission would result in geographically localized clusters of human cases.

Scenario 3: The scenario would result from the world progressing to Phase 5 of the pandemic with the appearance of a viral strain capable of rapid and effective human-to-human transmission. In this scenario the virus could arrive in Ghana via migratory birds but also (and perhaps more plausibly) by the arrival in Ghana of infected individuals travelling from other countries.

Source: Republic of Ghana (2006).

Appendix 15: Ethics Approval of the Study

Direct line/e-mail
+44 (0) 115 8231063
Louise.Sabir@nottingham.ac.uk



28 July 2010

Professor Jonathan Van-Tam
Professor of Health Protection
Room A40d Division of Epidemiology and Public Health
Clinical Sciences Building
City Hospital Campus
Nottingham University Hospitals
Hucknall Road
NG5 1PB

Medical School Research Ethics
Committee
Division of Therapeutics &
Molecular Medicine
D Floor, South Block
Queen's Medical Centre
Nottingham
NG7 2UH

Tel: +44 (0) 115 8231063
Fax: +44 (0) 115 8231059

Dear Professor Van-Tam

Ethics Reference No: F/07/2010 - Please quote this number on all correspondence

Study Title: Planning for and responding to ethical dilemmas raised by Pandemic influenza in Sub-Saharan Africa.

Lead Investigator: Professor Jonathan Van-Tam, Professor of Health Protection
Co Investigators: Emeritus Prof Robert Dingwall, Supervisor, School of Community Health Sciences, Evanson Sambala, Research Student, Division of Epidemiology and Public Health, School of Community Health Sciences.

Thank you for your letter dated 27th July 2010 responding to the issues raised by the Committee and enclosing revised version of:

- Volunteer Information sheet dated 27/7/2010

These have been reviewed and are satisfactory and the study is approved.

Approval is given on the understanding that the Conditions of Approval set out below are followed.

Conditions of Approval

You must follow the protocol agreed and any changes to the protocol will require prior Ethic's Committee approval.

This study is approved for the period of active recruitment requested. The Committee also provides a further 5 year approval for any necessary work to be performed on the study which may arise in the process of publication and peer review.

You promptly inform the Chairman of the Ethic's Committee of

- (i) Deviations from or changes to the protocol which are made to eliminate immediate hazards to the research subjects.

- (ii) Any changes that increase the risk to subjects and/or affect significantly the conduct of the research.
- (iii) All adverse drug reactions that are both serious and unexpected.
- (iv) New information that may affect adversely the safety of the subjects or the conduct of the study.
- (v) The attached End of Project Progress Report is completed and returned when the study has finished.

Yours sincerely

A handwritten signature in black ink, appearing to read 'R C Spiller', written in a cursive style.

Professor R C Spiller
Chairman, Nottingham University Medical School Research Ethics
Committee

**Medical School Research Ethics Committee
Membership 2009/2010**

Chairman Professor R C Spiller, Consultant Gastroenterologist & Professor of Gastroenterology, Wolfson Digestive Diseases Centre

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Representative

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Dr Liz Simpson, Chief Experimental Officer.

Molecular Medical Sciences

Dr David Turner, Senior Clinical Associate Professor in Microbiology

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Primary Care

Dr Richard Knox, General Practitioner/ Part-time Lecturer
Division of Primary Care, QMC Campus

School of Nursing,
Midwifery and
Physiotherapy

Ms Stacy Johnson, Senior Lecturer in Nursing

Lay (Out of Faculty)

Professor Robert Peter Bartlett, Professor of Mental Health Law,
School of Law, University of Nottingham.

Medical Students
nominated by ISC

Anish Sharma, 3rd Year Medical Student

Postgraduate Student
Member

Ms Jodie Finlayson-Burden, PhD student, Division of Psychiatry

Administrator

Mrs Louise Sabir, Division of Therapeutics & MM, School of
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