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Antibiotics in Mexico: An analysis of problems, policies, and politics

ANAHI CRISTINA DRESER MANSILLA

Thesis submitted in accordance with the requirements for the degree of

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Department of Global Health and Development

Faculty of Public Health and Policy

LONDON SCHOOL OF HYGIENE & TROPICAL MEDICINE

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(CONACYT, scholarship number 167955)

STATEMENT OF OWN WORK

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I, Anahí Cristina Dreser Mansilla, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Student ID Number: 045774

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Title of thesis: Antibiotics in Mexico: An analysis of problems, policies and politics

The candidate confirms that the work presented in the thesis is her own. However, there were contributions made by others to the work presented, which are described below.

1) **Interviews.** In total, 53 interviews were conducted between 2005 and 2008 as part of this thesis. The interview guideline was developed solely by the candidate, with support of her advisory committee. The majority of the interviews with key informants were conducted by the candidate, with the exception of 17, in which the interviewers were Dr. Kitty Corbett (8) and Dr. Veronika Wirtz (9), both researchers at the Mexican National Institute of Public Health (INSP) at that time. These 17 interviews were conducted using the interview guideline prepared by the candidate. These interviews were fully transcribed, and transcriptions were checked against the recording and field notes by the candidate. These 17 interviews were incorporated to the rest for analysis; analysis presented in the thesis was undertaken exclusively by the candidate. The coding scheme for all interviews was discussed with both colleagues at INSP as well as with the candidate's advisory committee at LSHTM. Full analysis and reporting of results was performed solely by the candidate

2) **Quantitative content analysis of printed media.** A systematic review of printed newspaper articles published between January 2009 and December 2010 was conducted as part of this thesis, including 322 newspaper articles. This review included two different analyses: A quantitative content analysis was performed to determine the frequency of topics and stakeholders covered; additionally, a qualitative content analysis was conducted to gain insight into stakeholder positions and actions.

The candidate conceived this study, in which the following researchers also participated: Dr. Veronika Wirtz, Dr. Edna Vázquez, and Dr. Sandra Treviño, all researchers at the INSP at that time. The coding scheme for the quantitative content analysis was developed co-jointly by the candidate and the three INSP researchers; once the codebook was agreed upon, the codification of newspaper articles was performed by Dr. Vázquez under the supervision of the candidate. Codification was additionally checked by the candidate with randomly selected newspaper articles.

The qualitative analysis of these notes –related to the participation of stakeholders- and reporting of these results was conducted solely by the candidate, although discussions were sustained with the other researchers.

Results from this study were presented in a publication, in which the candidate is the first author: Dreser et al. Regulation of antibiotic sales in Mexico: an analysis of printed media coverage and stakeholder participation. BMC Public Health 2012 12:1051.

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ABSTRACT

The inappropriate use of antibiotics poses a risk to individual health, is a waste of health resources, and triggers antibiotic resistance, a global health problem. Despite strategies promoted internationally to address antibiotic misuse and resistance (AMR), few low and middle-income countries have fully incorporated them into their national health policies. There is scarce research on the factors that affect the development of AMR policies at the national level. The present study addresses this gap by applying a policy-analysis approach to understand agenda setting, policy inaction and policy change with regard to AMR, focusing on the case of Mexico.

This study is designed as a longitudinal case-study, looking at events between 2001 and 2012 in Mexico, which cover two periods of government. The study used Kingdon's multiple streams (MS) theory of agenda-setting to guide the analysis, explaining both when the issue of AMR was denied a position on the agenda (first period studied) and when the issue gained agenda status and a policy change occurred (second period studied). The methods used were semi-structured interviews with key social actors, document analysis and media analysis.

The following factors hindered AMR inclusion in the health policy agenda during the 2000-2006 administration: a) low problem visibility and a narrow definition that pulled AMR away from the scope of public policies; b) lack of clarity on the policy alternatives and their feasibility; c) absence of policy entrepreneurs promoting these policies; d) within the health-reform context, improving medicine stocks was the priority. During the 2006-2012 administration, the problem of self-medication with antibiotics gained visibility when it was related to the 2009 influenza pandemic; a group of specialists acted as policy entrepreneurs supporting AMR policies. The national health crisis and a previous designation of an institutional body to control medicine sales favoured agenda placement and the development of a narrow-focused regulation, but hindered the formation of a comprehensive national policy on AMR.

The usefulness of Kingdon's theory in examining AMR agenda-setting, in the context of Mexico, is explained. The research findings are discussed in light of other studies to draw lessons for Mexico and other countries aiming to develop AMR policies.

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1. INTRODUCTION

1.1 Setting the problem

It has been estimated, that, globally, half of all medicines are inappropriately prescribed and dispensed, and that half of all patients do not adhere to prescribed treatment (WHO, 2004). In developing and transitional countries, in primary care less than 40% of patients in the public sector and 30% of patients in the private sector are treated in accordance with standard treatment guidelines; two thirds of all antibiotics are sold without prescription, favouring inadequate self-medication (Holloway and van Dijk, 2011: 1); up to 75% of antibiotics are prescribed inappropriately, even in teaching hospitals, worldwide (Wiedenmayer, 2004: 141). The inadequate use of medicines¹ poses a risk to individual health, because of treatment failures and adverse reactions, and poses an economic burden to health systems and households. However, the inappropriate use of antibiotics is of particular concern because it triggers the spread of antimicrobial resistance², which reduces the effectiveness of these medicines to cure infectious diseases, leading in turn to increased morbidity, mortality, and health care expenditure (Smith and Coast, 2002; WHO, 2001a).

Since more than two decades ago, antimicrobial resistance has been recognized, in its own, as a major threat to global public health, a “worldwide calamity” (Kunin, 1993). Despite this recognition, the declining effectiveness of antibiotics in treating common infections has hastened in recent years (Laxminarayan, *et al.*, 2013). In 2012, Doctor Margaret Chan, Director-General of the World Health Organization (WHO), underlined the severity of the problem envisaging a bleak panorama: “A post-antibiotic era means, in effect, an end to modern medicine as we know it. Things as common as strep throat or a child’s scratched knee could once again kill”³. More recently, the World Economic

¹ The terms “irrational use” and “inappropriate use” are used interchangeably in the literature. These terms include the *overuse* of antibiotics (frequent use for minor self-limiting infections), *misuse* (incorrect choice of medicine, dose and treatment schedule), and *underuse* (not using antibiotics when needed, not completing the treatment course) (WHO, 2001b). In the present document, I will use the terms “irrational use”, “inappropriate use” and “misuse” interchangeably.

² In the literature, the terms “antibiotics” and “antibiotic resistance” are often used interchangeably with “antimicrobials” and “antimicrobial resistance”. However, while antibiotics tend to refer only to medicines against bacteria, antimicrobials also encompass medicines to treat viral, fungal or protozoal diseases, including medicines against tuberculosis, malaria or HIV, which are not the focus of this study. The focus of this study is placed on the use of antibiotics and on bacterial resistance against antibiotics. However, the terms antibiotic resistance and antimicrobial resistance are used interchangeably.

³ Chan, M. “Antimicrobial Resistance in the European Union and the World”. World Health Organization, March 14th 2012,

Forum (WEF, 2013: 28) declared that antibiotic-resistant bacteria constitute one of the main risks to human health.

Antimicrobial resistance is a consequence of naturally-occurring mutations in microbes and selection pressure from antibiotic use that provides a competitive advantage for mutated strains; mutated strains then spread in health-care facilities and communities. Every dose of antibiotics creates selection pressure for resistance; however, inadequate antibiotic use (which includes suboptimal doses, as well as overuse, such as their frequent use to treat minor ailments) helps to trigger the selection of resistance (Laxminarayan, *et al.*, 2013). In fact, it has been clearly established that high levels of antibiotic consumption correlate with high levels of resistance to antibiotics (Diekema, *et al.*, 2000; Goossens, *et al.*, 2005).⁴

Strategies aiming to contain antimicrobial resistance can be directed to avoid the emergence of new resistance, or to prevent the transmission of existing resistance. But as transmission of resistance can only occur once resistance has emerged, the primary goal is avoiding the emergence of resistance (Smith and Coast, 2002: 127); and to attain this goal, improving antibiotic use is crucial (Leung, *et al.*, 2011). Until recently, new antibiotics have been developed to replace ineffective ones. However, antimicrobial resistance may be outpacing human innovation: the development pipeline of novel antibiotics is running dry. Consequently, maintaining the effectiveness of currently available antibiotics, by preventing their inadequate use, is of utmost importance (WEF, 2013; WHO, 2001a). This brings us again to the problem initially discussed here, the misuse of antibiotics. As these two problems are strongly related, in the present study I examine both as a single problem: antibiotic misuse and resistance (AMR).

AMR is no longer considered a mere medical issue; it is increasingly being considered a societal issue: individual decisions (by patients, prescribers or dispensers) can have repercussions in the rest of the population (WHO, 2001a: 2).⁵ The burden of AMR is heavier in low and middle-income countries, where infectious diseases are more

http://www.who.int/dg/speeches/2012/amr_20120314/en/index.html (accessed on August 24th, 2013).

⁴ The use of antibiotics in animals (such as growth promoters in livestock, or in veterinary medicine) and its potential effect on antimicrobial resistance in pathogens affecting humans has also been a matter of concern. Despite the relevance of the human-animal interface in antimicrobial resistance, this study focuses solely on the use of antibiotics in humans.

⁵ In economics, this is understood as a negative externality. The containment of resistance may also be defined as a global public good, since it is impossible to exclude people from benefiting from it; this stresses the need for international coordinated action on AMR (Smith and Coast, 2002).

frequent, a large proportion of the total medicines budget is dedicated to medicines (including antibiotics) and patients often have to pay out-of-pocket for them, aggravating existing poverty and inequities. In this sense, the reasons to promote the rational use of antibiotics and contain resistance involve health, ethics and economics (Madrid, *et al.*, 1998).

Concerned about the rapid emergence and spread of human pathogens resistant to available antibiotics, the 1998 World Health Assembly (WHA)⁶ urged Member States to improve practices to prevent the spread of infection and thereby the spread of resistant pathogens; as well as to promote appropriate antibiotic use in health care facilities and in the community. In 2001, the WHO published a review of interventions and strategies to improve the use of antimicrobials in developing countries (WHO, 2001c), and launched the *Global Strategy for Containment of Antimicrobial Resistance* (WHO, 2001a). The Global Strategy proposed a series of educational, managerial and regulatory interventions (more than 60), directed to policymakers, prescribers, dispensers, patients and relevant stakeholders (such as pharmaceutical industry and professional associations). These recommendations aimed at enabling countries to define and implement national policies on AMR, under the umbrella of national health policies. Over the years, a number of international, regional and national organizations and initiatives added to the call of improving antibiotic use and contain resistance, and have sought to promote policy action at the country level.⁷

Despite some important advances on the adoption AMR policies at the national level, mainly in developing countries, the WHO has recognized that, overall, the progress has been slow. Specialists on antimicrobial resistance have also pointed out to the “vagueness of the international response and the failure to translate existing knowledge into concrete action” (Cars and Nordberg, 2005: 103), underlining the breach between

⁶ Fifty-first World Health Assembly, 16 May 1998. Emerging and other communicable diseases: antimicrobial resistance, available at:

<http://apps.who.int/medicinedocs/index/assoc/s16334e/s16334e.pdf?ua=1>

⁷ In Europe, regional initiatives seek to promote AMR policies and national campaigns (European Centre for Disease Prevention and Control, available at:

<http://ecdc.europa.eu/en/eaad/Pages/Home.aspx>). Global networks also seek to trigger action on antibiotic resistance. Examples of these networks, conformed mostly by health professionals are: APUA-Alliance for the Prudent Use of antibiotics, available at: <http://www.tufts.edu/med/apua/>; ReAct - Action on Antibiotic Resistance, available at: <http://www.reactgroup.org/>; WAAR - World Alliance against Antibiotic Resistance available at: <http://www.infectiologie.com/site/waar.php>; the Antimicrobial Stewardship Working Group, available at: <http://www.ischemo.org/index.php/sections/isc-antimicrobial-stewardship>; and the Global Antibiotic Resistance Partnership-GARP, available at: <http://cddep.org>, which seeks to develop policy recommendations relevant to low- and middle-income countries. The International Network for Rational use of Drugs –INRUD, available at: <http://www.inrud.org/> (and the International Conferences for Improving the Use of Medicines- ICIUM held in 1997, 2004 and 2011) also seeks to improve the use of antibiotics.

strategies promoted by the global society and their acceptance by national policy makers (Cars, *et al.*, 2008). The 2005 WHA called again for the rational use of antibiotics by providers and consumers, and requested the Director General to strengthen WHO's leadership role in AMR and to provide more technical support.⁸ However, over the years, it became clear that actions on AMR have been frequently taken forward by individual programmes and institutions, but the effort is often fragmented and not comprehensive. Above all, AMR has not been prioritized by national governments (Leung, *et al.*, 2011). On World Health Day 2011, dedicated to raising awareness about antimicrobial resistance, WHO urged countries to commit to a comprehensive financed national plan on AMR, emphasizing: "Not action today, no cure tomorrow". That day, WHO introduced a six-point policy package, aiming to reframe and clarify the critical actions to be taken by governments in order to stimulate action by all stakeholders (Leung, *et al.*, 2011). This long-existing gap between international and national policy recommendations on AMR and policy action by national governments was what sparked the interest to conduct the present study.

Given the global nature of antimicrobial resistance, international collective action is essential; however, the responsibility for health and health policies (where AMR are embedded) remains predominantly national (Smith and Coast, 2002). Therefore, a disparity arises between the problems and solutions related to AMR and the institutions and mechanisms that are available to address them. This disparity reflects a common problem in international agencies that have been raised up in other aspects of pharmaceutical policies: developing global recommendations for policies that require national implementation (Reich, 1987: 49). While the WHO serves a coordinating and catalytic role in medicines and in AMR policies, advocating for action, shaping collaborations and facilitating evidence based guidance, it is not an enforcing or regulatory agency (Reich, 1987). As such, it is still national policy makers who must take policy decisions constrained by social, economic and political local contexts.

Political will and political commitment have been identified as critical prerequisites to bring about action on AMR, to develop comprehensive policies, organize health systems and legislation as required, and translate recommendations into practice (Leung, *et al.*, 2011: 391; WHO, 2001a: 10). Besides other factors such as poverty or weak health systems, the lack of political will has often been pointed out as a major

⁸ Fifty-eighth World Health Assembly, 16-25 May 2005. Improving the containment of antimicrobial resistance available at: http://apps.who.int/gb/ebwha/pdf_files/WHA58-REC1/english/A58_2005_REC1-en.pdf

reason for political inaction on AMR. As two leading specialists and activists on antimicrobial resistance bluntly put it:

How do we prevent the same pattern from continuously repeating itself: one in which medical experts meet and compare escalating figures of resistant bacteria from different parts of the world, discuss worst-case scenarios but fail to reach out successfully either to politicians or to society as a whole? Obviously, current efforts are not enough to make the problem of antibiotic resistance a national political priority in any country; therefore, other ways must be explored. Politicians are predictable. They will certainly remain inactive as long as political passivity outweighs the will to initiate action on this issue. (Cars and Nordberg, 2005: 110).

The Lancet Infectious Diseases Commission publication “Antibiotic resistance—the need for global solutions”, authored by a group of infectious disease experts from around the world (Laxminarayan, *et al.*, 2013), also stresses the relevance of political commitment at the national level. Along the document, the need for “visionary governments with adequate funding” (p. 5), “enlightened national and global leadership” (p.8), and “serious commitment of many stakeholders, including government authorities, policy makers” (p. 9) are pointed to as requisites to getting out of the current impasse concerning policy action on AMR. Similarly, a recent WHO publication (2012: 92) examining the experiences with implementing international recommendations on AMR concludes that “mobilizing the necessary expertise and resources to mount a concerted effort to prevent and control AMR will depend on the commitment of policy decision-makers across the world.”

However, how does political commitment on AMR come about? The aforementioned publications provide only few hints. Sharing positive experiences among countries, fostering collaboration between disciplines and sectors, generating reliable and up-to-date information on AMR –including its contribution to excess mortality and costs- and strengthening the engagement of academics, community leaders and civil society organizations, have been enumerated as relevant to raise governmental awareness, generate political will, and trigger governmental action (Laxminarayan, *et al.*, 2013; WHO, 2012). Despite these and similar factors being raised up by diverse scholars and organizations, there is scarce empirical evidence on how these factors come into play to generate (or not) political action on AMR. The present study addresses this gap by empirically examining the factors that influence policy inaction and policy change on AMR with a case-study at the national level.

The present study underlines the fact that AMR policies imply changes in health and pharmaceutical policies; and that policy reform in such areas involve highly political processes (Reich, 1994, 1995b, 2002; WHO, 2001b). Thus, the focus on political will,

which has frequently being stressed with regard to action on AMR, has a number of limitations to understand the process of policy reform⁹; as political scientist Michael R. Reich (2002:138) explains, the concept political will emphasises individual agency (“the leader makes decision and makes it happen”), disregarding the role of other factors, such as the influence of other stakeholders or institutional capacity, and ignoring political constraints and the political risks that reform implies. But besides these important influences on policymaking, political leaders *do* need to exercise their will-power and skills to attain policy reform. With this regard, policy advocates can create incentives for political leaders to enact reforms. To do this, policy advocates benefit from assessing the power, intentions and actions of stakeholders involved (political or stakeholder analysis); and using political strategies to improve the political feasibility of policy change (Reich, 2002: 139). These approaches have been applied to assess and to manage the political dimension of pharmaceutical policy reform (WHO, 1997); however, to the extent of my knowledge, have not been applied specifically to AMR policies.

On the other hand, before policymakers undertake policy action (i.e. enact policies) upon any given issue, firstly, they have to ‘decide to decide’ upon it. And for this to happen, the issue in question has to be in the policy agenda. Political theorist John Kingdon (1995: 3) defines the policy agenda as “the list of subjects or problems to which governmental officials, and people outside of government closely associated with those officials, are paying some serious attention at any given time”. But how and why certain issues become agenda items? Or as Kingdon puts it, “what makes people in and around government attend, at any given moment to some subjects, and not others?” In order to answer this question, John Kingdon provides a policy-analysis theory, known as ‘Multiple Streams’, to understand the agenda-setting process. This theory proposes that agendas are the product of the flow and interaction between three processes or ‘streams’ operating independently of each other: problems (public matters requiring attention), policies (generation of policy alternatives), and politics (the context and flow of political events). An issue is most likely to achieve public agenda status when these streams intersect; this is, a ‘policy window’ opens. Despite the diversity of factors involved and the ‘fluidity’ implicit in the model, Kingdon shows that there are patterns to policy intersection; policy windows are not random.

⁹ With this regard, political scientists Grindle and Thomas (1991: 123) assert that “lack of political will becomes a catch-all culprit, even though the term has little analytic content and its very vagueness express the lack of knowledge of specific detail”.

Hence, Kingdon's theory diverges from views in which agendas result from the mere addition of a number of factors; nor they are the product of only one circumstance, such as 'political will' or 'evidence'. Therefore, this theory provides insight to understand the complexity of the processes of agenda setting for AMR. This understanding on policy windows is important for advocates of policy proposals, as they can seize opportunities and take advantage of them (Kingdon, 1995: 175). And, as Reich (2002: 140) suggests, the political strategies adopted by policy advocates within each of the streams can make a critical difference for policy change to succeed. However, there is a dearth of studies on AMR agenda setting and policy adoption; and, to the best of my knowledge, Kingdon's theory has not been used before to analyse the problem of AMR agenda-setting at the national level.

Therefore, the main argument in the present thesis is that policy action (and inaction) on AMR can be understood –at least in part– by understanding whether AMR is on the policy agenda and the factors that affect AMR agenda-setting. Based on this idea, the present study initially sought to gain insight on policy inaction on AMR (i.e. lack of adoption of specific governmental policies to address AMR) by analysing the case of Mexico. This middle-income country, as many others, does not have an explicit national policy on AMR, despite the fact that problems related to antibiotic misuse (including inadequate prescribing, self-medication) and resistance have been documented. As such, the case study in Mexico sought to shed light on the factors related to lack of agenda placement and policy inaction on AMR at the national level. Originally, the present study only covered the 2000-2006 Mexican presidential administration. During this administration, a large health system reform was introduced and a national pharmaceutical policy proposal developed, which disregarded the issue of AMR. The main research interest here was on the factors that prevented AMR from reaching the health policy agenda. However, while analysing data collected, unexpectedly, in 2009 a policy to enforce the regulation of antibiotic sales only with medical prescription was announced, and enacted in 2010. Given the opportunity that this circumstance offered to examine policy action on AMR, the study was extended to cover the 2006-2012 presidential administration as well. The main research interest here was on the factors that allowed AMR to gain agenda status and triggered a policy change.

As a result, the present longitudinal case study comprises the analysis of agenda-setting for AMR in Mexico during 12 years, covering two presidential terms: one characterized by stability and policy inaction on AMR; and a second one when a policy change occurred.

1.2 Aim of the study, research questions and objectives

Aim of the study

The aim of this study is to explain the process of agenda-setting for the appropriate use of antibiotics and containment of antimicrobial resistance (AMR) in Mexico, and how that affected the adoption of related policies.

Research questions

The overall research question of this study is:

How did the issue of antibiotic misuse and resistance (AMR) come on to the national health policy agenda in Mexico and how that affected the adoption of AMR policies?

There are two main sub-questions guiding this thesis:

- Why did AMR not reach the health policy agenda during the 2000-2006 administration in Mexico, and how that affected the adoption of related policies??
- Why did AMR reach the health policy agenda during the 2006-2012 administration in Mexico, and how that affected the adoption of related policies?

In order to answer these questions, it is necessary to understand the problem of AMR, and to analyse the content of health policy documents in its relationship with that problem; to identify the role of different social actors –within and outside government–in health and pharmaceutical policymaking; to understand how the problem of AMR and its possible solutions were perceived by these actors; to elucidate the processes of policymaking for health and pharmaceutical policies; and to comprehend the context in which these actors interact. These queries are the focus of policy analysis (Parsons, 1995), and specifically agenda-setting analysis, which provides the theoretical and conceptual background for the present study.

Specific Objectives

1. To analyse the factors related to AMR agenda placement in Mexico during the 2001-2006 administration and the adoption of related policies, by focusing on problem definition and recognition, the political context, the development and perception of policy alternatives, and the role of policy entrepreneurs.

2. To analyse the factors related to AMR agenda placement in Mexico during the 2007-2012 administration and the adoption of related policies, by focusing on problem definition and recognition, the political context, the development and perception of policy alternatives, and the role of policy entrepreneurs.

1.3 Structure of the thesis

The present document is organized as follows:

Chapter 2 provides background information for this study. It begins with overview of pharmaceutical policies, in which specific policies to improve antibiotic use are embedded, and describes some of the challenges that countries face in developing such policies as documented in the literature. Subsequently, a review of the situation regarding antibiotic misuse and resistance in Mexico is presented. Finally, contextual information regarding Mexico's political system, as well as health and pharmaceutical policies is provided.

Chapter 3 reviews relevant theoretical approaches of policy analysis, discussing the concepts of public and health policies, and examining different approaches to understanding the process of public policy-making. The chapter goes on describing theories on agenda-setting (which provide the theoretical propositions for this thesis) and lastly presents the conceptual framework of the study.

Chapter 4 then presents the methodological approach, the study design and methods used to address the research questions posed. The case study design is described and its utilization for this study is justified. The chapter goes on to describe the two main sources of data for the study (documents and interviews with stakeholders), as well as the document analysis, thematic analysis of interviews, and media content analysis undertaken.

There are two results chapters. Chapter 5 presents findings pertaining to the first studied period (the 2000-2006 Mexican presidential administration), based principally in interviews with stakeholders and the analysis of official documents. Chapter 6 presents findings concerning the second studied period (the 2006-2012 administration), based in interviews with stakeholders, the analysis of official documents, and results of a media content analysis covering that period.

Chapter 7 summarize and compare findings pertaining to the two studied periods, and discusses as well results of this study in the light of other studies on agenda- setting and policy development for antibiotic use and resistance. The chapter finishes discussing some lessons, derived from the study, for Mexico and for other countries seeking to develop AMR policies. Finally, a summary and conclusion of this study is provided.

1.4 Role of the candidate

I was supported in the conduction of this doctoral research by the National Council for Science and Technology of Mexico (CONACYT, scholarship number 167955). While conducting the present study, I was firstly invited as a visiting researcher at the Mexican National Institute of Health, INSP (from October 2005 to November 2006). From 2008, I am a full time researcher in that Institution. As I mentioned in the Statement concerning conjoint work, I confirm that the work presented here is my own. However, my affiliation at INSP implied the collaboration with other researchers, which contributed, to a minor degree, to the work presented here, as described in the Statement. Additionally, two persons, Patricia Solís and Evelyn Aaron revised English grammar use in some sections of this document.

Information obtained from the literature review, interviews, as well as document and media analysis –undertaken as part of the present thesis– has been incorporated in a number of publications and conference presentations, which are enlisted in Appendix 1.

2. LITERATURE REVIEW

The present investigation is concerned with the development policies directed to improve antibiotic use and contain antibiotic resistance at the national level, analysing the case of Mexico. In this chapter, I provide background information for that analysis. The chapter begins with an overview of pharmaceutical policies, in which specific policies to improve antibiotic use are embedded, and describes some of the challenges that countries face in developing such policies. The second section presents a review of the problem of antibiotic misuse and resistance in Mexico.¹ The third section provides contextual information concerning the health system and pharmaceutical policies in this country.² Lastly, the fourth section describes the political system and the policy-making process in Mexico, focussing particularly on the 2000- 2006 and 2006-2012 presidential administrations.

2.1 Pharmaceutical policies and rational use of antibiotics

2.1.1 Pharmaceutical policies

Besides their unquestionable economic value –the pharmaceutical industry being amongst the most powerful in the world’s economy– the importance of medicines is crucial in health care and public health. In this sense, medicines are not simply commodities like any other: they are fundamental for medical care, and affect morbidity and mortality; account for a large share of the total health budget, and out-of-pocket expenses by patients; often legitimise health services and the role of health professionals, and are closely related with patient satisfaction. As such, medicines are at the core of discussions about equity, health, and health system performance throughout the world (Anderson and Huss, 2004: 12; Roberts and Reich, 2011; WHO, 2001b: 3).

Despite the key relevance of medicines, globally, problems related to insufficient access, poor quality, irrational use and waste prevail; this situation hinders the full potential that medicines have to improve the population’s health. Reasons behind

¹ The information presented in this chapter summarizes and updates the findings of a published review by Dreser, *et al.*, (2008).

² Some of the information presented in this section has been published in Dreser, *et al.*, (2011b) and Wirtz, *et al.*, (2012).

these problems are complex as a wide array of interdependent factors are involved, including socio-economic circumstances, characteristics of the medicines market, legislation and functioning of health systems, as well as behaviours of prescribers, dispensers and consumers (WHO, 2001b: 3). But, overall, it is public policy which largely influences the pharmaceutical system and their potential to improve the population's health: medicines supply in public health care facilities, product registration and quality monitoring, licensing of health professionals and facilities, are all subject of governmental decision making (Roberts and Reich, 2011).

Public policy choices with regard to medicines and the pharmaceutical system, are known as pharmaceutical policies.³ The pharmaceutical system is composed by a number of other complex subsystems, including: medicines research and development, registration and quality assurance, manufacturing, procurement and importation, supply chains, selection in health services, dispensing and sales, prescription and medicines use by patients (Anderson and Huss, 2004: 12; Roberts and Reich, 2011; WHO, 2001b). According to Roberts and Reich (2011), pharmaceutical policy is “the conscious efforts of national governments to influence the functioning of these subsystems”. This influence includes public sector and private sector performance, as well as the actions of citizens in using medicines (Roberts and Reich, 2002: 4). The World Health Organization (WHO) explains a national drug policy⁴ as a “commitment to a goal and a guide for action”. As such, it expresses and prioritizes the goals set by the government for the pharmaceutical sector, as well as the main strategies for attaining them. It provides a framework within which the activities of both the public and the private sector, and main actors in the pharmaceutical field can be coordinated (WHO, 2001b: 4).

This complexity of the pharmaceutical system, calls for a common framework to understand –and act upon– interrelated problems; different approaches can be used.⁵ For the present study, I use the framework proposed by the WHO that focuses on the integration of a national pharmaceutical policy (NPP) addressing three key objectives (WHO, 2001b: 6):

³ Many components of pharmaceutical policies overlap with health policies, and are within the realm of action of the health care sector. Nevertheless, other components overlap with policies in other sectors, such as industrial and property rights policies. Medicines utilization (which are focus of the present study) is both discussed within health policies (quality of healthcare), but it is also a key objective of pharmaceutical policies.

⁴ Drugs policy, medicines policy, and pharmaceutical policy are terms often used interchangeably.

⁵ A common approach is to use an economic perspective focusing on the demand and supply of pharmaceuticals, paying attention to cost-containment, efficiency, quality and equity as objectives in pharmaceutical policy (Jacobzone, 2000; Mossialos and Oliver, 2005).

- **Access:** equitable availability and affordability of essential medicines⁶, i.e., those that satisfy the health care needs of the majority of the population.
- **Quality:** the quality, safety and efficacy of all medicines
- **Rational use:** the promotion of therapeutically sound and cost-effective use of medicines by health professionals (prescribers, dispensers) and consumers. Policies directed to improve the use of antibiotics and contain antimicrobial resistance are included within this objective.

This approach has been widely used by academics due to the long experience of WHO in research on medicines, and providing advice to countries, dealing with the many medicines issues in a systematic way (Anderson and Huss, 2004: 13). Furthermore, given its emphasis in the rational use of medicines, it is particularly relevant for this study.

2.1.2 Rational use of medicines

Medicine use is considered rational (appropriate, proper, correct) when patients receive the appropriate medicines for their clinical condition, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost both to them and the community. Medicines use is considered irrational (inappropriate, improper, incorrect, inadequate) if one or more of these conditions is not met. Irrational use may take many different forms, for example, polypharmacy, over-use of antibiotics, failure to prescribe in accordance with clinical guidelines and inappropriate self-medication (Holloway and van Dijk, 2011: 2; WHO, 2001b). The WHO World Health Medicines Situation report (2004), estimated that over half of all medicines were prescribed, dispensed or sold inappropriately. The World Medicines Situation report of 2011 (Holloway and van Dijk, 2011: 2) concluded, despite this global problem few countries are monitoring medicines use or taking sufficient action to correct the situation.

⁶ Essential medicines are selected in compliance with public health relevance, evidence on efficacy and safety, and comparative cost-effectiveness. The essential drugs concept is central within a national medicines policy, as it promotes equity and helps to set priorities for the health care system. The rationale is that the use of a limited number of carefully selected medicines based on agreed clinical guidelines leads to a better supply of drugs, to more rational prescribing and to lower costs (WHO, 2001b).

The irrational use of medicines is wasteful and can be harmful for both the individual and the population. At the individual level, it can cause treatment failures and adverse medicines events; these, in turn cause significant morbidity and mortality. The overuse and misuse of antibiotics is a particularly serious global problem, as it triggers the development of antimicrobial resistance, which affects the population as a whole.

The use of antibiotics and other medicines is influenced by a complex interplay of cultural predilections, beliefs, knowledge, expectations and interactions of health-care providers and patients, economic incentives, as well as characteristics of health systems, pharmaceutical markets and the regulatory environment (Avorn and Solomon, 2000; Radyowijati and Haak, 2003; Wiedenmayer, 2004). Simplistic interventions to improve medicine use (such as disseminating printed information) have proven ineffective (Laing, *et al.*, 2001). Given this complexity on factors related to medicines use, it has been recommended that countries develop a coordinated national approach to promoting rational use of medicines and containing antimicrobial resistance (Holloway and van Dijk, 2011: 16; WHO, 2001a, 2012).

Worldwide, interventional research on improving the use of medicines and particularly antibiotics has been amply conducted gathering evidence to inform the development of policies. The WHO has had an important role in synthesizing and disseminating such evidence into policy recommendations, both directed to improving medicines in general and antibiotics in particular. These policy recommendations include educational, managerial and regulatory interventions, and are briefly described in Box 2.1. Additionally, in 2001, WHO published specific recommendations on antimicrobial resistance, the 'Global Strategy for Containment of Antimicrobial Resistance' (WHO, 2001a). These recommendations were updated in 2011 in a simpler six-point policy package (Leung, *et al.*, 2011). The contents of such documents are described in Box 2.2 and 2.3. As was mentioned before, the WHO has recommended these strategies to be developed as a coordinated national approach promoting rational use of medicines and containing antimicrobial resistance, and as a part of health and pharmaceutical policies. The need to establish a national intersectoral body to guide actions by several stakeholders under the overall stewardship of government has been stressed repetitively (Leung, *et al.*, 2011).

Box 2.1 Recommended strategies to promote rational use of antibiotics and to contain antimicrobial resistance

Macro level: Advocacy and regulatory interventions

- Multidisciplinary national body to coordinate medicine use policies
- Create a national intersectoral force on antimicrobial resistance with sufficient resources, and develop indicators to monitor and evaluate interventions
- Appropriate and enforced regulation:
 - Medicines licensing (allowing only registration of antibiotics meeting international standards, avoid irrational drug combinations)
 - Prescription and dispensing (enforce prescription-only status of antibiotics, or dispensing by professionals)
 - Licensure requirements prescribers / dispensers
 - Medicines promotion and advertising
- Avoidance of perverse financial incentives that encourage inappropriate use

Meso level: Managerial interventions

- Development and use of standard treatment guidelines (STG) linked to an essential medicines list (EML) to guide medicines procurement and prescription. Involvement of professional groups
- Medicine and therapeutics committees in districts and hospitals. Antibiotic use / antibiotic resistance policies and surveillance in health-care settings
- Supervision, audit, and feedback of prescribing practices

Micro level: Educational interventions

- Undergraduate and continuing in-service education on medicines use for health care professionals, based on STG and EML and local patterns of antimicrobial resistance
- Independent information on medicines (bulletins, formularies)
- Public education on medicines, involvement of consumers groups

Sources: (Laing, *et al.*, 2001; WHO, 2001a, 2001c, 2002b)

Box 2.2 List of 2001 WHO Global Strategy for Containment of Antimicrobial Resistance recommendations

- 1. Patients and the general community**
 - Education
- 2. Prescribers and dispensers**
 - Education
 - Management, guidelines and formularies
 - Regulation
- 3. Hospitals**
 - Management
 - Diagnostic laboratories
 - Interactions with the pharmaceutical industry
- 4. Use of antimicrobials in food-producing animals**
- 5. National governments and health systems**
 - Advocacy and intersectoral action
 - Regulations
 - Policies and guidelines

- Education
 - Surveillance of resistance, antimicrobial usage and disease burden
- 6. Drug and vaccine development**
 - 7. Pharmaceutical promotion**
 - 8. International aspects of containing antimicrobial resistance**

Source: (WHO, 2001a, 2012)

Box 2.3 The WHO policy package to combat antimicrobial resistance, 2011

1. Commit to a comprehensive, financed national plan with accountability and civil society engagement

- a. Provide stewardship and coordination; establish a national inter-sectoral steering committee
- b. Cost plans, mobilize and earmark resources
- c. Build partnerships with civil society; build strong public awareness and set up an accountability framework

2. Strengthen surveillance and laboratory capacity

- a. Establish AMR surveillance and monitoring systems
- b. Build laboratory capacity for rapid and reliable diagnostic testing
- c. Engage in regional and global surveillance networks

3. Ensure uninterrupted access to essential medicines of assured quality

- a. Reinforce the system for supply of essential medicines
- b. Assure the quality of drugs according to international standards

4. Regulate and promote rational use of medicines, including in animal husbandry, and ensure proper patient care

- a. Promote and enforce standard treatment guidelines
- b. Enforce prescription-only use of antimicrobials
- c. Promote education on antimicrobial medicines and their use
- d. Reduce antimicrobial use in food-producing animals
- e. Work to reduce financial incentives that encourage irrational use of medicines

5. Enhance infection prevention and control (IPC)

- a. Ensure availability of IPC programmes across the spectrum of health care, that include core elements
- b. Foster basic IPC standards in congregate settings
- c. Promote standards IPC measures and provide education on IPC in the community setting

6. Foster innovations and research and development for new tools

- a. Improve the use of current diagnostics and antimicrobials
- b. Create incentives for new product development
- c. Enable rapid regulatory processes for new tools and equitable access

Source: (Leung, *et al.*, 2011; WHO, 2012: 115)

2.1.3 Experience at the country level

The WHO World Health Medicines Situation report of 2004 concluded that few countries have fully incorporated the afore mentioned recommendations into their

national pharmaceutical policies; and even when they have, regulatory gaps are common, with the private and informal sectors for medicines supply often neglected, or lack mechanisms to enforce the implementation of regulations (WHO, 2004).

A comparative analysis of pharmaceutical policies in 12 countries (WHO, 1997) concludes that in most countries improving the availability of medicines in the public sector has been given priority above other NPP components; improving rational medicine use has been given much less priority. Similarly, a multi country study regarding the regulation of medicines concluded that prescribing practice is the least widely regulated activity (WHO, 2002a).

In formulating and implementing medicines policies, countries have been restrained by diverse social, political and economic factors. Box 2.4 summarizes the factors affecting the development of pharmaceutical policies and rational use policies at the country level that have been reported in the literature. Economic and political ideologies (Kanji, 1992: ix); and the relationship between the public and the private sectors (Reich, 1987) have been pointed out as a key issues affecting the achievement of the objectives of pharmaceutical policies.

Box 2.4 Factors affecting the development (adoption and implementation) of pharmaceutical policies and rational use policies at the country level

Impeding factors

- Ignore problem of inappropriate use and consequences, ignore NPP and WHO recommendations
- Competing issues in the agenda: prioritising availability in public services
- Providing medicines has more political appeal than rationalizing their use
- Lack of resources to implement strategies
- Funding: only 5% of the total pharmaceutical sector lending by the World Bank lending is committed to policy work and rational use of medicines
- Opposition of the pharmaceutical industry: threat to monetary profit
- Opposition by medical associations: threat to prescribing freedom
- Difficulties in implementing components of the policy that involve changes in behaviour
- Difficulties in implementing components of the policy that involve inter-ministerial collaboration and the private sector
- Priorities on NPP depend on type of actors involved (e.g. technicians and pharmacologists favour quality assurance; economists focus on access)

Enabling factors

- Favourable political conditions: climate of economic and/or social reform
- Involvement and support of key stakeholders; public involvement
- Political skills and commitment at the highest level

- Adequate and scientifically sound data
- Evidence on economic consequences, need for cost-containment
- Conducting continuous policy analysis through policy formulation and implementation
- Political strategies such as coordination, bargaining and formation of alliances

Sources: (Falkenberg and Tomson, 2000; Kanji, 1992; LSHTM/KIT, 1989; Reich, 1987, 1994, 1995b; Summers, 2004; WHO, 1988, 1997)

The WHO World Health Medicines Situation report of 2011 concluded that there has little improvement: Less than half of all countries are implementing many of the basic policies needed to ensure appropriate use of medicines, such as regular monitoring of use, regular updating of clinical guidelines and having therapeutics committees in most of their hospitals or regions (Holloway and van Dijk, 2011). This report underlines that a major reason for the failure to adopt a coordinated approach in promoting the rational use of medicines and containing antimicrobial resistance is that these aspects have not been “institutionalized” within health systems (Holloway and van Dijk, 2011: 16). While many rich nations have adapted their health systems with focus on the rational use of medicines by setting up national systems for medicines selection, prescription monitoring and obligatory continuing medical education, this has not been the case for the majority of low- and middle-income countries (Holloway and van Dijk, 2011: 16).

Another WHO report (WHO, 2012: 92) examining the experiences with implementing international recommendations on the containment of antimicrobial resistance, reached similar conclusions: although some specific interventions have been undertaken, very few countries have nationally funded and coordinated comprehensive activities on antimicrobial resistance. These are mostly high-income countries with stronger management and infrastructure capabilities. Australia provides a good example of success in developing a coordinated national approach promoting rational use of medicines and containing antimicrobial resistance. This country has an extensive National Medicines Policy; one of its main objectives, taken up in a national programme, is “Quality Use of Medicines”. The country has implemented as well a National Prescribing Service (NPS), and has developed numerous campaigns to promote the rational use of antibiotics, directed to practitioners, pharmacists and the general public (Holloway and van Dijk, 2011: 17).

However, there are also some successful experiences in low- and middle income countries. Thailand developed an “Antibiotics Smart Use” programme (Sumpradit, *et al.*, 2012). In South Korea, antibiotic overuse has been addressed by separating prescribing by physicians and dispensing by pharmacists, and by introducing a new payment system instead of the prevailing fee-for-service system (Park, *et al.*, 2005;

Kwon and Reich, 2005). More recently, in South Korea, antibiotic overuse has been addressed by publicly disclosing information on antibiotic prescribing rates of all health care providers (Choi and Reich, 2011). Advocacy and capacity building on interventions to contain antimicrobial resistance has been undertaken in some African countries (Joshi, *et al.*, 2011). However, it is important to note that most studies on AMR policies focus on the content policy outputs and their impact, and not in the policy *process* which led to policy adoption. With a few exceptions –for example the study on health care and pharmaceutical reform in South Korea by Kwon and Reich (2005) – little is known about the processes of agenda setting and policy formation for AMR at the national level. Other relevant country level experiences (the cases of Chile, India, Brazil and Peru) are described in the discussion chapter.

2.2 The problem: antibiotic misuse and resistance in Mexico

A systematic literature review on published research (1990-2004) concerning access and use of medicines in Mexico (Wirtz, *et al.*, 2008) concluded that the majority of studies (81 out of 108) focussed on the use of medicines. Of these, 52 studies showed that prescribing practices for hospitalized and ambulatory patients were often inappropriate, did not follow treatment guidelines, and implied unnecessary costs to patients; however, half of these studies were conducted before 1996. Far fewer studies were concerned with the dispensation of medicines or their utilization by patients. The majority of studies were descriptive, largely regarding the prescription of antibiotics in primary care settings; only 7 were interventional studies (Wirtz, *et al.*, 2008). The results of a more detailed analysis of those studies concerned specifically with problems related to antibiotic use (Dresler, *et al.*, 2008) are described below. With regard to the levels and trends of antibiotic consumption in the country from 1997 to 2007, concluded that Mexico had the highest level of consumption in the region, although it showed a decreasing trend during that period. However, consumption of broad-spectrum antibiotics (such as quinolones and new macrolides) rose sharply, as in other countries in the region. This high level of consumption was related to both self-prescription (antibiotics obtained without medical prescription in private pharmacies) and medical over-prescription (Wirtz, *et al.*, 2010).

Antibiotic prescription. Diverse studies shown that, both in private and public health care settings, between 70 and 80% of all patients with acute respiratory infections (ARI) and diarrhoeal diseases (DD) received antibiotics, while their use is justified in less than 15% of the cases (Bojalil, *et al.*, 1998; Gutiérrez, *et al.*, 1994; Pelaez-

Ballestas, *et al.*, 2003; Perez-Cuevas, *et al.*, 1996; Reyes Morales, *et al.*, 1997). Inadequate prescription of antibiotics for surgical antibiotic prophylaxis has also been reported (Mendez Lopez, *et al.*, 2005).

Some of the factors that have been related to an inadequate prescription of medicines in Mexico are deficient undergraduate and post graduate medical education, reliance on information on medicines distributed by the pharmaceutical industry, the perception of patient's expectation to receive medicines, and the prevalence of deficient but institutionalised treatment patterns (Corral-Terrazas, *et al.*, 2002; Guiscafre, *et al.*, 1998; Vilar-Puig, 2000). Interventions to improve the use of antibiotics in Mexico have largely been educational and directed to prescribers in the public sector, particularly IMSS (Guiscafre, *et al.*, 1995; Guiscafre, *et al.*, 1988; Guiscafre, *et al.*, 1998; Gutiérrez, *et al.*, 1994; Perez-Cuevas, *et al.*, 1996). Although successfully evaluated, there have been scarce efforts for scaling up these interventions at the national level.

Antibiotic dispensing and self-medication. Antibiotics have been among the most common type of medicines bought in private drugstores (almost a third of all sales) (Calva and Bojalil, 1996; Leyva-Flores, 2002), mainly for the treatment of ARI and DD—where they are hardly needed. Although current legislation requires antibiotics to be sold only with prescription, this regulation has not been enforced: between 40-60% of antibiotics are sold over the counter (Calva and Bojalil, 1996; Leyva-Flores, 2002; SSA-COFEPRIS, 2005; Wirtz, *et al.*, 2007). Among those who self-medicate, 90% of antibiotic purchases were inadequate regarding the type, dose or duration of treatment; this factor was pointed to contribute to the development of antibiotic resistance (Bojalil and Calva, 1994). In Mexico, it is not required for most pharmacies to have a full-time pharmacist; so under-trained clerks dispense most medicines. Between 70 and 80% of the treatment recommendations given by pharmacy clerks for DD, ARI and urinary tract infections (mostly involving antibiotics) were incorrect (Kroeger, *et al.*, 2001; Leyva-Flores, *et al.*, 2000; Turner, *et al.*, 2003).

Another important issue to consider with regard to the use of antibiotics is the information available for the public. In Mexico, the large majority of pharmaceutical products (including antibiotics) do not include a patient information leaflet. Not only is consumer-directed information lacking, but also for medical professionals and pharmacy personnel there is no national formulary to provide independent information on medicines. Instead, the most commonly used written information on medicines is a

non-exhaustive commercial formulary⁷ published yearly by the pharmaceutical industry. In this sense, some consumers associations (HAI-Mexico, 2000) and professional associations (CTFM, 1999) have demanded the government to provide patients and prescribers with practical and reliable information on medicines.

With regard to patient's knowledge on medicines, there are few studies available. A study with drugstores customers concluded that the overall majority of customers did not know that medicines they bought could produce adverse reactions. This was particularly alarming because they frequently bought prescription-only-medicines (including antibiotics) without consulting a physician (Wirtz, *et al.*, 2009). Another study explored specifically knowledge on antibiotics among patients seeking care for ARI at IMSS. The study found that self-treatment with and misperceptions about antibiotics were common. Many participants believed that common non-antibiotic treatments (such as aspirin and paracetamol) were antibiotics (Gonzales, *et al.*, 2012).

Consequences of antibiotic misuse. There is no systematic data collection and reporting on adverse medicine events and medication errors in Mexico. Consequently, it is not possible to understand the magnitude and severity of the consequences of inadequate antibiotic prescription and self-medication in terms of health expenditure and health outcomes (such therapeutic failure and adverse drug reactions) (Dreser, *et al.*, 2008: S843). One of the few studies published exploring costs related to inappropriate antibiotic use concluded that the waste of antibiotics due to the unjustified prescription and abandoned treatments for ARI and DD represented 11% of annual expenditure on medicines at that institution (Reyes Morales, *et al.*, 1997). A study in pharmacies concluded that inappropriate prescribing represented, with respect to standard treatments, an additional cost per patient of \$ 3.57 and \$ 8.37 for ARI and for DD (Flores, *et al.*, 2003), which was equivalent to 0.8 and 1.9 of the daily minimum in Mexico. Finally, another study at IMSS concluded that the majority (38%) of the adverse reactions reported in that health care institution were related to anti-infective medicines, particularly antibiotics (Hernández-Santillán, *et al.*, 2005). Similarly, a study conducted in a private hospital concluded that 40% of the adverse reactions reported were related to antibiotics (Zavaleta Bustos and Rosete Reyes, 2007).

Antibiotic resistance. In Mexico, there are diverse national and international networks which collect information on antibiotic resistance; some of them focus specific

⁷ *Diccionario de Especialidades Farmacéuticas*, PLM Publisher. Other Latin American countries such as Argentina and Venezuela are a step ahead from Mexico regarding this aspect, publishing regularly a National Therapeutic Formulary as part of their national strategy to promote the rational use of medicines.

pathogens. For example, the SENTRY network (Gales, *et al.*, 2012) is oriented to intra-hospital infections,) and the SIREVA network, organized by the Pan American Health Organization is oriented to pneumonia-related pathogens (Castañeda, *et al.*, 2009). While results of these networks originate an ample number of scientific publications and conference presentations, there is not a mechanism in place to systematise this information and communicate it to prescribers and policy-makers (Dresler, *et al.*, 2008). A study analysing antibiotic resistance in *Streptococcus pneumoniae* in ten Latin American countries, with data collected from 2000 to 2005, concluded that Mexico had the highest prevalence of resistant bacteria (Castañeda, *et al.*, 2009). This could be related to the fact that, during the same period, Mexico had the largest level of antibiotic consumption, when compared with other Latin American countries (Wirtz, *et al.*, 2010).

A system of hospital surveillance has documented antibiotic-resistant pathogens related with high mortality in hospital-settings; researchers have warned that these multi-resistant bacterial strains could spread quickly through the population (Silva, *et al.*, 1999; Silva, *et al.*, 1998; Silva, *et al.*, 2001). Increasing antibiotic resistance has also been documented for pathogens causing common community acquired infections such as common ARI and DD (Miranda, *et al.*, 1997; Nys, *et al.*, 2004; Solórzano and Miranda, 1998).

2.3 The context: Health system and pharmaceutical policies in Mexico

2.3.1 Mexico country profile

Mexico is an upper middle-income country, with more than 112 million inhabitants according to the 2010 national census.⁸ Life expectancy is 74 years, and 33% of the population is young (economically active population is 52 million).⁹ Mexico is undergoing epidemiological transition where cardiovascular diseases and diabetes are the leading causes of death; nevertheless, acute respiratory infections and diarrhoeal

⁸ Officially, 112,336,538 inhabitants in 2010; 106.6 and 103 million in 2008 and 2006, respectively. See: Instituto Nacional de Estadística y Geografía (INEGI), the Mexican statistics agency, <http://www.inegi.org.mx>.

⁹ See UNPD, <http://www.mx.undp.org/content/mexico/es/home/countryinfo/>

diseases are still among the main causes of general morbidity and under-five mortality, especially among the poorest sectors of the population (Gómez-Dantés, *et al.*, 2011).¹⁰

With a GDP of current US\$1.261 trillion in 2013, Mexico is the second largest economy in Latin America and the fifteenth economy in the world.¹¹ Although Mexico is the only Latin American member of the Organization for Economic Cooperation and Development (OECD), it is a very diverse country with the highest income inequality among such group (OECD, 2011). Mexican gross national income per capita is nearly US\$ 10 thousand (above Latin America average of 9.5 thousand),¹² but the GINI index (48.1 in 2012) reveals the important unequal income distribution.¹³ According to the United Nations Development Programme and CONEVAL,¹⁴ in 2012, 43.3 million (46% of the Mexican households) lived in poverty, of which 11.5 million (9.8%) lived in extreme poverty. The country ranks 61 in the Human Development Index (0.775), out of 187 countries and territories.

2.3.2 Mexico's health system

Since its origins, the Mexican health system has been organized around a segmented model: health services have been divided in those for people employed in the formal sector and their families (the insured population); and health services for people in the informal or agricultural sectors (the uninsured population). Formal sector employees are enrolled in social security schemes: the most important is the Mexican Institute of Social Security (IMSS, by its Spanish initials) which provides services to private sector workers, followed by the Social Security Institute for Government Employees (ISSSTE). Social security schemes provide a broad package of prepaid interventions, services, and medicines included in the institutional formularies.

As of 2000, before the 2003 health system reform, IMSS covered about 40% of the nearly 100 million inhabitants of Mexico on that time. ISSSTE covered an additional 7%, and private insurance accounted for around 3% of the population. Thus, about

¹⁰ INEGI <http://www.inegi.org.mx>.

¹¹ It is ranked twelfth using GDP 2013, PPP. World Bank <http://datacatalog.worldbank.org/>

¹² World bank, <http://data.worldbank.org/country/mexico>.

¹³ "Gini index measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution. [...] a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality" World Bank, <http://data.worldbank.org/indicator/SI.POV.GINI>. In such index Mexico stands slightly higher than Bolivia (46.6) and Argentina (43.3 in 2011), but lower than Colombia (53.5), Brazil (52.7) Chile (50.8 in 2011). East and South east Asian countries are better situated; Indonesia (38.1 in 2011) and Thailand (39.4 in 2010).

¹⁴ CONEVAL is the Spanish initials for National Council to Evaluate social Development Policy, see: <http://www.coneval.gob.mx>.

50% of the population was left without access to any form of prepaid health insurance (Frenk, *et al.*, 2006). The uninsured population could seek care in private facilities or in public health care facilities in exchange for a user fee which, despite being subsidised, still contributed to out-of-pocket expenses. Medicines shortages were common in public services (Gómez-Dantés, *et al.*, 2001), and this was the most frequent reason reported for not returning to use public health care services (Ramírez-Sánchez, *et al.*, 1998). As such, many patients attending public health care services had to pay for medicines in the private sector. In fact, medicines expenses accounted for two-thirds of household catastrophic health expenditures on the poorest sector of the population (Nigenda, *et al.*, 2003). Additionally, self-medication has been a common practice in Mexico (Leyva-Flores, *et al.*, 2001; Pagán, *et al.*, 2006); consequently, private pharmacies have played an important role in health care (Ángeles-Chimal, *et al.*, 1992; Molina Salazar and Rivas-Vilchis, 1998).

Accumulated evidence on the reliance on out-of-pocket payments that led to further impoverishment and deeper inequity (Leyva-Flores, *et al.*, 1998; Nigenda, *et al.*, 2003; Pérez-Rico, *et al.*, 2005) contributed to the 2003 reform, under the leadership of Health Minister Julio Frenk, which established the System of Social Protection in Health. This system, implemented from January 1, 2004, includes a subsidised insurance scheme, the *Seguro Popular* (Popular Health Insurance). It offers free access at the point of delivery to an explicit set of health-care interventions and medicines (Frenk, *et al.*, 2006). Official data collected by the Mexican Ministry of Health, suggested that, by 2012 the *Seguro Popular* provided insurance to 52.6% of the population (the majority of the previously uninsured population), and, therefore, universal health coverage has been attained (Knaul, *et al.*, 2012). However, the 2012 National Health and Nutrition Survey, revealed otherwise: the *Seguro Popular* covered 38.5% of the population; as such, only 78.6% of the population has access to pre-paid health insurance (Gutiérrez, *et al.*, 2012).

Despite this important advancement in the provision and financing of health services in Mexico, total health spending (6.2% of GDP in 2012) is still lower than the average in Latin America, and among the lowest shares of OECD countries (OECD, 2014). In 2007, private expenditures in health concentrated 54.6% of the total health expenditures (including health services and medicines), of which around 93% were out-of-pocket expenditures. Thus, Mexico still presents one of the highest rates of out-of-pocket expenditures in the region (Gómez-Dantés, *et al.*, 2011). It has been estimated that expenditures in medicines accounts for 24% of the total health expenditure (1.4% of GDP). Most expenditures in medicines are private (79%), predominantly out-of-

pocket. Higher out-of-pocket expenses in medicines in relation to other out-of-pocket expenses related to health is more prevalent amongst the poorest sector of the population (González Pier and Barraza Lloréns, 2011: 54-55)

By 2004, nearly 83% of available medical facilities were private; from those, the majority (87%) was ambulatory care units consisting of independent doctor offices or small clinics owned by the same doctors in most cases.¹⁵ Apart from the private health services, in Mexico there are 23,858 health units (2007), of which 4,354 are hospitals and the rest are ambulatory units. From the total of hospitals, 1,182 are public and 3,172 are private. Hospital certification by the General Health Council (since 1999) has been sluggishly accomplished. By 2009, only 256 health care facilities had valid certificates. The national ratio of doctors per 1,000 habitants is 1.85, which is lower than that of the OECD countries. There are around 80 Medical schools and faculties; only 44 are certified by the Mexican Council for Medical Education Certification (Gómez-Dantés, *et al.*, 2011).

There are around 23,500 private pharmacies in the country. A decade ago, most of the pharmacies were independent (neighbourhood) pharmacies; however, these are being increasingly substituted by large pharmacy chains and pharmacies in supermarkets. Pharmacy chains account now for 48% of sales, while independent pharmacies only 21%. Some of the largest pharmacy chains and supermarkets have partnered with pharmaceutical laboratories to commercialize their own branded generics (González Pier and Barraza Lloréns, 2011: 52). As, by law, only those pharmacies that sell controlled medicines (narcotic drugs and psychotropic substances), which are the minority, require a professional pharmacist to be present, the large majority of pharmacy personnel are sales clerks, who receive only a very brief training (Dreser, *et al.*, 2011b). It has been estimated that between 43% and 59% of prescription-only medicines, including antibiotics, were sold without a prescription (Altagracia, *et al.*, 2003; Wirtz, *et al.*, 2006; Wirtz, *et al.*, 2009). According to a Ministry of Health (MOH) policy proposal (SSA-COFEPRIS, 2005: 47), and as health officials confirmed in the interviews (see chapter 5) the prescription-only requirement of most medicines (including antibiotics) has not been enforced in order to favour the access to medicines.

¹⁵ “Síntesis ejecutiva 17. El componente privado del sistema de salud: producción, establecimientos y personal ocupado” [“Executive summary 17. The private component of the health system; production, facilities and personnel”], National System of Health Information 2007, Ministry of Health, available at: http://sinais.salud.gob.mx/descargas/pdf/SE17_ComponentePrivado.pdf (accessed on February 5th, 2013).

Despite the increasing coverage of public health insurance provided by the *Seguro Popular*, utilization of private services is still high and has increased, accounting for nearly 40% of national ambulatory medical consultations in 2012. Up to 31% of those insured choose to use private health facilities for ambulatory care, because of shorter waiting times and perception of quality of these services. Since a decade ago, a new form of private premises began to function: the medical clinics adjacent to private pharmacies,¹⁶ which offer cheap consultations. In 2012, these clinics accounted for 40% of private ambulatory consultations, and 16% of all ambulatory consultations (Gutiérrez, *et al.*, 2012; Pérez-Cuevas, *et al.*, 2014). The majority of users on these clinics (65%) were affiliated to a pre-paid public health insurance (social security and *Seguro Popular*). Despite favouring access to medical services, questions have been raised with regard to the impact of these clinics in the overall function of the health system, and out-of-pocket expenses that derivate from their utilization; as well as the potential conflict of interest (resulting from the linkage of prescribing and dispensing) which could derivate in adequate prescribing (Chu and García-Cuellar, 2011; Pérez-Cuevas, *et al.*, 2014).¹⁷

2.3.3 Pharmaceutical market

As of 2003, Mexico was the ninth largest pharmaceutical market in the world; the largest proportion of the market, by value, corresponded to alimentary and metabolic drugs (18.6%) and systemic anti-infectives (15.2%), including antibiotics (IMS-Health, 2003).¹⁸ Anti-infectives represented a largest share of the market when compared with other large markets (e.g. in Brazil, antibiotics accounted for 6.7% of the market, while in the UK, only 3.5%) (IMS-Health, 2003). Despite a slowing growth rate, as of 2009, the Mexican pharmaceutical market was still among the 15 largest in the world, and the second largest in Latin America; systemic anti-infectives were still the second most important groups of medicines, with a 12.5% of the total value market (González Pier and Barraza Lloréns, 2011).

¹⁶ The forerunner was a commercial chain targeting the low-income segments of the population called *Farmacias Similares*, oriented to the sale of generic medicines. Since the first pharmacies began to operate in 1997, their number has grown exponentially; by 2005, Similares was the largest drugstore chain in Latin America. Its founder, Víctor González Torres, declared himself a candidate for the Mexican 2006 Presidential elections; one of his campaign slogan was “vitamins + sports = health” (Chu and García-Cuellar, 2011).

¹⁷ It is important to notice that current regulations for private pharmacies literally forbid their “direct communication, through windows, doors or aisles, with other businesses, such as doctor’s offices (...)”. However, doctor’s offices have been opened besides or even within pharmacies (Dreser, *et al.*, 2011b; Pérez-Cuevas, *et al.*, 2014).

¹⁸ Antibiotics have been top-seller medicines in the country since decades ago. In 1984, systemic antibiotics were the most widely medicines sold, accounting for 19% of total market sales; ampicillin was the best-seller medicine, commercialised in 68 trademarks (WHO, 1988).

By value of the total sales, the pharmaceutical market is almost 80% private, and 20% public; whereas by volume, 65% of all commercialized units are sold in the private sector, and 35% are sold to the public sector (González Pier and Barraza Lloréns, 2011:15,54). In 2008, about 86% of medicines that were consumed in Mexico were produced locally and the rest was imported (Gómez-Dantés, *et al.*, 2011). However, 65% of the pharmaceutical market value is concentrated in the national branches of 15 transnational pharmaceutical corporations¹⁹; the Mexican pharmaceutical industry has a smaller share of the market value, and has been oriented largely to the production of generics. With regard to the market composition, the commercialization of generics has increased considerably during the last decade, attaining 54% of the total market by volume, and almost 30% by value (González Pier and Barraza Lloréns, 2011: 45-48). Despite this increase in generic sales, studies have shown that, when adjusted for income, medicines (including generic versions) in Mexico are far more expensive than in other countries (Danzon and Furukawa, 2003).

Although more than 40,000 medicines have been registered in Mexico, around 7,000 are commercially available (SSA-COFEPRIS, 2005: 47). A Mexican pharmacopoeia and a quality assurance system are in place to assure that all registered medicines are of good quality (e.g. purity or bioavailability). However it has been documented that between 10-15% of the medicines commercially available are unsafe, prohibited or restricted in other countries (CTFM, 1999; Vicencio Acevedo, *et al.*, 1995). Furthermore, the commercialization of antibiotics in irrational combinations²⁰ has been reported such as antibiotics together with cold and cough preparations (Arenas-Garduza, 2002; Calva and Bojalil, 1996; CTFM, 1999; Leyva-Flores, 2002), leading to an increased risk of adverse effects, inappropriate use, and the development of antibiotic resistance (PAHO, 1999; Valsecia, *et al.*, 1997; Wirtz, *et al.*, 2013b).²¹

The pharmaceutical industry in Mexico is organized since 1946 in the National Chamber of the Pharmaceutical Industry (CANIFARMA, by its acronym in Spanish) congregating 97 laboratories. Besides this large chamber, the industry is organized in

¹⁹ Pfizer/Wyeth, MSD/Schering Plough, Sanofi-Aventis, Bayer and Novartis have the largest market share (González Pier and Barraza Lloréns, 2011:49).

²⁰ Irrational combinations are those fixed-dose medicine combinations that do not show an increased efficacy when compared with the separate components, have a low therapeutic value, and their use represents more risk than benefit. Their commercialisation is indicator of the poor quality of medicines and the scarce regulation over the licensing of medicines (Capella and Laporte, 1993; DURG-LA, 1997).

²¹ Although the consumption of antibiotics in irrational fixed combinations is decreasing in Latin America, it is worth mentioning that the majority of these antibiotics in combination have an approved indication for cough- and cold related symptoms or for diarrhoea, conditions for which antibiotics generally are not indicated (Wirtz, *et al.*, 2013b).

other associations, according to the interests of the producers. The largest one is AMIIF, which groups 30 transnational pharmaceutical corporations, and dominates the sector economically and politically; its main aim is to promote the protection of intellectual property rights. The longstanding ANAFAM groups 20 laboratories, many of them domestic, but more recently incorporated also transnational companies specialized in generic medicines. Its main interest is to promote the development of the national industry, as well as market entry to generic medicines. Newer associations are AMELAF, grouping more than 50 Mexican laboratories, which aims to promote national industry and access to national generics; AMEGI, which congregates both national and foreign producers of generic medicines. With regard to the distributors of medicines, the largest companies are represented by DIPROFAR. Finally, independent pharmacies are represented mainly by the National Association of Pharmacies of Mexico (ANAFARMEX) and the National Union of Pharmacy Entrepreneurs (UNEFARM). On the other hand, large chain pharmacies and their own distributors are represented by the association ANADIM, while supermarket pharmacies are grouped in the association of supermarkets ANTAD. Smaller pharmacy chains are represented by the associations ANEFAR and PROFARMEX (González Pier and Barraza Lloréns, 2011: 48-52; Shadlen, 2009: 51).

2.3.4 Pharmaceutical policy and legislation in Mexico

Although some elements of a national pharmaceutical policy (NPP) were developed since the 1950's and 1960's –e.g. a national essential medicines list (EML) or '*Cuadro básico*'– the development of the first comprehensive Mexican NPP was triggered by the 1982 economic crisis, which resulted in a severe shortage of medicines (Gasman, 1995). The objectives of the first NPP –enacted within the General Law of Health document in 1984– were: 1) To make good quality essential medicines available to the population at a reasonable price; 2) To promote self-sufficiency and the development of the national pharmaceutical industry; and 3) To promote the rational use of medicines (WHO, 1988). However, the 1984 policy received strong opposition and pressure from transnational corporations, mainly directed against the use of generic names and the elimination of medicines from the register; the Mexican Government had to revise and change some of these regulations (Gasman, 1995; WHO, 1988: 90). The 1984 NPP brought important advances, namely the improvement of the medicines coverage, the development of the national pharmaceutical industry and of a quality assurance system. The promotion of rational use of medicines was the weakest part of the policy (Gasman, 1995; WHO, 1988). Although most of the elements for a sound and rational

NPP were in place, the time allowed for its implementation was too short. As in many countries, towards the end of the 80's Mexico experimented a shift on its economic policy, characterized by a general trend to de-regularisation within the health and pharmaceutical sectors (Madrid, *et al.*, 1998). When Mexico joined the North American Free Trade Agreement in 1994, pharmaceutical issues were negotiated mainly from the industrial and commercial perspective, but without explicit concern for public health issues (such as equitable access and rational use). The NPP had to be revised once again, was replaced by a *de facto* policy (Gasman, 1995) for which no public document set out explicit national targets regarding access, quality and use of medicines.

Hitherto, Mexico does not have an official and explicit pharmaceutical policy document; additionally, the regulatory framework for medicines is complex and dispersed in many different documents. Some elements are present on the General Health Law; others, in specific regulations pertaining health care services, health care products, the essential medicines list, and specific regulations for social security institutions (such as IMSS and recently the *Seguro Popular*), all of which are weakly connected (Dresler, *et al.*, 2011b; Wirtz, *et al.*, 2012). Within the General Health Law (the main juridical instrument for health policy), one of its 18 chapters is dedicated to the control of a wide variety of products and services: food, drugs, pesticides, tobacco, medicines, pharmaceutical manufacturing and pharmacies. Within this chapter, legislation on medicines and pharmacies (that could be relevant for policies on rational use of medicines) is heavily loaded toward the regulation of narcotics and psychotropic substances. While there are 23 articles dedicated to narcotic and psychotropic drugs, there are only 14 dedicated the rest of the medicines (which include scheduling medicines in prescription-only and over-the-counter), and only two devoted to pharmacies. Confusingly, this Law assigns responsibility on pharmacies regulation to a special commission within the Pharmacopoeia Committee (in charge principally of assuring the quality and safety of medicines). Consequently, this regulation diverts the functioning of pharmacies (central for ensuring adequate dispensing and promoting the rational use of medicines) from other regulations and policies related to quality of care (Dresler, *et al.*, 2011b).

In the course of the following years, medicines policies in Mexico were addressed from two divergent perspectives: health, and industrial development, with no link between the two. In general these policies have not arisen from a detailed analysis of priorities and alternatives; rather, they have been developed to respond to specific conjunctures, or stakeholders' interests (González Pier and Barraza Lloréns, 2011; Wirtz, *et al.*, 2012). Although in Mexico there has been for decades a list of generic preparations

forming the EML, it has been used almost solely to organize medicines procurement in the public sector, and not to promote the rational use of medicines. The concept of 'essential medicines' has been rarely incorporated in the university curricula; there has not been a strategy to promote this concept in the private sector (Gasman, 1995).

By the end of 2005, the Mexican Ministry of Health published a NPP policy proposal: "Towards a comprehensive pharmaceutical policy for Mexico" (SSA, 2005). The process, by which this document was developed, as well as its content with relation to medicines use and AMR, is described in Chapter 5. Here, it is important to say that this proposal did not include rational use of medicines as an objective, nor specific strategies on AMR. The policy proposal did not materialize in an official NPP, although some of the proposed actions were indeed implemented.

Since 2005, diverse medicines-related initiatives have been developed and regulations have been enacted; various elements related to a NPP are dispersed in a fragmented legal framework and the national health programmes published with each new administration. In addition, there is lack of clarity about what government agencies have the responsibility to draft, monitoring and evaluating pharmaceutical policies. The lack of a national pharmaceutical policy document, the fragmented legislation, the multiplicity of policy initiatives, and the absence of a clear institutional responsibility on pharmaceutical policy creates a very confusing policy arena (Wirtz, *et al.*, 2012).

As was described before, the pharmaceutical industry in Mexico is well organized in a national commercial chamber (CANIFARMA), and several other associations. These organizations have facilitated the industry participation –both by formal and informal means–, in the formulation and implementation of pharmaceutical policies in Mexico. The influence of the organized pharmaceutical industry in Mexico is illustrated by an analysis comparing the politics of patents on medicines in Brazil and Mexico (Shadlen, 2009). After the introduction of the trade agreement TRIPS in the mid 1990's,²² Brazil adjusted the intellectual property rights system to serve public-health purposes, i.e. to ameliorate the effects that medicines patents can have on prices and access. In contrast, Mexico introduced few adjustments, and these tended to reinforce the effects of drug patents; as such, prices of patented drugs remained higher in Mexico. The author argues that these differences cannot be explained only by the fact that Mexico

²² The World Trade Organization's Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPS) as well as the intellectual property rights provisions of the North American Free Trade Agreement (NAFTA) prohibit countries from declaring pharmaceutical non-patentable, and require countries to provide patent holders with strong rights of exclusion, all of which can raise medicines prices and deter access (Shadlen, 2009:41).

signed the NAFTA, or by the political orientation of governments. Rather, a political economy perspective focusing on the role of actors and coalitional formation provides an explanation for these divergent trajectories (2009: 41-42). In Brazil, there was a compelling governmental response and wide social mobilization to face the HIV/AIDS epidemic which triggered changes to patent law in favour of access to medicines. Even if the Brazilian reforms of patents system were state-led, they were feasible because the government could elicit the support, as coalition partners, of the local pharmaceutical industry interested in promoting national made generic medicines. Despite the opposition of the transnational pharmaceutical sector to reforms, the national industry had strong economic and political assets, and was crucial in not blocking, and indeed supporting, the reforms (Shadlen, 2009).

According the study by Shadlen (2009), the policy process for patents system reforms in Mexico was different in many aspects. While Mexico had a less compelling response to HIV/AIDS epidemic, the economic crises of 1994, the escalating prices of pharmaceuticals, and the insufficient coverage of social security systems put access to medicines on the political agenda. In fact, the idea of reforming the patent system for public health purposes was based on the Brazilian experience and underpinned a legislative initiative in Mexico in 2002. This initiative, which was against of TRIPS and NAFTA requirements, was proposed by a member of the Chamber of Deputies of the Green Party, who was relative to the owner of the pharmacy chain *Similares*, seller of national generic medicines. The proposal drew a sharp reaction from the transnational pharmaceutical industry, well organized the association AMIIF, interested on protecting medicines patents. AMIIF mobilized resources to gain the support of decision-makers, law firms and even foreign embassies. This association launched a counterproposal to reform the patent system which was supported by President Fox government. A new version of the initiative (which increased patent protection) was drafted and passed in the legislative, and the signed into law by President Fox in 2004. On the other hand, the national industry interested in producing national generic medicines, organized in the association ANAFARM, did not provide support for the original initiative, nor opposed the revised and unfavourable version. ANEFARM was neither economically strong nor politically independent vis-à-vis the transnational industry. Both associations (AMIIF-the transnational sector and ANEFARM- the national sector) are part of the chamber CANIFARMA. Furthermore, ANEFARM was suffering a decline in its membership was undergoing trans-nationalization of its own, with international generic firms purchasing long-established Mexican firms; additionally it was not and ally of the pharmacy chain *Similares* (Shadlen, 2009: 49-50). The author concluded that even though the idea of reforming the patent system for public health purposes was able to

reach the policy agenda in Mexico, the policy was not developed. This was a result of the strong opposition of well-organized and powerful patent-holding firms, and the scarce support of national manufacturers of generic medicines: “[t]he nature of Mexico’s transnationalized pharmaceutical sector meant that [health minister] Frenk could not, and therefore would not, attempt to go down the Brazilian path” (Shadlen, 2009: 53).

As the study previously described explains, the strongly organized pharmaceutical industry in Mexico has been able to mobilize resources to influence decision-making. Additionally, recent evidence points out to collusive practices of the pharmaceutical industry in Mexico, affecting the implementation of public procurement of medicines (Bohórquez and Devrim, 2012). In 2010, six pharmaceutical companies were sanctioned for bid-rigging on IMSS auctions of different medicines. The involved pharmaceutical companies maintained contact through the pharmaceutical commercial chamber establishing agreements to winning and losing bids, which resulted in unusually high contract prices (Bohórquez and Devrim, 2012: 106).

2.4 Political system and the process of policy-making in Mexico

2.4.1 Political system: The authoritarian legacy and the transition towards democracy.

Mexico is federal republic composed of 31 states and a Federal District; government has the usual three branches of power (executive, legislative and judicial). The chief executive of the Federal Government is the President, who is elected for a six-year term. A bicameral National Congress, comprised of the Chamber of Representatives and the Senate, represents the federal legislative branch. Since 1986, the National Health Council (*Consejo Nacional de Salud*) is the collegiate board from the executive branch of government where Mexican health policies are formulated, and where coordinating mechanisms are established among federal and state level to oversee the implementation of the National Health Programmes. The Council is chaired by the Minister of Health, and is integrated by 32 state-level health ministers, as well as the directors of the main national health and social security institutions. With regard to the legislative branch, both cameras of the National Congress have permanent Health Commissions which decide upon health legislation.

For most of the twentieth century, Mexican political system has been considered an authoritarian regime, under the hegemonic rule of the centre-right political party *Partido de la Revolución Institucional* (PRI, by its Spanish initials). The 71 years long PRI's rule (1929-2000) was characterized by presidentialism, corruption, corporatism, informal arrangements, cronyism, and clientelism (Cadena, 2004; Lehoucq, *et al.*, 2005; Morris, 1999; Teichman, 1992). Under the PRI unified government, nearly all legislators and governors belonged to the same party. Although elections were held every 6 years, the outgoing president was the one who designated the PRI candidate that became, invariably, the new president. Clientelistic²³ practices and labour corporatism (particularly the inextricable relationship between large labour unions confederations, government and PRI) were central features that ensured political stability and PRI permanence (Hagene 2015).

Under the PRI heydays, policy-making was state-centred, vertical and exclusionary. Given the concentration of power in the executive, it was the president and a small group of close collaborators (appointed by the president) who initiated policies and decided policy formulation. The president had “meta-constitutional” powers; i.e., although not formally established in the Federal Constitution, the president enjoyed a superlative power and the Congress systemically approved presidential initiatives with scarce opposition (Díez, 2006; Lehoucq, *et al.*, 2005). Additionally, the role of the Mexican Congress was constrained by financial and technical limitations, and a strong party discipline. Advisory commissions in the Congress (such as the health commissions) played only a secondary role in decision-making. Given that by law members of the Congress couldn't be re-elected, they had scarce experience and incentives to be actively involved in policy-making. Furthermore, given the non-re-election clause, congressmen tended to court the favour of the president or the party to seek appointments after the completion of their terms, and were less responsive to public demands (Cabreró, 2000; Díez, 2006; Starr, 2002; Trostle, *et al.*, 1999).

Notwithstanding the low permeability of the system that hindered participation in the policy process, the institutional design facilitated the participation and influence of certain actors. Among these were businessman and manufacturers (*'empresarios'*); these were organized on industrial and commercial chambers (or *'cámaras'*). One of these chambers is the CANIFARMA which organizes the pharmaceutical industry in México. These economically powerful chambers have been, by law, instruments of

²³ Political clientelism refers to a long term relationship involving the exchange of goods and services (including benefits from public programmes and employment in the public sector) for electoral support (Hagene 2015).

consultation of the State regarding national industrial and commercial needs. In the political reality, these *cámaras* have been used by businessmen to protect their interests and to influence public policy-making (González-Casanova, 1985: 66). In contrast to these well-organized groups, other societal groups not belonging to the corporatist structure lacked the political instruments –as well as the political culture– to participate as citizens in public decision-making. In this way, participation was much restricted to intermediation and personal relationships (Cabrero, 2000; González-Casanova, 1985: 156).

The exclusionary nature of agenda setting and policy formulation was aided by a print media uncritical of the regime's policies (Díez, 2006; Lawson, 2002). Once policy was formulated, the minister responsible would start a process of negotiation through his ministry's bureaucracy, which was largely unprofessional. The implementation of policy was carried out through the corporatist structure and clientelistic relationships. Bureaucrats became the *de facto* interpreters and brokers of policies. As practices were mostly discretionary and unsystematic, this caused the traditional gap that exists in Mexico between the adoption of policies ("legal formalism") and their implementation (Díez, 2006; Lehoucq, *et al.*, 2005).

Between 1983 and 1997, politics in Mexico experienced a transitional period. Fraud and disputed elections, economic crisis, growing discontent with the regime and social mobilization led to a series of electoral system reforms. These reforms fuelled the development of a three-party system and eventually, functional elections. Until 1982, Mexican social policy was sustained by a welfare State regime; however, during the technocratic presidential administrations of 1988-1994 and 1994-2000 structural adjustment policies were introduced consolidating a neo-liberal tendency. Other relevant institutional changes brought by these administrations were decentralization program that transferred responsibilities to the state and municipal levels, liberalization of trade (including joining the North American Free Trade agreement), and the privatization of some state companies (Camp, 2012; Lehoucq, *et al.*, 2005). However, the 1988 electoral fraud scandal, and the 1994 guerrilla movement and economic crisis triggered social mobilization, fractured the relationships with the business community, and ultimately eroded PRI's legitimacy. During this transitional period, oppositional parties began to make electoral gains, and in 1997, PRI lost its absolute majority in the Congress Chamber of deputies. This marked the beginning of a new period of policy-making under a divided government, in which presidentialism weakened, and the Congress began to play a more active role in policy formulation (Díez, 2006; Lehoucq, *et al.*, 2005). Despite these changes, the public's opportunities to influence decision-

making remained minimal (Cabrero, 2000). This gave place to political system that Cabrero (2000: 197) defined as “semi-open system, fragmented and in chaos”.

In 2000, after 71 years of PRI’s continuous rule, the general election brought party alternation to the executive: Mr. Vicente Fox, candidate of the opposing conservative centre-right National Action Party (PAN), became president for the 2000-2006 administration. Mexico’s political context, the protracted political transition and the characteristics of the policy-making process after the 2000 election (which is the period under investigation in this thesis) are described below.

2.4.2 The political system during the 2000-2006 and the 2006-2012 presidential administrations.

Party alternation after the 2000 general election is often regarded as the most important turning point in Mexico’s democratic transition, or even more, the moment of instauration of democracy. Undoubtedly, political representation had a major shift after 2000: there were functional elections, and the people of Mexico were represented by a plurality of political parties. Under the new divided government, no longer was the PRI the absolute majority in Congress, and there were governors from all parties. Metaconstitutional practice ceased to exist, and Congress attained a growing role in initiating new legislation. Nevertheless, as many political experts underline, “democratic transition” is a highly contested term, because democracy in Mexico was –and still is– far away from being consolidated (Camp, 2012; Cansino, 2004; Cansino 2012).

President Vicente Fox administration. During the 2000-2006 administration, Mexico’s political transition advanced unevenly across policy areas and levels. Despite the increasing role of the legislative in policy-making and the strengthening of the judiciary, equilibrium between powers was not fully attained: decision-making in the executive branch kept a strong role (Díez, 2006). However, as the PAN (the ruling party) did not have a majority of seats in the Mexican Congress, a number of presidential initiatives failed to pass in Congress. As part of his fiscal reform, early in his administration President Fox proposed to expand the valued-added tax to medicines (among other items). This proposal was strongly opposed by the public, by the PRI and PRD (arguing that the tax was too regressive), and even by the PAN, who raised concerns about the political cost of such measure (Starr, 2002). This proposal was not approved (which reveals the increasing Congress veto power); however, the public discussion that the proposal sparked underlines the relevance of access to medicines as a political issue in that moment. Nevertheless, as is explained in other

sections, under President Fox administration and the leadership of the Minister of Health Dr. Frenk other policy proposals prospered, namely a new health insurance scheme (*Seguro Popular*), and number of health policies related to medicines (see sections 2.2.2 and 5.1).

President Fox's administration was characterized by being overtly related to business groups: businessmen participated in his electoral campaign and many actors from the private sector –highly qualified, but without political experience– were appointed in his initial cabinet (Camp, 2012; Díez, 2006; Starr, 2002). Actually, for Thacker (2012) the willingness of the private sector to participate in party politics has been regarded as one of the most important changes in the Mexican political system, especially after 2000. President Vicente Fox himself was largely an “outsider” to Mexican politics, who emerged from the private sector (he was formerly a chief executive in Coca-Cola Company). During this administration, a large number of business candidates won offices on the executive. Moreover, there was an important increase of business association members in the legislature. The private sector lobbied, directly and indirectly, through the Congress, and as a result the legislative agenda was influenced by powerful stakeholders (Díez, 2006:10-11; Thacker, 2012:319-320; Shadlen, 2009). This is exemplified by the effective mobilization of the organized transnational pharmaceutical industry (backed by President Fox) against a patent system reform initiative (Shadlen 2009) as has been described before. On the other hand, private foundations were encouraged to finance the implementation of some governmental health programmes (Mills, 2006). Finally, President Fox favoured the creation of a new administrative agency of the Ministry of Economy, the Federal Commission for Regulatory Improvement (COFEMER, by its initials in Spanish), in order to promote the development of cost-effective regulations, and to reduce the burden on business. In practice, the Commission opened a new door to business companies to lobby and to influence the drafting of regulations guarding their interests (Díez, 2006).

Vicente Fox has been regarded as a weak president, which was not able to exert presidential leadership, was not supported by his party, faced opposition in the legislature, and lacked the political ability to move forward his agenda (Méndez, 2013). Although his electoral triumph fed hopes for major changes in the political and economic spheres, these did not happen. There was policy confusion and inefficiency, related to the cabinet lacking government experience. President Fox political capacity and public approval ratings declined in the following years (Méndez, 2013; Starr, 2002).

President Felipe Calderón administration. The subsequent presidential election, in 2006, was highly controversial. There was a close party competition among PAN, PRI and the left-wing Party of the Democratic Revolution (PRD, by its Spanish initials). The final vote count gave the victory to Mr. Felipe Calderón, the candidate of the ruling party PAN, but only with a narrow margin of less than one percentage of the vote above the leftist PRD candidate. PRD alleged irregularities, there were street protests, and ballot boxes had to be recounted. Finally, the Electoral Tribunal ratified Mr. Calderón's triumph, but he came to power rather delegitimized. The 2006 elections caused a generalized lack of credibility in the political parties and an institutional crisis of the electoral system (Cansino, 2012).

President Calderón had the support of only a few PAN Governors, and PAN did not have majority in the Congress. Quite differently from President Fox, he cared a lot for the presidential reputation, followed protocols strictly and had a tight control on his cabinet (Méndez, 2013). From the first days of his administration he made clear that the central issue of his agenda would be the “war” against drug cartels. Firstly, this initiative was supported by the public, and the Congress approved a constitutional reform on public security that included deploying the army in some cities. However, the war on drugs soon backfired. From 2008 on, violent crime and organized-crime related deaths increased dramatically. The insecurity crisis brought important social and economic costs, as well as further dissatisfaction with the government. As President Calderón's political capital eroded, approval ratings for his administration declined. Overall, President Calderón did not exert presidential leadership, and his level of achievement was low: although he accomplished some minor reforms, public security was a major failure (Méndez, 2013). In 2012, PRI returned to the presidency –and regained the majority of seats in Congress– after another controversial election in which there were allegations of media bias and vote buying in favour of PRI (Cansino, 2012; Hagene 2015).

Policy-making under a divided government. Two presidential administrations (2000-2006, and 2006-2012) after the historic party alternation, there is no evidence of a dramatic change towards democracy. Corruption, informal agreements, impunity and a discredited political class are still features of the political culture (Cansino, 2004; Espinoza Valle, 2006). Overall, public accountability has been much less common than accountability to political parties or political cliques (Cabrero, 2000). Because of these characteristics, the Mexican political system remains in a grey area between authoritarianism and democracy, and there is much debate among political science specialists on how to classify it. For Robert Ai Camp (2012) Mexico has remained a

“semi-authoritarian political model” that can be best described as in the “process of democratic consolidation”. Besides the shift to a democratic model in the electoral arena, he explains, other conditions remain to be met in order to fully attain democracy: transparency, respect for human rights and a strong legal system. Furthermore, the media still has to fulfil its democratic potential (Camp, 2012).

Cansino (2012) asserts that, even if it has not progressed as a continuous process and has had setbacks, there is evidence that a political transition has indeed taken place. However, the political system during the 2000-2012 period was characterized by a “failed establishment of democracy”. According to this author, the main reason behind this failure is that party alternation in Mexico has not been accompanied by constitutional integral reforms that could actualise –in a democratic perspective– the normative and institutional legacies of the past regime (Cansino, 2004, 2012).

Coinciding with Cansino (2012), other authors have also underscored the role of institutions²⁴ in Mexico’s political transition to explain patterns in policy formulation, policy outputs and outcomes (Cabrero, 2000; Camp, 2012; Díez, 2006; Hagene 2015; Lehoucq, *et al.*, 2005). As Camp (2012:17) asserts, in Mexico “[...] many patterns of political behaviour among politicians are determined by informal rather than institutional or structural influences and therefore are much more impervious to change and more difficult to ascertain.[...] Informal characteristics can have a significant impact on institutional patterns of behaviour or internal processes [...]” The role of the legislature, bureaucracy, and informal institutions as part of the political system during the 2000-2012 period is explained below.

The separation of powers boosted the role of the Congress in law making during this period. Actually, the legislative branch has played a central role in the democratic transition (Camp, 2012). At the same time, the loss of the metaconstitutional powers revealed the institutional weakness of the figure of the President, who consequently, lost the ability to change the status quo (Lehoucq, *et al.*, 2005). Despite the important change in the role of the legislature, the non-re-election clause for members of the

²⁴ Institutions are the rules of the game within a society that structure human interaction by constraining and enabling actor’s behaviours. They encompass formal constraints (constitutions, laws, regulations) and informal constraints (conventions, norms of behaviour) and their enforcement characteristics (North, 1990). Other authors have further explained formal institutions as those that are legal or *official*, encompassing state institutions (e.g. legislatures, bureaucracies) and state-enforced rules (e.g. laws, regulations), as well as the official rules that govern organizations. On the contrary, informal institutions are shared rules, usually unwritten, created and enforced outside official channels (Helmke and Levitsky 2004:727). Informal institutions (such as clientelism or corruption) emerge as a complement or substitute for the state when formal institutions are too cumbersome or ineffective, or when they exist on paper, but not in practice (Helmke and Levitsky 2004).

Congress remained unchanged, which hinders congressmen to acquire legislative experience. Furthermore, because Mexican legislators cannot be reelected, they are not susceptible to public opinion; legislators are accountable to their party, not to the electorate (Cabrero, 2000; Díez, 2003; Starr, 2002). On the other hand, business chambers (*cámaras*) still participate on Congress commissions, both formally and informally (Díez, 2006). Business groups are in advantageous position to lobby Congress given their resources in comparison with the weak structure and experience among nonrepeating congressmen (Thacker 2012).

After the 2000 general elections, labour corporatism –i.e. the influence of organized labour in policy-making– declined. However, political clientelism in Mexico remained as a resilient phenomenon enduring macro-political changes. Political clientelism is profoundly integrated in relations of power in Mexico, has cultural components, and is not necessarily perceived as illegitimate. Furthermore, this phenomenon is fueled by prevailing poverty and inequity (Díez, 2006:25; Hagene 2015). Clientelistic practices still have a major influence hampering the implementation of existing programmes (Lehoucq, et al., 2005).

Legal dualism –law that appears to be an ideal on paper, but is not implemented as originally devised or not implemented at all– is still prevalent in Mexico. This has been related to the characteristic low level of voluntary compliance with the law in the country, the persistent lack of resources and a largely non-professional bureaucracy, weak institutional capacity, as well as to the opposition of powerful interests and prevailing clientelistic practices (Camp, 2012; Díez, 2006; Lehoucq, et al., 2005). However, Lehoucq et al. (2005) explain that policy implementation has become less coherent and less coordinated under the divided government because of the increasing aperture of the policy-making process that includes more and new policy players. Furthermore, the process of decentralization in Mexico has had important implications for policy-making and outcomes, particularly in education and health services²⁵ (Lehoucq, et al., 2005:12; Mills, 2006).

²⁵ Decentralization involves the devolution of responsibility, but not necessarily power, to lower levels of government. This reordering is negotiated and contested, as social actors strive to appropriate space. As responsibility for policy development and implementation shifts to the states, the strengthening of veto players in the system has increased, a characteristic that is status quo preserving (Lehoucq, et al., 2005:12; Mills, 2006:490) In Mexico, along the 1980's and 1990's the federal government initiated and progressed unevenly in the decentralization of health care services. Implementation resulted in greater inequity in health services provision in some states. During the late 1980's, this process of decentralization had to be stopped as a result of opposition by trade unions and state governments, and had to be reconfigured, before being reactivated again (Mills, 2006: 490).

Finally, it has been argued that with the end of the corporatist system and the advent of the divided government in Mexico, many of the vested interests have actually *increased* rather than decreased their influence in policy-making (Camp, 2012; Thacker, 2012). Indeed, as the political system opened up, non-state actors gained access to the policy process. Such was the case of the active participation of international non-governmental organizations (NGOs) as in maternal health policy (Mills, 2006) and environmental policy (Díez, 2006). However, this opening of the political system also meant that business groups gained more access points into the political system, and were able to compete with other interest groups from a more favourable position, i.e. with greater resources and more extensive experience in lobbying. As such, even if the political transition introduced changes that affected the private sector, “[...] through the use of concentrated market power, legal maneuvering, political participation and access, and effective deployment of its material resources, big business has succeeded in protecting itself from democratic incursions while maximizing its own freedom to maneuver” (Thacker 2006:331). The empirical study by Díez (2006) pointed to the differential access that business had (vis-à-vis NGOs) to the policy process, using non-transparent mechanism of access, but also facilitated by the establishment of institutional mechanisms (e.g. COFEMER). As a result of the greater involvement of the private sector, and the authoritarian legacy in the exercise of power encouraged by the permanence of pre-democratic rules of the game in policy-making, Díez argues, the concentration of power in Mexico has been equally excessive before and after the alternation of 2000. In this context, policy initiatives that threaten the legitimization of political elites have been neglected (Cansino, 2012).

2.4.3 The process of public policy agenda setting and policy formulation, and the role of research.

What are the characteristics of the processes of public policy agenda-setting and policy formulation within the context of political transition and unattained democracy? Cabrero (2000) explains that, in the earlier moments of political transition in Mexico, public policy-making followed largely a state-centred and enclosed process, deriving from a tradition of governmental intensity during the PRI authoritarian regime. Even in the context of democratic transition, the structures were not designed to be permeable, nor have the actors been oriented to openness and participation. The government dominated all the phases of policy-making, more by means of sectorial political cliques (*'camarillismo'*) and inter-personal relations than by professional policy communities.

The definition of public problems and agenda-setting kept as government-centred, endogenous processes; government specialists within each political area defined social problems and solutions. It was not uncommon that internally created governmental agenda led (through the media, labour unions or business groups) to the public agenda, which posteriorly was transformed to the official governmental agenda²⁶ (Cabrero, 2000: 201). Undoubtedly, there were moments in which a consensus with other groups were needed, but the general the trend –the non-formally established rule of the game– for agenda setting was dominantly endogenous (Cabrero, 2000: 203).

According to this author, policy formulation was an even more enclosed process, left often exclusively to autonomous groups of governmental specialists, and sometimes also to private consultants hired by the government. Indirect dialogue, underground negotiations, personal relations and informal networks were more important in policy-making than direct and open dialogue. In contrast with countries with a longer democratic tradition, in Mexico the creation of formal experts groups of different sectors (involving, for example diverse governmental ministries, academics and NGOs) in order to discuss policy options was uncommon. Academic institutions and NGOs were sometimes invited to opine about a finished document or even about an already operating plan. The exclusion of the public from this process, together with the use of highly technical language, caused public policies to be perceived by the public as a technocratic ambit alien to citizen demands (Cabrero, 2000: 204).

What has been the role of research in policy-making in Mexico? In an empirical study of four vertical health programmes in Mexico, Trostle, *et al.* (1999) pointed to the longstanding scarcity of well-defined channels of communication between research and decision-makers. The excessive state centralization, the hierarchical management of information, the drastic changes in top-level management and priorities within governmental ministries with each sexennial change of president, along with a ‘political culture’ of decision-making based on experience and immediate pressures (including “yellow journalism”) were identified as factors that deterred the uptake of research in policy decision-making. Furthermore, the particular agendas of non-academic interest groups (particularly, the private industry) were frequent causes of conflict and hindered research uptake for decision-making; on the contrary, research results that that did not pose conflict with other governmental sectors or the private industry were preferred for decision-making (Trostle, *et al* 1999:108-109). These factors had hindered legislators or members of the executive to receive advice about specific health policy problems

²⁶ This process is reflected on the sexennial plans, which allegedly emerge from citizen polls, such as the National Development Plan, and the National Health Programme.

and solutions. On the other hand, the existence of good personal relationships between researchers and policy makers and the need for prompt solutions to urgent health problems were identified as key factors that facilitated research uptake in health policy-making. Quantitative studies were given preference over qualitative ones. The political stability provided by the long term PRI rule (in which researchers rotated in and out of government) and well as the scarce opposition by the legislature also favoured research informed decision-making. According to this study, the WHO had an important normative force to inform national policies; however, the role of foreign donors has been characterized as minor in informing health policy initiatives (Trostle, *et al.*, 1999).

As discussed previously in this section, newer studies (Barquera *et al.*, 2013; Díez, 2006; Mills, 2006; Shadlen 2009) show some changes regarding the actors and processes of policy-making in Mexico from what was described by Cabrero and Trostle *et al.* (*op. cit.*). The stronger role of the legislative, and the incursion of non-state actors in policy-making during the 2000-2012 period point out to increasing pluralism. The role of international initiatives, foreign donors and NGOs according to these studies is also manifest, as it is described below.

Mills (2006) explain that international NGOs facilitated –by funding both policy research and advocacy organizations– the creation of networks oriented to maternal health in Mexico, involving NGOs and governments at the national and sub-national level (state and municipal local level). Linkages between actors and the creation of “spaces of engagement” for maternal health policies at the sub-national level were favoured by the decentralization of health services provision. Additionally, the United Nations Millennium Development Goals also boosted interest of the federal government in this policy area. Similarly, Díez (2006) found that, in the case of environmental policies, international links were very relevant for national NGOs to obtain funding, training and expertise to allow them to participate in policy-making and advance their demands. Furthermore, during the 1994-2000 period, environmental policy-making was greatly aided by a reformist Minister of Environment. This Minister was not linked to any political clique; instead, she came from an academic background and included a tight group of researchers in her cabinet. Furthermore, this Minister was able to steer the environmental policy agenda by working closely with standing committees of the Mexican Congress. These findings underline policy-making beyond political cliques or *camarillismo*, greater involvement of academic groups, as well as the increasing role of formal institutions (*i.e.* the Congress) in policy-making. However, Díez concludes that agenda status and the move towards greater participation in environmental policy-making during 1994-2000 were not sustained after 2000 elections. This was related, in

part, to the privileged access and influence in decision-making that powerful business groups kept and even increased during President Fox administration²⁷. But environmental policy-making also was affected by the weakening of national NGO's (as the most important environmentalist were recruited to work in the government) and to the decreasing funding from international donors. Some international funding sources considered that, since Mexico had become a stable democracy (after party alternation), they could shift their attention to other countries (2006:163).

Finally, a more recent account of health policy-making in Mexico is provided by Barquera *et al.* (2013), describing the development of the National Agreement for Healthy Nutrition (ANSA, by its Spanish initials) in Mexico in 2010. The dramatic increase of obesity and overweight (particularly in children), as well as its relation with the consumption of caloric beverages was documented by researchers with data of the 2006 National Health Survey. This research evidence, together with the support of the WHO Global Strategy on this matter, brought obesity to the policy agenda in Mexico during the 2006-2012 administration. An inter-sectorial expert panel was integrated, which drafted a series of policy recommendations grouped in the ANSA²⁸. This agreement was signed by numerous actors, including the ministers of health and education, with the President of Mexico, Mr. Calderón, as witness. However, policy recommendations were soon strongly opposed by the beverage and food industries, as well as by milk and sugar producers, using the media to discredit the pertinence of such policies, and stressing economic losses. A public hearing for the regulation of foods in schools was opened in COFEMER. The majority of the comments received were in favour of the regulation and only one third –mainly by the food industry– was against it. Despite this support, COFEMER made a preliminary ruling rejecting the original proposal. This led to a re-negotiation of the policy with the industry, which resulted in changes that, ultimately, allowed some energy dense foods and beverages (originally forbidden) to be sold at schools (2013:74). Furthermore, according to the authors, the strong influence of the food and beverages industries has successfully prevented other of the recommended policies to be developed.

²⁷ Díez (2006) argue that the close relationship between President Fox's cabinet and business groups resulted in pressure from the President's office to influence –and even block– environmental policies. The most notable example was a controversy over a policy addressing dirty beaches in 2003. The Minister of Environment released research results that indicated the high levels of pollution in some Mexican beaches. This announcement was strongly opposed by hoteliers, the National Hotel Chamber, governors of touristic states, and even by the President; it ultimately resulted in the dismissal of the Minister of Environment.

²⁸ Among these, were: banning energy dense food and sugar-sweetened beverages from schools, implementing a new food labelling system, regulating of marketing directed to children, and introducing a tax to soda beverages.

At the same time, a consortium of more than 20 health related NGOs and academic groups was formed: The Mexican Alliance for Health Nutrition, which received funding from Bloomberg Philanthropy. The Alliance launched an innovative media campaign to support the ANSA policy recommendations and to counteract the industry's arguments. According to Barquera *et al.* (2013:77) substantial backing by effective civil society organizations, along with the support of key political leaders, was very relevant to move forward the enactment and the implementation of some of the recommended policies. However, the ANSA recommendations still face strong challenges to be implemented. These challenges are the strong opposition of powerful industries, as well as government limitations, including poor planning capacity, lack of accountability and insufficient resources to assess implementation. Overall, the authors conclude, "[i]n some cases unwillingness to protect the public interest from [economic] influences that oppose health policies has been a factor in the failure to enact some policies" (2013:77).

Taken together, the studies described here allow identifying some important characteristics of the political system and the policy-making process during the 2000-2012 period in Mexico. Firstly, following a longstanding authoritarian regime, policy-making kept largely as an enclosed, executive centred governmental process. In contrast to the scarcity of well-defined channels of communication between researchers and decision-makers, personal relationships have had an important role in research uptake. Secondly, the political transition has given place to an increasing participation of other actors. In addition to the relevant role of international organizations informing national policies (such as WHO), networks involving decision-makers, researchers and national and international NGO's have had an increasing role supporting policy development. The legislative has exhibited a stronger role in policy-making; however, this role is stalled by the institutional design that does not favour experience and accountability to the electorate, but facilitates the participation of business groups above, for example, researchers. On the other hand, with the opening of the political system, business groups have gained more access to the policy-making process. Given their longstanding lobbying experience and strong organization (such as in the commercial chambers) and their relation to political elites, business groups had been able to block the enactment of policies that affect their interests. In the case of health and pharmaceutical policies, this is illustrated by opposition of the transnational pharmaceutical industry to the 2002 initiative for patent system reform, and the resistance of the food industry (reflected as well in the official COFEMER) to the 2010 healthy nutrition agreement. These characteristics are relevant to understand the context in which AMR policies would be developed in Mexico.

2.5 Summary and conclusion

International organizations, especially WHO, have provided ample guidance on strategies and interventions to improve the use of medicines, address irrational antibiotic use, and contain antimicrobial resistance. These recommendations imply changes in health and pharmaceutical policies at the national level. While there are successful experiences in some countries, a number of barriers have been identified to fully incorporate these recommendations in national policies. Therefore, it is necessary to recognize the complexities of AMR problems and policies, as well as to understand the local contexts in which AMR policies would be adopted and implemented.

In Mexico, problems related to the inadequate use of antibiotics have been reported in the literature: inadequate prescribing, lax regulation of pharmacies that facilitate self-medication with antibiotics, and scarce information on medicines use for prescribers and patients. The consequences of inadequate use of antibiotics, in terms of costs and adverse reactions, have also been documented. Nevertheless, there is no systematic collection on any of this data. Similarly, despite a number of networks generating data on antimicrobial resistance, there are not mechanisms in place to systematise this information and communicate it to prescribers and policy-makers. The response to the problem of AMR has been mainly in the form of educational and managerial interventions directed to physicians in public health services, as well as epidemiological surveillance of antimicrobial resistance. However, there is a paucity of research and interventions on AMR focused on patients, pharmacies, and the private sector. Above all, there is not a national policy on AMR; promoting the rational use of medicines and addressing AMR have been largely disregarded by health policies in Mexico.

The information described in this chapter provides insights on some relevant contextual factors to consider when analysing health and pharmaceutical policies and policy-making in Mexico. Despite important improvements in strengthening the public health sector, the country is still marked by inequity in access to health care and medicines. The private sector is an important actor in health care, by the provision of medical services and medicines. Anti-infective medicines (including antibiotics) account for a substantial share of the large medicines market. The transnational pharmaceutical sector is well-organized and has experience in policy lobbying. Even if the democratic transition is, slowly, bringing some changes about the political system in Mexico, policymaking is still very much state-centred. Whereas the institutional design facilitates the participation of some interest groups (particularly business groups) in

policy-making, the opportunities of participation for other groups (researchers, professional associations, NGOs) remain limited, although slowly increasing. While the gradual incursion of new non-state actors in policymaking could enable policy change, the system has been regarded as largely status quo preserving. This is related to the enduring powerful elites, decentralization of governmental responsibilities, and persistent informal institutions. Longstanding practices of political clientelism, and corruption, as well as a non-professional-bureaucracy and a discredited political class prevail as features of the political system in Mexico. The normative role of the WHO to inform health policies is recognized; nevertheless, the influence of powerful business groups (including pharmaceutical industry and commerce, and the food industry) in health policy is patent, as these groups had been able to block the enactment of health policies. These are important contextual factors to take into consideration when analysing the process of agenda-setting for AMR in Mexico.

3. CONCEPTUAL AND THEORETICAL BACKGROUND

The present investigation is concerned with how and why health and pharmaceutical policies in Mexico have dealt (or not) with the issue of inappropriate use of antibiotics and antibiotic resistance (AMR). These questions are addressed from the disciplinary perspective of policy analysis, focusing on the difficulties and opportunities to place AMR on the governmental health-policy agenda. Therefore, I begin this chapter by presenting a theoretical review of policy analysis, discussing the concepts of public and health policies, and examining different approaches to understanding the process of public policy-making. The chapter goes on describing theories on agenda-setting that provide the theoretical propositions on which this thesis is based. Finally, I present the conceptual framework of the study.

3.1 Public policy and health policy

Overall policy, public policy and health policy are much contested concepts. Policy has been defined as “a relatively stable, purposive course of action or inaction followed by an actor or set of actors in dealing with a problem or matter of concern” (Anderson, 2011: 6). However, a policy can also be a course of action that is not intended, but is nonetheless carried out (Parsons, 1995: 13). Furthermore, a policy can refer to what is *not* being done (Leichter, 1979: 6-7). Public policy, in turn, focuses on the public and its problems. It is concerned with problems in those spheres which are designated as public, or held in common, as opposed to those domains of life that are private, or individual. As such, public policy has been regarded as requiring governmental or social intervention (Parsons, 1995: 3). The concept of public policy is generally understood as governmental decisions or choices regarding courses of action (which involve, firstly, defining public problems and solution alternatives). These decisions and courses of action are undertaken by the administrative executive branches including ministries or departments such as those of health, education, defence, and transport. However, recognising that policy decisions are fluid and not confined to one level or stage (Gilliat, 1984: 345), the concept of public policy is also concerned with the process that leads to any given course of action. In this process, a large number of *actors* participate individually or as groups including governmental agencies, interest groups, researchers and journalists. Furthermore, each actor has different ideas and interests regarding the policy problems and solutions (Sabatier, 2007: 3). The process

of public policy frequently involves negotiation and bargaining among competing interests and groups aiming to influence decision-making in favour of their interests and ideas. Moreover, the fora or institutions where these political interactions occur can influence public policy-making and its outputs. Finally, the wider social, political and economic context is relevant as well to understand the issues, actors, and processes involved in policy-making¹ (Leichter, 1979).

Regarding health policy, this concept has been frequently defined featuring the policy content; for example, the World Health Organization defines health policy as “decisions, plans, and actions that are undertaken to achieve specific health-care goals within a society”². The technical orientation in the definition of health policies and its implicit consensual environment has been challenged by many scholars (Walt and Gilson, 1994). The health-policy environment is fluid, frequently uncertain and conflictual given, among others, the following characteristics:

- Besides involving technical issues, health policy takes on a political dimension (determined by the values and interests of the participants involved), as well as an ethical dimension³ (Roberts and Reich, 2002).
- Whereas health policies are often considered ‘low politics’, they usually have a high profile and demand public responses (Walt, 1994; Walt, *et al.*, 2008). This is especially true for pharmaceutical policies, given that medicines are a tangible part of health care, provide a visible output of state policy, and often legitimise health services and the role of the doctors (Reich, 1995b).
- Whereas some health policies are likely to be considered only by a single government department (likely the Ministry of Health, MOH), and to be dealt with by the bureaucracy using standard operative procedures, others involve the increasing participation of a wide array of actors; these include other

¹ For example, at the national level, the political system affects the extent to which people and interest groups can participate in public policy-making. In addition, the political culture (i.e., people’s beliefs, expectations and attitudes towards politics) influences participation. Besides these structural factors, Leichter (1979) distinguishes other contextual factors that can influence policy-making: situational factors (e.g., disease outbreaks and economic crises), cultural factors (e.g., religion and values within society) and international factors (e.g., globalisation and the role of multilateral organisations).

² World Health Organization: “Health Policy”, at: http://www.who.int/topics/health_policy/en/ (accessed on November 28, 2014). Health policies have diverse branches or categories, including health-care financing, health-care delivery, public health, and pharmaceutical policy. AMR policies fall within the larger scope of health policies, although, given the emphasis on medicine utilization, it is frequently discussed specifically as part of pharmaceutical policies.

³ The goals that guide policy makers can favour, for example, cost-effective interventions (utilitarian perspective, based on the *consequences* of policy) above those directed to improve social equity (communitarian perspective, emphasising the *character* and *virtue* of the policy) or patient choice (libertarian position, giving priority to *individual rights*) (Roberts and Reich, 2002).

governmental departments, professional associations, international and multilateral organisations, and several interest groups (Walt, 1994). The tobacco, food, and pharmaceutical industries are powerful interest groups that seek to influence the health policy process (Brownell and Warner, 2009; Reich, 1995b). Furthermore, health policy is increasingly shaped by complex cross-border and inter-organisational relationships and global decisions, in addition to actions at the national level (Walt, *et al.*, 2008).

- Distributive and redistributive health and pharmaceutical policies, such as medicine provision and taxation, are highly confrontational. Most pharmaceutical policies are regulatory (WHO, 2002a)⁴ (impose restrictions on the actions of individuals or groups in the provision of goods and services) and, as such, are also contentious; there is frequently tension between attaining self-regulatory or regulatory policies.⁵
- In low- and middle-income countries, the health-policy environment is more uncertain given weaker regulation and monitoring systems, reliance on donor funds, and more patronage in political systems, among other issues (Walt, *et al.*, 2008).

Incorporating the concepts related to public policies and health policies discussed above, Gill Walt (1994) provides a different definition of health policies, underscoring that health policy is about process and power:

Health policy embraces courses of action that affect the set of institutions, organizations, services, and funding arrangements of the health care system. It goes beyond health services, however, and includes actions or intended actions by public, private and voluntary organizations that have an impact on health (Walt, 1994: 41).

Consequent to this understanding of health policy, a number of scholars have made the case of transiting research from a mere technical-content orientation to an analysis of health-policy processes and their determinants (Bernier and Clavier, 2011; Oliver, 2006; Reich, 1995b, 2002; Walt and Gilson, 1994). These authors have underlined that prescriptions for health policy abound; for example, policy recommendations on *what* strategies should be implemented to improve medicine use and contain antimicrobial resistance. Conversely, much less information is available as to *why* these policies are

⁴ Policies directed towards AMR and medicine utilization are largely regulatory; for example, they establish rules for medicine licensing and promotion, licensure requirements for health providers, regulate prescription according to a narrow medicine list, and regulate medicine dispensing as OTCs or prescription-only drugs (WHO, 2002).

⁵ For example, the *Codes of Marketing Practices and Good Manufacturing Practices* (GMP) agreed by pharmaceutical companies allow them to skip direct regulation as well as to promote their marketing procedures as ethical and their products as of good quality.

successfully developed or not. There is scarce advice on *how* to draw the attention of decision makers to these issues, and how to effectively formulate and implement recommended policies. Here, policy analysis plays an important role not only in understanding past policy failures and successes but also in planning for future policy development (Walt, *et al.*, 2008), which is the focus of the present study.

Some arguments have been exposed, though, against policy analysis, underscoring its limits in attaining generalisation. It has been argued that policy is unique in time and place; that given the complexity of the policy process, it is impossible to fully understand it; that information becomes quickly out-dated; and that, because policy analysis theory is based on developed countries, it is not applicable to other contexts. However, other scholars disagree with these arguments and underline the relevance of policy analysis for advancing the health policy agenda and influencing policy outputs and outcomes in both developed and developing countries (Grindle and Thomas, 1991: 141; Walt and Gilson, 1994: 366).

Considering the complexity of the health policy environment, relevant elements have been highlighted in conducting policy analysis. Grounded in a political-economy perspective, Walt and Gilson (1994) propose the 'policy triangle' analysis framework for health policies, which incorporates the analytical categories of policy content, actors, context, and processes, and considers how these elements interact to shape health policy-making. Similarly, the interaction between institutions, interests and ideas in the policy process has been emphasised with regard to health policies (Walt, *et al.*, 2008: 308). The present study is based on this understanding of health policy. While the government is considered at the centre of health policy and is the main focus of the study, the actions, ideas and interests of non-state actors as well as the role of some relevant contextual factors are also taken into account. These elements of policy-making are further discussed in the next sections.

3.2 Policy-making and policy analysis

The process of public policy-making is complex. It often involves very technical, scientific legal issues disputes regarding public problems and solutions, as well as hundreds of different social actors (from inside and outside the government, with deeply held values and interests) interacting over periods of a decade or more. Policy-making process comprises the way in which problems are conceptualised and brought into the government agenda for solution; the manner in which governmental institutions

formulate and select policy alternatives as solutions; and how those solutions are implemented, evaluated and revised. As such, when attempting to understand policy-making, it is simply not possible to look for, and see everything. Analysts have thus developed diverse models, conceptual frameworks and theories, which involve an interrelated set of propositions, to understand and explain general sets of phenomena related to policy-making (Sabatier, 2007: 3-4). Frameworks, such as the 'stages heuristic' described below, identify the critical elements or variables of policy-making and their interrelationships. Theories, on the other hand, deepen our understanding of the relationship between these elements, and can be applied or tested empirically to shed light on the causality of the policy process (Walt, *et al.*, 2008). Kingdon's Multiple Streams theory, described further on this chapter, provides the theoretical propositions for the present study.

The classic 'stages heuristic' framework divides the policy-making process into a series of five broad subsequent stages⁶ (Anderson, 2011:3-5):

1. Problem definition and agenda-setting: The identification and specification of issues as public problems, and the generation of public policy attention to those problems.
2. Policy formulation: The creation or borrowing of policy alternatives for dealing with a problem, from which a choice is to be made. Involves setting the policy objectives and the means to achieve them.
3. Policy adoption or decision-making: Involves making a discrete choice from among two or more policy alternatives (including taking no action); and the authoritative enactment of the chosen alternative (policy outputs in the form of legislation, regulation or programmes, for example).
4. Policy implementation: The carrying out of adopted policies.
5. Policy monitoring, evaluation and revision: Activities intended to determine what a policy is accomplishing (outcomes).

However, this framework has been subject to several criticisms, mainly because it inaccurately assumes clear-cut stages rather than a continuous process where the different activities in each stage influence each other; furthermore, success in one of the stages does not necessarily imply success in others (Kingdon, 1995: 3; Sabatier 2007). Furthermore, although this framework identifies important elements of the policy-making process within each stage, it does not offer propositions on causality. Nonetheless, it is useful to dissect and simplify the analysis of a rather complex

⁶ Different authors number and name these stages differently. For example, Sabatier (2007) portrays policy formulation and legitimation as a single stage. Zahariadis (2007) make reference to the term *policy formation*, comprising the processes of agenda setting, formulation of policy alternatives, and decision making among those alternatives. Anderson (2010) differentiates between *policy formation* (agenda setting and policy formulation), and *policy adoption* (decision-making).

process involving many interacting elements over long periods of time (John, 2002; Sabatier, 2007), with each stage providing a context in which different approaches and frameworks for analysis can be deployed (Parsons, 1995: 80).

The present study, concerned with health policy-making directed to the problem of AMR, focuses on the early stages of the policy process, often referred to as *policy formation*. The main focus of this thesis is on agenda-setting, and secondarily on how agenda status affected the adoption of related policies. It seeks to comprehend perceptions regarding AMR as a public problem and the responsibility on it; placement on the governmental agenda, the development of policy alternatives to deal with the problem of AMR; and the formulation, content and adoption of a specific policy -or the lack of it. These processes are discussed with more detail in section 3.4; but, firstly, it is important to discuss the scope of policy analysis and the different approaches involved.

Policy analysis as a form of inquiry can follow a range of different objectives and relations with regard to the policy process. However, two broad purposes are distinguished (Gordon, *et al.*, 1997):

- *Analysis of policy*. This analysis is used retrospectively to provide descriptions and explanations of policy. It encompasses analysis of *policy determination*, concerned mainly with examining how and why policy is made. It also includes analysis of *policy content*, which refers to aspects such as the operation of specific policies, and describes a policy either in relation to other policies or based on a theoretical or value framework (Gordon, *et al.*, 1997; Parsons, 1995: 55).
- *Analysis for policy*. It is used prospectively, pursuing 'prescriptions' for policy. It includes policy advocacy, and information to aid decision-making.

The present study deals with *analysis of policy*. Its main interest is *policy determination*, which emphasises "the inputs and transformational processes operating upon the *construction* of public policy" (Gordon, *et al.*, 1997: 6). It aims to understand how the machinery of the state and political actors interact to produce public actions (John, 2002: 1), or not producing them. The main focus of the present study is on the construction (or formation) of AMR policies in Mexico. The study also involves the analysis of policy content, in an effort to determine the extent to which Mexican health and pharmaceutical policies included elements recommended internationally for

addressing AMR when the study began; and if policy changes occurred during the two studied periods.

Peter John (2002: 12) maintains that, when analysing public policy-making there are two main sets of phenomena that researchers seek to explain: One is policy *variation* including differences in policy construction between sectors such as education and health, and differences in policy-making between countries. The other relevant phenomenon is policy *change* (also named *policy dynamics*), which involves policy stability or change overtime. According to (Capano, 2009:14) policy change can be understood in many ways, including changes in the policy processes, or in terms of the policy content (e.g strategies, instruments), or even in terms of implementation outcomes. Likewise, policy can change in different degrees: while some policies are new or innovative (radical change), others are only incremental refinements of earlier policies and involve a marginal shift of the status quo (incremental change). For the present study, policy change is understood as the adoption of national policies specifically targeting the problem of AMR, either as a radical or incremental change.

The determinants of policy change (how and why policies change- or not) are complex. Gordon *et al.* (1997: 7-9) underscore that attempts to analyse the determination of public policy are unavoidably based upon models and assumptions of the policy process. For example, researchers can assume that policy-making is in essence a rational and controlled process tending to consensus and centred in decision-making. Under this *rational model* perspective, policy makers are able to identify particular problems, assess their relevance, establish clear goals, and meticulously consider each alternative to deal with a problem. On the other hand, researchers can assume that public policy-making is an “inescapably political activity”, in which the perceptions and interests of different actors play a key role through all policy stages (1997: 7). As such, conflict rather than consensus predominates. This last perspective has been emphasised in studies related to pharmaceutical policy, given that medicines are of utmost importance for the functioning of health systems, are a pressing demand of the population, and involve powerful interest groups. For example, analysing three cases of national pharmaceutical policy in developing countries, Reich (1995b) explains that pharmaceutical-policy reform is highly political because it has distributional consequences of valued goods in society and, as such, can bear important implications for a regime’s political stability. Opposing to rationalistic approaches to understand the determinants of policy making, the incrementalist approach argues that policy makers are generally pragmatic and conservative in decision-making, tending to choose those options that differ only slightly from existing policies; as such policy-making is much a

matter of “muddling through” (Lindblom, 1980). On the other hand, analysts can argue, following a ‘path-dependency’ approach, that there are culturally embedded preferences, generally in the form of norms, conventions and other informal constraints, which lead to incremental rather than drastic policy changes (Bennett and Howlett, 1992). Finally, other authors have pointed out that politics and policy is not only about conflict and power, but also about knowledge, uncertainty and decision-making (Hecl, 1974, cited in Bennett and Howlett, 1992). In summary, alternative views of rationality in the policy process (including the Multiple Streams theory, described below) recognize that policy-making and policy change occurs under conditions of ambiguity (often involving highly technical issues) and encompass the interests of different actors, whose behaviour is constrained by formal and informal rules.

No unified paradigm has emerged to organise research on public policy, and there are now many approaches that often overlap, complement and supplement each other (John, 2002: 8-9; Parsons, 1995: 88; Sabatier, 2007; Walt, *et al.*, 2008). Sabatier (2007) advises researchers to be aware of and capable of applying different theoretical perspectives when conducting policy analysis; this, in order to clarify differences in assumptions across frameworks, to encourage the development of multiple hypotheses, and to explain the choice of perspective. In this regard, I provide below a brief account of approaches to understanding policy-making, and the ways they feed into the present study on the policy determination of AMR policies.

3.3 Approaches to understanding policy determination

The following elements have been traditionally deemed important in public policy-making: conflicting values and interests, ideas and information flows, institutional arrangements, and variation in the socioeconomic environment (Sabatier, 2007: 8). Emphasis on each of these elements has given place to particular approaches to understanding policy-making. Peter John (2002: 168) proposes that the diverse approaches can be linked together by distinguishing between *constraints* and *causes* of political action; processes involved in each of these approaches interact with the others over time:

[I]nstitutions, patterns of interest-group and networked relationships and socio-economic structures are limits to human action though sometimes they change autonomously. Individual actors are the drivers for change and the foundations for human action. Ideas, on the other hand, give human agents purpose and are the way they express their interests (John, 2002: 168).

The following is a description of some approaches that are relevant for analysing the early stages of policy-making; I provide some examples with regard to health and pharmaceutical policies, identifying elements that could be involved in AMR policies. Following John's (2002) classification, I begin with those approaches related to causes and constraints of action. Then provide a brief account to what John (2002), Sabatier (2007) and Parsons (1995) define as "synthetic" or more comprehensive approaches to policy-making.

Socioeconomic approaches. These approaches assert that public policy results from the structure of economic and social power in nation-states and is driven by the interest of the most powerful. Elitist and Marxist accounts, as well as analysis of the dimensions of power exerted by interest groups (Bachrach and Baratz, 1962; Dahl, 1957; Lukes, 1974) sum up to this approach. With regard to health and pharmaceutical policies, medical professionals⁷ and the pharmaceutical industry have been traditionally regarded as powerful interest groups that seek to influence policy. Their dominant and exclusive position to do so derives from their specialised knowledge, their legitimate access to the policy process, and their relation to the provision of valued goods that could determine life and death (Osman, 2002; Reich, 1995b; Walt, *et al.*, 2008: 309). One example is policies that aim to increase access to essential medicines by regulating market entry as well as controlling prices and promoting the use of generics. These policies have been seen by the pharmaceutical industry as instruments used by politicians against the economic interests of the industry (Reekie and Weber, 1979); in this sense, AMR policies directed to limit or rationalise antibiotic use may involve similar interests. With regard to political agenda-setting, the lobbying activities of the pharmaceutical industry aiming to put forward their own interests in health policies have been documented. For example, Beder *at al.* (2003) analysed how the pharmaceutical industry has deployed sophisticated public-relation techniques and effective advocacy coalitions in order to shape the mental-health agenda seeking to increase the sale of their products. These resources are unlikely to be deployed by other groups such as public-health specialists or academics in order to set the agenda for health or pharmaceutical policies.

Rational-Choice theory. This model proposes that individual choice is the main driver of political action and inaction. Policy decisions are the result of bargains between

⁷ Whereas this is particularly true in the United States and Europe, medical professionals in low- and middle-income countries (such as India and those in Latin America) appear to have much less power in the policy-making process. This has been related to their weaker organisation in these settings and to the fact that, in these countries, policy-making is highly centralised and state-centred (Walt, *et al.* 2008: 103; Osman, 2002).

actors motivated by material self-interest seeking to maximise their utility. A major critique to this theory is that not all behaviour can be reduced to the preferences of the individuals, and the relevance of structures in shaping decisions is denied.

Institutional approaches. While the preceding approaches for policy-making emphasise power and the behaviour of social actors, the institutional perspective underlines that behaviour occurs in the context of institutions, and can only so be understood (Immergut, 1998: 6). Institutions such as the parliament, legal systems and bureaucracies structure policy decisions and constrain how decision makers behave. The school of thought of *new institutionalism* extends the definition of institutions to formal and informal procedures, norms, routines, and codes of conduct reflecting cultural antecedents that are capable to favour some groups and demobilise others, rendering some policy outputs possible, and others unlikely (Béland, 2005; Immergut, 1998; North, 1990). *Historical institutionalism* explains that institutions not only mediate political struggles, but also determine subsequent development of institutions and policies, taking into account the role of previous choices and political forces (Oliver and Mossialos, 2005; see also Thelen and Steinmo, 1992). This school of thought is useful to explain how politicians will be reluctant or unable to make a policy change when the prevalent policy path is tied with the expectations of the general public, or has institutionally-advantaged actors with vested interests in its maintenance (Oliver and Mossialos, 2005)⁸.

Group and network approaches. These approaches assert that formal and informal relationships between the participants of the policy process, both within and outside political organisations, shape policy decisions. Originally, groups approaches centred on the influence of 'iron triangles' –executive agencies, congressional committees and 'producer groups' (which include medical and pharmaceutical industry associations). However, this approach has been replaced by networks approaches: not only the presence of an organization affects policy-making, but also the relationships (networks) between different actors involved in policy-making (John, 2002: 78). Networks vary in complexity and scale, ranging from clusters of actors collaborating in closely connected policy or discourse communities, or clusters loosely structured in which actors engage in collective action around a particular issue (issue networks) (Marsh and Rhodes, 1992). Issue networks may include politicians, interest group lobbyists, experts, and

⁸ For example, a study of the politics of health-care reform in France, Switzerland and Sweden shows that the structure of the Swiss federal system reinforces the political influence of medical professionals, such that they can oppose reform more easily than their colleagues in other countries (Immergut, 1992). The institutional approach has been scarcely applied in health-policy studies referring to low- and middle-income countries (Walt, *et al.* 2008).

policy analysts who share the same values and policy goals around certain issue (Hecklo, 1978). In network approaches, understanding the power, resources and strategies deployed by actors is important to understand policy determination. Policy networks have been regarded to constrain the policy agenda because these regularized relationships exclude some groups of exercising power and participating in the policy process (John, 2002: 84); however, policy networks had been pointed as having a central role in defining health policy—such as in defining smoking policies (Read, 1992). There is controversy among scholars over the explanatory value of network as a concept, or if it is merely descriptive (Walt, *et al.*, 2008).

Ideas-based approaches. Apart from interests and institutions shaping policy-making, ideas-based approaches appraise actors' beliefs and conceptions about policy problems and solutions on influencing political action. As Stone affirms (1989), it is ideas what is created, changed and fought over in politics. John (2002: 144) explains that "Ideas can be statements of value of worth; they can specify causal relationships; they can be solutions to problems; they can be symbols and images which express private and public identities; and ideas can be world systems and ideologies". Social actors⁹ advocate trying to influence decision-making on the basis of what they believe is a right course of action, articulate narratives, images and symbols to advance their ideas (Stone, 1989); this is particularly relevant for problem definition and agenda-setting, as described in the next section. Sociological approaches of policy-making focus on the role of ideas in the social construction of problems; as such, language and discourse, debate and argument, all have a decisive role in policymaking (Majone, 1989). Elite theorists such as Edelman (1977) focus on the role of language structuring reality so as to marginalize certain ideas and certain groups. But scientific research and public opinion are also important to define a problem; furthermore, the role of the media in labelling, amplifying and sensitising is central to the construction of problems and agenda setting (Baumgartner and Jones, 1993; Henshel, 1990; Nelson, 1984). Critiques to ideational approaches are that they underplay the importance of interests (John, 2002).

Competing moral outlooks and ideologies can also influence the policy process especially in the discussion on policy alternatives. For example, policies directed to rationalise the use of medicines as a means of avoiding health hazards for the

⁹ Kingdon (1995), and Baumgartner and Jones (1993) theories on agenda –setting emphasise the role of policy entrepreneurs for an idea to be successful in reaching the policy agenda. These entrepreneurs –people who invest time and energy in pushing a proposal or a problem for a policy change– can be politicians, bureaucrats, analysts, experts, journalists, academics and interest-group lobbyists.

population and costs related to unnecessary consumption can be seen as being in favour of communitarian or utilitarian value systems and opposed to libertarian ideas (Reich, 1995b). They are thus likely to be rejected by doctors who perceive them as a threat to their freedom in prescribing. Finally, another ideas-based approach is that of 'policy transfer', which implies examining the positive and negative experiences in one country in order to develop it in another. This concept is discussed later on in this chapter with regard to the process of adopting global initiatives on AMR at the country level.

It is clear that these approaches by themselves only provide a partial account of the complex process of policy-making: some of them focus on policy variation, others on policy change, and yet others on policy stability. However, according to John (2002), both policy change and variation are better explained by the interaction of the elements and processes mentioned above; for example, ideas become more relevant when they interplay with interests. As such, this author emphasises the relevance of integrating approaches, and distinguishes the work of three scholars as *synthetic approaches* to the policy process. These synthetic or integrative approaches that consider the interaction of institutions, interests, socioeconomic factors, individual choices and ideas are Sabatier's Policy-Advocacy Coalition, John Kingdon's Multiple Streams theory (Kingdon, 1995), Baumgartner and Jones' (1993) Punctuated-Equilibrium theory, and what this author proposes as Evolutionary Theory (drawing on the preceding approaches). The synthetic approaches Multiple Streams and Punctuated-Equilibrium theories are of most relevance for my study because they are particularly useful in explaining both policy change and stability, and because they focus on problem definition and agenda-setting, as described in the next section. Both theories were developed involving health-policy case studies, and have been subsequently applied to health-policy research and global-health agendas (Walt, *et al.*, 2008).

In this regard, I present an account of research on agenda-setting, particularly of John Kingdon's Multiple Streams theory, which provides the theoretical propositions for the present study, as well as other relevant notions of agenda-setting which feed into the conceptual framework of this study.

3.4 Analysing agenda-setting

In its seminal article "Up and Down with Ecology –the Issue-Attention Cycle", Anthony Downs (1972:38) discusses how any one domestic issue "suddenly leaps into prominence, remain there for a short time, and then – though still largely unresolved – gradually fade from the center of public attention." Subsequent to this piece of work,

several authors had aimed to explain how and why issues gain (or fail to gain) a high priority among the public and the government concerns, i.e. get or not on the agenda. The term *agenda* has many uses. For example, it has been used to describe both the concerns of the public requiring governmental action, and the problems and policies under consideration by governmental bodies. The former is usually called public or systemic agenda, and is a product of the interaction between public opinion and issue salience on the media, with the latter often called policy or formal agenda¹⁰ (Cobb and Howard-Ross, 1997: 7; Soroka, 2002: 7-8). John Kingdon (1995: 3) refers to this last concept as “the list of subjects or problems to which governmental officials, and people outside of government closely associated with those officials, are paying some serious attention at any given time”. John Kingdon further distinguishes between the *governmental agenda* (subjects getting attention by government) and the *decision agenda* (issues that are up for an active decision). Furthermore, there are diverse *specialized* agendas within the government, such as the health or education agendas.

The present study is concerned with the health policy agenda; this is, with those issues that obtain –or are denied– serious consideration by health-related governmental bodies (including both governmental and decisional agendas, following Kingdon’s definitions).

Various models try to explain the factors whereby some issues reach the policy agenda while others do not. Concentrating attention on the role of governments as agenda setters and using a rational and prescriptive approach, Hogwood and Gunn (1984) described the steps that governments should follow to search for issues, establish if they are problems and decide if they should be included in the policy agenda. Other authors recognise that non-governmental actors influence the agenda as well. For example, Hall and colleagues (1975) allude to support (i.e., the position of different interest groups regarding a specific problem and policy) together with legitimacy and feasibility as necessary conditions for an issue to reach the agenda. Furthermore, other scholars recognise the conflict involved in defining issues as problems,¹¹ and describe agenda-setting as “the politics of selecting issues for active consideration”. As such,

¹⁰ The public and the governmental agendas are autonomous, but might be related: they can overlap, or one might precede and influence the other. This relation is further studied by Baumgartner and Jones (1993) as it is discussed later on.

¹¹ Not all private or social conditions generate policy action; firstly, they have to be recognized as public problems (i.e. linked to human or governmental causes or amenable to such solutions). This is what Deborah Stone (1989) names ‘problem definition’. This aspect is addressed by John Kingdon (1995) (regarding the problem recognition ‘stream’) and by Baumgartner and Jones (1993) (regarding policy images), as it is described in the following sections. For example, analysing a case of environmental contamination, Reich (1983) described how the issue transited from being a private trouble, to a public issue, to a political controversy issue.

agendas are not just about what issues government chooses to act on; “they are also about competing interpretations of political problems and the alternative worldviews that underlie them” (Cobb and Howard-Ross, 1997: 3-4).

Studies on policy agendas try to shed light as well on the dynamics of agenda-setting. Cobb and Howard-Ross (1997: 9) distinguish between inside access-agendas (which contain issues that originate within a narrow governmental group and are then placed in the formal agenda with or without attention from the public) and outside initiative models (which focus on the efforts of nongovernmental sources to place issues on the agenda). Cobb and Elder (1972) argue that agenda-setting occurs as a result of the expansion of an issue from a specifically concerned attention group to a wider interested or attentive public. The dynamics of this expansion depends in the first instance on the characteristics of the issue (i.e., degree of specificity, scope of social significance, temporal relevance, and degree of complexity) as well as on the strategies of issue containment deployed by opposing groups (such as discrediting the issue or the groups promoting it).

Although these approaches are useful to understand some elements of agenda-setting, they do not provide an all-encompassing perspective on what makes people in and around governments to attend some subjects, and not others, at any given time. This integrative approach is provided by Baumgartner and Jones’ (1993) Punctuated-Equilibrium theory and John Kingdon’s Multiple Streams theory (1995), described below.

Baumgartner and Jones (1993) postulate that in a policy sector there are periods of stability with minimal or incremental policy change disrupted (‘punctuated’) by bursts of public interest, media scrutiny and rapid policy change. Policy stability and change are explained by the interaction of two forces: policy images (how policy problems and solutions are understood and discussed); and policy venues (institutions and groups in society that have the authority to make decisions concerning an issue) (1993: 25-38). The authors propose that policy images may predominate for a long period of time; but this can be challenged by new understandings of the problems and its solutions. On the other hand, a set of actors may hold policy monopolies (by means of a definable institutional structure and shared policy ideas and political values) for a long period, which limits access to the policy process. However, this monopoly is challenged as new actors with alternative policy images gain prominence.

Baumgartner and Jones emphasize the rapidity by which long periods of stability are replaced by periods of instability and public action. Central to this rapid change is issue expansion and the positive feedback that occurs in the interaction between policy entrepreneurs, the media, and public opinion. As issues expand, media coverage tends to shift from low and positive coverage in specialist sections, to high amounts of negative coverage in the front pages. Adopting a social constructivist perspective, this theory highlights the role of policy entrepreneurs and the media in constructing policy images and setting the agenda. The relevance of the media in framing policy issues and setting the agenda is further discussed in the next sections.

The Punctuated-Equilibrium theory asserts that the nature of the policy problem and solutions has an influence in the interaction between policy images, policy venues and public debate. For example, for a new or very complex problem there might not be a clear institutional authority to deal with it. Furthermore, for highly complex issues, and those involving policies with dispersed costs and benefits (or those involving self-regulatory policy types) the mobilization of constituencies is unlikely, and they are likely to remain out of the public agenda. On the contrary, issues with less technical complexity, and those which involve policies with concentrated costs and benefits (such as distributive and redistributive types) are more likely to generate public controversy and become politicized (Baumgartner and Jones, 1993: 33-41). These concepts are discussed later on this chapter with regard to Kingdon's Multiple Streams theory, and are crucial to the present study with regard to AMR policies: what is the perceived complexity of the problem and policy solutions, and what are the institutional locations where authoritative decisions on AMR and on medicines utilization are made.

Criticisms to Punctuated-Equilibrium theory this theory point out that they are based on the United States policy process, and question their applicability in non-liberal democracies (John, 2002). Regarding its application to health policy issues, elements of this theory were incorporated in a study of global health policy agendas, analysing the emergence of disease control priorities (Shiffman, *et al.*, 2002).

3.4.1 Kingdon's Multiple Streams (MS) theory

Kingdon's Multiple Streams (MS) theory is considered as a synthetic or integrative approach of the public policy process (Parsons, 1995; John, 2002; Sabatier; 2007), which provides a comprehensive cognitive approach of policy change (Capano, 2009). MS examines the political system as a whole, embracing all the elements that are deemed important to explain policy determination and policy change: individual agency,

policy ideas, strategic interests, political institutions and external processes. Furthermore, this approach stresses that policies are made under conditions of ambiguity, i.e. uncertain problem definitions and goals (Zahariadis 2007:65). Rather than assuming that agendas are the automatic reflection of the power of the participants in the policy process, Kingdon argues that agendas are set based as much on chance as on intention (John, 2002: 173-174).

In his book *Agendas, Alternatives and Public Policies*, first published 1984, John Kingdon (1995) proposes that agendas are the product of the flow and interaction between three processes or 'streams' running separately: problems (public matters requiring attention), policies (generation of policy alternatives), and politics (political processes and context, such as elections or the governmental structure). Social and political actors mobilize through these streams in order to promote specific issues or policy options. Visible participants –such as the president, high-level appointees and the media– have a prominent role on getting attention to problems and setting the governmental agenda. On the contrary, the role of hidden participants –including researchers, academics and bureaucrats– is generating policy alternatives. Interest groups (such as business, industry and professional associations) can affect both governmental agendas and the alternatives considered by policy makers, either positively (promoting new courses of action), or negatively (seeking to avoid public policy change) (Kingdon, 1995: 49). However, the role of policy entrepreneurs (politicians, bureaucrats, analysts, experts, journalists, academics, interest group lobbyists or any other person willing to invest time and energy advocating for their conception of problems and their 'pet' policy alternatives) is decisive to mobilize opinion and couple these streams at critical points ('open windows') in time, seeking to place an issue on the agenda and ensuring that it does not fall off it. MS embraces a non-linear logic of policy making: contrary to the stages heuristic framework, Kingdon argues that the generation of policy alternatives, i.e. policy formulation, can precede agenda-setting. These are two distinct processes and involve different participants.

According to Kingdon's MS theory (1995: 15-18), two categories of factors affect agenda-setting and the specification of policy alternatives: active participants, and processes pertaining to each of the streams: problem recognition, generation of policy proposals, and political events. Each of these processes can act as an impetus or as a constraint for an issue to gain agenda status. When two streams converge, an issue can reach the governmental agenda. However, for an issue to reach the *decision* agenda, the three streams need to converge in a single package: a pressing problem is recognized and demands attention; a policy proposal is developed, made available

and coupled to the problem as its solution; and developments in the political sphere favour the consideration of that problem and that policy proposal. Coupling is facilitated by policy entrepreneurs, whose major qualities are expertise, political connections, negotiating skills and persistence. If policy entrepreneurs are successful on bringing the three streams together, policy change can occur. However, it is important to note that processes on the policy stream by themselves will not open a window of opportunity to place any given subject on the decision agenda. This situation is more likely to happen when a 'window of opportunity' opens by events in either the *problems* or the *political* streams: a compelling problem appears, or a new administration in power facilitates to push some ideas forward.¹² Open windows are an opportunity for policy entrepreneurs to promote their ideas. Open windows call for different borrowings from the policy stream, depending on what opened the window in the first place. If policy makers become convinced that a problem is pressing (i.e. a 'problem window' was opened) they reach into the policy stream for an alternative that could serve as an adequate solution; alternatives that are politically acceptable have more chances to advance as solutions. On the other hand, if policy makers decide to advance a topic that will serve their administration (i.e. a 'political window') they reach into the policy stream for proposals, and a problem is attached to it (Kingdon, 1995: 173-175).

In sum, according to Kingdon's MS theory, the governmental agenda is set in the problems or politics streams (happenings in these streams open problem or political windows). Policy alternatives are generated in the policy stream. A policy window opens to bring an issue to the decision agenda, and an opportunity for policy change occurs when the three streams converge, aided by skilful policy entrepreneurs. Policy windows sometimes open in a cyclical and to a certain extent, predictable manner, for example, after changes in the administration. However, windows are often unpredictable: separate happenings on the three streams coincide in time and favour their coupling (1995:188-195). Regardless of how they open, policy windows are scarce and do not stay open long. This calls for quick action, before the issue at hand falls in the issue-attention cycle (Downs, 1972). Therefore, it is very important that the policy stream produce viable alternatives well in advance a problem or political window opens. Otherwise, it is very likely that the subject will fade away from the decision agenda.

¹² For example, with regard to pharmaceutical policies, an economic crisis can focus attention on the elevated cost or shortages of medicines, and provide the impetus for introducing an essential drugs policy; according to Gasman (1995) this was the case of the inclusion of pharmaceutical policies in the development of the 1984 Mexican General Health Law. Reich (1995b) describes how in Bangladesh pharmaceutical policies have been tried to be introduced for years, but reform only succeeded when a military dictator came into power.

Many of the elements on MS theory coincide with Baumgartner and Jones' Punctuated Equilibrium theory: problems and policies streams relate to policy images; and politics streams (particularly interest group mobilization and governmental jurisdictions) relate to policy venues (in which policy entrepreneurs can push their proposals). These two theories coincide on stressing the important role of policy entrepreneurs, and assert that both, agency and structure determine agenda setting. Kingdon recognizes that agenda-setting appears to follow a punctuated equilibrium fashion: attention to public problems proceeds 'in jumps', and the agenda changes suddenly after a window opens. However, Kingdon (1995:226-227).stresses that continuity is also a characteristic of agenda-setting: policy alternatives are developed gradually, combining old and new proposals; happenings in the problems as politics stream flow independently along the time. Policy change arises from the continuous interplay of the three streams.

With regard to the present study, Kingdon's MS theory provides an indication as to why policy recommendations promoted internationally to address AMR might not by themselves place AMR as a policy problem on national agendas and prompt policy formulation and adoption. This theory suggests that favourable factors in each of these streams are needed, as well as an event (either in the problems or politics stream) to facilitate a window of opportunity to be open. Furthermore, the three streams have to converge in time, a process that is facilitated by a skilful policy entrepreneur. The structural elements of Kingdon's MS theory are further described in Box 3.1. These elements are incorporated for the present study conceptual framework (see Figure 3.1).

Box 3.1 Structural elements John Kingdon's Multiple Streams theory

- a) *Problem stream.* Conditions become defined as problems when it is believed that something has to be done about them. The chances for a problem to rise on the agenda increase if statistical indicators, crisis or other 'focusing events', or feedback from previous policies raise it, and if a solution is attached to it.
- Underlines the role of ideas and external processes.
- b) *Policy stream.* The generation of policy alternatives occurs in a process analogous to biological natural selection. Policy proposals are debated and refined within communities of specialists; many ideas 'float' around, recombining new with already-familiar elements, in a policy 'primeval soup'. Those policy proposals that are technically feasible, congruent with current values, and anticipate future constraints for implementation (such as budget constraint and public acceptability), have more chances to be selected for serious consideration. Policy entrepreneurs 'soften-up' both policy communities and the public, getting them used to new ideas.
- Underlines the role of ideas and institutions.

c) *Politics stream*. The flow of political events is a powerful agenda setter. It includes the prevailing national mood (e.g. pro or against governmental intervention); interests groups configurations; and changes in the administration (elections, turnover of key personnel, governmental jurisdictional boundaries). Policy change is aided by a constituency in favour of it, and hindered by the lack of it. Administration shifts affect agendas substantially. On the contrary, potential agenda items could be neglected when they are perceived to be handled elsewhere in government, or not to be within a specific governmental jurisdiction.

- Underlines interest groups dynamics and institutions.

d) *Policy entrepreneurs*. Favour the convergence of the three streams. Their role is critical on the softening up process of policy alternatives that must precede high agenda status and enactment; as well as on seizing opportunities (open windows) to negotiate and push for their proposals.

- Underlines the relationship between individual agents, policy ideas, strategic interests, and political institutions*

Policy windows. Happenings on the problems or politics streams can open windows of opportunity to place an issue on the governmental agenda. However, the probability of an issue rising on the decision agenda (and thus that a policy change occurs) increases sharply when the three streams are joined.

Sources: Kingdon, 1995; John, 2002; Zahariadis, 2007:71. * See footnote 14

Since its publication, Kingdon's MS theory has been extensively applied to explain how policies are made by national governments in a wide variety of policy arenas.

Regarding health policy, MS this theory has been applied to study agenda-setting and policy change at the national level for a range of issues, including tobacco control (Schwartz and Johnson, 2010), pesticides (Pralle, 2006), child health promotion (Guldbrandsson and Fossum, 2009) a public health crisis (Schwartz and McConnell, 2009), and health sector reform (Mannheimer, *et al.* 2007; Shroff, *et al.*, 2015).

Furthermore, this theory has been successfully adapted for analysing the international or global health policy agendas¹³ (Ogden, *et al.*, 2003; Reich, 1995a; Hafner and Shiffman, 2012). To my best knowledge, Kingdon's MS theory has not been applied before on an empirical study on AMR agenda-setting; in this sense, the present study contributes to the literature.

Given the integrative approach (involves all elements relevant to explain policy determination) and its focus on national governments, it provides the main theoretical framework for the present study. Furthermore, this approach is particularly suited form

¹³ With regard to international health, Reich (1995a) critiques the simplistic concept of 'political will', and underlines the politics of agenda setting, identifying additional elements that feed into Kingdon's politics stream (organizational, symbolic, economic, scientific and politician politics).

the present study, because it explains how policies are made under conditions of ambiguity, i.e. multiple and conflicting problem definitions and uncertain policy goals (Zahariadis 2007). This is the case of health policies and particularly, AMR policies, studied in the present thesis.

Some of the critiques of Kingdon's MS theory are with regard to the independence of the streams. Given the efforts of people to seek solutions to problems, and given the fact that some policies are preferred over others because of developments in the political stream, the three streams might be more closely related, as Paul Sabatier's advocacy coalition framework suggest. From a historical institutionalist perspective, Béland (2005: 7) explains that problems in policy agendas are largely constructed through a social learning process. In this sense, the three streams are only partially autonomous,¹⁴ because earlier policies can affect the definition of problems streams at a later time, by establishing some groups (and not others) as authoritative voices. With this regard, Kingdon (1995: 228) acknowledges that there are some links between the streams as well as the relevance of institutions, but asserts that still the streams are largely independent, involving different people and processes. Critiques also point to the fact that the overall importance of institutions is downplayed in the MS theory. Formal institutions (or veto points) has the ability to block the adoption of administrative and legislative policy proposals (Sparkes, *et al.*, 2015). With this regard, Kingdon recognises that institutions (such as governmental forms and procedures) are important constraints to policy-making, rendering some outputs possible, while others unlikely (1995:230); however, this aspect is not sufficiently integrated within MS theory (Hewlett, *et al.* 2013).

Finally the applicability of this theory in political contexts different than that of the United States has been questioned. This is an issue that is of much relevance for the present study, based in Mexico, a country undergoing an incipient democratic transition; this aspect is further addressed below. Because MS was developed on the basis of the US political system, it neglects the role of institutional variation from country to country to explain why some types of actor have more influence in agenda setting in some contexts than others (Béland, 2015:229). Because of this, the explanatory power of MS with regard to policy variation is weak (John, 2002:202).

¹⁴ In order to succeed, policy ideas need the support of powerful actors that have an interest in promoting them; formal political institutions largely determine which actors are in a strong position to campaign for a policy alternative. And policy entrepreneurs promote their policy ideas by framing issues using cultural symbols acceptable in their society (Béland, 2005: 10).

3.4.2 Merits and limitations of using Kingdon's MS theory to study agenda setting and policy change in the present study

The present study aims to explain the process of agenda-setting for the appropriate use of antibiotics and containment of antimicrobial resistance (AMR) in Mexico, and how that affected the adoption of related policies. The study applies Kingdon's MS theory of agenda-setting to guide the analysis. On the following paragraphs, the merits and limitations of using theory are discussed, in relation to a) Its capacity to explain both when issues gain and fail to gain agenda placement; b) Its capacity to explain policy change and policy adoption; and c) Its capacity to be used in political contexts different from the United States, as it is the case of Mexico..

With regard to the first point, it has been pointed out that while the explanatory power of MS on policy change is strong, MS is less effective in explaining policy stability (John, 2002:202). Probably because of this, most empiric research on health policy using MS theory explains how a window *did* open to put an issue on the agenda, and not the contrary. However, Kingdon's affirms that MS theory can be used to explain both why some issues, at a given time, rise on governmental agendas; and why some issues, at a given time, are neglected. Processes and actors operating within each stream, and coupling opportunities act as an impetus or a as constraint for agenda-setting (Kingdon 1995: 197). In this sense, in the present longitudinal case study, Kingdon's theory streams are used as independent variables to explain both when the issue of AMR was denied a position on the agenda (first period studied) and when the issue gained agenda status and a policy change occurred (second period studied).

With regard to the link between agenda setting and policy adoption (policy change) the present study begins with the 'puzzle' of policy action on AMR at the national level, i.e. why and how countries adopt policies directed to address the problem of AMR. It argues that policy action (and inaction) on AMR can be understood –at least in part– by understanding AMR agenda-setting. In this argument I state 'at least in part' because even if agenda placement is necessary for a policy being adopted, agenda placement does not automatically assure policy enactment, or the type of policy that will be enacted. It has been argued that the explanatory power of MS on policy change is strong, the opening of a policy window significantly increases the chance of a policy proposal to be seriously considered and adopted (Kingdon 1995; John, 2002).

However, the link between agenda change and policy change has been focus of much debate¹⁵, part of which is described below.

In his seminal book, Kingdon argues that MS is not about how governmental authoritative figures make their final decision on policy adoption; rather, it focusses in two 'pre-decision' processes: agenda setting and alternative specification. Kingdon explains that open policy window act as 'magnets' for people concerned with particular problems and advocates of particular proposals; as a result, many problems and solutions cluster, overloading the system. In this scenario, the outputs¹⁶ (i.e. the specific policy or policies that will be adopted as a result of agenda placement), can be unpredictable (1995: 176-177). As such, "enacted proposals don't always respond exactly to the perceived problems or to the contents of political events" (1995:217). Nevertheless, a relation or coincidence between agenda setting and policy adoption *do* exist, because the process of alternative specification, and the active role of policy entrepreneurs, narrows the ample set of possible alternatives to a limited set from which choices are made (1995:177, 196). In further editions of his book, Kingdon follows up some case studies, and points out that MS is useful in understanding policy formation as a whole (1995:209).

Developing on Kingdon's MS, other authors argue that MS has the capacity to explain policy formation as a whole: agenda setting *and* decision making, i.e. explaining why policymakers adopt some policies and not others (Zahariadis, 2007:65; Sabatier, 2007: 297). Zahariadis incorporates the concept of policy outputs into MS theory (2007:71). In order to explain why a certain policy is adopted (and no others) this author explains that, using MS theory, the answer relies on the persistence and ability of policy entrepreneurs to couple streams, as well as their resources and their strategies to focus attention and bias choice (2007:79). Similarly, Barzelay argues that agenda-events can influence decision-making through two causal channels: first, problem definition influence the assignment of issues to distinct venues for policy formulation. Second, the prospect of policy change spurs the efforts of participants in alternative specification processes, whether they are entrepreneurs pushing for innovative policies, or protectors of the status quo (Barzelay, 2006:253-254). On the other hand,

¹⁵ MS theory and Punctuated Equilibrium theory assume that that policy change is a product of changes of the governmental agenda. Nevertheless, some authors affirm that agenda status is not sufficient for policy change (negative aspect of decision making) . And even more, it has been argued that policy change can occur through cumulative incremental steps, which do not rely on agenda mobilization. Agenda-Setting and Policy Change. European Consortium for Political Research. At: <https://ecpr.eu/Events/PanelDetails.aspx?PanelID=914&EventID=5>.

¹⁶ Kingdon uses the term 'outcome' here. However, other theorists developing on Kingdon's work, have substituted this word for 'outputs' (Zahariadis, 2007: 71).

other authors are critical of these views that connect the capacity to bring an issue to the agenda to particular policy options, underlining that this assumption is forced and was not put forward by Kingdon; therefore, new models are needed to extend MS theory to decision-making (Hewlett, et al. 2013). Following in this discussion, Capano affirms that even if MS does account for policy change, it does not distinguish among the different types of policy change (including a radical or an incremental change). At such, MS it provides scholars with ample room for manoeuvre for defining what will be considered policy change when formulating their analyses (Capano, 2009:21). In this sense, Kingdon's theory has been used before in empirical studies to explain both agenda setting and policy adoption related to health sector reforms (Shroff, *et al.*, 2015). In sum, in the present thesis, I primarily aim to explain the process of AMR agenda-setting using Kingdon's MS theory; and secondarily, I aim to explore how agenda placement affected the adoption of related policies. However, I am aware that MS can only provide a partial explanation of policy outputs.

Finally, as was mentioned above, the applicability of this theory in political contexts different than liberal democracy of the United States has been questioned (John, 2002). Critiques underline that the nature of political institutions in each country determine the influence of actors and their opportunity to participation in the policy process, and thus the range of policy proposals that can reach the agenda and are adopted¹⁷ (Sparkes, *et al.*, 2015; Béland, 2015:229). However, it is important to underline that , by applying partial corrections, Kingdon's theory has been successfully applied to empirical studies in different contexts, including the European Union (John, 2002; Sabatier, 2007) and even in an African low income country (Ridde, 2009). For example, when applying MS theory to analyse agenda setting and policy adoption of a national health insurance in India, Shroff, *et al.* (2015) modifies MS structural elements by adding a fourth stream: economic influences. In the case of Mexico, the state-centered and exclusionary nature of policymaking; the strong role of the executive branch in decision-making; the opportunities of participation for business groups; and the prevalence of informal arrangements and corruption, are contextual factors that cannot be neglected when examining the determination of public policy. In the present thesis, findings of the case study are discussed in the light of these contextual characteristics. In this sense, the present study contributes to the literature, by applying Kingdon's MS theory in an empirical research focusing on health policy in a middle-income country undergoing a democratic transition.

17 For example, in the US, non-state actors have an important role in the production of policy proposals; while in France, state bureaucrats have more clout (Béland, 2015:229).

3.4.3 Policy inaction

The present study is concerned with both policy inaction and policy change regarding AMR in Mexico. It seeks to explain which factors prevented AMR from reaching the health policy agenda during the first studied period; and what factors facilitated agenda setting and a policy being adopted during the second period. There are diverse approaches to analyse the lack of political action, i.e. policies are not enacted or adopted to deal with a public issue. This lack of political action can originate from: a) policy problems not reaching the policy agenda (policy 'non-actions'); and b) when issues do reach the governmental agenda, and decision makers decide not to act upon them (the output is a negative policy or policy 'inaction') (Anderson, 2011).. In the present study, I refer to policy action on AMR as the adoption of public policies to deal with AMR; on the contrary, I use policy inaction referring to the lack of adoption of AMR policies (including both as a consequence of issues not being considered on agendas; as well as a negative policy resulting from decision-making).

Cobb and Howard-Ross (1997: 7) suggests that in order to analyse why problems do not get attention in the policy agenda, three aspects should be considered. First, there must be some objective evidence that the problem exists. Second, for many issues, it is important to know if they were on the public agenda. Third, it has to be considered if the issue at hand is already on the formal agendas of countries with similar social systems. If the answer is yes, then there is a case of asking why the issue has not yet reached the formal agenda, as it was the case of the first period analysed in the present study regarding AMR in Mexico.

Based on views that stress the role of structure, economic and social power on policy determination, diverse authors have emphasized that certain issues remain 'latent' and fail to enter the decision-making processes because they are against the interest of those in power, or because they contradict the dominant values and as such are deliberately suppressed from agendas (Bachrach and Baratz, 1962; Cobb and Howard-Ross, 1997; Walt, 1994: 60). For these authors, non-decision-making (or agenda denial) involve the exercise of power to maintain a dominant set of beliefs, values, and institutional processes that privilege the vested interests of some groups in relation to others, restricting the scope of decision-making to those relatively 'innocuous' issues. According to Cobb and Howard-Ross (1997: xi) the major reason that issues are excluded from the agenda is the active effort of those whose interest would be affected if a particular issue is considered. Groups that oppose a new issue coming into the agenda use both material and symbolic resources and strategies such as avoidance,

attack and problem redefinition to keep an issue off the agenda¹⁸ (Cobb and Howard-Ross, 1997: 25-41). However, Crenson (1971) underlines that active participation is not the only way to exert influence on agenda:¹⁹ “The mere reputation for power, unsupported by acts of power” can suffice to restrict the scope of decision-making and lead to instances of “political enforced neglect” (Crenson, 1971). For example, with regard to health policies, policy-makers could anticipate opposition of powerful groups (such as medical associations, or labour unions) and thus keep off the agenda policy issues that might be against the interests of these groups.

Departing from the perspective of deliberate agenda denial, Kingdon's MS theory offers a more comprehensive view to understand why some issues are excluded from the policy agenda, and, consequently, policies are not adopted. One set of explanations is related to the processes operating within each stream; e.g. regarding problems, the conditions are not highlighted by indicators; regarding policies, a feasible alternative is not available to address the problem at hand. The second set of explanations derives from limits on the streams coupling opportunities: two streams might converge, but not the third, or there is not a policy entrepreneur coupling problems and solutions. Third, there are various constraints on the system intrinsic to the politics stream: political cycles and timing affect issues reaching and falling from the policy agenda.²⁰ Once an issue is being acted upon (symbolically or seriously) it falls from the agenda. Issues already on the policy agenda tends to deter other issues reaching it: a country can only consider a limited number of major problems at a time (Roberts, *et al.*, 2004b). Consequently, beliefs about what are the most pressing problems must be taken into account on the study of policy agendas (Béland, 2005: 7). All these aspects are explored in the present study. Kingdon's theory is used to explain both the lack of agenda placement (and subsequent policy inaction); and agenda setting (and subsequent policy action or policy adoption).

¹⁸ Opponents –who may be bureaucrats, politicians, or organized groups outside the government– may use different strategies to keep an issue off the agenda. . Opponents can avoid the problem simply by not recognizing it (the ‘*non-issue*’ status of a problem, as Reich (1983) terms it, invoke reasons that a particular issue is inappropriate for consideration, and deny that the problem exists, or state that it is only an isolated incident. Other series of strategies involve attacking proponents of a policy: discredit the issue stance of the group and the groups itself, what can be done showing symbolic concern in dealing with a problem, or stating that the issue is not a legitimate concern and ought be resolved privately. Other strategies are to link the policy proponents with negative stereotypes, the use of deception, and even violence. Finally, the problem can be redefined in order to deal only with those parts of the problem that opponents prefer (Cobb and Howard-Ross, 1997).

¹⁹ Here, Lukes' (1974) *Dimensions of power* are useful to explain how power in non-decision making is exerted.

²⁰ This is also known as issue-attention cycle, described by Downs (1972).

3.5 Problem definition and media framing

Why do some problems gain the attention of governmental officials why others do not? According to Kingdon, the answer lies in how these officials learn about problems (e.g. indicators, or focus events), and how these conditions are defined as problems, i.e. the perceptual or interpretive element of problems (1995:110,197).

For Rochefort and Cobb (1994: vii), 'problem definition' is concerned with what becomes to be identified as a public issue. Understanding how a problem is defined is central to understand its rise or decline on the governmental agendas, and the kind of solutions that governments devise. This view, shared by other scholars, blurs the line between agenda-setting and problem definition (Dery, 2000). While other authors recognize the relevance of problem definition to set the agendas, they draw a clear distinction between the two processes. For Weiss (1989: 118) problem definition has to do with the organization of a set of facts, beliefs and perceptions about issues (how people think and talk about any given issue), while agenda-setting is the process by which some problems come to public attention. Similarly, Kingdon stresses that problems and solutions run in different streams. However, once a problem is recognized as important, and defined in a particular way, whole classes of policy alternatives are favoured over others, affecting significantly the outcomes of agenda-setting (1995:198). For this reason, policy entrepreneurs invest resources in pushing for their definition of problems and their policy alternatives to address them. The role of policy entrepreneurs is critical, because the definition of problems tends to become 'frozen' in the position of bureaucratic agencies and resist change (Reich, 1983: 309). As such, as Baumgartner and Jones affirm, "definition is at the heart of the political battle" (1983: 29). Therefore, for the present study, when exploring processes within the MS theory 'problems stream', special attention is paid to how AMR is understood by diverse social actors, and if AMR is defined as a problem. Relevant concepts related to problem definition are described below.

Besides the nature²¹ of difficulties (e.g. severity, novelty, proximity, effects, problem populations), the use of symbolic language (e.g. causal ideas, metaphors, frames) is important to explain how difficult conditions come to be seen as problems (Kingdon, 1995; Rochefort and Cobb, 1994; Stone, 1989). Furthermore, is through language that symbols are used to lend legitimacy to one definition, and undermine another, or to

²¹ The intrinsic characteristics of medicines probably add complexity to the recognition of problems related to them: while tobacco is now perceived to a great extent as prejudicial, medicines (and particularly antibiotics, 'the miracle cure') are perceived generally as beneficial. Furthermore, the low visibility of the consequences of antibiotic misuse (particularly antibiotic resistance) may hinder the identification of victims, and the recognition of it as a problem.

heighten participation of certain actors in the policy-making process, and restrict others. For example, the use of highly specialized or technical may narrow problem definition to procedural aspects, and group participation to closed elite. On the contrary, issues framed using broad social themes, such as justice or liberty, heighten other actor's participation (Elder and Cobb, 1983; Rochefort and Cobb, 1994: 5, 9).

Taking a social constructionist view of policy problems, Stone (1989) proposes that *causal ideas* are central to the transformation of difficulties into political problems. The author proposes that problem definition is "a process of image making, where the images have to do fundamentally with attributing cause, blame and responsibility" (Stone, 1989: 282). In this way, political actors deliberately use narrative story lines and symbolic devices focussing on the causality of events in order to define a condition as a problem or not, according to their own interests. This author proposes a typology of 'causal theories'. This typology distinguishes between conditions of accidental cause, and conditions derived from purposeful actions, where governmental intervention to stop the harm (e.g. prohibition, regulation, compensation or education) can be claimed. Causal politics is concerned with political actors pushing interpretations of a situation between the realm of accident and the realms of control (Stone, 1989: 284). A similar distinction has also been applied to disease and disease prevention paradigms (Tesh, 1988) and can be applied to AMR. There are different understandings of AMR; some emphasize antibiotic resistance as the inescapable consequence of the inevitable use of these medicines (Bayer HealthCare, 2004); others underline the lack of individual awareness and education on the use of antibiotics; and others point out to the influence of a free-market healthcare environment (Baquero, *et al.*, 2002: 34), economic interests of the industry (Price, 1989), and lack of governmental commitment (WHO, 2001a). These different understandings move AMR from the 'accidental', to the 'inadvertent' or even to the 'intentional' realms of Stone typology, calling for very different solutions.²²

Consequently, with regard to the present study, it was deemed important to gain insight in how stakeholders learn about AMR (for example which indicators are available), and also how they frame AMR. The competing and prevalent causal stories related to AMR among diverse social actors in Mexico were studied, along with public discussions in

²² For example, some actors from the pharmaceutical industry emphasize the need for development and commercialisation of newer antibiotics, and educational interventions to improve their use. From their perspective, governmental regulatory actions (such as imposing limits to antibiotics licensing and prescribing) have a detrimental effect on the development of new antibiotics, which in turn favour resistance (Bayer Healthcare, 2004). Understandings that underline individual behaviour on the use of medicines, call for educational interventions similarly to the problems of tobacco and unhealthy food. On the contrary, other views emphasize the influence of pervasive environments in which individuals live (and consume tobacco, unhealthy food or antibiotics), calling for supportive policies.

the media), in order to understand AMR problem definition and how this could influence agenda-setting.

3.5.1 Role of the media and media framing

Important elements related to problem definition are the role of the media, and media framing. As it was mentioned before, there is a multidirectional relation between the public agenda (the focus of public attention, commonly assessed by public opinion polls), the mass media, and the policy agenda. The role of the media in defining problems, amplifying issues or even 'producing' new problems has been raised by diverse scholars (Parsons, 1995: 107-110); thus, media has been deemed an influential agenda setter. According with Baumgartner and Jones' theory (1993) mass media has central role in expanding issues and influencing public and governmental agendas. As such, media coverage indicators correspond to official concerns and can be used to describe the degree to which an issue is placed on the broad policy agenda. However, while Kingdon (1995) recognises that the media do report what is going on in government, he asserts that the *effect* of the media on governmental policy agendas is much less than what others authors indicate. Nevertheless, this author affirms that the media is still important in agenda-setting by acting as communicator within policy communities; it is relevant as well in shaping and magnifying movements that have started elsewhere; and, by affecting public opinion, it may influence the attention and position of participants in the policy process (1995: 57-60).

One manner in which the media can shape the public agenda is by 'framing' or emphasizing issues in particular ways. There are various definitions of framing, but the most widely used is provided by Robert Entman (1993):

Framing essentially involves *selection* and *salience*. To frame is *to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation* for the item described (Entman, 1993: 52, italics in the original).

As such, frames define problems (for example in terms of cost and benefit) and attribute causality, and suggest treatments or solutions to problems (Entman, 1993: 52), all of which are aspects related to policy agenda-setting, as was described before. According to Entman, 'salience' means making a piece of information more noticeable, by placement, by repetition, or by associating it with culturally familiar symbols; while selection is related to highlighting some features of a given issue, while omitting others. Frames are manifested by the presence or absence of certain keywords, phrases and

sources of information (among others) within texts; these indicate the views or perspectives by which issues are discussed (Entman, 1993: 52-53).

The way in which issues are framed in the media reflects journalistic conventions; the interaction among journalists and elite constituents, social movements, and scientific bodies; as well as a frame's resonance with broader political values (Carragee and Roefs, 2004; de Vreese, 2005). De Vreese (2005) distinguishes between "issue specific" frames and "generic" frames which are not related to a specific topic or a specific cultural or historical context. Examples of generic frames are: 'episodic framing' (in which social issues and public affairs are portrayed as limited to events only); 'conflict' (making reference to winners and losers, as well as 'powerlessness', 'human impact' and 'economic consequences' (such as in reference to distressed groups). Social actors use these frames to draw attention to issues of concern implying that certain types of solutions are called for (Schön and Rein, 1994). Elite stakeholders have significant resources for shaping journalistic frames to serve their specific interests (Carragee and Roefs, 2004); but the media can also give voice to less powerful stakeholders to provide a new direction to a policy debate. (Esmail 2010)

As Entman (1993: 55) explains, frames reveal the "imprint of power", by reflecting the identity of actors and interests that compete to dominate news texts. Because framing emphasizes one aspect of a problem at the expense of others, it can restrict public debate on policies in the range of problems and policy alternatives considered (Schön and Rein, 1994), and thus *potentially* influence agenda setting (Esmail, *et al.*, 2010).

With regard to the present study, the role of the media and media framing were explored in relation to the policy process which led to the regulation of antibiotics sales during the second studied period. The interest was twofold: First, to gain insight in the participation of diverse stakeholders and their position vis-à-vis the policy development (as it was portrayed in media coverage); second, to shed light on the potential effects of media framing on AMR problem definition and the overall policy process.

3.6 Research up take and policy transfer

According to Kingdon, it is ideas, not only interests, what shapes agendas. Kingdon asserts that, after interest groups, the most important non-governmental actors influencing agendas are academics and researchers (1995:53) . Ideas from the academic literature are used when discussing policy problems and solution. Thus,

understanding the role of research uptake is important when analysing agendas, which is discussed below.

According to Kingdon's MS theory, the development of policy proposals and their coupling with a pressing problem or with a key political event is a critical element to agenda setting. Many policy proposals are generated and debated in specialized policy communities, but not all are considered by decision-makers. Thus, policy entrepreneurs push for the consideration of their views of problems and pet proposal in many ways, including the recombination of ideas within policy communities and decision-makers. This long process of softening-up is critical for policy change (Kingdon, 1995:201). Kingdon considers that in the formulation of policy alternatives, ideas can come from anywhere (1995:72); however, other authors underline the relevance of understanding the origins of policy ideas (Béland, 2015). For example, learning approaches hold that countries can learn from their own past experiences (Bennett and Howlett, 1992), and that leaning in turn can influence alternative specification and agenda setting.

Previously, when discussing ideas-based approaches to understand policy-determination, the role of scientific research (especially the uptake of evidence by policy makers), and the utilization of experiences on policy development in other settings (policy transfer) were mentioned. These concepts are related to the recognition and definition of policy problems and generation of policy alternatives, following Kingdon's MS. thus, it is worthwhile describing them further and clarifying the extent to which they are considered in the present study.

Understanding the uptake of research results in policy-making presents numerous aspects. Weiss (1979) has described different models to explain the range of uses of research in guiding decision-making. In the 'interactive model', direct interaction between researchers and policy makers influences both research and the policy process. The 'strategic' approach conceives research as a means that policy makers have to support predetermined solutions or to postpone decisions. A third approach, of 'enlightenment' or diffusion, suggests that research plays a role in sensitising policy makers to the presence of problems and their proposed solutions.

For T.R. Oliver (2006: 198) the primary influence of public health research on policy-making is through its role in 'documenting' a problem: statistical information on disease burden, health care cost and quality can bring attention to a problem and facilitate its recognition. However, as it has been discussed before, even if indicators or evidence can be used for 'enlightenment' about a problem, they are not sufficient to bring an

issue into the governmental agenda. The definition of the problem with regard to its causes and which are the affected populations also influence governmental priorities.²³

Despite the range of possible uses of research for policy-making, the gap between research and policy has been frequently flagged as a problem. Some factors that have been pointed to influence the relationship between research and policy are ideology and interests (Rocheffort and Cobb, 1994: 160) and scientific uncertainty²⁴ (Reich, 1983). A number of factors acting as barriers and as facilitators of the use of research evidence by policy makers have been identified in systematic reviews (Innvær, *et al.*, 2002; Oliver, *et al.*, 2014). Personal contact and collaboration between researchers and policy-makers, timely relevance and clear policy recommendations were frequently reported as facilitating evidence uptake. On the contrary, absence of personal contact, lack of timely research output, power and budget struggles, and poor access to good quality relevant research were frequently reported barriers. Specifically in Mexico, the existence of good relationships between researchers and policy makers, the quality of research, the concreteness and cost-effectiveness of research recommendations, and the presence of urgent health problems were identified as key factors that facilitate research uptake in health policy-making. On the other hand, particular agendas brought up by the media or interest groups like the private industry, along with the desire of policy makers to maintain their public image, have been described as important impediments for the research-health policy connect (Trostle, *et al.*, 1999). Interestingly, both the systematic reviews and the study in Mexico identify the collaboration and personal relations between researchers and policy makers among the most common factors that favour research uptake, an aspect that is explored in the present study.

Concerning the present study, I was interested to learn about research and researchers on AMR in Mexico and their relation with policy-makers, in order to bring further understanding on problem recognition, development of policy alternatives and AMR agenda placement in this country. These issues were explored in the interviews with researchers and health officials (as part of the problems and policies streams in the conceptual framework); however, this relationship was not the main objective of the study, and not specific framework was applied to it.

²³ An example provided by Oliver (2006: 198) is bioterrorism, which draws attention disproportionate to its epidemiological impact.

²⁴ Analysing a case of environmental contamination, Reich (1983) concludes that the uncertainties of epidemiological studies pose a dilemma for regulation and affect conflicting interests in society. This aspect may also be relevant when analysing AMR agenda-setting.

When generating political priority for health issues, not only domestic advocacy is relevant (including the role of policy entrepreneurs, researchers or the media, as was discussed before): transnational influence, both by shaping norms and providing resources, also play a key role (Shiffman, 2007). This aspect is particularly relevant as increasing globalisation is influencing the patterns of health and disease, calling for global solutions to shared health problems. This implies a new health policy environment, in which the role of international organisations (such as the WHO) and the global civil society is enhanced; new cross-border and inter-organisational relationships take increasing relevance (Walt, *et al.*, 2008: 309). Additionally, countries can learn from the positive or negative experience of others; this is known as 'policy transfer', the process by which political actors borrow policies developed in one setting to develop programmes and policies within another (also referred to as lesson-drawing or policy convergence) (Dolowitz and Marsh, 1996).

AMR is a perfect example of 'global health': besides resistant pathogens, antibiotics, and antibiotic use behaviours crossing borders, efforts to improve antibiotic use and contain resistance do intend to cross borders as well. Initiatives such as the WHO *Global Strategy for Containment of Antimicrobial Resistance* (WHO, 2001a) seek to influence health policy development at the national level.²⁵ In the present study, I was interested in understanding the role of international recommendations, and particularly the WHO Global Strategy, on the development of AMR in Mexico (in relation to the recognition and definition of AMR problems and the development of policy alternatives); this aspect was explored in the interviews. Additionally, interviews also explored knowledge of the case of AMR policy adopted in Chile. However, in the present study policy transfer was not analysed in-depth.

3.7 Study conceptual framework

The present study is an analysis of policy (or policy determination) examining policy dynamics (policy stability and change) in a longitudinal case study in Mexico, covering two administrative periods. Its overall aim is to explain the process of agenda-setting for the appropriate use of antibiotics and containment of antimicrobial resistance (AMR) in Mexico, and how that affected the adoption of related policies.

²⁵ Furthermore, regional initiatives also seek to promote AMR policies and national campaigns, such as the European Antibiotic Awareness Day, promoted by the European Centre for Disease Prevention and Control, (<http://ecdc.europa.eu/en/eaad/Pages/Home.aspx>). Other global AMR networks, conformed mostly by health professionals in both developed and developing countries are referred to in Chapter 1.

As it has been argued before on this chapter, policy change is complex social phenomena. In order to understand it, social inquiry implies abstracting aspects of the phenomena under study as a set of explanatory and dependant variables, which are specified by a given theory. Posteriorly, units to apply those variables are identified; and observations of those variables on the units are made (King, Gary and Keohane 2001:218). In the present study, the structural elements of Kingdon's MS theory provide the set of variables to be observed in the case of agenda setting for AMR in Mexico. I looked at the three streams of Kingdon MS -'problems', 'policies' 'politics'- and 'policy entrepreneurs' as independent variables to explain the success or failure of AMR agenda-setting (dependent variable). Furthermore, the study explores how agenda-setting affected the adoption of AMR policies.

The study uses Kingdon's MS theory of agenda-setting to guide the analysis, to answer the two main research sub-questions. MS theory was used to explain both when the issue of AMR was denied a position on the agenda (first period studied) and when the issue gained agenda status and a policy change occurred (second period studied).

The ideas or assumptions implicit in Kingdon's MS guided data collection and analysis. The key issues that were explored within each of Kingdon's MS structural elements are the following:

- 1) Problems stream
 - How did stakeholders in the governmental and non-governmental sectors identify and define the issue or problem of AMR?
 - How did the media frame the issue of AMR and the regulation of antibiotic sales? (second studied period)
- 2) Policy stream
 - How did stakeholders perceive policy alternatives for AMR (feasibility and acceptability)
 - Did WHO recommendations and national research on AMR aid stakeholders in recognizing AMR as a problem, or in devising policy solutions?
 - Did specific policy proposals were developed by policy communities?
- 3) Politics stream
 - What were the health policy priorities during each administration?
 - Which governmental institutional bodies had responsibilities in promoting the rational use of antibiotics?
 - How were interest groups involved in AMP policies?
- 4) Policy entrepreneurs
 - Were there policy entrepreneurs promoting AMR policy proposals? How did they push for their policy proposals?

Policy window opening and policy change

- Did a policy window opened to place AMR on the decision agenda?
- Did a policy addressing AMR was adopted?

Based on the structural elements of Kingdon's MS theory, I propose a conceptual framework to analyse the favouring and impeding factors affecting AMR agenda-setting in Mexico (Figure 3.1). Starting on the emphasis of the role of ideas in policymaking implicit in Kingdon's MS theory (Béland, 2015), I added some additional concepts. Within the 'problems' stream, I incorporated the concept of causal ideas, proposed by Deborah Stone) and media framing. Within the 'problems' and 'policies' streams, I consider the concepts of research uptake and policy transfer.

The present study mainly followed a deductive approach. Informed by Kingdon's theory, a number assumptions or presuppositions were put forward regarding the factors related to AMR agenda setting. These assumptions were confronted with data collection; conclusions were drawn about the case itself, and also regarding the helpfulness of Kingdon's theory to explain the case in question. The research design and methods used in this thesis are explained on the following chapter.

4. METHODS

As I explained in the previous chapter, this thesis is situated in a public policy analysis field, and is particularly oriented towards the analysis of a health policy process. It is concerned with the definition of a problem and the relationship of public policies to that problem. It is also concerned with the content of public health policies and the processes involved in their development, including what policy makers and other stakeholders do – and do not do, as well as with the context in which these processes occur. Thus, Ritchie (2003: 24) explains, the remit of research in public policies “like the policy process itself, is multifaceted and extensive”.

This chapter presents the methodological approach and the study design and methods used to address the research questions posed; the chapter also describes the role of Kingdon’s theory in the overall methodological framework for this study. First of all, the research paradigms in policy analysis and the relevance of qualitative methodology are discussed. Then, the case study design is described and its utilization for this study is justified. The chapter goes on to describe the qualitative data collection (documentary sources) and data generation methods (individual interviews) that were used, together with an account of the content and thematic analysis carried out. The last sections address the researcher’s position in this study, and the study’s ethical aspects.

4.1 Methodological approach

Policy analysis as a field of study is composed of a wide array of disciplines, theories and models; while public policies and problems are a common focus of social science, diverse disciplines can be involved, including political sciences, economics, psychology and sociology (Parsons, 1995: 29). Additionally, several qualitative and quantitative methods are commonly used when researching this complex phenomenon. Wildavsky (2007(1979): 15) argues that there is not a single definition of policy analysis; thus, its content “cannot be determined by disciplinary boundaries but by whatever appears appropriate to the circumstances of the time and the nature of the problem” In this sense, before considering the relevant methods used in the present study, it is useful to first discuss the theories or paradigms of knowledge –*epistemology*– related to the field of policy analysis, the *purpose* of the research (related to the kind research questions

involved and to the functions of the research product itself), as well as the *nature* of the phenomenon under study.

4.1.1 Research paradigms in policy analysis

The methodology that informs policy analysis is rooted and has traditionally drawn upon positivist assumptions about the nature of knowledge and scientific investigation (Hawkesworth, 1991; Parsons, 1995; Yanow, 2000). Assumptions regarding the existence of a 'reality' driven by laws of cause and effect which researchers can observe and measure, the hypothetic-deductive method of scientific analysis and the stress on empiricism and value-free inquiry of this epistemological tradition, have largely shaped the methods of policy inquiry¹ (Hawkesworth, 1991: 296). However, other theorists have criticized the underpinnings of positivist-informed policy analysis. The post-positivist critique challenges the validity of the 'fact/value dichotomy' (Hawkesworth, 1991) and the assumptions that science and scientific knowledge are detached from society and subjective views. While still assuming that there is a reality 'out there', the post-positivist perspective holds that it can only be known imperfectly: there is a multiplicity of causes and effects, and observers can be influenced by what they observe. And while still adhering to a deductive –hypothesis testing– rationale, more emphasis is placed on context. This paradigm of inquiry seeks objectivity, but as an inherently social phenomenon, it stresses the need to use triangulation across multiple fallible perspectives and embraces both quantitative and qualitative methods.

Another source of criticism to the positivist view of policy analysis comes from the constructivist approach to social problems. Exponents of this view argue that reality is socially constructed; related theories stress the need to analyse politics and policies as 'modes of discourse which structure reality' (Parsons, 1995: 70). An additional shift away from the positivist presuppositions in policy analysis comes from interpretative approaches that emphasise human behaviour: instead of focusing on the 'reality' of the world, they centre on people's interpretations of it (Green and Thorogood, 2004: 12). Interpretative policy analysis argues for the centrality of subjective meaning and local knowledge held by a variety of policy-relevant actors, including decision makers, implementers and those likely to be affected by the policy (Yanow, 2000). Rather than questioning policy costs and benefits or measuring performance, interpretative policy

¹ The early growth of policy sciences was focused on how decisions come to be made, and particularly on how decision-making could be improved. The positivist philosophy is clearly reflected in the prospective uses of policy analysis (*analysis for policy*) based on a quantitative comparison of policy costs and benefits in order to evaluate alternative courses of action and make recommendations.

analysis questions policy *meanings*. This approach builds from the premise that policy implications are not transparent and easily evident, and that the assumptions of policy makers and constituencies should be understood. In order to ascertain these perspectives, the ‘policy artefacts’ (consisting of symbolic language, objects, and actions) have to be identified to determine how a policy, is framed or understood (Yanow, 2000). Interpretative policy analysis draws deeply on qualitative methods. However, differently from a deductive or an inductive rationale, it does not have a single starting point; it begins with a ‘puzzle’, typically arising from the juxtaposition of expectations (deriving from *a priori* knowledge) with field observations and experiences (Yanow, 2000: 143).

From this account, it is clear that there are many schools of thought in public policy analysis. Parsons² explains that no one theory or model is enough to explain the complex processes of policy activity; therefore, researchers “must accept the pluralistic nature of the inquiry, both in terms of the interdisciplinary quality of investigation and the need for a hermeneutic tolerance of diversity” (1995: 73). The present study draws from post-positivist and interpretative approaches to policy analysis.³ It includes a diversity of research techniques and social actors’ perspectives, and pays particular attention to the framing of problems and policies –an important dimension of agenda-setting research, as was described in the preceding chapter.

Despite the fact that the present study is informed by Kingdon’s ideas, following what is customary in qualitative research, no formal hypotheses were formulated to be tested through data collection. As Lewis (2003: 49) explains, a fixed theoretical position in qualitative research is unhelpful; researchers need to remain open to emergent concepts and themes. Following a deductive approach, the present study used Kingdon’s structural elements as intervening variables to analyse the determinants of AMR agenda setting and policy change in Mexico. But at the same time, it was open to unexpected clues that could indicate the presence of variables not considered initially; furthermore, this study reflects on the application of Kingdon’s theory on this particular case.

² For some authors, given that positivist, post-positivist and interpretative research paradigms are ‘incommensurable’, researchers should decide upon and make explicit their epistemological orientation. However, Parsons alludes to the complexity of inquiry in public policies to draw both on post-positivist and constructionist conceptions of policy analysis (1995: 73).

³ Given that post-positivism has been regarded as emphasising a deductive approach and interpretative systems as emphasising an inductive approach, drawing on both approaches may seem contradictory. However, both deduction and induction can be involved at different stages of the qualitative research (Snape and Spencer, 2003).

4.1.2 Methodology

With regard to the chosen methodological approach, a distinction is usually made between two kinds of research questions that a study seeks to answer with regard to its purpose. While questions about 'how many' or 'how much' are related to quantitative research, qualitative studies seek to answer questions about the 'what', 'how' or 'why' of a determined phenomenon (Green and Thorogood, 2004: 5). Accordingly, the main methodological approach for this investigation is qualitative research; more than quantify a phenomenon, this study aims to explore and explain it; it aspires to answer queries related to *what* are the policies, *who* are the actors, *how* does a policy process occur, and *why* do issues reach or not reach the policy agenda.

A qualitative approach is chosen when the major purpose of the research is related to understanding context or processes (Ritchie, 2003: 32); both are focal points of the present study. As such, a qualitative approach allows us to focus on naturally occurring events in natural settings and to provide 'thick descriptions' nested in a real context, with a strong potential for revealing complexity (Miles and Huberman, 1994: 10). Moreover, in the present study, understanding the perceptions and actions of different social actors regarding AMR is of utmost relevance; consequently, a qualitative approach for this study is extremely useful because it emphasizes people's 'lived experiences' and the meaning they attach to their social world (Bowling, 2002: 352). In this sense, I have chosen a qualitative approach due to the flexibility it offers to explore and connect the broad macro social context in which policy-making takes place, with the insights that different stakeholders have regarding this process (Bronfman, *et al.*, 2003: 13-16).

Another determinant in the use of qualitative research is related to the nature of the phenomenon being studied (Ritchie, 2003: 33), especially when it:

- a) Is 'ill-defined' or not well understood: as is the case of AMR policies as newly occurring social phenomena, together with the perceptions and roles of diverse social actors
- b) Is complex: involving technical matters, or exploring cognitive processes, such as policy decisions on AMR in the present study; and
- c) When the data is collected from individuals that have highly specialised roles in society, as is the case of governmental health officials and researchers in the present study.

Finally, the flexibility of qualitative research – which allows for the identification of informants, data collection and analysis to be developed as iterative processes and each feeding into the others – is necessary in policy analysis, where the issues are complex and involve a wide range of actors (Varvasovszky and Brugha, 2000: 341).

The uses and roles of the diverse research methods are related to the research questions that arise in any specific social study. Although a distinction is usually made between theoretical research (aiming to generate new theories or testing existing ones) and applied research (aiming to contribute directly to the understanding or resolution of a contemporary issue), in social sciences research this distinction might not be useful or even valid (Ritchie, 2003: 24-25). Even if a social study is directed towards gaining insight into an existing problem, the collection and interpretation of evidence is based on certain theoretical assumptions, and the study can contribute to theory by providing greater understanding of the social world (Ritchie, 2003: 25). As such, social inquiry research is not absolutely theoretical or applied.

When considering the purpose of this study, it can be argued that it is closer to applied research, in the sense that it aims to contribute to the understanding of a contemporary issue -development of AMR policies at the national level. However, at the same time, this study borrows from an existing theoretical framework (Kingdon's MS theory of agenda-setting) to guide data collection and interpretation within a specific country case. Furthermore, this study goes on reflecting on the applicability of Kingdon's theory under the specific peculiarities of the Mexican political context, and its usefulness in explaining agenda-setting for AMR at the national level.

Finally, in order to understand the particular role of qualitative methods it is also convenient to consider the broader *functions* of social investigations (Ritchie, 2003). These can be classified as contextual (aiming to describe or explore *what* exists in the social worlds); explanatory (concerned with *how* and *why* phenomena occur); evaluative (aiming to elucidate *how* programmes or initiatives operate); and generative (concerned with generating new ideas, such as theories, strategies or actions). An initial part of this thesis plays a contextual function identifying which policies related to AMR exist or not, and identifying relevant actors on AMR policy. However, the main subject of this thesis –the determinants for agenda-setting for AMR– is closer to an explanatory function, as it aims to examine the reasons for which AMR reach the agenda and AMR policies are enacted. Although there is debate as to whether social inquiry has the potential to truly detect causal relations or if it is merely speculative,

others argue that even so, qualitative research does have a role in identifying relevant influential factors and generating explanatory hypotheses (Ritchie, 2003: 28). These hypotheses can be tested on subsequent studies on AMR policymaking. Moreover, based on the identified influential factors in AMR agenda-setting, the present study draws lessons for Mexico, as well as for other countries, seeking to develop AMR policies.

In conclusion, the use of a qualitative approach for this study is derived from the orientation of the research questions posed, which aim to explore in depth and explain a phenomenon whose nature is highly complex, occurring in a real context, and in which an understanding of the perspectives and lived experiences of diverse social actors is of much relevance. As I mentioned before, policy analysis can make use of diverse theories, frameworks, research designs and data collection/ generation methods (Parsons, 1995; Walt, *et al.*, 2008). In the following section I describe the research design of the present study, explaining the type of study conducted (a case study), and the methods (document analysis and individual interviews) for producing and analysing data.

4.2 Research design: Case study

The case study represents a common design in public policy analysis and in health policy analysis (Collier, 1993; Walt, *et al.*, 2008; Yin, 2003) and has been used in agenda- setting studies (Kingdon, 1995). There is a fair amount of consensus in the literature pointing to the fact that case studies enable an intensive study of a complex social phenomenon in its natural context, aiming to answer broad questions about social processes and using multiple data collection methods. Nevertheless, there are multiple and conflicting definitions of what a case study is. While for some authors it is narrowly defined in relation to sample selection (involving a small number of naturally occurring phenomena), for other authors case studies represent a unique research design or research strategy (Green and Thorogood, 2004; Yin, 2003). The second understanding is used for the present study. A case study was chosen as an adequate strategy for the present investigation, based mainly on the scope or attributes that Robert Yin (2003) and Peter Swanborn (2010) describe for case studies.⁴

⁴ Case studies can be pursued from positivist, post-positivist, constructivist or interpretative epistemological perspectives. The methodology proposed by these two authors (particularly Yin, who explicitly considers a preliminary theory prior to data collection, as well as the use of qualitative and quantitative research methods) has been identified by other authors as being predominantly deductive or testing oriented, and as such is based on post-positivist paradigms.

For Yin (2003: 13), a case study “is an empirical inquiry that investigates a contemporary phenomenon within its real life context, especially when the boundaries between the phenomenon and context are not clearly evident”. This deliberate emphasis on *context*⁵ (which differentiates this research strategy from others, such as a survey) is very relevant in policy analysis. As was mentioned before, public policies cannot be understood without understanding the social, economic, and political contexts and their interaction with policy contents, actors and processes (Walt and Gilson, 1994). According to Yin, the interaction between the phenomenon and the context can be used to refine a hypothesis for further scholarly inquiry (as in exploratory case studies), or to understand the role of context affecting causal relationships between the phenomena under study (as in explanatory case studies). In the present study, the contemporary phenomenon or ‘case’ is the *agenda-setting process for AMR policies in Mexico*, and the context is provided by health policy-making in Mexico..

According to Robert Yin (2003: 14), because in case studies phenomenon and context are difficult to distinguish, there are many variables of interest; consequently, case studies rely on multiple sources of evidence that need to converge in a triangulating fashion and benefit from theoretical propositions, either to develop or to test theory. Theory is used at the onset of the study to guide (‘operationalize’) research design and data collection; but it is also the ‘vehicle’ for generalizing the case study results⁶ (2003: 33) through the process of analytic generalization. As was mentioned earlier in this chapter, the analysis of public policies requires multiple sources of evidence and is composed by a wide array of theories in order to grasp the different aspects in the complexity of policy-making. As such, a case study design was considered appropriate for the present study because it pays special attention to contextual conditions as well as to the experience of the actors, and considers the integration of multiple research sources and methods. Furthermore, this research strategy stresses the centrality of

They differ from case studies oriented towards providing a rich description of social phenomena, intending to capture its complexity and thus generating knowledge of the particular within the interpretative or social constructivist viewpoints; one of these qualitative case-study approaches is the one proposed by Stake (1995). According to this author, the researcher interacts with the case; the case is developed in a relationship between researchers and informants. Contrastingly, Yin’s post-positivist approach involves developing a defined protocol and pays special attention to validity and potential bias aspects.

⁵ Similarly Miles and Huberman (1994) define a ‘case’ as a phenomenon of some sort occurring in a bounded context. This context can be temporally or spatially defined, or refer to an episode or a process.

⁶ Yin (2003: 29) explains that rather than a formal or ‘grand’ theory, what is needed are theoretical propositions that are enough to provide a “blueprint”, a hypothetical story about why acts, events, thoughts, etc. occur.

theory (here, Kingdon's MS theory) to shape research questions, the methodological framework, and for discussing results.

Similar to Robert Yin, Peter Swanborn identifies case studies with intensive approach (contrary to an extensive approach such as a survey), aiming to answer the *whats*, *whys*, and *hows* of the social world. Swanborn (2010: 13) defines case study as the study of *social phenomena* or process that takes place within the boundaries of a social system (i.e. the case, such as individuals, groups, organizations, communities and countries), that is conducted in the case's natural context and based on several data sources, particularly document analysis, interviews, and observations. Differently from Yin, for Swanborn, this type of empirical study begins with an initial broad question which can later evolve into more specific research questions guided by empirical findings. Although case studies use available theories from the beginning, for this author the research process "abstains from pre-fixed procedures of data collection and data analysis"; flexibility is needed for findings to be able to inform subsequent research steps (2010: 22). Finally, while Yin only considers the study of contemporary phenomena, Swanborn also contemplates undertaking retrospective case studies.

Swanborn emphasises two aspects of case studies relevant to the present study: a) the relevance of processes; and b) its focus on a general phenomenon that manifested in one or few cases. With regard to the first concept, he underscores the relevance of case study strategy for 'process-tracing': the description and explanation of *social processes* that unfold between people, focusing on their values, perceptions, resources and decisions; or processes that unfold within and between social institutions. The descriptions, interpretations and explanations that diverse categories of participants in the social system attach to the social phenomenon under study, are a central focus of case studies according to this author. As such, the case study research strategy is relevant to the present study which aims to understand a *policy process* –i.e. agenda-setting for AMR– taking into account the perceptions and explanations of different social actors and the role of institutions. With regard to the second concept that is relevant to the present study, Swanborn also emphasises that in case studies one should keep in mind that the researcher is interested in the general phenomenon more than in the case or 'instance', in which the phenomenon manifests itself (2010: 8). Accordingly, other expressions that the author uses to define case studies are "the study of a phenomenon or a process as it develops within one case" (2010: 9) or "the study of a social phenomenon in one, or only a few, of its manifestations" (2010: 22).

Depending on the phenomenon of interest, a case may be located at the micro-level (persons), at the meso-level (organizations, institutions), or at the macro-level (communities, nation-states). Swanborn explains that, at the *macro-level*, the predominant tradition is that of case studies in political science and economy (2010: 6), and is the level of analysis of the present study. In sum, in the present investigation, the wider phenomenon under study is the process of agenda-setting for national AMR policies; this phenomenon is studied as it develops or manifest within one instance, the case of Mexico,⁷

As occurs with the multiple definitions of case study, there are diverse classifications which group case studies in accordance with their scope, purpose and design; some of these typologies are important to situate the present study, as I explain below. According to Yin (2003), a primary distinction occurs between single and multiple-case designs. Both types of case studies can be generalised to theory; however multiple-case design has been regarded as being more robust. Yin advises that, given the analytic benefits, when choice and resources are available, multiple-case designs should be preferred. Nevertheless, there are several rationales for adopting a single-case study design, like the one used in the present study. These include a critical case to test a theory, an extreme or unique case of a phenomenon, and when a *longitudinal* case is planned. This last rationale was relevant for the research design of the present study, which covers a 12-year period divided into two governmental administrations. Yin (2003: 42) explains that, by studying the same single case at two or more different points in time, the theory of interest allows us to see how certain conditions related to the social phenomenon under study change over time. This is further explained in section 4.3. According to Sabatier (2007), the long term and longitudinal perspective is required to understand policy dynamics; this is, how agenda-setting and policy adoption changed over time change (Sabatier, 2007).

In summary, the rationale for undertaking a case study has to do with the opportunity that this research strategy offers to study a complex phenomenon within its own context, from a contemporaneous and longitudinal perspective, using multiple methods and data sources, and incorporating theoretical propositions but yet with enough flexibility for data collection. All these characteristics are relevant for analysing public policy processes, the focus of the present study.

⁷ Gary Thomas (2011) also emphasizes the distinction between two parts of case studies: the subject of the study, which is the case itself; and the object, which is the analytical frame or theory through which the subject is viewed and which the subject illuminates and explicates. For this author, case studies can be classified by their purposes and the adopted approaches, distinguishing between theory-centred and illustrative studies; accordingly, the present study could be classified as theory-oriented

4.2.1 Case selection

Case studies have been a common research design for health policy analyses of low and middle income countries; however, there is room for improvement in the way many of these studies have been conducted or reported (Gilson and Raphaely, 2008). Walt *et al.* (2008) underline that the value or significance of case studies for health policy analysis increases with a careful case selection and when the purpose of the case study in terms of its contribution to knowledge is clarified. The following two questions (Walt, *et al.*, 2008) are helpful to clarify the scope of a case study and its contribution to knowledge. First: *What is it a case of?* As has been explained above, the present study of AMR agenda-setting in Mexico is a case of AMR agenda setting at the national level. Second: *Why is this case a useful one to study?* The choice of Mexico to develop the case study was based on my previous knowledge of this country's health policies and systems. Furthermore, because Mexico transited from a long period of policy stability and inaction on AMR, to a period of AMR agenda placement and policy action, this longitudinal study comprising two administrations allowed for better comprehension of AMR policy dynamics within one country, identifying, enabling and counteracting factors related to AMR agenda-setting and policy change over time.⁸

4.2.2 Theoretical generalisation

While case studies primarily allow us to reach conclusions about the unit of analysis, they can also illustrate a broader class of phenomena (Yin, 2003). In this sense, the present case study sheds light on a wider phenomenon –the process of agenda-setting for AMR– by analysing a single case –that of Mexico. Conclusions from the present study are discussed for this particular case, but also beyond the case itself.

However, a common critique to case-study research is that it is not suitable for generalisation. With this regard, Yin (2003: 10) explains that given that cases are not 'samples', "case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes". That is, during theoretical or analytical generalisation, the researcher attempts to link findings from a particular case to a theory of the phenomenon being studied. This theory, in turn, may have wider applicability than the particular studied case. There are two steps involved in the process of analytic generalisation, according to Yin (2010: 21). The first one involves a

⁸ The longitudinal design of the present study comprising two periods is particularly relevant for *explanatory* case studies, as they allow to draw hypothesis on the *causal* factors related to agenda placement (see section 4.3).

'conceptual claim' by which researchers state how their case study findings bear upon a pertinent theory or theoretical construct. These theories (which could be a series of hypotheses or even one hypothesis or proposition) are informed by the existing literature, i.e. are posed at a conceptual level, rather than that of the particular case. The second step involves applying the same theory, drawn hypothesis, or propositions to implicate other situations where similar events might occur. In this sense, the present case study allows to draw hypothesis or propositions on the factors influencing the process of AMR agenda-setting at the national level in Mexico, which can be used in future studies on AMR agenda setting in other countries.

With regard to the present study, it draws from public policy theories in agenda-setting, (Kingdon's MS), Findings from this case study on AMR policies in Mexico are linked to theory on agenda-setting (focusing on policy problems, alternatives, political context and entrepreneurs) to explain difficulties and opportunities for AMR agenda-setting. Findings from this case are discussed in the light of other cases from the literature, and can be applied to illuminate the wider social phenomenon of AMR agenda-setting and policy action at the national level.

The generalizability of findings is facilitated by multiple-case study designs (Yin, 2003) and by the strategic selection of cases (Flyvbjerg, 2006). In fact, several authors underline the relevance of conducting comparative policy analysis studies (including similar, but also contrasting cases) in order to deepen the description and to facilitate hypothesis testing and theory building (Collier, 1993). In health policy analysis, cross-country comparative studies aid to unscramble common from context-specific factors that affect the health policy-making process (Walt, *et al.*, 2008). In this sense, the one-country, single case study design presented here might pose a limitation. Nevertheless, Yin stresses that, for single case studies, generalizability is increased when they are supported by findings from other case studies, whether they are reported in the literature or are conducted after the first study (Yin, 2010: 22). Accordingly, findings on process of AMR agenda-setting that derived from the present longitudinal case study in Mexico are discussed together with findings from other cases reported in the literature. Furthermore, the single case-study presented here still makes a contribution to knowledge on AMR policies by offering a first case-study on the topic that can be used for future studies in other country contexts. Finally, Flyvbjerg describes that a common misunderstanding about case-study research is that general, theoretical (context-independent) knowledge is more valuable than concrete, practical (context-dependent) knowledge. With this regard, he argues that concrete, context-dependent knowledge is valuable in itself and above the "vain search for predictive theories and universals"

(2006: 224). In this sense, the present study makes a contribution to knowledge by providing an in-depth account of the context-specific problems, policies and politics related to AMR in Mexico.

4.3 The comparative approach in social sciences and policy research

Comparison is considered as a fundamental tool in political and other social sciences: it strengthens the power of description, contributing to hypothesis testing, discovery of new hypotheses and to theory building (Collier, 1993: 105). Comparison can also contribute to inferences about causality (King, Keohane and Verba 2001). Within the disciplines of political science and policy analysis, the decision of analysing only a few cases derives from the complexity of the phenomenon under study (which requires a resource-intensive research), as well as the uniqueness of instances of the phenomenon under consideration (Collier, 1993: 105). In social sciences, the label '*comparative method*' refers to "the methodological issues that arise in the systematic analysis of a small number of cases, or a 'small N'" (Collier, 1993: 105).

According to the classic author Arend Lijphart (1971), analysing only a few cases distances these studies from statistical (or large N), experimental, and case-study methods⁹, and implies the problem of having more rival explanations to assess than cases to observe; these characteristics determine the specificity of the comparative method. Aiming to solve these problems, Lijphart proposes to increase the number of cases (or units of observation). The number of cases can be increased by selecting new cases across space or across *time*, or both, as it is describe below (Lijphart 1971; King, Keohane and Verba 2001).

In posterior work, Lijphart (1975) emphasised in the importance of selecting a small number of *comparable* cases. In this sense, the comparative method is now understood now as "a strategy for conducting research of naturally occurring phenomena in a way that controls for potential confounding variables through careful case selection [...]" (Levy, 2008:10). According to Lijphart, "comparable cases are similar in a large number of important characteristics but dissimilar with regard to the variables between which a relationship is hypothesized" (1975:159). Comparable case strategies involve inter-case comparisons, and intra-case comparisons, (including longitudinal comparisons) (Levy, 2008). In longitudinal analysis, the different time

⁹ Lijphart considers case-studies only as N=1 studies, a concept that diverges from Robert Yin (discussed on the preceding section), who considers both single- and multiple-case study designs.

periods under analysis (temporal units) are treated in the same way as spatial units (Bartolini 1993: 146). A longitudinal analysis of a single country has the advantage that a broad range of country-specific variables is held constant, which allows to better focus explanatory and explained variables (Lijphart, 1975). For the present study, this was the comparative approach used: two temporal units (corresponding to two presidential administrations) were studied and compared within the single-case longitudinal case study (AMR agenda setting in Mexico). This approach is further explained later on this section.

4.3.1 The comparative approach in public policy and health policy analysis

The comparative approach in political sciences research aims at explanations of political phenomena by comparing them across systems, through time, or cross-nationally (Pennings, Keman and Kleinnijenhuis 2006:20). However, in contrast to the ample interest in the comparative approach in reference to cross-spatial variance research, less attention has been dedicated to its application to cross-time variance (Bartolini 1993).

A large body of research in public policy analysis has focused on differences and similarities in policy issues as well as the role of the comparative approach both within and between social units¹⁰. Within the field of health policy, comparative research has tended to focus on policy comparison and policy learning at the national or subnational level. This includes cross-national analysis on health policy and policy making (Immergut 1992; Marmor et al, 2005; Marmor and Wendt, 2012; Oliver et al, 2005). These comparative studies analyse political processes that shape policy-making and policy outputs; i.e., seek to explore and explain *policy variation* (John 2002). Within these studies, understanding the context-specific factors that affect policymaking in each setting is central.

Another set of literature on policy analysis aims to explain *policy dynamics*, this is, policy stability and change along the time. Here understanding differences on the influence of social, economic and political processes along the time is central (John 2002: 14). Within the field of health policy, examples of policy dynamics along the time are provided by Sabatier and Jenkins Smith (1993), analysing changes in the U.S. pollution control policies from one decade to the following one; and Uhlmann and Braun (2009) analysing policy stability and change in Swiss health care reforms.

¹⁰ Journal of Comparative Policy Analysis: Research and Practice. At: <http://www.tandfonline.com/action/journalInformation?show=aimsScope&journalCode=fcpa20#.VoXBsuk5CM8>.

The present study has its focus in policy dynamics; it uses a comparative approach, as it is explained below, analysing policy stability and change in two time-periods in Mexico. These two time periods relate to two governmental administrations; while many structural variables kept the same (e.g. economy, cultural, and bureaucracy related factors), other variables were different. Therefore, comparing these periods is useful to draw hypothesis on the factors that could explain the failure of AMR agenda-setting in one period, and why progress was made in the following period.

4.3.2 The comparative approach used in the present thesis.

The present study is a case study of AMR agenda-setting in Mexico. According to Yin (2003), one of the reasons for selecting a single-case study (rather than a multiple-case design) is that it is optimal for a *longitudinal* study, i.e., one that involves studying and comparing the same case at two or more different points in time. In a longitudinal case-study design, the theory of interest (here, Kingdon's theory) would shed light on how and why certain conditions and their underlying processes (here, AMR agenda-setting) change over time. Selected time intervals would reflect periods in which changes are expected to reveal themselves (here, two presidential administrations in Mexico).

However, the single-observation design of single-case studies has been regarded as a limitation for generalization and to assess causal theory (Lijphart 1971, Yin 2003). Aiming to overcome this limitation, King, Keohane and Verba (2001) explain that it is possible –and desirable– to increase the number of observations from a single-case study in order to avoid the “Fundamental Problem of Causal Inference” in $N=1$ research problems: “[...] what may appear to be a single-case study [...] may contain many potential observations, at different levels of analysis” (2001:208).

King, Keohane and Verba (2001) explain that a qualitative single-observation design can be reformulated into one with more observations to be compared, in order to better sustain causal inference. One way of achieving this is by observing more units; this implies aiming to apply the same (or most of the) explanatory and dependent variables to new instances in which to observe the implications of a theory. The main two ways to obtain more observable implications are 1) via variations *across space* (for example, seeking two or more similar units- i.e countries, cities, etc.); and 2) via *variations across time* (for example, one country, two different time periods) (2001:218).

With regard with this second approach, the authors point out that it is possible to compare a social process in the same country in two different time periods, as done in this thesis. Period one of this thesis (presidential administration when AMR was not included in the agenda, and no AMR policy occurred) and period two (following

presidential administration, when AMR gained agenda status and a policy occurred) were compared to assess what changes occurred on the explanatory variables (problem recognition and definition, development of policy alternatives, political context, and activity of policy entrepreneurs).

This approach (reformulating a single case study into one with more observations, via analysing variations of a social process across time) corresponds to what Bartolini (1993: 147-153) describes as *diachronic* or longitudinal comparative study, involving two different time periods determined by the data itself. This approach also correlates to the 'focused comparison' research design proposed by Ragin (1991), in which the inclusion of cases, or units of observation, derives directly from the research question. With this regard, Ragin (1991) explains that the researcher might focus on the outcome of the dependent variable, choosing contrasting cases in order to better identify the independent and intervening variables: "[O]ne might vary the outcome, choosing cases of both successes and failures in order to identify the conditions and variables that seem to account for differences in outcomes" (1991:79).

By using this approach in the thesis, it was possible –within a single (conventionally labelled) case-study– to observe two separate instances of AMR agenda setting in Mexico, applying Kingdon's theory. In this way, the range of variation of the explanatory variables as well as the dependent variable was extended, providing additional leverage over causal inference (King, Keohane and Verba 2001: 218-21).

One limitation of this diachronic comparative approach is the independence between the two observations across time, given the influence of events of an earlier time period on events of later time periods (Bartolini 1993; Collier 1993:117). However, according to King, Keohane and Verba (2001:222), unless the dependence is *perfect* (there are only predictable factors involved), "certain dependence between observations does not disqualify the observations as independent tests of a theory". In the present study, dependence between the two periods is not perfect, as it considers: changes in the administration, which often bring along changes in the governmental priorities and governmental structures; as well as external factors that affect policymaking (in this study, for example, the influenza epidemic, and policy entrepreneur activity).

In this sense, even if comparing two time periods within the single-case study (AMR agenda-setting in Mexico) does not allow causal inference, it can allow one to draw reasonable and plausible hypothesis (or testable propositions) about AMR policy determination and change in Mexico.

4.4 Selection of data collection and generation methods

Policy analysis and case study research rely on multiple sources of evidence and multiple data collection methods. The use of multiple sources of evidence allows one to address a broader range of aspects related to the case (such as historical and attitudinal issues), but above all it allows for triangulation, or the convergence of lines of inquiry aiming to corroborate a fact or phenomenon (Yin, 2003: 96).

There were two main sources of data for this thesis: documents (governmental documents and printed media) and interviews with stakeholders from the governmental and non-governmental sectors. Subsequently, document analysis, thematic analysis of interviews with key social actors, and media content analysis were undertaken. These data collection and analysis methods are commonly used when analysing agenda-setting for public policies, and in case study research strategies (Baumgartner and Jones, 1993; Kingdon, 1995; Swanborn, 2010; Yin, 2003).

Analysis of governmental printed and electronic material (complemented by the literature review described in chapter 2) was used to analyse the content of health policies in Mexico with regard to AMR. Furthermore, document and literature reviews aided in addressing the research questions (i.e. factors related to agenda-setting) by providing a broad picture of the health policy context in Mexico, and by allowing me to identify both 'visible' and 'hidden' actors involved in medicines (and AMR) policies in the country, as well as potential interviewees.

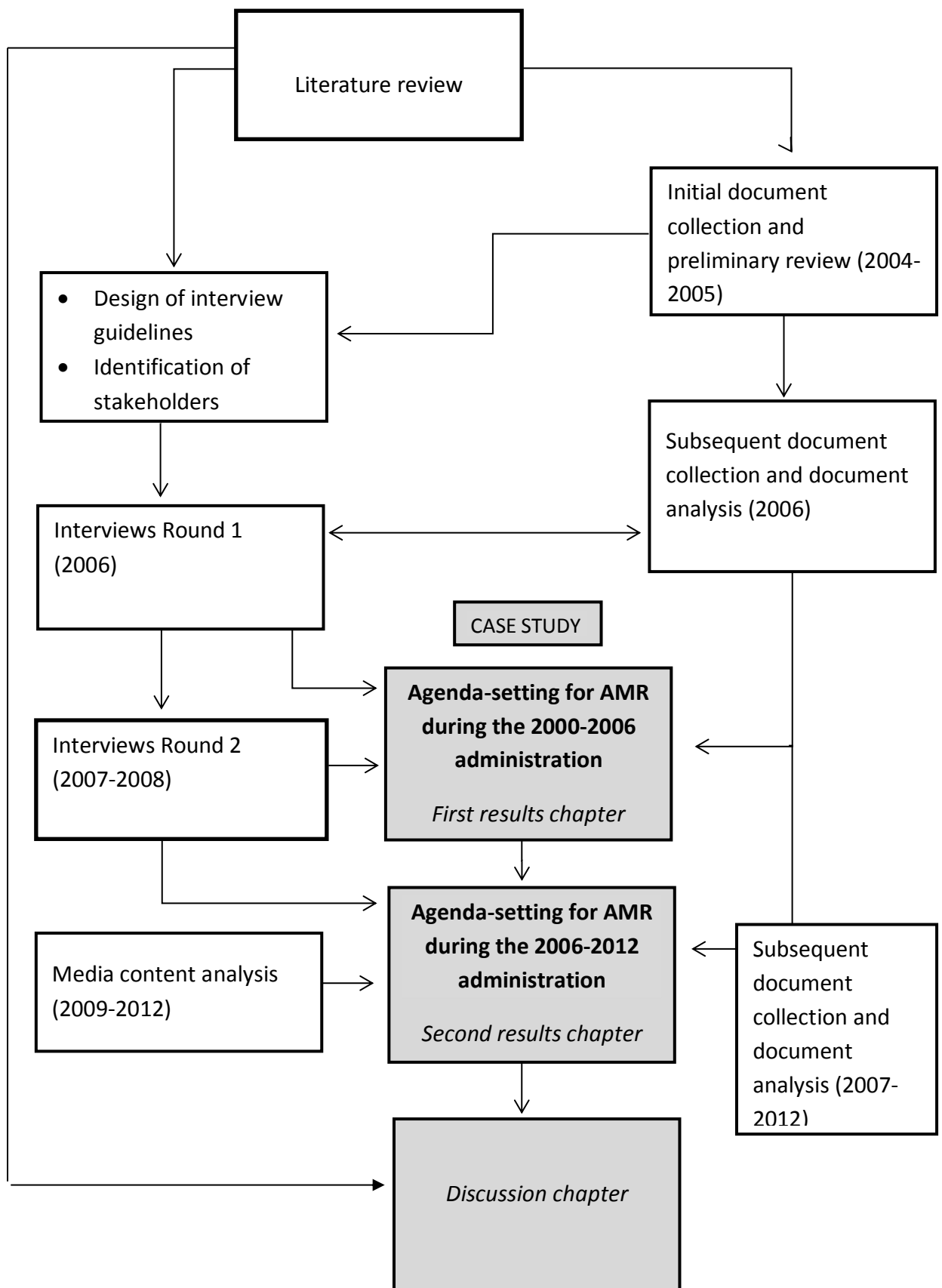
Semi-structured interviews were used to address the two research questions –factors related to agenda-setting during the 2000-2006 and 2006-2012 administrations, although most of them were used to analyse the first period. The interviews explored main medicine-related priorities in each interviewee organization, their perception regarding the issues of inadequate use of medicines and AMR and its possible solutions, as well as their participation (if any) in medicine policies in the country.

Finally, media content analysis was used to analyse AMR agenda-setting during the second studied period, the 2006-2012 administration, addressing the second research question. Media content analysis was chosen as a method to gain insight into the political context and on the participation of diverse social actors during the policy formation process (regulation of antibiotic sales) given the logistical complications to

conduct interviews during this period. Furthermore, media analysis allowed me to understand how problems and solutions regarding AMR were publicly discussed.

The relation between the objectives of the study, the posed research questions, as well as the conceptual framework and methods used is summarized in Appendix 2. Figure 4.1 illustrates the integration of the different study components in the case study, over time. Data collection and analysis pertaining each of these methods are described in the following section.

Figure 4.1 Integration of study components



4.5 Document analysis

Document analysis refers to the study of existing documents or written sources, such as newspapers, governmental reports, and others. Analysis can be pursued either to understand their substantive content or to illuminate other meanings, such as those revealed by their style and coverage (Ritchie, 2003: 35). The present study mainly used the first level of analysis, aiming to understand substantive content of health policy documents in relation to AMR, as well as to understand the health policy context (such as priorities stated by the Ministry of Health and the regulatory framework for medicines) and the actors involved in medicine-related policies. The collection and analysis of governmental documents is described below; the collection and analysis of printed media is described separately (section 4.6 media content analysis).

4.5.1 Data collection

Governmental documents were collected in three different moments (see Figure 4.1 above). Initially, a first set of relevant documents was identified following the literature review and a consultation with experts in health systems and policies at the National Institute of Public Health (INSP) in Mexico. These documents pertained to the following two groups:

- 1) Legislative and regulatory documents (health laws, regulations, decrees, and 'norms' or standards).
- 2) Ministry of Health (MOH) plans, programmes and policies. Proceedings of the National Health Council.

An initial analysis of the first set of documents (undertaken between 2004 and 2005) allowed me to identify which ones were relevant for further analysis with regard to AMR policies, and also helped me identify key stakeholders to conduct interviews, as well as relevant interview topics.

A second moment of document collection and analysis occurred concomitantly with the first round of interviews (during 2006). Some of the interviewees pointed to additional relevant documents, which were also included in the document analysis as part of the first studied period (2000-2006 administration). Additionally, other types of documents were also collected: these were organisational documents and 'grey literature', mainly on-line documents related to each of the identified stakeholders' organizations (governmental and non-governmental), such as internal regulations, work plans, programme reports, etc. These documents were reviewed mainly to provide

'background' information, aiming to understand the stakeholders' affiliation and role facing AMR policies in preparation for interviews –as is later explained– but were not included in the document analysis.

The third moment of document collection occurred after the change of administration. Relevant plans, programmes and policies launched by the MOH during the 2006-2012 administration were included in the document analysis as part of the second studied period in this study. The documents included in the document analysis are described in table 4.1.

4.5.2 Data analysis

The orientation of the document analysis was content analysis: the primary focus was on the substantive meaning of the data, and not on the language or structure of the text (as occurs in discourse or narrative analysis). In content analysis, themes are identified and attention is paid to the way the theme is treated or presented, and the frequency of its occurrence (Spencer, *et al.*, 2003: 200). Furthermore, the content of documents is linked to their context (such as the characteristics of those who produced them). For the present study, diverse analyses were conducted:

- 1- Current legislation and regulation were thoroughly reviewed in order to assess if and how the regulatory framework addressed the issues of AMR and the rational use of medicines. Similarly, organizational documents from the Ministry of Health (MOH) pertaining to different departments were reviewed in order to assess if and how AMR and the rational use of medicines were within their field of competence, i.e. if these issues were within their responsibility or area of jurisdiction. As all these documents were publicly available in electronic formats, first the 'search' tool was used to identify the following terms (in Spanish): antibiotics, antimicrobials, resistance, medicines, prescribe/prescription, dispensing, pharmacy and rational use. Sections of the documents in which these terms were identified were analysed in order to assess if they explicitly referenced elements of AMR and recommended strategies for the rational use of medicines. These elements are listed in Box 2.1 and 2.2, which includes international recommendations on strategies to promote the rational use of antibiotics and to contain antimicrobial resistance.

Table 4.1 Governmental documents included in the document analysis of policies on antibiotic misuse and resistance

First period of the study 2000-2006 administration	Second period of the study 2006-2012 administration
<ul style="list-style-type: none"> ▪ General Health Law (GHL) (<i>Ley General de Salud</i>) and its reforms ▪ Regulation of Medical Supplies (<i>Reglamento de Insumos para la Salud</i>) ▪ Internal Regulation of the Essential Medicines List Committee (<i>Reglamento Interior de la Comisión Interinstitucional del Cuadro Básico de Insumos del Sector Salud</i>) ▪ Internal regulation and action programme of the Federal Commission for Protection against Health Risks (<i>Programa de acción COFEPRIS</i>) ▪ Catalogue of Mexican Official Standards , MOH (<i>Normas Oficiales Mexicanas de la Secretaría de Salud</i>) 	
<ul style="list-style-type: none"> ▪ National Health Programme NHP, 2001-2006 and follow-up documents (<i>Programa Nacional de Salud; Metas del Programa Nacional de Salud; Estrategia para la mejora en el abasto de medicamentos</i>) ▪ Health Quality Crusade Programme, 2001-2006 (<i>Programa de Acción Cruzada nacional por la calidad de los servicios de salud</i>) ▪ Medicines Policy, Health Protection System (<i>Seguro Popular</i>), 2006 (<i>Política de Medicamentos del Sistema de Protección Social en Salud</i>) ▪ Pharmacies Regulation, 2005 (<i>Suplemento para establecimientos dedicados a la venta y suministro de medicamentos y otros insumos para la salud, FEUM</i>) ▪ National Pharmaceutical Policy NPP, 2004 and 2005 drafts (<i>Hacia una Política Farmacéutica Integral para México</i>) ▪ Proceedings of the National Health Council (<i>Consejo Nacional de Salud</i>). ▪ Archives of the Health Commission of the Legislature 	<ul style="list-style-type: none"> ▪ National Health Programme NHP, 2007-2012 (<i>Programa Nacional de Salud</i>) ▪ Specific action plan to improve access to medicines, 2007-2012 (<i>Programa de Acción Específico, 2007-2012. Mejora del Acceso de Medicamentos</i>) ▪ National Model for Hospital Pharmacy, 2009 (<i>Modelo Nacional de Farmacia Hospitalaria</i>) ▪ Bulletins and communications of the “Rational Use of Medicines” programme of the Health Quality Directorate (<i>Programa SICalidad, Boletines, Instrucciones</i>) ▪ Agreement to determine guidelines for sales and dispensing of antibiotics, 2010 (<i>Acuerdo por el que se determinan los lineamientos a los que estará sujeta la venta y dispensación de antibióticos</i>) ▪ COFEMER Documents, 2010 (Federal Commission for Regulatory Improvement. This bureau emits an ex ante analysis of any new proposed regulation, which includes an open public consultation in its website)

Documents were classified as including or not elements relevant for AMR and rational use of medicines, and according to which elements were included. This analysis provided information as to the *regulatory and institutional contexts* in which health policies and programmes occur, an important feature of policy analysis (Spencer, *et al.*, 2003: 201). This contextual information fed into the agenda-setting analysis (political context ‘stream’).

2. In the case of the documents pertaining to the two National Health Programmes (for each period), the 2005 National Pharmaceutical Policy (NPP) , the 2010 Ministerial Agreement, and other health policy and program documents produced during each of the presidential administrations, analysis was oriented towards two different aspects:

- a. First, a similar analysis to the one described in point one above was performed, in order to assess if and how these policy documents addressed the issue of AMR (and compared them to international recommendations). Additionally, attention was paid to the policy objectives and priorities mentioned in these documents. Data deriving from these documents were organized and reduced in thematic or descriptive summaries. The focus of this analysis was to assess which were the *stated* governmental health policy priorities during each of the studied periods (2000-2006 and 2006-2012 administrations), which health policy issues were receiving more attention and comparably, what was the prominence of AMR; also, to assess which AMR policy elements were addressed. This analysis provided relevant information on the political context 'stream'.
- b. Second, these policy documents were reviewed in order to gain understanding on those who participated in the generation of the documents, as well as to understand how policy problems in relation to AMR and medicines use were defined, and what policies were considered as solutions. Following an interpretative approach, these governmental documents were read as providing insight into the perspectives of those who generated them, and the political process behind their production (O'Laughlin, 1998). Attention was paid to issues that were raised and issues that were omitted, participants that were included or excluded when producing these documents¹¹, as well as the context in which these documents were produced. This analysis was performed in an iterative process with the conduction of interviews with stakeholders, to gain insight into the policy process for AMR and the stakeholders' understanding of policy problems and solutions. Similarly, a series of documents (19) posted in the COFEMER website by diverse stakeholders, as a reaction to the 2010 antibiotics sales regulation, was analysed to understand the position of diverse stakeholders vis-à-vis the regulation. This analysis provided relevant information on the political context, stakeholders involved, the development of policy alternatives, and problem definition 'streams'.

¹¹ This, in reference to the processes and actors which, according to the WHO, should participate on the drafting of national pharmaceutical policies (WHO, 2001b).

Finally, a quantitative content analysis was performed in two series of documents. For this analysis I only focused on the occurrence of (mention, or allusion to) topics. First, archives from the Health Commissions in the Legislature (covering the 2000-2006 administration) were reviewed in order to assess the legislative 'intensity' with regard to medicine-related topics. These archives contain all the health policy initiatives discussed, passed and rejected as well as the minutes of debates concerning these initiatives. The number of reforms to the General Health Law was estimated, as well as the number of reforms that were incumbent to medicine and AMR policies. Second, proceedings of 25 meetings of the National Health Council (a board presided by the Minister of Health, where health policies are formulated), held from 2001 to 2006, were reviewed. The frequency of medicine and AMR related issues, as well as the frequency of other health policy issues, were estimated. This analysis was performed in order to describe the priorities within the governmental agenda regarding pharmaceuticals, and to assess agenda placement for AMR versus other health related issues during the 2000-2006 governmental administration. This analysis provided information on the political context 'stream'.

As I mentioned before, organizational data and grey literature from diverse sources (reports and bulletins available mainly in electronic format, institutional web pages) produced by the Ministry of Health as well as by non-governmental organizations, industry and professional bodies, were reviewed. The objective of the analysis was to understand more about medicine-related stakeholders and their possible role regarding AMR policies, to inform the creation of interview guidelines, and to contrast and complement the information that interviewees provided.

Although document collection and analysis were performed entirely by the researcher, these processes –as well as the analysis results– were discussed and enriched by the commentaries of colleagues at the Mexican Institute of Public Health (INSP) in Mexico. This document analysis was later on incorporated into other analyses regarding pharmaceutical policies in Mexico, which were subsequently published (Dresler, *et al.*, 2008; Dresler, *et al.*, 2011b; Leyva-Flores, *et al.*, 2006; Wirtz, *et al.*, 2013a).

There are some drawbacks in using documents as primary data sources in policy analysis. As Green and Thorogood (2004: 168-169) explain, from a positivist approach, these include threats to reliability and validity. Regarding reliability, an important concern is the representativeness of records, which is related to selective deposit (not everything is recorded or published) and selective survival (not everything that is

recorded or published at one point remains available to be retrieved). For the present study, documents from the MOH and the legislature were analysed aiming to understand health policy priorities and what kind of attention was paid to AMR. However, official papers publicly available might not represent all relevant health policy documents; documents reflecting relevant health policy decisions might have been left out of the analysis¹². Finally, policy documents by themselves provide scarce information about the decision-making process that led to the policy or the role of groups or individuals in producing that document (Green and Thorogood, 2004: 169). However, for the present case study, document analysis was not the only source of data. As I explain below, interviews with diverse stakeholders allowed me to obtain relevant documents as well as information regarding the production of policy documents, such as the role and position of particular groups or individuals, and main controversies. Furthermore, some stakeholders provided me relevant documents that were not publicly available: this was the case particularly of various drafts of the 2005 National Pharmaceutical Policy written prior to the final version that was released. Comparing these drafts with the final version provided important hints of topics that were included or excluded, or addressed differently –issues that were further explored in the interviews.

4.6 Individual interviews

As I discussed before, diverse authors have emphasized that the process of public policy-making is a complex phenomenon, with a variety of actors involved, and where no single perspective can provide a full account of the process. Understanding the diverse perspectives and actions of diverse actors related to the policy problem under study is central; therefore, individual interviews take on much relevance. As a matter of fact, for Kingdon (1995), interviews stand above any other data collection or generation method in the assessment of agenda-setting for public policies. When analysing public policy-making, interviews are undertaken with key informants inside and outside government; these key informants are ‘experts’ or part of ‘elite’ groups in any determined public policy arena, such as senior civil servants, managers, academics and representatives of professional groups; expert interviews provide a unique source of ‘inside’ information on the policy-making process (Dorussen, *et al.*, 2005: 317).

¹² Green and Thorogood (2004) explain that, by using qualitative approaches other than positivist traditions, this bias is less relevant as the documents that an organization deliberately chooses to make public provide hints about the organization’s perspective regarding any given topic.

However, for some policy areas there are only few relevant experts to be interviewed, and not all experts are equally knowledgeable (Dorussen, *et al.*, 2005). Furthermore, conducting expert or elite interviews involves some methodological challenges, as I will describe later on.

Individual interviews were the second data collection method used for the present study. Individual interviews are one of the most widely used method in qualitative research, allowing a detailed investigation of people's personal *accounts* (Green and Thorogood, 2004) of their own beliefs or motivations, but also regarding any given social phenomena. The type of interview chosen for this study was semi-structured, i.e. fairly structured questions, without response codes. This type of interview combines some of the opportunities offered by structured interviews and by informal interviews; this is effective when researching about complex topics¹³ (Bowling, 2002). Carrying out semi-structured interviews enables the researcher to structure data collection and set the agenda in terms of the topics covered, but, at the same, it keeps enough flexibility to alter interview sequences and maintains the focus broad enough to allow for emerging themes (Fontana and Frey, 1994; Green and Thorogood, 2004: 80; Varvasovszky and Brugha, 2000: 341). In this way, it is the interviewee's response which determines the kind of information obtained about the pre-determined topics, as well as the time and relative importance granted to each topic (Green and Thorogood, 2004: 80).

4.6.1 Selection of participants

Case studies allow us to understand a phenomenon, including a multiplicity of perspectives and rooted in a specific context; it is around context where the sample design of the case study is structured (Lewis, 2003: 52). For the present case study on the process of AMR agenda-setting in Mexico, the context was provided by the health policy arena in this country –including a wide array of actors, their perspectives and actions. Therefore, it became essential to understand which social actors were relevant within health and pharmaceutical policies in Mexico, and to identify key potential interviewees. Consequently, the selection of participants for this study followed a *purposive* (or purposeful) sampling: selected interviewees were those who were intended to generate appropriate data for the study (Green and Thorogood, 2004: 102).

¹³ This kind of interview has been used in other health policy investigations in Mexico, for example, the research-policy connection study by Bronfman *et al.* (2003).

The identification of relevant individuals, groups, governmental and non-governmental organizations in the health policy arena in Mexico benefited from a stakeholder analysis; this analysis was carried out iteratively while conducting the literature review, revising documents and conducting interviews. Stakeholder analysis (also referred to as political mapping) is the process of collecting and systematically analysing information to understand the behaviours, intentions, interrelations, agendas and interests of relevant social actors, as well as the influence and resources they can bring to decision-making¹⁴ (Brugha and Varvasovszky, 2000; Reich, 1993; Roberts, *et al.*, 2004a; Varvasovszky and Brugha, 2000). During the process of identifying and mapping relevant actors for the present study, I did not intend to assess in-depth aspects such as the stakeholders' values, power and resources; there are contested definitions of these aspects, and it is difficult to capture and measure them (Walt, *et al.*, 2008). Instead, the focus of the stakeholder analysis in the present study –and in much of the interviews– was to identify main individuals, groups and organizations related in some way to health and pharmaceutical policies, and more specifically related to AMR issues, and to understand their actions and perceptions about AMR and possible policy solutions. As it is customary in stakeholder analysis, the present study sought to map stakeholders' interests in terms of their goals, responsibilities and strategies, and to set out their formal or informal connections with other relevant stakeholders (Varvasovszky and Brugha, 2000).

For the first round of interviews (conducted during 2006) I developed a preliminary list of potential interviewees, informed by MS theory, and based on the literature review, document analysis, and interviews with key informants. Following Kingdon's MS, I aimed to identify actors deemed to be relevant for public policy agenda setting and policy alternative specification. This included high-level governmental appointees within the MOH, who have a prominent role on getting attention to problems and setting the governmental agenda; researchers and lower level MOH officials, whose major role is in generating policy alternatives; as well as interest groups related with the health sector (pharmaceutical industry and business, health care providers), which could affect both governmental agenda items, and the types of alternatives considered. Literature and document review provided hints about which were the relevant decision makers around health and pharmaceutical policies in Mexico, which groups could influence decision-making and groups not apparently involved in policy-making, but with expertise in AMR and the utilisation of medicines. Furthermore, I held informal

¹⁴ The information generated by conducting stakeholder analyses is frequently used in prospective policy analysis to assess the feasibility of future policy directions; however, this is not the scope of the present study.

interviews with experts in health and pharmaceutical policies,¹⁵ who contributed to identifying key governmental and non-governmental actors as potential interviewees. In this way, informants were selected *purposively*, seeking to interview social actors involved (or with a potential to be involved) in AMR policies. The preliminary list of key informants fell into three broad categories, although, given the professional career and activities of some of the interviewees, there was some overlap (for example, academics that had had positions as governmental officials). The categories were:

- a) Governmental stakeholders directly involved in health and pharmaceutical policy-making: MOH officials, representatives of the Health Commission at the legislature.
- b) Interest groups, who might have exerted their influence on health and pharmaceutical policies, or who might otherwise be affected by them: representatives of the pharmaceutical industry and drugstores associations; representatives of medical and pharmaceutical professional associations; and consumer groups.
- c) Experts in health and pharmaceutical policies, and experts in AMR¹⁶ (academics and specialists in universities, research institutes and health organizations); and representatives of international organizations related to medicine use and AMR.

There was a deliberate bias on selecting a larger number of governmental interviewees, given two reasons. Firstly, given that the matter of inquiry was on public policy and governmental agenda-setting, a wide range of governmental actors were chosen to be interviewed. As Kingdon (1995) stresses, when aiming to ascertain which subjects occupy the time and attention of important government people; that is, what is on the governmental agenda, there is no substitute for asking them directly. Secondly, in the case of AMR agenda-setting for Mexico, there was not an obvious jurisdiction (or policy venue) for AMR policies. Rather, the document review and first interviews showed that diverse MOH offices *could* hold responsibility for this issue. Given this reason, a large number of interviewees were planned to cover all these MOH offices.

¹⁵ From October 2005 to November 2006, I was invited as a visiting researcher to the Mexican National Institute of Public Health (INSP). From October 2005 to February 2006, the interview topic guide was designed, and pilot interviews were conducted. At INSP, Dr. René Leyva, Dr. Veronika Wirtz and Professor Michael Reich provided valuable feedback in identifying key stakeholders and relevant interview topics, as well as rich discussions around the pilot interviews. The rest of the interviews for this first period of the study were conducted between June and November 2006. Clearance from the Ethics Committee at INSP was obtained; the project was registered at INSP with the name “*Análisis de políticas y prácticas farmacéuticas sobre el uso adecuado de antibióticos en México*” (Analysis of pharmaceutical policies and practices related to antibiotic use in Mexico. Principal investigator: Dr. Veronika J. Wirtz, INSP 2006-2009).

¹⁶ These actors corresponded to the ‘hidden participants’ in agenda-setting described by John Kingdon (1995).

The aim was to interview at least two people for every relevant organization or MOH department, so originally, around 40 interviews were planned. However, not all potential informants agreed to participate in the study; furthermore, as in policy analysis the identification of stakeholders is often a protracted process (Varvasovszky and Brugha, 2000), I was aware that important actors may emerge at a later stage of the fieldwork. For that reason, following the initial selection of relevant stakeholders, the “snowball sampling technique” was used, by which at the end of each interview, informants were asked to identify other stakeholders that could be somehow related to medicine use policies or AMR policies. The snowball approach allowed identifying information rich informants that were not previously listed, i.e. individuals knowledgeable or experienced with medicines policy-making. Snowball sampling provides an advantage on accessing hidden and hard to reach populations, including elites (Atkinson and Flint, 2001). For the present study, the snowball approach was useful to identify hidden participants (not previously identified by document review or experts opinion) such as lower level governmental officials involved in health policies; the snowball approach was also useful to reach elite respondents, namely high level MOH officials and pharmaceutical industry directives. It is important to mention here that snowball sampling has some drawbacks: given the similarity within social networks, this sampling approach might introduce a bias on identifying respondents toward people that know each other, or share certain viewpoints. In order to overcome this bias, it is recommended to begin with a set of informants as diverse as possible, which account for different ‘entry points’ or referral chains were used. For the present study, a set of interviewees were identified from the document review, and a referral chain began with these respondents. Another chain of interviewees began with stakeholders identified after consultation with experts. However, even when using this approach it is possible that ‘isolates’ would be ignored, this is, people who are not connected to any network that the researcher has approached to (Atkinson and Flint, 2001), The new identified stakeholders were added to the list of potential interviewees. Finally, 46 interviews were conducted from January to November 2006 (see Appendix 3, interviewees list) which were included in the first period of the study: agenda-setting for AMR during the 2000-2006 administration.

The second round of interviews was conducted from March 2007 to February 2008. These interviews were included in the second period of the study: agenda-setting for AMR during the 2007-2012 administration. However, these interviews proved to be very useful to inform on the previous period as well: because some of the interviewees occupied relevant (but different) positions during the two administrations, they were

able to offer accounts contrasting both administrations. The selection of interviewees for this second round was directed mainly to assessing medicine-related priorities and AMR agenda placement during the new administration. It sought to interview different informants but pertaining to the same governmental and non-governmental organizations that were included in the previous period; seven (7) interviews were conducted during this period. One informant interviewed in 2006 (as a university academic) was interviewed again in 2008, as a key MOH official during the 2006-2012 administration, which was useful to contrast perspectives.

Additionally, aiming to further understand the policy process that gave place to the innovative regulation of antibiotic sales in Chile (a case that is contrasted with the Mexican case in the discussion section), during 2009 four interviews were conducted with key informants from Chile. Two interviews were conducted face-to-face with health officials in Chile, and two academics were interviewed by telephone. Information derived from these interviews in Chile was incorporated later in a study on antibiotic policies in Latin American countries (Wirtz, *et al.*, 2013a) Furthermore, personal communication with a public health official of the Brazilian regulatory agency ANVISA allowed to gain insight on the process of regulation of antibiotic sales in this country, which is described in the discussion chapter and has been incorporated in other studies (Dresler, *et al.*, 2012; Santa-Ana-Tellez, *et al.*, 2013).

In total, 53 interviews –conducted between 2006 and 2008– were included in the case study of AMR policies in Mexico: 16 with Ministry of Health (MOH) officials, 1 with a member of the legislature; 12 with national academics, 7 with members or representatives of professional (medical and pharmaceutical) associations; 12 with representatives of the pharmaceutical industry and pharmacy associations; and 5 with members of international organizations (described in Appendix 3).

As principal researcher, I conducted most of the interviews (36 in total). However, 17 interviews were conducted by Dr. Veronika J. Wirtz and Dr. Kitty K. Corbett, both researchers at INSP with ample experience in elite interviewing and pharmaceutical policies. Dr. Wirtz and Dr. Corbett utilised in the interviews the same elements of the topic guide that I developed to be used in the rest of the interviews.¹⁷ These interviews were carried out during 2006, contemporaneously with others that I conducted; there was ample opportunity to discuss the progress of fieldwork amongst the three interviewers.

¹⁷ In these interviews, an additional topic was explored (practices on antibiotic use and possible drivers for behavioural change) which were not included in the present analysis.

4.6.2 Data generation

A general interview topic guide was used with all the interviewees (please see Appendix 4). However, the contents of this guide were adjusted for each interview: specific topics or questions were added or omitted in accordance with the institutional base or particular role of the interviewee (e.g. topics regarding the administration's priorities were explored in-depth with MOH officials; the process of drafting the NPP document was explored with those who participated in it). The development of interview topic guides was informed by the research questions and the study conceptual framework (related to Kingdon's MS theory); and by findings obtained in the literature and in the preliminary document review.

Topics included in the general interview guide were:

- Perceptions about medicine priorities and AMR placement in the health policy agenda
- Main medicine-related priorities in each interviewee organization
- Perceptions about AMR problems, possible solutions and their feasibility
- Responsibilities of the respondent's office on medicine use and on AMR
- Interviewee participation in medicine policies in the country, including the development of the NPP 2005 document. Process of drafting the NPP and involved actors.
- Role of research results and international recommendations in informing AMR policy-making

Attention was paid to beginning the interview with very general questions, leaving more sensitive issues towards the middle or end and avoiding 'leading' or judgmental phrasing of questions. The first version of the interview topic guide was piloted in five interviews¹⁸ (4 MOH officials, 1 academic). Findings from pilot interviews were used to refine wording and improve the schedule of questions, as well as to assess and improve the researcher's interviewing technique. When piloting the topic guide, I noticed that respondents understood differently the meaning of "medicine-related aspects or issues", so it was difficult to explore their perceptions regarding which issues were higher on the health sector agenda. I decided therefore to begin each interview with a brief self-administered questionnaire (which took approximately 5 minutes) that could provide a common language for all interviewees regarding medicine-related policy problems. This questionnaire was based on the categories of priorities for pharmaceutical policies developed by Rainhorn, *et al.* (1994) in a Delphi

¹⁸ Given the richness of information provided, these five interviews were included in the final analysis.

survey. Later on in the interview, I returned to the questionnaire and asked the interviewees about their answers (please see question 3 and questionnaire at the end of Appendix 4). As the main purpose of the questionnaire was to facilitate the interview, no statistical analysis was carried out.

With the exception of many of the interviews undertaken with academics, the majority of the interviews for the present study were conducted with political, professional and economic 'elites': policy makers, and representatives of professional associations and industry and business associations. 'Elite' interviewing implies that there is a clear social difference between the interviewer and the interviewee –being this last one more powerful– which is common in policy analysis. These interviews were a challenge, in terms of getting access to respondents in the first place, and second, in gaining openness by establishing enough trust and rapport. In this kind of interviews, there is a risk for the researcher of being patronized, and not getting personal assessments or accounts outside the 'party line' of the interviewee's organization – obtaining at the end the same information that could have been obtained simply by documentary reviews (Green and Thorogood, 2004: 94; Mikecz, 2012; Welch, *et al.*, 1999). Consequently, a series of steps were taken seeking to counteract the status imbalance between researcher and respondent.

In order to gain access to stakeholders, an introductory letter was sent by a chief researcher of the Mexican National Institute of Public Health (INSP) where the academic nature of the study was emphasized¹⁹. Subsequently, I contacted (by telephone or by email) potential respondents to arrange interviews. Those who agreed to participate were sent in advance an information sheet and an informed consent form (more on the ethical issues regarding the research is described in section 4.4. below). Most of the contacted potential interviewees agreed to participate in the study; while some top-level governmental officials were not available for interview, they referred me to another person from the same governmental body that I could interview. While interviews with academics and those from professional associations were relatively quickly scheduled, interviews with governmental officials took several weeks to be scheduled, something expected when conducting elite interviews. As I mentioned before, document analysis was used to increase the researcher's knowledge of the interviewee's background and that of his/her organization, therefore enhancing the

¹⁹ In order to prevent bias, in the introductory letter and on the information sheet, only the general topic of the study was mentioned. It stated that the research was about pharmaceutical policies –and not antibiotic policies– in order to assess if during the respondent's discourse the topic of antibiotics arose spontaneously or not.

researcher's position (Mikecz, 2012) and providing guidance on the specific topics to be addressed in the interview.

All interviews were conducted in Spanish (my first language as well as the respondent's), except for one interview conducted in English (with a representative of an international organization). The majority of interviews with Mexican stakeholders and academics were conducted face-to-face in the interviewees' offices in Mexico City, which was their preferred space to talk. Other interviews were carried out in other Mexican cities where informants worked, and one was conducted by phone. Interviews with representatives of international organizations were conducted in Mexican cities, one in London, and one by telephone. Most interviews lasted around fifty minutes, although they went from half an hour to one and a half hours, depending on the issues raised by the respondent, as well as his/her availability.

With prior authorization, all interviews were tape-recorded with simultaneous note taking. Only in one interview, the informant asked to turn-off the recorder during a fragment of the interview, and in another few, informants asked to keep some issues 'off the record'; this happened during accounts in which actions of other groups of actors were criticized. In many interviews with MOH officials, the interview was interrupted by phone calls or by people coming into the interviewee's office, and the recording was paused. In one interview conducted with a MOH official (COFEPRIS office), as well as in an interview with a representative of the pharmaceutical industry, a third person from those offices participated as observer; this was a condition put forward by the informants in order to agree to the interview.

Throughout data collection, a fieldwork diary was maintained. In this diary, all the interviews scheduled together were registered, with notes derived from the analysis of documents that were relevant to the interview; after the interview was undertaken, particular conditions or difficulties when conducting the interviews were also recorded (in writing). Likewise, relevant documents and key informants listed by the interviewees were recorded for further inquiry.

All the interview (audio) recordings were transcribed to Microsoft Word documents by two experienced transcribers at the INSP, with the exception of two transcripts: one case in which there were technical problems with the recording, and another in which the interview was conducted in English. In these cases the notes taken during the interview were expanded and transcribed by the researcher, and were included in the

analysis together with the rest of the transcripts. All transcripts were checked against the audio by the researcher.

4.6.3 Data processing and analysis

The transcripts of the five interviews conducted as part of the pilot study were imported to Atlas-Ti©, a qualitative research software that I have experience using. This software was used to aid the qualitative analysis of transcripts, which involved coding of the texts using an iterative thematic content analysis technique (Bernard, 2002; Bowling, 2002). As with the document content analysis, the primary focus of thematic analysis was not language or the structure of talk, but the substantive meaning of data –derived from the description and interpretation of respondents' views– aiming to illuminate a phenomenon. Coding refers to the process of labelling, grouping and conceptualising data sections, a process that emerges from the interaction of theory and data (Miles and Huberman, 1994: 249). Coding employed mainly a priori –deductive– codes (related to the questions in the topic guide and categories described in the conceptual framework). However, it was open to emergent (inductive) thematic codes that were created during coding and analysis (Crabtree and Miller, 1999), including those related to specific processes pertaining to individual respondents, as well as relevant contextual factors mentioned in the interviews. This early analysis informed an initial coding scheme, as well as subsequent data collection, as is customary in qualitative analysis.

When further interviews were summed up, I found that even if coding and retrieval of passages of text for the thematic analysis were facilitated by the use of the software, data resulted to be over-fragmented and detached from the original transcripts. It was difficult therefore to understand and compare data both within individual interviews, and between groups of interviews. Consequently, I quitted using this software and used instead a matrix output on a Microsoft Excel sheet, as I explain below.

The approach taken to analyse the whole data set (interview transcripts) was thematic content analysis, although many elements of framework analysis were incorporated as well. Thematic content analysis is a process by which common or recurrent 'themes' in respondents' accounts are searched for and categorized. However, the present study sought to analyse data beyond the 'emic' summaries of respondents' accounts, by providing a 'thick' description of the context under study and linking findings to theory (Green and Thorogood, 2004: 177-180) by means of 'framework analysis'. Framework

analysis is a matrix-based analytic method, developed by the National Centre for Social Research in the United Kingdom (Ritchie and Spencer, 1994), to manage and analyse qualitative data explicitly oriented towards applied policy research. As such, this analysis method is distinguished from others, such as 'grounded theory' approaches, in terms that it is often linked to focused objectives and a structured topic guide. But the key difference is that throughout framework analysis, the integrity of individual respondents' accounts is conserved (Green and Thorogood, 2004: 220); this aids in data interpretation, as I describe below.

Following the steps described by Ritchie, *et al.*, (2003), during the first phase I became familiar with the data. This involved reading all the transcripts while checking them against the recordings. Later on, a sample of the first set of interviews (involving a diversity of interviewer and interviewee categories) was reviewed to gain insight on the phenomena under study and the variety of perspectives involved, as well as to identify recurring and significant themes. In this process, key text segments in the electronic version of the transcripts were highlighted using different colours, identifying main themes related directly to the study's conceptual framework (based on Kingdon's theory, and retrieved in the topic guide), as well as emerging themes. Comments were inserted in the margins registering preliminary thoughts and interpretations (please see transcription coding example in Appendix 5). With this initial list of themes and subthemes an *index* (or coding scheme) was developed; this index was discussed with colleagues at INSP as well as with my advisory committee at LSHTM; however, as research progressed, some refinements had to be made which mainly involved making some subdivisions and collapsing some of the categories²⁰ (please see the study themes index in Appendix 6).

During the next phase, I applied the constructed codes to all the transcripts ('*indexing*'²¹), following the same procedure described before. Later on, a thematic chart or matrix was created, using an Excel sheet. Here, data was reduced identifying cases (interviews) in rows, and themes and sub-themes in columns, trying to maintain the 'voice' of the participants by paraphrasing or transcribing verbatim text fragments (translated into English); comments and interpretations were also included (in brackets and upper-case font to differentiate them from the informant's voice). Furthermore,

²⁰ For example, 'problem perception' (more related to severity or proximity) and 'problem framing' (more related to causality) were initially separated codes; but given the frequent overlap in these codes on the same fragments of respondents' accounts (such as when they referred to 'problem populations' involved) I decided to collapse them into one theme.

²¹ Ritchie *et al.* (2003: 224) explain that, in framework analysis, 'indexing' refers to identifying sections of the data in order to show what theme or concept is being mentioned; it is different from 'coding', which refers to assigning a more precisely defined label.

columns were added after each theme column to include original texts in Spanish, only for those rich or vivid accounts which were likely to be discussed or cited later with regard to specific findings. The finished matrix allowed for case-by-case data analysis and also analysis by theme. At the end of rows and columns, notes were introduced describing relationships between themes, data interpretation and relevant findings. During the analysis, I sought to characterise and contrast the informants' understandings of AMR and their accounts on policy-making, both between and within different groups or categories of informants; for example, how governmental, non-governmental and market-oriented informants defined and perceived AMR problems and solutions, and how these groups communicated with each other. Within each main theme in the thematic chart, I sought to identify evidence about AMR agenda placement, as well as factors that could have favoured or impeded AMR reaching the health policy agenda. These explanatory accounts were informed by theory on agenda-setting, and by continuously switching between the informants' perspectives in their own terms (emic explanations) and the researcher's perspectives (etic explanations); this process was facilitated by the thematic matrix.

4.6.4 Rigour in analysis

There is an ample debate on using the concepts of *reliability* and *validity*, developed in the natural sciences to assess the quality of qualitative research, which is based on different epistemological perspectives (Green and Thorogood, 2004; Lewis and Ritchie, 2003; Mays and Pope, 2000). However, it has also been argued that, when used in their broader sense – reliability, meaning 'sustainable' and validity, meaning 'well grounded' - are notions that do have relevance for assessing the robustness and credibility of qualitative research (Lewis and Ritchie, 2003: 270); this is especially needed in research aiming to influence policy or practice. Along this same line, diverse authors have outlined a number of principles related to rigour in qualitative analysis (Green and Thorogood, 2004; Mays and Pope, 2000: 191-192). Some of these features are discussed in relation to the application and analysis of interviews for the present study.

In order to maximise validity (i.e. the 'truth', 'correctness' or 'plausibility' of interpretation when analysing interviews) and avoid the charges of "anecdotalism", common against qualitative research (Green and Thorogood, 2004: 192; Lewis and Ritchie, 2003), I was receptive to 'deviant cases' and disconfirming evidence when 'testing' theoretical propositions against findings (Bernard, 2002; Miles and Huberman, 1994). For example, even when accounts within one group of informants largely coincided and

supported propositions about factors hampering AMR agenda placement, if there was a testimony which differed –and contradicted emerging explanations– this was further explored and discussed. Additionally, I sought to provide enough context of the research setting and quotes, in order to clarify descriptions and interpretations. Although respondent validation would have provided a relevant validity check when interpreting interviews, this feedback with informants was not completed. Given the prolonged fieldwork and the frequent respondent turnover, only few informants were re-contacted; this constitutes a limitation of the present study.

Triangulation, the process of using multiple information sources and ‘readings’, is important to clarify meanings, verifying the repeatability of an observation or interpretation, and thus to ensure comprehensiveness and to deepen the understanding of a phenomenon. It was been argued that triangulation also has a role in the validation of findings, although there is controversy on this (Lewis and Ritchie, 2003: 275; Mays and Pope, 2000). Triangulation can be obtained by comparing information by data source, by method, by researcher, by theory and data type. Along this line, the present study involved triangulation of sources: information from both documents and interviews, from different groups of interviewees, and collected at different points in time, which was compared to assess issues such as AMR agenda placement, problem perception, and the role of different stakeholders. Theory triangulations (analysing data from different theoretical perspectives) has also been recommended as a method of external validation, and is particularly relevant in empirical research of policy-making (Lewis and Ritchie, 2003: 276; Sabatier, 2007); however, it was not undertaken in this study.

Regarding reliability –‘confirmability’ or ‘consistency’ are the related terms in qualitative research (Lewis and Ritchie, 2003)– attention was paid to ‘good practices’ in fieldwork (Green and Thorogood, 2004: 194) (keeping records and careful note-taking, checking transcriptions) and to analysing the whole data set. Because I was the only person involved in coding the interview, the concept of inter-rater reliability does not apply here. However, coding of the interviews as well as data interpretation was discussed amply with colleagues at INSP and at LSHTM;²² furthermore, results of the analysis of documents and interviews were presented in an international conference (Dreser, *et al.*, 2009) which was an opportunity to receive feedback from experts in the field.

²² Some of the interview transcripts were reviewed during the monthly Qualitative Analysis Workshop organized by Dr. Judith Green at LSHTM, during 2006.

As it was described throughout this section, interviewing as a research method places some limitations, which are further described in section 4.8 .

4.7 Media analysis

Media content analysis was the third method used in the present study. As pointed out in the previous chapter, the interest of conducting a media analysis as part of the present study was twofold: First, to analyse AMR agenda-setting during the second studied period (2006-2012 administration); and to gain insight on the participation of actors and the policy process that led to the adoption of a policy, the regulation of antibiotic sales, during this period. A key interest was the participation of diverse stakeholders and their position vis-à-vis the policy development during the second studied period. Second, media analysis was conducted to shed light on the potential effects of media framing on AMR problem definition and the overall policy process. These two aspects are, however, connected.

Understanding the policy process through the media. Mass media outputs (such as newspaper reports or television programmes) offer a relevant source of data regarding health and health policy questions (Esmail, *et al.*, 2010; Green and Thorogood, 2004: 161; Prosser, 2010; Wallack, *et al.*, 1993). Furthermore, mass media outputs have been deemed as an important data source for agenda-setting studies. Baumgartner and Jones (1993) argue that in long term periods, media coverage indicators correspond to official concerns and can be used to describe both the degree to which an issue is placed on the broad policy agenda, as well as the tone of elite understanding at a given time (1993: 50). Accordingly, with regard to the present study, media analysis allowed understanding the coverage of AMR-related topics (and thus, AMR agenda placement); as well as the participation of social actors on the policy process that led to regulation of antibiotic sales. Additionally, given the prolonged fieldwork for the present study, there were logistical difficulties in conducting more interviews to document the policy process (the Ethics Committee approval at INSP and LSHTM had expired, there were time and resource constraints for conducting and transcribing interviews); in this situation, mass media outputs provided a readily accessible source of information.

Understanding media influence on the policy process. Mass media outputs have the potential to influence public perceptions and attitudes towards health; but also to influence public perceptions of health policy issues, political elite's policy considerations and, eventually, the final policy product (Esmail, *et al.*, 2010; Schön and

Rein, 1994; Wallack, *et al.*, 1993). Media has been deemed an important influence in public and governmental agendas, by expanding and by framing issues (Kingdon, 1995; Baumgartner and Jones, 1993; Entman, 1993). Accordingly, with regard to the present study, media analysis allowed understanding how problems and solutions regarding AMR were framed and publicly discussed during the second studied period; and, consequently, gaining insight on the potential effect of media framing on AMR problem definition, agenda setting, and the overall policy process.

Media content analysis. Media content analysis focuses on the way in which issues are represented in the media (how they are 'framed', what messages they convey), and the frequency of their occurrence (Douglas Gould and Co., 2004; Green and Thorogood, 2004: 161). Therefore, it involves both quantitative and qualitative research approaches. The *intensity* of printed media coverage (e.g. number of articles on an issue as the total number of articles in a year) has commonly been used as an indicator of the relation between the mass media and the national agenda; but besides levels of attention, Baumgartner and Jones (1993) underscore the *nature* of that attention, as it sets the context for agenda access. This includes the general *tone* (positive or negative) of media articles on diverse public issues, as well as their *concerns*, such as the severity of the problem, its economic implications, or the actions that the government should or should not be taking (1993: 50-51). As such, media content analysis can be used within policy analysis to understand policy-making, but it can also be used to support advocacy efforts, by identifying opportunities in communication (Douglas Gould and Co., 2004).

By looking directly at communication –via texts– media analysis sheds light on the ideas of those who produced them, as well as on social interaction. Compared to other methods such as interviews, media content analysis has the advantage of being unobtrusive: neither the sender nor the receiver of the messages is aware that he/she is being analysed, so there is little chance that the data will be influenced and confounded by the act of analysing them (Weber, 1990: 10). Media content analysis entails analysing media coverage during a set time-frame, aiming to answer questions such as the following ones formulated by Douglas Gould and Co. (2004: 1).

- How do the media frame public discussion of an issue (by repeating various story elements, using common metaphors, quoting similar people, etc.)?
- Who are the main spokespeople on a particular topic, and how are they being quoted? Are they mainly advocates, policy makers, academic experts, etc.?
- How often are various spokespeople quoted and in what context?

- What topics are being covered, and what topics are being ignored?
- Is a topic or organization front-page news, and if not, where in the paper is that topic or organization covered?
- What messages are being used?

4.7.1 Data collection

For the second period of the study (2006-2012 administration), a media analysis was conducted covering the process of regulation of antibiotic sales and its follow-up. First, a systematic review of printed newspaper articles published between January 2009 and December 2010 was conducted. A quantitative content analysis was performed to determine the frequency of topics and stakeholders that were covered; additionally, a qualitative content analysis was conducted to gain insight into stakeholder positions and actions in relation to the regulation. The study background, methods and results, in which other researchers participated, are described in detail in the article by Dreser, *et al* (2012),²³ and are detailed below. Second, an on-line search engine of a major newspaper was used to retrieve articles addressing the regulation of antibiotic sales comprising the period between January 2011 and December 2012.

For the systematic review, newspaper articles were retrieved using a specialized electronic media service²⁴ which encompasses 18 national and regional newspapers, the most relevant ones in terms of copies sold, and representing a variety of political positions. This media service retrieves newspaper articles related to health and pharmaceutical issues, by using key words such as “medicines”, “antibiotics”, “Ministry of Health”, “pharmaceutical industry”, and “pharmacies”. All newspaper articles published between January 2009 and December 2010, retrieved by the media services, were manually screened in order to identify those that covered issues related to antibiotic use or antibiotic sales regulation; these were included in the study (322). The time period covers three stages of the policy process: 1) policy agenda-setting (01 January 2009 to 24 March 2010, before the regulation was announced); 2) policy drafting (25 March 2010 to 24 August 2010, the period from the regulation

²³ I conceived this study, in which the following researchers also participated: Dr. Veronika Wirtz, Dr. Edna Vázquez, and Dr. Sandra Treviño, all researchers at the INSP at that time. The coding scheme for the *quantitative* content analysis was developed jointly by the research team; once the codebook was agreed upon, the codification of newspaper articles was performed by Dr. Vázquez under my supervision. The *qualitative* analysis of these notes –which describes the participation of stakeholders– and reporting of these results were conducted solely by me, although discussions on coding and interpretation were sustained with the other researchers.

²⁴ Especialistas en Medios: <http://www.emedios.com.mx/canifarma/>.

announcement to the beginning of its implementation); and 3) policy implementation (25 August 2010 to 31 December 2010).

As of 2011, it was no longer possible to use the specialized media service. Consequently, in order to provide follow-up on the public discussions regarding AMR policies and the regulation of antibiotic sales during the rest of the administration, a different media analysis was employed. This involved manual use of the on-line search engine of one of the most relevant national newspapers (El Universal²⁵) to retrieve relevant articles published between January 2011 and December 2012. All the articles retrieved with the key word “antibiotics” were screened to identify those specifically related to the follow-up of the regulation of antibiotic sales and other discussions on AMR policies; these were included in the analysis.

4.7.2 Data analysis

All 322 articles were coded for the analysis (2009-2010). To develop the codebook, each author coded 20 articles identifying emerging themes through inductive reasoning. Those themes were then structured and sorted into subject categories and each of the defined codes. Seeking to improve reliability and validity, the codification was checked by using investigator triangulation with 20 randomly selected articles. Discrepancies were discussed and adjustments made to the codebook (please see Appendix 7). The rest of the articles were coded by one author using Atlas-Ti© 5.2 software. In addition to the theme codebook, each article was coded according to stakeholders covered by the media: 1) government (executive); 2) congress (legislative); 3) pharmacies and outlet associations; 4) pharmaceutical industry; 5) medical and other professional associations; 6) civil society groups; 7) academic institutions; 8) journalists (in editorials and opinion columns); and 9) private sector other than the pharmaceutical industry.

For the quantitative content analysis, first the frequency of thematic categories for each of the three time periods was calculated separately. If a thematic code was mentioned several times in the same article, it was counted only once. Second, stakeholder appearance was counted as the number of times a stakeholder was mentioned in a newspaper article. Additionally, the number of articles published by month was estimated.

²⁵ El Universal: <http://www.eluniversal.com.mx>

A qualitative thematic content analysis was undertaken in those notes in which a stakeholder code appeared; the objective was to understand the position and actions of stakeholders in relation to the new policy during each stage of the policy-making process. In order to gain understanding on the *position* of stakeholders vis-à-vis the regulation, only those articles in which the voice of stakeholders appeared, particularly quotes, were analysed (and not the voice of journalists, except for editorials and opinion columns for which we considered journalists as another stakeholder group with its own voice. In order to gain insight into the *actions* taken by different actors, all articles which made reference to stakeholders (either in their own voice or that of journalists) were analysed. Similarly to what was described for the analysis of interviews, a matrix was elaborated in which newspaper articles were placed in rows. Relevant passages and interpretations were put in columns, which corresponded to the following themes:

- Position (General statements about the regulation and its objectives, arguments against or supporting it)
- Specific actions undertaken in relation to the new policy

During the analysis, attention was paid to similarities and differences between actors within the same stakeholder group, and between different stakeholder groups. This same matrix was later expanded with the articles published between 2011 and 2012, which were retrieved by the manual search in the newspaper website. Discussions on coding and interpretation were sustained with the other researchers at INSP, who reviewed the thematic chart.

The media content analysis undertaken as part of this case-study presents, however, some limitations, which are described in the following section. .

4.8. Methodological limitations of the present study

The present study presents some limitations with regard to the overall design of the study, as well regarding the methods used (document analysis, individual interviews and media analysis), which are described below.

Design of the study. The present study made use of methods valid for policy analysis (interviews, document and media analysis). However, a major limitation was that these methods were not used consistently in the two studied periods. During the first period, analysis was based on interviews and documents; AMR was so scarce on the news

media that a media analysis was discarded. However, during the second part of the study, due to logistical constraints only a limited number of interviews were conducted; analysis was based mainly on document analysis and media analysis; the latter method was favoured by the intense media coverage of the antibiotic regulation. This limited the discussion of results between the first and second period studied.

Individual interviews. As it was mentioned earlier in this chapter, interviewing as a research method places some limitations. Although interviewing allows gaining insight about people's perceptions and lived experiences, respondent bias can occur as when the respondent gives a "socially desirable" or leaves out relevant information. Interviews take part in social interaction context, and they are influenced by that context (Fontana and Frey, 1994: 364). This is especially true when interviewing elites. When conducting interviews for the present study (such as top decision makers at the MOH) it was difficult to move interviewees from speaking on behalf of their organisations, quoting official documents and "the party line", to offering a personal assessment. This limitation was addressed, whenever it was possible, by interviewing different people within the same organization (for example: diverse respondents with different positions in the organisational hierarchy within one MOH office; or more than one academic from the same institution). Additionally, a strategy that proved to be useful for obtaining richer information from top MOH officials was conducting some interviews *after* their administration had concluded; for instance, interviewing in 2007 and 2008 health officials who held positions during the 2000-2006 administration.

When conducting interviews, researcher bias can be introduced by an inadequate type of instrument and wording, or by an interviewer with flawed questioning techniques (Fontana and Frey, 1994: 364). Furthermore, being the present study conducted by only one researcher, the validity of findings depends greatly on the skills of the researcher what may lead to analytic bias, such as relying on pre-existing beliefs (Miles and Huberman, 1994). As has been described before, these possible sources of bias were addressed by getting training in qualitative analysis, by piloting the interview topic guide. During analysis, information derived from interviews was triangulated within the interviews dataset, and with information derived from the document analysis. When coding the interviews and developing interpretations, I built on validity checks by being receptive to negative evidence, looked at complete data, and discussed interviews coding and data interpretation with colleagues. Finally, although respondent validation would have provided a relevant validity check when interpreting interviews, this feedback with informants was only possible with only few informants.

Media content analysis. With regard to the media content analysis undertaken as part of this case-study there are some limitations. First, the analysis used a unique coding scheme (“issue-specific” instead of “generic” frames) which limits the ability to generalise and compare the results with other past and future cases (de Vreese, 2005). However, whenever possible, the coding scheme was discussed in relation to generic frames (Dresler, *et al.*, 2012). Another limitation is that full media analysis (involving a large set of different newspapers) only covered a period of two calendar years (2009 and 2010), a period of high coverage in which the issue of AMR rose into the agenda, and policy drafting and initial implementation occurred. For the rest of the period, due to financial constraints, media analysis was based on the review of only one major newspaper. Furthermore, the study excluded the analysis of electronic media (radio, television and internet) which are important in Mexico (Sánchez and Sivaraman, 2010), and might have reflected the views and actions of stakeholders differently from the printed media. Finally, as other authors have pointed out, we can describe the representation of issues and stakeholder participation in the media, but we can only infer their relation with the policy process (Esmail, *et al.*, 2010). In sum, media analysis, allowed understanding media framing and public discussion of AMR and policy; as well as gaining insight stakeholder participation. However, the analysis of agenda setting for the second studied period would have benefited from conducting as well a larger set of interviews. As Kingdon ascertains, even if documents can provide insights on the policy process and agenda items, there is no substitute for conducting interviews. With regard to this limitation, even when no formal interviews were conducted during the process by which a policy was enacted in 2010, being an “insider” in the policy process (coordinating the drafting and dissemination of the INSP-AMIMC-APUA policy proposal) gave me the opportunity to have personal communication with several of the actors involved. In this manner, I was able to learn about their insights into the processes of agenda-setting, policy drafting and adoption.

4.9 Position as researcher

Gill Walt and her colleagues (2008) advice that we need to reflect on the *positionality* of researchers when conducting health policy analysis, given its implications for access to data and the construction of knowledge. To this regard, my connection with the Mexican National Institute of Public Health (INSP) is worth discussing. This is a research-oriented decentralized institute of the MOH. During the first period of the study, when most interviews were conducted, I contacted possible interviewees presenting myself as a LSHTM research student and a visiting researcher at INSP. When contacting health officials, an introductory letter was sent by a senior INSP

researcher. Being in close contact with researchers at INSP put me in the position of an 'insider'; this facilitated the identification of relevant actors in the health and pharmaceutical policies arena, as well as gaining access to top decision makers in order to request interviews. However, even when access was attained, this did not always imply openness, as discussed before. This could relate (at least to a certain extent) to the complex relationship between INSP and the MOH, particularly regarding their independence, which might have affected the perception of the academic neutrality of this study. There were interviewees (from inside and outside the MOH) who, when criticizing a MOH programme, requested that I stop recording, or keep something 'off the record'. Furthermore, being myself Mexican and being close to the national public health arena, favoured a broad understanding of the cultural and political contexts in which policy-making occurs, as well as an understanding of jargon and an ability to read non-verbal cues. Yet 'insiders' have been accused of being inherently biased, as they do not have a critical distance from what they study, and carry with them a large number of assumptions, all of which might affect a comprehensive understanding of the policy process (Walt, *et al.*, 2008; Welch, *et al.*, 1999). Aiming to address this limitation, during data collection and analysis, I sustained discussions with 'outsiders' –both researchers outside Mexico, as well as researchers in this country, but alien to the pharmaceutical policy arena.

Moreover, during the second period of the study, my research team at INSP was involved in the policy-making process around the regulation of antibiotic sales. I participated in coordinating the drafting of the INSP-AMIMC-APUA policy brief on AMR (fragments of which were later on incorporated into the regulation document), and in some communications with decision makers. This put me in a position of being both participant and observer of the policy process. While this insider position allowed me to have a closer understanding of some parts of the policy process, it also jeopardized the neutrality of the analysis regarding the position and actions of diverse stakeholders. In order to minimize this risk, two researchers outside the pharmaceutical policy research team at INSP were involved in order to aid in the codification of newspaper notes (investigator triangulation, see (Dreser, *et al.*, 2012), and discussions with other outside researchers were sustained when interpreting data and drawing conclusions.

Finally, as Walt *et al.* (2008) assert, researchers linked to particular policy environments (as is my case with the INSP and public health) will naturally be more concerned with developing policy relevant conclusions than new theoretical or methodological understanding, a critique that might well apply to the present study. Nevertheless, as I described in the discussion section, this study still contributes to the

advance of the incipient field of health policy analysis in low and middle income countries (Gilson and Raphaely, 2008) by applying a theoretical perspective in empirical research on a health policy issue.

4.10 Ethical considerations

Regarding the involvement of people in this study (in individual interviews), ethical approval was requested and obtained from the Mexican National Institute of Public Health (INSP) Ethics Committee (approval number 185) and from the LSHTM Ethics Committee (approval number 5034).

Interviewees were fully informed about the nature of the study using information sheets; consent to be interviewed and audio-recorded was obtained in writing, through consent forms (please see Appendix 8). The information sheet included my name and contact details, the reason why the informant's cooperation was requested, and how confidentiality would be maintained. I provided all interviewees with a presentation letter with the contact details of the Institution I was working with in Mexico. In these documents, the general theme of the study was mentioned without detailed explanations on its objectives, in order to prevent interviewees from creating perceptions before the interview, which could result in bias. All interviewees were told that they could interrupt their participation in the study at any time, and that they would have access to recordings and transcripts.

In order to assure confidentiality of interview data, an ID code was assigned to each interview recording and transcript. Digital recordings and electronic versions of transcripts have been kept in password protected computers (and locked drawers, in the case of tapes and paper transcripts), and will be destroyed after conclusion of this thesis. Transcripts had no signs of identification of participants (this information was deleted), and participant ID codes were used instead. The contents of the interview transcripts have been available only for those directly involved in the research (including my advisory committee at LSHTM and my research team at INSP). The list of participants in the study is presented in a manner that does not publicly disclose the identity of the participants.

When specific quotations that were retrieved from the transcripts were presented to illustrate particular issues or views, the anonymity of the respondent was preserved; only the institutional base of the respondent has been cited.

5. RESULTS (I): POLICY INACTION ON ANTIMICROBIAL MISUSE AND RESISTANCE DURING THE 2000-2006 ADMINISTRATION

This first empirical chapter presents findings related to the first specific objective stated for the present study: *To analyse the factors related to AMR agenda placement in Mexico during the 2001-2006 administration and the adoption of related policies, by focusing on problem definition and recognition, the political context, the development and perception of policy alternatives, and the role of policy entrepreneurs.* The information presented was obtained from interviews conducted with stakeholders during 2006-2008, including government officials, NGOs, pharmaceutical-sector representatives, researchers and health professionals; their perceptions about AMR, AMR agenda status, and policy alternatives to deal with AMR were explored. Additionally, information derived from the analysis of official documents from the legislative and executive, as well as grey literature (see Table 4.2) is presented to describe health policy priorities in the country, AMR agenda status and background information of the stakeholders involved.¹

5.1 Political context

After 70 years of hegemonic centre-right party rule, in 2000, a new conservative centre-right party advocating free enterprise came to power: the National Action Party (PAN, by its Spanish initials), with Vicente Fox as president. At that time, Dr. Julio Frenk, a well-recognised public-health official and academic, was appointed Minister of Health. He was in office between December 1, 2000, and November 30, 2006

As was described in the literature review chapter, during this administration, Mexico underwent an important health-system reform. The leadership of the Health Minister Julio Frenk was pivotal for the development of the reform that led to the adoption, in 2003, of the subsidized insurance scheme *Seguro Popular* (Popular Health Insurance; SP, by its Spanish initials) (Gómez-Dantés *et al.*, 2015). The development of the SP was supported by evidence of out-of-pocket payments on health (including medicines) that led to further impoverishment and deeper inequity; it was recognised that assuring medicine availability and supply was key for the functioning of the new SP and

¹ Some of the findings described here have been published or presented before in: Leyva-Flores, *et al.* 2006; Dreser, *et al.*, 2008; and Dreser, *et al.*, 2009.

sustaining the health-system reform (Nigenda, *et al.*, 2003). Furthermore, one of the most pressing demands raised during the presidential campaigns was the problem of medicine stock-outs in public services, an issue that was reflected frequently on the mass media and later became, as stated in official documents, a “presidential priority”. Besides the policy developments around SP, another medicines related topic was highly discussed in the beginning of this administration: generic medicines. A series of regulatory changes during 1997 and 1998 led to the expansion of the market for generic medicines, which faced opposition of the leading pharmaceutical industry associations; the conflict around this topic extended to the beginning of the new 2000-2006 administration (Shadlen, 2009). In 2002, a MOH decree was introduced, by which public health services were bound to buy only generic medicines. The need to strengthen medicine management and supply within the SP, the presidential priority on guarantying the supply of medicines (decreasing stock-outs), and the conflict around generic medicines, led Health Minister Frenk to commission the development of a national pharmaceutical policy document (NPP). This is further explained in section 5.3.

The overall weight of medicines for the administration was stressed by a number of interviewees:

“Within the health sector [...] the issue of medicines, it is a topic that I would say that has too much emphasis on politics” (MOH15).

“Medicines, in this country, have been used as a political weapon”. (PHAR1)

The relevance of medicines policies for this administration, and especially on improving the supply and access to high quality medicines, is revealed in many MOH documents, and by this discourse of Minister Julio Frenk in early 2003².

“These are three major challenges we have to face in the National Health System: the challenge of quality, the challenge of equity and the challenge of financial protection. Precisely with this perspective is that the Ministry of Health has been given the task of designing and promoting a comprehensive pharmaceutical policy that responds to these three challenges. [...] The objective is to guarantee universal access and rational consumption of high quality medicines for the entire population at a cost that Mexican society can afford. So here the key words are: access, rational consumption, high quality of medicines and fair prices.

² Message from Dr. Julio Frenk Mora, Secretary of Health, at the opening of the symposium "Interchangeable Generic Drugs" organized by the General Health Council and the Mexican Academy of Surgery. March 18th, 2003. In: http://www.salud.gob.mx/unidades/dgcs/sala_noticias/discursos/2003-03-18-MEDICAMENTOS-GENERICOS-INTERCAMBIABLES.htm

There are also all the policies in terms of procurement and supply, which are fundamental. The main claim made by citizens, and where the President of the Republic has given instructions to all holders of public health institutions, including the general managers of IMSS and ISSSTE and myself, is that we make visible improvements in the subject of the supply of medicines.

Finally, the last great fusion that has to do with the quality of the provision of services, includes elements such as rational prescription based on scientific evidence, a very complex issue of therapeutic adherence and responsible self-medication. As you can see, it is a policy that wants to include instruments around each of these links in the chain.

Evidently, in a comprehensive pharmaceutical policy, one of the key elements is the production of generic medicines, which is one of the internationally proven means to improve medical care based on the quality, efficiency, supply and competitive price of medicines.”

It is important to underline that while Minister Frenk mentioned the objective of achieving the rational use of medicines (by improving evidence-based prescription, patient’s adherence, and self-medication) achieving this objective was diluted along the administration, as it is described later in this chapter.

5.1.1 The MOH agenda, jurisdictional borders, and perceived responsibility on AMR

The National Health Programme (NHP) 2001-2006 (SSA, 2001) centred on improving equity, quality, and financial protection in health care, as well as strengthening the health system. To this end, the NHP document proposed ten strategies, some relating to medicines policy. The most important of these strategies was the creation of a new insurance scheme, the *Seguro Popular* (SP).

Another NHP strategy consisted in strengthening MOH role in health systems stewardship. One of the related lines of action was the “reinforcement of national policy on access and rational use of medicines”, which included three components: ensuring medicine stocks in public services, improving use of quality generics, and elaborating standard-treatment guidelines (STG). Another line of action was strengthening the role of the MOH on protection against health risks. Consequently, a new regulatory agency was created: the Federal Commission for the Protection against Sanitary Risks (COFEPRIS, by its Spanish initials), which was charged with regulating the quality of medicines –together with numerous other responsibilities involving environmental hazards, food, pesticides and other chemical products, and around 200 more health hazards. Importantly, COFEPRIS was tasked by the Minister of Health to develop a national pharmaceutical policy towards the end of the administration. Finally, the NHP

document also proposed a strategy named the National Crusade for Health Care Quality which included, among other objectives, the promotion of STG and the certification of health services, health professionals and the universities dealing in their education. The strategy was assigned to the Health Quality Directorate (HQD). Improving medicines supply in health services was regarded as one of the five key commitments of the Crusade.

It is important to mention that within the NHP there was a section which described the problem of inadequate use of antibiotics, both related to self-medication and to physician over-prescription. Nevertheless, it did not propose specific lines of action to address explicitly these problems (the action proposed was developing STG to improve overall prescription). Regarding antimicrobial resistance, the only action proposed was related to improving tuberculosis treatment. Importantly the NHP did not explicitly assigned responsibility on AMR to any office.

Besides the creation of COFEPRIS other MOH offices were opened or re-arranged in order to better align their function with the NHP. Among these were the National Centre for Technological Excellence in Health (CENETEC, by its acronym in Spanish), in charge of producing information to improve the management, assessment and use of health-related technologies, including medicines; this centre was assigned later on the task of developing STG. The Economic Analysis Office, as well as a National System for Health Information were created to support health policy decision-making. The Epidemiological Surveillance Centre, belonging to the General Directorate of Epidemiology, was reorganized: preventive programmes were developed for tuberculosis, vector-borne and zoonotic diseases, as well as health emergencies and disasters. This Centre also held the already existing Hospital Network for Epidemiological Surveillance (RHOVE), focused on the surveillance of nosocomial infection (including surveillance of antimicrobial resistance). Additionally, the General Health Council (*Consejo de Salubridad General*) which depends directly on the President, continued with its responsibility of establishing health priorities, certifying medical units, and managing the Mexican national medicines list (*Cuadro Básico y Catálogo de Insumos del Sector Salud*).

During President Fox administration, the general topic of medicines was high on the executive health agenda, as reflected on the Proceedings of National Health Council (the MOH board responsible for the formulation of health policies, composed by the all the state-level health ministers). Medicines were discussed in 18/25 meetings held from 2001 to 2006 by the National Health Council. The main subjects addressed were

the of medicines in the public sector as an indicator of quality (12/25 meetings, which was described in the proceedings as a “Presidential priority”), and the management of medicines for the recently created SP. AMR was not mentioned as an agenda topic in itself, with antimicrobial resistance brought up exclusively in relation to medicines for AIDS and tuberculosis.

Among the interviewees pertaining to different MOH offices, there was also a shared perception that improving medicines procurement and stock in public health services, as well as assuring the quality, safety and efficacy of medicines were the top priorities during the administration. Improving the prescription, dispensing and use of medicines was less often mentioned as a priority, while containing antimicrobial resistance was seldom recognized as a priority (see introductory questionnaire, Appendix 4). As described in these testimonies of MOH officials:

“There was much controversy on the media about medicines stock-outs on public services. So one of the priorities when president Fox arrived was to improve the supply of medicines “(MOH5)

“The issue of medicines has received a great deal of attention in the current administration, larger than on other occasions, manifesting this in both the investment made in medicines and in different initiatives, whether to define a policy, or to monitor the proper supply of medicines. It was established a whole system of measurement of the supply of medicines, of measuring the satisfaction of the population with the supply of the prescriptions and this has been very closely monitored, so much so that it is one of the indicators that the presidency itself follows” (MOH14)

Among MOH interviewees, there was also fair consensus on the definition and causes of AMR, which was related to other two problems: self-medication (over-the-counter sales of antibiotics) and inadequate medical prescription. However, MOH interviewees did not reach consensus on the interventions required to address AMR at the national level or the implications of different policy alternatives. Even more, they were uncertain as to which MOH office was the competent authority to deal with policies or interventions aimed at improving medicine use and containing AMR. None of the offices recognised a direct responsibility in this area; many pointed in the direction of other offices.

“Improving prescription? That is responsibility of the Ministry of Education.” (MOH8)

“Rational use is not a domain of COFEPRIS. That is responsibility of another sub-ministry, Health Quality“(MOH3)

The Health Quality Directorate (HQD) recognised rational use of medicines and AMR as a shared responsibility between this office and COFEPRIS, with the latter office having the authority to regulate over-the-counter sales of antibiotics:

“No, we don’t deal with pharmacies at all. We don’t have the authority that COFEPRIS has” (MOH7)

The HQD recognized its responsibility on improving medical prescription, but adduced lack of resources as an impediment for executing such interventions, specifically the STGs recommended in the NHP and other pressing priorities. This office was almost fully dedicated to other endeavours, namely, measuring and improving medicine stocks in public-health services and supporting the National Crusade for Health Care Quality.

“It is just lack of structural capacity, lack of attention and of budget to address all the problems that have to be fixed in a system [...] Clinical guidelines, for example: we had money for one year to develop them. And then it was over [...] And that was only the first step. Now imagine implementing it, that 50,000 physicians use them. No, the challenge is not easy.” (MOH7).

Similarly, a respondent in the Health Promotion and Prevention Directorate, admitted that they were not currently engaged on activities promoting the rational use of medicines in the population, although that would be part of a future agenda with COFEPRIS:

“We have reestablished contact between this division and the COFEPRIS about four, five months ago, because we are looking at the common agenda and within the common agenda –between them in the part of health regulation, and us in health promotion– has emerged the issue of orientation and education of the consumer of medicines, and this is therefore within the agenda pending to be developed...” (MOH14)

As for the COFEPRIS interviewees, they did not recognize their direct responsibility on rational use of medicines, explaining that the Commission was oriented to “involuntary risks”, thus their main activity was on regulation to assure quality of medicines, and pharmacovigilance.

“The Federal Commission’s [COFEPRIS] mission is basically to protect the population against involuntary risks to the person, what does this mean? That it is the will of the person to go with a doctor, who gives him a medical prescription, and it is the hundred percent willingness of the person to acquire or not to acquire the medication, to take it or not to take the medication. What is not the will of the person, is that the medication prescribed is of adequate quality, is efficient and safe; that is an act that the authority, in this case the Federal Commission has under its tutelage, being a guardianship of the public good that is health.” (MOH6)

The contradictory views on interventions needed to promote rational medicines use and perception of responsibility on this matter is summarized in Table 5.1.

Table 5.1: Perceptions of possible solutions and responsibilities among MOH interviewees

Possible solutions to improve the use of medicines in general, and antibiotics in particular	Perceived responsibility on addressing AMR
<p>Economic Analysis Office (EAO)</p> <ul style="list-style-type: none"> The main action is to improve access. Improving access, self-prescription is avoided. There has to be more control on medicines dispensing The problem about inadequate prescribing is that there is not continuing medical education, guidelines, and there is excess promotion, especially in the private sector. This is related to absence of someone overseeing what physicians are prescribing, especially in the private sector. The solution is to have a third-payer, the <i>Seguro Popular</i> or private health insurance to oversee prescriptions. The solution is to “institutionalize” doctors, to avoid them to be independent or autonomous actors. Regarding controlling excess marketing, "good practices" could be promoted. 	<ul style="list-style-type: none"> EAO is not directly involved here, because these are "clinical issues" rather than economic topics. They do not know exactly who is developing interventions on AMR, and if there is an explicit policy on that issue. EAO participated on the National Pharmaceutical Policy Proposal.
<p>Regulatory agency (COFEPRIS)</p> <ul style="list-style-type: none"> Antibiotic misuse comes from a problem of doctor-patient relationship, in part because of the patients demanding antibiotics. This problem should be addressed with educational campaigns directed both to physicians and patients 	<ul style="list-style-type: none"> AMR is not within the competence of the regulatory agency, which is focused on assuring the quality and safety of medicines. The responsibility belongs to Health Quality Directorate. Educational campaigns have to be addressed by that office. COFEPRIS participated on the National Pharmaceutical Policy Proposal.
<p>Health Quality Directorate (HQD)</p> <ul style="list-style-type: none"> The determinants of inappropriate use of medicines in the country are the deficient training in medical schools and institutions, the pressure of the pharmaceutical industry in promoting medicines, and the lack of a monitoring and feedback system to inform prescribing practices. 	<ul style="list-style-type: none"> The responsibility is shared by COFEPRIS and this office. The HQD can influence policies, but COFEPRIS has the authority to regulate. This office tried to implement STG to improve prescribing, but there was not enough financial resource to do so. The office objective is to improve quality of services. However, given the President's priorities on access to medicines, the main focus of HQD was to improve and monitor medicines stock in public health services.
<p>General Health Council (GHC)</p> <ul style="list-style-type: none"> Over-the counter sales of antibiotics could 	<ul style="list-style-type: none"> The responsibility of the GHC on medicines is mainly related to integrating

<p>be addressed with training more pharmacists and bringing them to work in pharmacies. Rational prescribing of antibiotics has to be promoted among physicians.</p>	<p>the essential medicines list EDL (<i>Cuadro básico</i>) and defining policies on generic medicines.</p> <ul style="list-style-type: none"> • Does not recognize their role in better connecting EDL with STG and medical training in order to promote RUM. • The responsibility of promoting STG and good prescribing practices belongs to each healthcare institution –IMSS has developed important interventions- and to medicine schools. • COFEPRIS should insist more on not allowing medicines sales without prescriptions, although it is difficult to deal with the private sector. COFEPRIS could also develop educational campaigns.
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5.1.2 The legislative agenda on health

This period was characterised by active legislative work on health issues; while 82 reforms to the General Health Law (GHL) were approved during the 2000-2006 administration, only 26 reforms to the GHL were approved during the whole previous decade (1989-2000). The majority of the GHL reforms during the 2000-2006 administration (16/82) were related to with the enactment of SP, as well as medicines issues. The medicine-related topics debated in Congress revolved around the regulation of so-called “miracle products”, generics, counterfeit and non-bioequivalent medicines, subjects which were brought to the congressional agenda by the pharmaceutical industry and by physicians members of Congress. In the words of a Health Commission member:

“Over the past years, the pharmaceutical industry has approached Congress to expose their proposals and opinions [...] Topics such as ‘miracle medicines’ have been raised by senators who are specialised doctors, some of them cardiologists [...], people who really know about this topic because of their experience...” (GOV1)

According to this interviewee, rational use of medicines and AMR were not discussed by the commissions; AMR topics did not appear in any of the reports of the Congressional Health Commission hearings.

To sum-up: President Fox administration was very active in promoting health-policy reforms under the leadership of Health Minister Julio Frenk, many of them related to medicines. This could have opened a ‘political window’ for medicine use and AMR to reach the health-policy agenda as well, but the political context was not conducive in

this regard. At the time, the competing issues on the executive agenda were the formulation and implementation of SP, and the National Crusade for Health Care Quality. Assuring the provision –not rational use- of medicines was at the heart of both initiatives. SP proved the most important public policy in that administration. One interviewee explained that during that administration, the MOH engaged in a “mono-thematic” (MOH16) drive towards health reform and SP coverage.

With regard to the responsibility on developing and implementing interventions directed to AMR, there was a clear fragmentation of responsibilities among the different MOH offices. Probably because many of these offices were recently re-organized, interviewees underlined a poor linkage among them. The responsibility of some elements pertaining to a national policy on AMR (see Boxes 2.1 and 2.2) were scattered between longstanding offices (GHC), and newly formed offices (COFEPRIS, CENETEC, HQD, EAO).

As it is explained in the next section, during this administration there were groups undertaking actions or advocating for policies on the rational use of medicines and containing antimicrobial resistance. However, none of the interviewees within the government acknowledged these initiatives. In contrast, according to the testimony of one respondent (GOV1) the pharmaceutical industry was able to bring their own interests to the congressional agenda, especially regarding the regulation of generics, a topic that boosted during the Fox administration. As it was mentioned in Chapter 2, the pharmaceutical industry groups have a role as consultants in Congress³. The academic and professional organisations interested in promoting rational use of medicines and containing AMR had no direct channel of communication with either the legislative or the executive body.

5.2 Problem recognition

5.2.1 Problem identification

The occurrence of inadequate use of antibiotics has been amply documented by researchers in Mexico, particularly during the late 1980s and early 1990s (Dresler, *et*

³ An internal document of the pharmaceutical industry association CANIFAMA, states that this Association “is a body of consultation and collaboration with the State for the design and execution of policies, programs and instruments that facilitate the expansion of economic activity [...]. The most important function of the Health Affairs Committee is to be a link between the Pharmaceutical Industry and the Ministry of Health. This relationship occurs in several instances and levels of authority [...]”. CANIFARMA-Health Affairs Committee. Report 2000. In. <http://www.canifarma.org.mx> (accessed March, 2006).

al., 2008; Wirtz, et al., 2008). Nevertheless, as described by academics interviewed in the study, research on antibiotic use has been undertaken mostly as “biopsies” (ACAD4) to diagnose the situation in selected public and private health services, without however generating national data on antimicrobial consumption (ACAD2). Available findings on the health and economic impact of AMR have been minimal. As was described in chapter 2, research on antibiotic resistance has been reported in papers and conferences documenting specific cases such as hospital outbreaks and resistance levels in a particular health service. None of the MOH made reference to these research findings; only some interventions of antibiotic developed by the social security institution (IMSS) were mentioned, with regard to their experience on developing STG. During this administration, although monitoring systems were put in place to measure medicines stocks in public services, mechanisms to assess the use of medicines (for example, indicators to assess quality of prescription, or consumption levels) were not put in place. With regard to antimicrobial resistance, the General Directorate of Epidemiology implemented a hospital network for the surveillance of intra-hospital infections (the RHOVE network) which also collected information on antimicrobial resistance. However, at that time, as interviews explained, collected information was not used to provide feedback to prescribers, and was not publicly available.

When explaining their views on the scope of the problem of AMR in the country, none of the interviewees made explicit references to indicators to measure the problem, nor to focusing events that could call their attention to the severity of the problem; very few made reference to research results. The MOH interviewees recognized that the lack of indicators on AMR was a problem in itself:

“We don't have enough information in order to identify the magnitude of the problem and where it is more severe”. (MOH7)

“I believe that the impact generated by non-optimal use of antibiotics is not yet documented. [...] [With regard to antimicrobial resistance] this is an issue of health policy, a theme of rectory, where the MOH would have to generate evidence to exercise another type of regulation”. (MOH7)

Similarly, academics also underlined the lack of indicators:

“The indicators that are not measured end up not being a priority, I believe, within health systems or priorities within any ministry. And there are no, indicators have not been used to measure the adequacy of prescription or dispensing.” (ACAD2)

5.2.2 Problem definition

Most interviewees recognised AMR as an important problem due to its consequences; health risks related with antimicrobial resistance and unnecessary expenses emerging as the most frequently cited effects, and adverse drug reactions lagging behind. Interestingly, despite the fact that the highly positioned problem of medicine stock-outs in public services may be in part a consequence of over-prescription, this relation was not recognized by interviewees. Overall, the severity of the problem of inappropriate use of medicines and AMR was stressed more frequently by academics and representatives of NGO's, than by governmental officials and industry representatives.

"[antimicrobial misuse and resistance] is a universal problem that has a terrible impact in our society, both economic and ecological, as well as in the patients' health". (ACAD4)

For the majority of the respondents, AMR was a twofold problem residing in self-medication and inadequate-prescription practices, which they associated, in turn, with other problems. The problem of inadequate prescribing was more emphasised by academics and representatives of medical associations. In general, MOH respondents tended to overemphasise the problem of self-medication over the problem of inadequate prescribing of antimicrobials.

"We still have a long way to go before medicines sales require a prescription [...]. I am very concerned in that sense, yes, with antibiotics; we are facing strong bacterial resistance problems" (MOH14)

Self-medication with antibiotics. According to most of the interviewees, self-medication stemmed from the insufficient health-insurance coverage, lack of enforcement of regulations, and from cultural aspects of a Mexican society accustomed to consuming antibiotics as "quick fixes" for health problems. With regard to lack of access to health-care, one interviewee explained:

"Either you go to the doctor or go to the pharmacy. The truth is that it's cheaper to go to the pharmacy because if you go to the doctor the consultation costs 200 to 300 pesos. You don't have enough even for the consult. The medication can cost you less, so you go directly or you ask the employee of the pharmacy" (PHAR3)

Professional pharmaceutical associations explained self-medication as a problem deriving from the absence of professional pharmacists in pharmacies, as pharmacy clerks could not distinguish over-the-counter and prescription-only medicines (PROF1,

PROF 6, INDUS 1). The lax governmental regulation that allowed the over-the-counter sales of antibiotics was mentioned only by few respondents. According to this representative of the pharmaceutical industry, they are also to blame:

"I think that industry also has a lot to do with it, because the industry does not care that the pharmacy is professionalized, because in any case the medicines are sold with or without a prescription, they are sold freely, something that do not happen in other parts of the world. But also the Secretariat has turned a deaf ear here, because it is a way not to face the social and economic problems that it represents (INDUS1)

According to two MOH interviewees (MOH3, MOH6), not enforcing the regulation of medicines sales only with prescription, was, in fact, a *laissez-faire* policy to facilitate access to medicines, given the lack of coverage of public insurance systems.

"Why have not we done it? There is a problem that is clear: we have not yet been able to achieve universal coverage in health services; the popular insurance goes there, we will have, I hope that in 2010 –fingers crossed- we will attain that universal coverage. What happens with patients today? Today a person has two hundred pesos in the bag and has to make a decision: either I go to the doctor, I pay for the consultation and I run out of money for the medication; or I'm going to buy the medication."(MOH6)

On the other hand, pharmacy owner associations, tended to minimize the problem of antibiotic sales without prescription, and their responsibility on it: *"I was telling you, that in order to be objective, 95% of all antibiotics are dispensed with a prescription"* (PHAR2). Similarly, other representative of a pharmacy owner association stated: *"In any city in Mexico, if someone has a cold the first thing they will say to him is take an antibiotic ... it is very much a cultural issue"* (PHAR1).

Inadequate prescribing. Inadequate prescribing, in turn, was associated by interviewees with deficiencies in the education of physicians, although others underline cultural aspects as well: *"It is the culture of each hospital and of each physician"* (MOH5). The promotion of medicines by the pharmaceutical industry was recognized by many of the interviewees as a relevant factor that explained inadequate prescribing (MOH1, MOH7, MOH14). Interestingly, the pharmaceutical industry perceived that they had a key role in educating physicians:

"What happens is that the pharmaceutical industry educates the doctors. The only way of staying current is through the pharmaceutical industry. [Company name] has over 30 projects right now, symposiums, Internet courses, distance learning courses, continuing education courses, to provide continual education, and not just about their products." (INDUS2)

Interviewees from the MOH recognized the need to improve medical prescribing, and to strengthen physician education. However, this was deemed as a very difficult task, given the number of physicians and medical schools involved; the needed collaboration with the Ministry of Education, and the perception of opposition by medical professionals. In words of a HQD official:

“The part that has to do with the training of the doctor involves the Ministry of Education, that is, it involves another area, and the universities. Initiating any change in the doctor's curriculum is really a Herculean task [...] Going into the curriculum implies putting 74 medical schools in the country into agreement [...]. I think that the issues of prescription and improvement in the use of medicines reach a very delicate point, that is the autonomy of medical practice, and that is one of the great barriers within health institutions, not only in Mexico, in all the world. Doctors reject much that their freedom of choice is restricted” (MOH4)

Furthermore, MOH interviewees acknowledged that not enough attention was being devoted to AMR. They recognised that it was particularly difficult to find a solution because of the interdependence of AMR with other problems and the prevalence of conflicting priorities on the agenda, namely, enhancing access to quality generics and improving medicine stocks in public services. To summarise, government inaction regarding AMR was related to the complex situation of medicines in Mexico. In the words of a top MOH health official:

Look, what is happening to us is the same that has happened to any other country in the world where the main discourse is coverage, and later the issue of quality begins to emerge; it is the natural evolution of the problem. I think that this has been the case of Mexico: firstly it is ‘let's have the medicines’ and later it is ‘let's see how they can be used as God commands’. And the problem of medicines stock outs is so complex [...]” (MOH7)

This same MOH official explains that the issue of AMR has indeed been mentioned in some meetings of the National Health Council, from two different perspectives: availability of antibiotics in the public sector, and nosocomial infections. The measures that have been developed to address these issues are improving medicines availability in general, and regarding nosocomial infections, it had to be addressed beginning with the most basic, promoting hand-washing, which hasn't proved to be easy. So, given the situation of the Mexican health system, addressing the issue of the quality of prescription means a “level of sophistication” that has not been reached yet. However, he concluded,

“We are plenty aware—and this is a topic that has been raised several times in the National Health Council—of the need to influence on the prescription patterns of physicians. But we haven't had time, and I don't think we will have time during this administration, to address this issue. I want to think that on the

next administration —having solved the issue of stock outs, or at least generally improved it—[...] naturally the next issue to be addressed will be the issue of medical prescription.” (MOH7)

According to other MOH interviewees, the issues of rational use of medicines and AMR were raised sporadically in important policy meetings, but were not considered urgent. Some interviewees explained that AMR was not on the agenda because there has been no leadership to promote it; simply, “no one has put it forward” (MOH4). As this MOH official mentioned: *“I think it has simply not been prioritized, right? It is not an issue that is high on the agenda, it is discussed, but it is not high on the agenda” (MOH14)*. Contrastingly, for some interviewees outside the government, the absence of governmental initiatives to improve the use of antibiotics was related to corruption and lack of knowledge:

“So there are political interests, there are economic interests and there is corruption, yes? And there is ignorance and, please, IGNORANCE in capital letters” (ACAD1)

In general, AMR was perceived as a complex issue framed under two spheres: first, as a problem connected to circumstances intrinsic to the health system, such as limited access to health services and lack of mechanisms to regulate the private sector; second, as a problem pertaining to the national culture, or the individual realm, where people self-medicate regularly, and physicians treat patients with insufficient knowledge and inadequate prescription habits. Such a complex problem warranted complex solutions that were difficult to act upon.

Although government and non-government actors recognised AMR as a problem, their perceptions differed with regard to its level of urgency. Non-government actors viewed AMR as an important problem requiring urgent governmental intervention, whereas government stakeholders saw it as relative minor problem compared to priorities such as the provision of medicines in the public sector. For some interviewees, these were mutually exclusive agenda items.

Despite research in Mexico identifying AMR as a problem and most government interviewees acknowledging its existence, AMR was not perceived as a severe problem that had to be acted upon urgently. This can be attributed to various factors including the prevalence of competing items on the official health agenda, the absence of indicators, lack of feedback from previous programmes, absence of focussing events that may draw attention to the problem, and the perceived complexity of the nature of the problem and its possible solutions.

5.3 Development of policy proposals

Inadequate use of medicines, particularly antibiotics, has been the object of various studies; however, researchers have focused considerably more on the *occurrence* of the problem in the public and private sectors than on *interventions* to combat it (Dresler, *et al.*, 2008; Wirtz, *et al.*, 2008). Exceptionally, in the late 80s and early 90s, the Mexican social security system (IMSS by its Spanish initials), the largest public-health security system at the time, implemented, evaluated and documented a series of educational and managerial interventions for improving antibiotic use in common health disorders such as acute respiratory infections and diarrhoeal diseases. Although the interventions were demonstrated to be successful in several publications (Guiscafre, *et al.*, 1995 and 1998), the MOH did not adopt them to be implemented nation-wide. Two of the interviewees, who authored these investigations (ACAD4, ACAD5), recognized that they did advocate for these interventions to be adopted at IMSS, but not in other public or private services.

Two main non-governmental groups were identified as performing activities aiming to gain awareness on the problem of AMR, or developing policy proposals. In 1988, the NGO Health Action International-Mexico together with academics in various universities formed the National Committee for the Rational Use of Medicines aiming to improve the quality of education in therapeutics for health professionals (Vicencio Acevedo, 1999). HAI-Mexico (2000) and professional associations (CTFM, 1999) have demanded the government to provide patients and prescribers with independent, practical and reliable information on medicines. Nevertheless, as one interviewee of an NGO explained, gaining access to MOH officials proved to be very difficult: "They are like Gods" (ORG1). Thus, this organization was not actively involved in promoting their proposal to the MOH. Even more, despite an important momentum of activity during the 1990's, afterwards the activities of such organizations subsided.

During the 2000-2006 period, other groups developed actions on AMR. In particular, the Mexican chapter of the Alliance for the Prudent Use of Antibiotics (APUA), which is hosted by the Mexican Association for Infectious Diseases and Clinical Microbiology (AMIMC) organized annual workshops on antimicrobial resistance, directed to physicians; and also got involved in teaching about the use of antibiotics in some medical faculties. In 2001, APUA, AMIMC, the Pan American Health Organization (PAHO) and the Pan American Society for Infectious Diseases (API) organized an international symposium on antimicrobial resistance in Guadalajara, Mexico. It concluded with the "Guadalajara Declaration to Combat Antimicrobial Resistance in

Latin America”⁴ which involved key recommendations to improve antibiotic use. Some of the interviewees that participated in this Declaration (ACAD7, ORG2) explained that there weren’t efforts to communicate it to decision makers in Mexico, besides inviting some MOH officials to the launch of the Declaration. And, in fact, none of the MOH interviewees knew about it. During the following years, there were scarce efforts by these organizations to approach the MOH. According to a top researcher on antimicrobial resistance, this topic was not even relevant within public health research institutes: “*They don’t care about a bunch of scientists talking about bugs*” (ACAD8). When prompted about the role of PAHO on fostering AMR policies in Mexico, one respondent from this organization (ORG4) explained that, differently from other countries, Mexico did not need much support, as there was already an “excellent group of specialists” (referring to APUA-AMIMC).

As was mentioned earlier, most interviewees related AMR with the problems of self-medication and inadequate prescription. Accordingly, most of them were able to point to a number of possible solutions (for example, see Table 5.1). Rarely, however, they did cite studies on the situation in Mexico when discussing the effectiveness or feasibility of courses of action against AMR. Only interviewees from NGOs referred to the WHO initiatives on AMR, and only one referred explicitly to the *Global Strategy for the Containment of Antimicrobial Resistance* published in 2001. Not one of the MOH interviewees was aware of the WHO Global Strategy, or the measures it recommends for tackling AMR. MOH respondents explained that “tons” of documents arrived each day to their offices, and it was impossible to read everything (MOH3). Another MOH official, when recognizing that he was not aware of the Global Strategy on AMR, nor of policy initiatives on AMR developed by other groups in the country, explained: “*Probably we are still very immature as a society; the influence over political agendas is very endogenous, or influenced by powerful interest groups*” (MOH14).

Interviewees were presented a list with some of the policy recommendations on AMR were asked for their opinion on the feasibility of implementing them in Mexico. With regard to enforce a prescription status for all antibiotics, all interviewees regarded this as a needed intervention; however, MOH interviewees perceived that implementation was unfeasible in the sort term, given insufficient health insurance coverage in Mexico and the probable opposition of patients and pharmacies. Enforcing a prescription status for only *some* antibiotics seemed more viable to them. None of the interviewees made reference to the Chilean experience. Regulation of prescription (such as limiting

⁴ APUA: Guadalajara Declaration to Combat Antimicrobial Resistance in Latin America. At: http://www.tufts.edu/tufts-test/med/apua/Chapters/Guad/guad_eng.html

prescription of some antibiotics only by infectious diseases specialists) was perceived as being likely opposed by doctors, and thus not feasible. Many interviewees pointed to educational interventions for physicians as a possible solution. However, as a key official interviewed from the Health Quality Directorate described, improvement of physician training and prescribing practices was a “Herculean task” (MOH4). Regarding the need to improve prescribing, another MOH informant explained:

“We haven't found the way to do it. That is, even though the federal government, the health education institutions and the professional associations have sat down together, we haven't found a way to sort it out”. (MOH9)

5.3.1 Content and development of the national pharmaceutical policy proposal

Towards the end of President Fox administration, Health Minister Frenk commissioned the newly created regulatory agency, COFEPRIS, to develop a national pharmaceutical policy document (NPP). The agency convened a series of experts to participate in drafting the document; among them were mostly representatives from the main public-health services and experts from the pharmaceutical industry, as well as members of some professional medical and pharmaceutical associations. No representatives from civil-society groups, academics, or public-health experts were included in the task. Some important MOH officials were also excluded from the process. In the view of this interviewee from the health promotion office:

“I did not participate in the elaboration of this document [...] it clearly demonstrates the lack of participation of relevant groups; it is very directed towards the inside of the sector itself, with little gathering of opinion and information beyond the industry itself.” (MOH14).

When asked about why public health researchers were not invited to participate on the elaboration of the NPP, one of the coordinators stated “*because our work was not for public health, it was for medicines*” (MOH6).

According to some interviewees (MOH3, IDUS1) there was conflict among the participants about the document content. The first version of the NPP was circulated internally in 2004; rational use of medicines was one of the stated objectives of the document, and delineated strategies to improve prescription and dispensing. Subsequently, the leadership for developing the document was reassigned to the MOH Health Economics Unit, where the final version was drafted. In the final version, the objective of attaining rational use of medicines was omitted. Other relevant MOH

offices, such as Health Quality Directorate as well as the National Institute of Public Health (INSP by its Spanish initials) were assigned marginal roles that consisted mainly in providing comments on the final version. The finished NPP, named “Towards a comprehensive pharmaceutical policy for Mexico” (SSA, 2005), was disseminated only to a limited extent and was not launched officially. Overall, interviewees who participated in the formulation of the NPP document made scarce references to the WHO guidelines on how to develop and implement a national pharmaceutical policy (2001b), and coincided that the subject of rational use of medicines was only superficially addressed while drafting the document.

In the NPP, there were not references to research on antimicrobial resistance or antimicrobial misuse, neither to interventions directed to address this problem. Nevertheless, antibiotic resistance was mentioned a number of times within the document, in relation to: a) the disposal of expired medicines (discarded antibiotics could generate resistance); b) medicines packages (that are not adjusted to treatment recommendations, and could affect treatment length, favouring resistance); c) inadequate prescription of antibiotics, favouring resistance; d) lack of patient adherence to VIH and tuberculosis treatment, leading to resistance. Nevertheless, none of the proposed strategies pointed specifically to improving the use of antimicrobials. With regard to improving prescription, the stated strategy was to include pharmaco-economic information in STG and medical training (SSA, 2005:120-121). There was confusion among many interviewees on the scope of the document; while some informants perceived as a White Paper or even a “monograph” (Indus1); for other it was clearly an official policy. The content of the NPP proposal is summarized in Box 5.1 with regard to rational use of medicines and containment of antimicrobial resistance.⁵

Box 5.1 Content of the national pharmaceutical policy proposal with regard to the rational use of medicines and containment of antimicrobial resistance

The proposed new Mexican NPP presents an analysis of the epidemiological and pharmaceutical situation in the country as a base to promote changes in many areas. The three main objectives listed in the policy proposal are: assuring quality, security and efficacy of medicines; improving access and availability; and promoting innovation and competitiveness of the national pharmaceutical industry.

The new NPP proposal does not include the rational use of medicines as an objective of the policy, neither proposes a mandated multidisciplinary national body to coordinate medicine use policies as it is internationally recommended. Nevertheless, some elements of policies towards the rational use of medicines are dispersedly addressed throughout the document, proposing interventions focused on improving prescription and dispensing, as well as consumers' information on medicines.

⁵ Part of the information presented in Box 5.1 has been published in: Leyva-Flores et al. 2006.

Within the document, the problem of rational prescribing is discussed in the section of access to medicines. In this way, the concept “rational” is explained only from a pharmacoeconomic perspective (cost-effectiveness) focusing in decreasing the costs of prescriptions. The proposed strategies are to further promote the use of generics among prescribers, and to include elements of pharmacoeconomy in the medical education curricula.

In order to promote rational prescribing, new NPP draft proposes the development of standard treatment guidelines (STG) that include pharmacoeconomic information. The use of STG and EML in under and postgraduate education of health professionals to promote the rational use of medicines is overlooked. Similarly, the need for independent, practical and updated written information on medicines widely available for consumers, dispensers and prescribers – particularly in the form of a national formulary related the EML and STG– is not discussed.

Confusingly, the NPP draft analyses the problem of adequacy in medicines dispensing within the section of quality, efficacy and safety of medicines. In this way, the policy draft advocates a change in the training programs for pharmacy clerks and technicians in order to assure the maintenance of medicines safety. The document states that a prescription-only status for medicine sales had not been enforced given the need to ensure access to medicines in a context of insufficient health-care coverage. States that the regulation on sales, antibiotic sales included, would occur once SP insurance coverage increased and universal health coverage was attained

Although the NPP document dedicates special sections to the regulation of certain medicines such as vitamins and pseudoephedrine, strategies towards improving the use of antibiotics and contain antibiotic resistance are omitted. The inclusion of these strategies within NPPs have been recommended by international organisations.

The key concept of essential medicines is not central for the new Mexican NPP draft. Contrary to this situation, for the new NPP the development and research of innovative medicines is defined as one of the main objectives. Along the document, it is stressed the fact that the epidemiological situation of Mexico demands more and better medicines.

Finally, the new NPP draft document omits the use of internationally recommended indicators for monitoring and evaluating the NPP.

Noteworthy, within the final document, the issue of rational use of medicines was largely disregarded. Particularly, improving prescription was described as being out of the scope of the MOH and the NPP (See Figure 5.1, below).

When asked why the document barely mentioned interventions to improve prescription practices (as recommended by the WHO), a key participant from COFEPRIS (MOH3) explained that prescribing “is not part of the pharmaceutical process” and the NPP document was intended to deal with medicines and the pharmaceutical process. As he further asserted:

“Teaching doctors how to prescribe? No, that is not related to a pharmaceutical policy [...] That is out of place. Because people at WHO sit down to write and they do not see how things are done in reality” (MOH3)

When prompted about why interventions on containing AMR were omitted, this same informant explained: *“That’s another issue. It’s not pharmaceutical policy. It’s policy on how things have to be done in a hospital, not in a pharmacy [...]” (MOH3)*

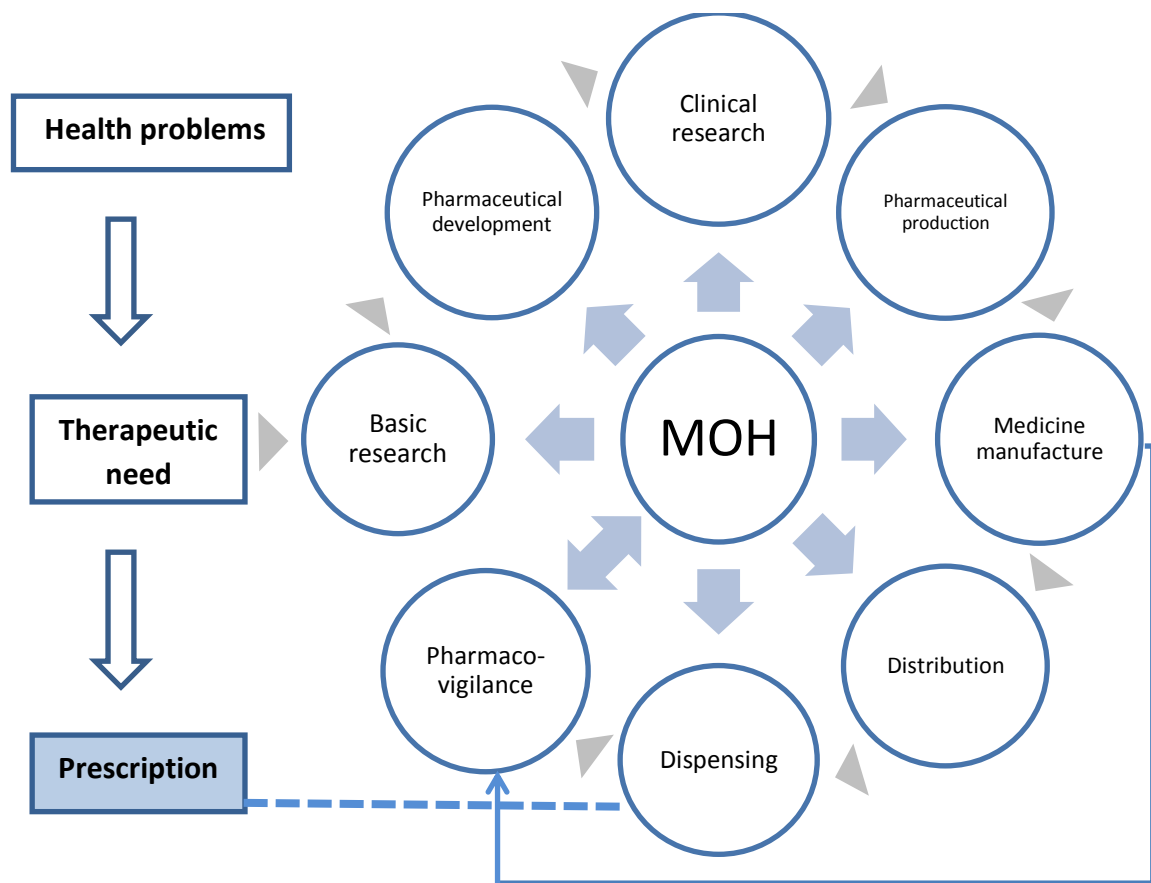


Figure 5.1. Processes that pertain to the pharmaceutical policy. Reproduced and translated from: reference SSA 2005: 16.

5.4 Policy entrepreneurs, and coupling of streams

In the present study, no policy entrepreneurs on AMR were identified. AMR containment was backed by groups of academics and members of professional associations who did not engaged actively on pushing their views of the AMR problem or specific proposals outside their own groups; they had scarce interaction with policy-makers. A tightly knit policy community did not emerge around the issue of AMR to push a single “pet” policy solution. On the contrary, little interaction took place among the infectious-disease specialists, academics and civil society groups in favour of achieving an AMR policy.

The new government and the health policy reform implemented under the Fox administration opened a political window to bring medicines high on the agenda and for developing a national pharmaceutical policy. Nevertheless, there were no policy

entrepreneurs taking advantage of this open window to bring about the problem of AMR and ad-hoc policies. The formulation of the NPP was a missed opportunity to develop policies directed to deal with medicines use and AMR.

The failure of this administration to discuss AMR policy alternatives in any significant manner may be explained by three factors connected to the generation and survival of ideas, the role of actors, and the health-policy-making process. To begin with, policy-makers did not have data to recognise AMR as a problem, and there were many different understandings on this issue. Inappropriate antibiotic use was regarded as a complex issue, connected to many other problems, such as limited access to health services, lack of mechanisms to regulate the private sector, or cultural aspects. While stakeholders had various ideas on how to deal with AMR, there was overall lack of information on the technical feasibility of the possible interventions, which may have resulted, in turn, from paucity in studies regarding medicine use in Mexico and unawareness of the relevant international recommendations on this matter. Given the fragmented national health-care system, policy solutions achieved by the IMSS were not disseminated to the rest of the system. Furthermore, some of the internationally recommended policy alternatives were considered to be hardly feasible due to lack of resources and the anticipated opposition of some groups. It was believed that physicians, pharmacists and the public at large would reject a regulation on prescribing and dispensing procedures. Finally, the AMR policy solutions “floating around”, as described by Kingdon, were not coupled to a pressing problem; in fact, policy solutions related to “limiting” medicine use were incompatible with the prevailing health policies directed to increase access to medicines.

Concerning the health-policy-making process, the NPP was commissioned as a tool for improving the provision of medicines in the context of the newly adopted health reform. It was not the result of a planned process pursuing a comprehensive medicines policy with the open participation of a wide variety of actors. The objectives and content of the document reflect the concerns of the stakeholders who drafted it. The groups interested in improving medicine use and containing AMR (from inside and outside the government) were not included in the process.

The MOH office that could have had a leadership on promoting policies on rational use of medicines (Health Quality Directorate), was overwhelmed by the presidential priority of increasing medicines supply in public health services. Furthermore, the two offices in charge of drafting the document (COFEPRIS and the Economic Analysis Unit) believed that promoting rational use of medicines and containing antimicrobial resistance were

irrelevant to their jurisdictional attributions and exceeded what they perceived as the scope of a pharmaceutical policy. None of these governmental offices were in charge of implementing important AMR policy components, namely, integrating essential medicine lists, formulating standard-treatment guidelines, certifying hospitals, developing educational campaigns, or engage in antimicrobial resistance surveillance; relevant offices with those attributions did not participate on the NPP drafting, AMR was therefore “defined away” by the drawing of jurisdictional boundaries.

5.5 Summary and conclusion

According to Kingdon’s stream theory, problems are not addressed until they are recognised as such, policy solutions evolve sufficiently, and policy makers have a motive and an opportunity to adopt them. Policy windows for addressing a problem typically open when these three streams converge, and this generally occurs after a change in the problems stream or the politics stream, denominated by Kingdon a “problem window” or a “political window”.

Why did AMR not reach the health policy agenda during the 2000-2006 administration in Mexico, and how that affected the adoption of related policies?? During the 2000-2006 Fox administration, the new government and the health reform it promoted opened a political window for placing medicines high on the governmental agenda and for discussing policy alternatives that eventually crystallised into the NPP proposal in 2005. This was favoured by the leadership of the Health Minister (Gómez-Dantés *et al.*, 2015).

Is noteworthy that, contrary to the scarce participation of academics and public health experts on drafting the NPP, representatives from the pharmaceutical industry were fully engaged in the process; industry groups were regarded as “experts on pharmaceutical policy” (MOH6). The range of participants in the policy process (dominated by governmental and industry groups) could be related to longstanding tradition of State-centred and enclosed policy making in Mexico (Cabrero, 2000); but also to the increasing openness of policy-making to business groups during President Fox administration (Camp, 2012; Díez, 2006; Thacker 2012); and the experience of the well-organized pharmaceutical industry in influencing policy making (Shadlen, 20009).

While the open politics window allowed medicine-related subjects to reach the decision agenda, especially with regard to improving access, policies dealing with use of

medicines and AMR did not prosper. AMR was not able to reach the decision agenda given the processes operating within each stream: lack of congruence among the perceptions of different stakeholder groups regarding the problem and policy solutions; no active policy entrepreneurs coupling problems with solutions; lack of governmental policy venues related to AMR; and an unfavourable political climate for regulating medicine use, given the demand from the population for increasing access to medicines and the commitment declared by the Minister of Health and the President to act upon it. In this way, the policy adopted largely disregarded contents related to improving medicines use and addressing AMR.

However, during the following administration a window of opportunity opened for placing medicines use and AMR on the decision agenda.

6. RESULTS (II): A WINDOW OF OPPORTUNITY FOR ANTIBIOTIC MISUSE AND RESISTANCE POLICIES DURING THE 2006-2012 ADMINISTRATION

This second empirical chapter presents findings related to second specific objective stated for the present study: *To analyse the factors related to AMR agenda placement in Mexico during the 2007-2012 administration, by focusing on problem definition and recognition, the political context, the development and perception of policy alternatives, and the role of policy entrepreneurs.* The information presented was obtained from interviews conducted with stakeholders during 2007-2008, the analysis of official documents from the legislative and executive, as well as MOH press releases, in which attention to AMR was explored. Additionally, this chapter describes the results an analysis of printed media covering the 2009-2012 period, which sought to further illuminate AMR agenda status, as well as the process of developing the regulation of antibiotic sales during this period.⁶

6.1 Political context

Newly elected President Felipe Calderón belonged to the same right-wing political party (PAN) as the previous administration. He was in office between December 1, 2006, and November 30, 2012. President Calderón appointed José Angel Córdova, a physician and politician, as Minister of Health.

The National Health Programme (NHP) 2007-2012 pursued similar objectives to those of the previous NHP, with the MOH still focusing its efforts on incrementing the *Seguro Popular* coverage. Additionally, the rise on obesity and overweight, as well as non-communicable diseases (NCDs) documented by the 2006 National Health Survey, aided these topic to raise in the health policy agenda (see section 2.2.4). During this administration, a Presidential decree led to the creation of the National Council for the Prevention and Control of Non-communicable Diseases. One of its many responsibilities was to support the inclusion in the essential medicines list of medicines and medical supplies for NCDs.

⁶ Some of the results of the analysis of printed media coverage (encompassing the 2009-2010 period) have been presented in: Dreser, *et al.* (2011a) and Dreser, *et al.* (2012). A description of some aspects of the policy process presented in this chapter has been summarized in Zaidi, *et al.* (2014).

The NHP 2007-2012 pointed out that access to medicines remained a predominant demand from the population and a challenge for the health system. However, differently from the previous programme, the new NHP text included lines of action specifically on the use of medicines in two of its ten strategies, namely, prevention against sanitary risks (under the leadership of the regulatory agency, COFEPRIS) and implementation of a health care quality system named *SICalidad* (under the leadership of the Health-Quality Directorate). The first strategy specified the need to address the risks of self-medication, and proposed intensifying pharmacy inspections to ensure the sale of prescription-only medicines as specified.

The second strategy (on health care quality), one central line of action was: “to design and implement a National Medicine Policy to promote the development of efficient models for medicine provision”. Furthermore, concerning the *SICalidad* system, the strategy proposed other lines of action: to promote evidence-based medicines and standard treatment guidelines (STG); prevent intra-hospital infections; generate projects for rational use of medicines at the sub-national/state level; and transform the functions of hospital pharmacies from administrative duties into professional patient-oriented activities.

Despite the inclusion of action lines on self-medication, STG and rational use of medicines, all of them intimately related to use of antibiotics, the new NHP document did not state the issue of AMR explicitly. Likewise, although one of the NHP strategies called for strengthening disease prevention and control, antimicrobial resistance was not accented in its own right; it was mentioned only marginally under other lines of action concerning tuberculosis and HIV/AIDS. Overall, improving antibiotic use and containing antimicrobial resistance were overlooked by the new NHP.

Despite the fact that the NHP proposed the development of a National Medicine Policy, this was not achieved as a single-standing official document. With the customary turnover of officials following the election of a new government in Mexico, the 2005 momentum for formulating an NPP document was diluted among the new MOH staff and priorities. Moreover, it became unclear which MOH office would take the leadership in organising the design of the National Pharmaceutical Policy (NPP). Responsibilities were assigned to different offices, and several official documents related to pharmaceutical policies were elaborated.

As early as February 2007 (only three months into rule), President Felipe Calderón announced the "Compromise to establish a national policy of sufficient, available and fair-priced medicines", undersigned by representatives of the public and private sectors. He recognised the pressing issues of insufficient medicines in public services and overpriced medicines in the private sector. Following this initiative, one year later, an inter-ministerial Coordinating Commission for Price Negotiations on Medicines and other Health Products was established with the objective of improving medicines supply in the public sector.⁷

In the legislative field, pharmaceutical policies were also the subject of discussion. In 2008, the Congress Competitiveness Committee, with the participation of the MOH, the Ministry of the Economy and representatives from the pharmaceutical industry, organised a Forum to Advance the Competitiveness of the Pharmaceutical Sector in Mexico.⁸ At the Forum, NPP was described as having only a threefold objective on supply and access, quality and safety, and innovation. Medicine use was left aside.

In 2007, as an upshot of the NHP and the aforementioned presidential "Compromise", the MOH published a Specific Action Plan for Expanding Access to Medicines.⁹ While the Plan recognized four of the main NPP objectives, promotion of rational use of medicines included, the text indicated that its focus was set primarily on improving medicine supply and access. Regarding rational use of medicines, it merely announced the creation of an online information centre for medicines (which was not achieved) and the promotion of professional pharmacies in hospitals. The task of coordinating the design of a National Hospital Pharmacy Model,¹⁰ officially launched in 2009, was assigned to the General Directorate of Health Planning and Development (DGPLADES by its Spanish initials), with support from the Health Quality Directorate and the active participation of professional pharmaceutical associations. The model included a proposal for creating therapeutic committees to promote rational use of medicines in hospitals –which included developing antibiotic policies.

With regard to the health care quality action lines proposed under the NHP, an interviewee from the Health Quality Directorate explained that time and resources for addressing use of medicines were freed up after the most pressing issues of SP

⁷ "ACUERDO por el que se crea la Comisión Coordinadora para la Negociación de Precios de Medicamentos y otros Insumos para la Salud". Diario Oficial de la Federación, February, 2008.

⁸ "Foro para impulsar la competitividad del sector farmacéutico en México". Cámara de Diputados (Chamber of Representatives). November, 2008.

⁹ "Programa de Acción Específico 2007-2012: Mejora del Acceso a Medicamentos", Ministry of Health, 2007.

¹⁰ "Modelo Nacional de Farmacia Hospitalaria", Ministry of Health, 2009.

coverage and medicine provision were dealt with. This clarifies why the Calderón administration was able to consolidate the National Hospital Pharmacy Model and develop an extensive STG catalogue,¹¹ both of which concentrated a great deal of effort. Furthermore, the Health Quality Directorate launched a Programme for Rational Use of Medicines oriented primarily to implement clinical pharmacies and therapeutic committees in hospitals. Despite these initiatives, the establishment of national or sub-national bodies to coordinate policies on use of medicines and monitor their impact were not considered. The scope of the Programme did not include community pharmacies, primary-care facilities or actions targeting the population such as educational campaigns on rational use of medicines. In hospitals, monitoring under the Programme for Rational Use often consisted in documenting the mere existence of the therapeutic committees, not their actual functioning. Information indicating if and how hospitals developed antibiotic policies is unavailable; however, according to interviewees, the priority in hospitals has been strengthening pharmacy services, and collaboration needed to develop antibiotic policies (particularly involving laboratory facilities and infectious diseases specialists) is still a challenge.

Lastly, with regard to the NHP strategy against health hazards, during the first years of the new administration, COFEPRIS devoted considerable effort not only to revising and renewing the national registry of medicines, but also to confiscating so-called “miracle products”, in line with its objectives on medicine quality assurance, an issue also supported by pharmaceutical industry associations. Regarding the regulation of prescription-only-medicine sales and public education on the risks of self-medication (lines of action also described on COFEPRIS Specific Action Programme¹²), no visible actions emerged until 2010 for reasons described in subsequent paragraphs.

¹¹ The impetus given to the formation of a National Catalogue of STG was unprecedented. A shared responsibility was assigned: the National Centre for Health Technology Excellence (CENETEC) was in charge of producing the STG; and the Health Quality Directorate was in charge of disseminating them. Up to 2011, more than 300 STG had been published; however, there were a number of barriers to implementation, including the limited validation of STG by medical associations (such as the infectious diseases association) and the lack of harmonization between STG and the essential medicines list. Furthermore, a mechanism to promote the use of STG for medical undergraduate training, continuing medical education and monitoring of prescribing practices within health services, was not established. These barriers might have affected STG legitimacy and had limited their utilization as input to improve prescription practices (Wirtz, *et al.* 2012). Furthermore, the drafting of the new STG for infectious diseases did not take into consideration local and updated information on antimicrobial resistance, as they were drafted based on evidence from national and international papers, and not in national reports on antibiotic resistance (personal communication, CENETEC). Thus, some of the STG warned about resistance rates for recommended antibiotics citing data of investigations conducted outside Mexico several years ago. These factors limited the potential relevance of STG to improve the prescription of antibiotics.

¹² “Programa de Acción Específico 2007-2012. Comisión Federal para la Protección contra Riesgos Sanitarios”, Ministry of Health, 2009.

In summary, the political context for health policies provided somewhat of a continuum from the 2000-2006 Vicente Fox to the 2006-2012 Felipe Calderón administration. With the same political party in rule, improving access and the provision of medicines remained high on the governmental agenda. At the beginning of the Calderón administration, relevant policies were developed beyond the scope of the MOH and with direct backing from the president. However, while drafting a national pharmaceutical policy was listed as a core component of the 2007-2012 NHP, no agreement was reached on the formulation of a single all-inclusive policy document; instead, an array of governmental offices with different perspectives on NPP scope were charged with addressing disaggregated policy elements.

In contrast with the high-level inter-ministerial commissions and legislative discussions dealing with the different aspects of improving access to medicines and stimulating innovation (like the ones organized by the Chamber of representatives)¹³, the NPP objective of promoting rational use of medicines was delegated to diverse, scarcely interconnected MOH offices. Similarly to the previous administration, no national-level body was instituted to coordinate policies on use of medicines, in accordance with international recommendations, and responsibilities remained fragmented.

Furthermore, the newly created Programme for Rational Use of Medicines mentioned above directed most of its actions to hospital settings, disregarding other dimensions of medicine use.

Finally, it is important to mention that, in the last months of 2007, southern Mexico suffered severe floods during one of the worst natural disasters in the history of the country, leaving a toll of over 1,000,000 affected individuals.¹⁴ With floods recurring in 2008, much of MOH's attention was deviated by both disasters towards the prevention of cholera and other flood-related outbreaks. One of the interviewees, expert in antibiotic resistance and health official during this period, explained that, in fact, it was intended to develop and antibiotic resistance surveillance system during this administration within the MOH Epidemiological Surveillance Centre. However, this initiative was cancelled when epidemiological surveillance in relation to the 2007-2008 floods (and posteriorly the 2009 influenza epidemic) became priorities.

¹³ "Foro para impulsar la competitividad del sector farmacéutico en México". Cámara de Diputados (Chamber of Representatives). November, 2008

¹⁴ CNN. "Devastating floods prompt outbreak fears in Mexico", in: <http://web.archive.org/web/20071104102744/http://www.cnn.com/2007/WORLD/americas/11/02/mexico.floods.ap/index.html>.

During the first half of the 2006-2012 administration, AMR was omitted from the governmental agenda for a number of reasons: the prevailing priorities were providing access to medicines, responding to health emergencies and NCDs. No changes occurred in terms of indicators or focal events that may have brought attention to the issues of antibiotic misuse and resistance; and no office or institution was designated to coordinate actions on use of medicines.

However, unexpectedly, in 2009, a health crisis brought public and governmental attention to inappropriate use of antibiotics: the influenza A H1N1 pandemic.

6.2 Problem recognition and definition

In early April 2009, national health officials issued an epidemiological alert due to atypical and increasing cases of influenza. Confirmation of a new virus and initial uncertainty as to the nature of the disease -marked by a high case-fatality rate and rapid spread to other countries- triggered national and international concern. Within days, schools closed in Mexico City and the surrounding states and, by late April, all non-essential activities had been suspended, with social distancing measures sustained for two weeks (Sarti, *et al.*, 2010). Flights to Mexico were cancelled by some countries and trade was halted by others. The WHO soon declared a public-health emergency of international concern, calling all countries to activate their pandemic preparedness plans, and by June, it had classified the outbreak as a pandemic. During these turbulent months, the evolution of the epidemic and Mexico's response were kept under close scrutiny by the national and international media, with the MOH organising press conferences almost daily.

As more information on the nature of the disease transpired, one question arose among journalists, the scientific community and the Mexican population at large: Why were the *fatal* cases of novel influenza disproportionately high among the Mexican population, albeit the extension of the virus across numerous countries?¹⁵ When Health Minister Córdova was asked this question during a press conference on May 6th, he answered that there was at least one “very convincing” factor:

¹⁵ Alberto Aziz Nassif, “¿Cambiará la fotografía?”, *El Universal*, May 5th 2009, available at <http://www.eluniversal.com.mx/editoriales/43963.html> (accessed on September 9th, 2014); Ricardo Alemán “Morir de gripe” (Column “Itinerario Político”), *El Universal*, May 4th, 2009, available at <http://www.eluniversal.com.mx/columnas/78006.html> (accessed on June 21st, 2009).

Many people, especially between the ages of 20 and 50 years, do not seek medical care when they experience the first symptoms of an illness. Without hesitation, they self-medicate and ingest antibiotics or other medicines that should only be dispensed (...) with a prescription. This complicates their clinical condition.¹⁶

This one single declaration attracted a great deal of public attention to the issue of self-medication with antibiotics. Warnings against self-medication, particularly with antibiotics, and delayed medical care were reiterated throughout media declarations by medical associations and health officials as well as in governmental campaigns against influenza. Interestingly, in June, several media notes deliberated on the determinants of self-medication, discussing the issues of poor access to medical care and lax pharmacy regulations as underlying factors in the sale of medicines without prescription. Journalists interviewed academics, representatives of pharmacy associations and health officials regarding the lack of enforcement of the antibiotic-sales regulation (Zuckerman, 2009).¹⁷

In early October 2009, a new declaration from the Director of the National Institute of Respiratory Diseases was covered by the media. In his declaration, he confirmed that, while the majority of critically ill patients with influenza had indeed *self-medicated* with antibiotics, in many other cases, *physicians* had erroneously prescribed antibiotics to patients with influenza. This declaration was published by one of the major newspapers in Mexico under the following piercing headline: "Antibiotics heighten the epidemic".¹⁸

Although this medical director publicly stressed the need to improve antibiotic prescribing, this theme had scarce resonance on the media. Similarly, media reporting on antibiotic use and its relation to bacterial resistance was infrequent around that time.

¹⁶ Press conference. "Conferencia de prensa que ofrecieron José Ángel Córdova Villalobos, Secretario de Salud; Maki Esther Ortiz Domínguez, Subsecretaria de Innovación y Calidad de la Secretaría de Salud, y Directora General del DIF en la mañana del 6 de mayo", Secretaría de Salud. May 6th, 2009, available at: <http://www.presidencia.gob.mx/2009/05/conferenciade-prensa-que-ofrecieron-jose-angel-cordova-villalobos-secretario-de-saludmaki-esther-ortiz-dominguez-subsecretaria-de-innovacion-y-calidad-de-lasecretaria-de-salud-y-directora-general-d/> (accessed on October 5th, 2009).

¹⁷ Listen also to: "Antonio Pascual Feria, presidente Anafarmex, habla de la situación de los medicamentos que se venden sin receta en farmacias", *W Radio*, radio programme: "Hoy por Hoy" (audio interview, 15:26min), broadcasted on June 4th, 2009, available at http://www.wradio.com.mx/escucha/archivo_de_audio/antonio-pascual-feria-presidente-anafarmex-habla-de-la-situacion-de-los-medicamentos-que-se-venden-sin-receta-en-farmacias/20090604/oir/823359.aspx (accessed on July 25th, 2009); "Anahí Dreser, investigadora en ciencias médicas, habla de la automedicación", *W Radio*, radio programme: "Hoy por Hoy" (audio interview, 19:04min), broadcasted on June 9th, 2009 available at http://www.wradio.com.mx/escucha/archivo_de_audio/anahi-dresser-investigadora-en-ciencias-medicas-habla-de-la-automedicacion/20090609/oir/826058.aspx (accessed on July 25th, 2009).

¹⁸ Laura Toribio, "Antibióticos aumentan la epidemia", *Excélsior*, October 8th, 2009, page 14.

On October 18, 2009, Health Minister José Ángel Córdova declared that, because the practice of self-medication in the influenza pandemic had “caused the death of many Mexicans”, he was initiating a process to ensure that “antibiotics for the respiratory tract” would be sold with prescription only. This declaration was covered by one newspaper under the headline “Because of influenza, antibiotics only with prescription”.¹⁹

One month later, a top official from COFEPRIS, the agency tasked with controlling antibiotic sales in pharmacies, declared that the agency was revising all registered antibiotics (around 4,000) in order to “identify those related to health complications in influenza patients.”²⁰ No further official declarations were made on the subject for some months, and there weren’t newspaper notes with this regard. It is probable that the media lost interest in the problem because it was reduced to only a limited set of antibiotics and COFEPRIS was already dealing with it.

However, the declaration of Health Minister Córdova was perceived by some academics and medical associations as an opportunity to bring AMR to the governmental agenda and formulate an ad-hoc national policy. The circumstances are described below.

6.3 Development of a policy proposal

In October 2009, during its Annual Meeting in Guadalajara, the Mexican Association of Infectious Diseases and Clinical Microbiology (AMIMC by its Spanish initials) organised a meeting of experts to prioritise interventions towards two objectives: on one hand, to promote adequate antibiotic use and contain antimicrobial resistance in the human and veterinary health sectors; on the other, to recommend action lines to decision makers. The meeting was a response to two facts: first, the realisation that, almost ten years after the launch of its 2001 *Guadalajara Declaration on Antimicrobial Resistance*, none of the action lines proposed in the document had been implemented, and thus there was a need to reactivate the initiative; second, the recent public discussion and intention of action by the MOH regarding the perils of self-medication with antibiotics.

Participants in the meeting of experts comprised not only researchers from the INSP, infectious-disease specialists and veterinarians, but also representatives from

¹⁹ Nancy Narváez Cid, “Por influenza antibióticos sólo con receta”, *Ovaciones*, October 18th, 2009, page 5.

²⁰ Ángeles Cruz Martínez, “Seguros y eficaces antivirales próximos a caducar Cofepris”, *La Jornada*, November 5th, 2009, page 39.

academic institutions and hospitals throughout Mexico, the Alliance for the Prudent Use of Antibiotics (APUA), the World Organisation for Animal Health (OIE by its Spanish initials), and the pharmaceutical industry. Over the following few months, a sub-group of experts worked under the leadership of INSP, AMIMC and APUA to elaborate a consensus document that was ultimately endorsed by the principal medical and veterinary associations and institutions at the national level. The ensuing proposal, drafted as a policy brief,²¹ summarised the AMR situation in Mexico and enumerated the existing international recommendations on AMR and use of antibiotics. It called for seven priority actions to improve human/veterinary²² antimicrobial use and mitigate resistance in Mexico; the first involving the creation of a multidisciplinary advisory group on the use and regulation of antimicrobials (see Box 6.1).

During the first quarter of 2010, printed and electronic versions of the proposal were sent to the head offices of the MOH (including COFEPRIS) and the Ministry of Agriculture. They were also submitted to the health and agriculture commissions of the Mexican legislature, and to various interest groups including professional, pharmacy and pharmaceutical industry associations. While press releases on the subject were run in major newspapers, the proposal was not mentioned at the time by journalists or health officials' speeches.

Box 6.1 Priority actions recommended in the INSP-AMIMC-APUA proposal for improving antibiotic use in Mexico, 2010

- 1.- Creation of a multidisciplinary advisory group for antimicrobial use, regulation and licensure.
- 2a.- Enforcement of national regulations requiring human and veterinary antibiotics to be dispensed only with prescription
- 2b.- Stricter control of the critically important antibiotics
- 3.- Establishment of national guidelines for the use of antibiotics for growth promotion and metaphylaxis in animals
- 4.- Review of the licensure requirements for antimicrobial to safeguards antibiotics for human use
- 5.- Creation of legal mechanisms to guarantee the quality, safety and efficacy of human and veterinary antibiotics
- 6.- Implementation of national surveillance systems for antibiotic usage and antimicrobial resistance
- 7a.- Development of educational programs for pharmacists, physicians and veterinarians
- 7b.- Development of public education campaigns through mass media

²¹ Dreser, A., M.B. Zaidi, M.A. Peredo, 2010 (coordinators): Regulación y promoción del uso adecuado de antibióticos en México: Propuesta de lineamientos para la acción. Available at http://www.insp.mx/images/stories/Lineas/medicamentos/doc/acciones_antibioticos.pdf

²² There were some advances with regard to the strategies proposed for the veterinary sector; this aspect is not described here, but is explained elsewhere (Zaidi, *et al.*, 2014).

6.4 A window of opportunity to develop policies on antibiotic use?

On March 24, 2010, the President of the Mexican Red Cross was invited for the first time to participate in a National Health Council meeting. At a press conference after the meeting, without prior notice, he declared that, in a “historical voting”, the Council had decided to forbid the sale of antibiotics without prescription: “Beginning in April, there will be no more antibiotics without prescription, no more self-medication endangering the lives of Mexicans.”²³ This declaration created an unprecedented public debate that gained prominence and space on the media over the following months. Press conferences and bulletins were organised by diverse stakeholders, while opinion columns in newspapers, discussion forums on the Internet, and special programmes on radio and television covered the enforcement process.

The day after the declaration, COFEPRIS health officials confirmed that, in effect, the agency had developed such an initiative, and antibiotic sales would be regulated; however, not as soon as April, since pharmacy personnel needed to be trained and mechanisms installed to supervise pharmacies. Penalties faced by noncompliant pharmacies were also mentioned. Among the earliest statements on the subject were those of the largest independent-pharmacy association ANAFARMEX and the association of national pharmaceutical laboratories AMELAF requesting a deferral of the policy, under the argument that more time was needed to diffuse pertinent information among the population, to change the “Mexican self-medication culture”, and to warn the public of a possible “black market” of antibiotics and prescriptions.²⁴

Notoriously different from previous official pronouncements focusing on the influenza pandemic, this time, the topic of antimicrobial resistance came to light, with Health Minister José Ángel Córdova declaring that the decision to regulate antibiotic sales had been taken because “the practice of self-medication had generated antibiotic resistance, rendering antibiotics useless.”²⁵ Notwithstanding the declared interest in antimicrobial resistance, the problem was linked to self-medication only, not to inappropriate prescribing practices. As the Health Minister explained in a press conference with the representatives of the association of pharmacies and distributors ANADIM: “Regulation is not just a whim: the Mexican population is becoming resistant

²³ Laura Toribio, “Anuncian venta de antibióticos sólo con receta”, *Excélsior*, March 25th, 2010, page 22.

²⁴ Ruth Rodríguez, “Farmacias quieren prórroga en recetas”, *El Universal*, March 31st, 2010, page 6.

²⁵ Nurit Martínez, “Farmacia que surta antibióticos sin la receta será cerrada”, *El Universal*, March 26th, 2010, page 6.

to antibiotics as a consequence of self-medication” and quoted some of the figures on antimicrobial resistance stated on the INSP-AMIMC-APUA policy proposal.²⁶ Even President Felipe Calderón was quoted supporting the regulation and mentioning the burden of antibiotic resistance policy.²⁷ Other declarations by COFEPRIS officials and Health Minister Córdova included almost textual fragments of the policy proposal developed by INSP-AMIMC-APUA to explain the need for enforcing antibiotic sale regulations. Nevertheless, no official declaration and only a few newspaper notes referred explicitly to the tripartite policy proposal and its suggested lines of action. When during a press conference Health Minister Córdova was confronted with the argument that self-medication was a consequence of insufficient access to health care, and an antibiotic policy would therefore adversely affect the poorest families, he rebutted that, with the expanded coverage of the *Seguro Popular*, that argument was no longer valid (see footnote 21).

Soon after its announcement, the policy was opened to public discussion on a governmental website of the Federal Commission of Regulatory Improvement (COFEMER, by its Spanish). COFEPRIS supported the regulation underlining the “risks of self-medication with antibiotics, which were evident during the influenza epidemic”. In total, 9 stakeholders sent communications against the regulation; these were: representatives from the national pharmaceutical associations AMELAF and AMEGI (2); an international pharmaceutical company (GSK) (1); the association of independent pharmacy owners UNEFARM, and the associations of smaller pharmacy chains Farmapronto, Profarmex, and ANAFAR (4); the association of medicines distributors DIPROFAR (1); and the association of supermarkets and private outlets ANTAD (1). They argued that the regulation was incompatible with the current legislation; and that it imposed high costs to the private sector.

Despite the arguments exposed in the public hearing, COFEMER approved the regulation with only minor changes, one of them delaying implementation for some months. In May 2010, the enforcement policy was officially enacted as a ministerial agreement, effective from August of the same year, under the title: Agreement on the

²⁶ “Versión estenográfica de la conferencia de prensa presidida por los doctores José Ángel Córdova Villalobos, Secretario de Salud Federal; Miguel Ángel Toscano Velasco, Comisionado Federal para la Protección contra Riesgos Sanitarios (COFEPRIS); y Miguel Ángel Salim Alle, Vicepresidente de la Asociación Nacional de Distribuidores de Medicamentos, A. C. (ANADIM), y Director General del Instituto de Seguridad Social del Estado de Guanajuato (ISSEG), realizada en el “Salón Las Joyas” del Hotel Fiesta Americana, de esta ciudad, posterior a la Asamblea General Ordinaria de dicha Asociación Nacional.” April 24th, 2010.

²⁷ Press Release No. 271 “Antibióticos contendrán una advertencia sanitaria en sus etiquetas” Ministry of Health, June 30th, 2010, available at http://www.salud.gob.mx/ssa_app/noticias/datos/2010-06-30_4646.html (accessed on April 16th, 2012).

Guidelines for Regulating the Sale and Dispensing of Antibiotics.²⁸ The beginning of Agreement implementation was marked by a ceremony organised by COFEPRIS,²⁹ with an abundant presence of the media. Invited speakers were representatives of the pharmaceutical industry (CANIFARMA), medicines distributors and private outlets (ANTAD, the association of supermarkets, and ANADIM, representing large pharmacy chains) and an infectious diseases specialist –but none of the specialists that participated on the INSP-AMIMC-APUA proposal. The MOH press release that followed the ceremony, stated:

“The decision to control the sale of antibiotics was taken after confirmation that more than half of the population self-medicates or stops treatment, which contributes to bacteria becoming resistant to these drugs, in addition to the adverse reactions produced, such as nausea, headache, tachycardia, hypotension, urticaria, erythema, skin rashes and others when given incorrectly.”³⁰

The Ministerial Agreement enforces the existing regulation of antibiotic sales with medical prescription only, as established under the General Health Law. Additionally, it requires all systemic antibiotic prescriptions to be registered and retained for one year in pharmacies, imposing high penalties for noncompliance, the rescission of business licenses included. Furthermore, the Ministerial Agreement includes some paragraphs indicating other requirements for prescription and dispensing. Particularly, it stresses that prescription can use generic or trade names of medicines; but if a prescription is written using a trade name, only that trade name can be sold. The enforcement policy for antibiotic sales applied to 2,000 medicines, roughly between one fourth and one-fifth of all medicines commercially available in Mexico.

The text of the published Ministerial Agreement incorporated several paragraphs from the INSP-AMIMC-APUA proposal, including a description of the problem of AMR in Mexico, and the AMR recommendations issued by the WHO. Nevertheless, it omitted information concerning inadequate medical prescription and use of antibiotics in food animals, and failed to cite the priority actions enumerated in the proposal. Likewise, the public information campaigns disseminated by COFEPRIS, which lasted only a few weeks, focused on the adverse health effects of self-medication with antibiotics,

²⁸ “ACUERDO por el que se determinan los lineamientos a los que estará sujeta la venta y dispensación de antibióticos”. Diario Oficial de la Federación, May 27th, 2010.

²⁹ Press Release No. 364, “A partir de hoy, venta y dispensación de antibióticos sólo con receta médica” Ministry of Health, August 25th, 2010, available at http://portal.salud.gob.mx/redirector?tipo=0&n_seccion=Boletines&seccion=2010-08-25_4749.html (accessed on April 16th, 2012).

³⁰ See previous footnote.

stressed the relevance of obtaining medical advice, and explained the new procedures established by the Ministerial Agreement, but provided little information on antibiotic use and on antibiotic resistance.

6.4.1 Media Coverage of the policy process

According to the analysis of the printed media coverage undertaken between January 2009 and December 2010, the most notorious among stakeholder responses to the policy were the actions of pharmacy owners associations. Early on, an alliance called FADIF³¹ was built between some independent and chain pharmacy associations, medicine distributors and outlet organisations. This alliance, built as a common front to negotiate medicines-related policies with health authorities, demanded the government to delay policy implementation and provide pharmacy information systems to facilitate the new dispensing procedures. They also organised frequent press conferences airing their views on the policy.

Apart from that alliance, the media also reported the different strategies developed by independent pharmacy associations and associations of large pharmacy chains. Specifically, the independent-pharmacy association, ANAFARMEX, was the one that attained more media coverage. In their press conferences, they asked the government to provide loans for modernising small pharmacies, and publish a comprehensive database of all registered physicians in Mexico as a tool for detecting false prescriptions; even more, they asked the health commission in the legislature to establish a dialogue on the regulation of pharmacies. Another pharmacy association, UNEFARM, organised a protest in front of the COFEPRIS building, and sent a petition letter to the President contesting regulation. This association argued that, with the regulation, thousands of independent pharmacies could close, with a dramatic loss of direct and indirect jobs.

On the other hand, large pharmacy chains developed a strategy to buffer the impact of regulation by setting up physician offices attached to their pharmacies to offer cheap or free medical consultations and prescriptions. This “business model” of “in-situ physicians” was recommended by a private consulting agency explicitly “to avoid economic drawbacks for pharmacies facing the new regulation”.³² The number of pharmacies with adjacent physician offices grew 130%, from 4,300 in 2010 to 10,000 in

³¹ The Alliance FADIF was formed between the associations ANADIM, UNEFARM, DIPROFAR, ANEFAR and PROFARMEX.

³² Karla Ponce, “Farmacias, la industria que debe reinventarse”, *La Razón*, September 21st, 2010, available at <http://razon.com.mx/spip.php?article47485> (accessed on May 5th, 2012).

2012, with the average number of daily medical consultations provided by their physicians reaching 250,000 in 2012 (Pérez-Cuevas, *et al.*, 2014).

Actions from other stakeholders during the policy-drafting period received less media coverage. Medical professional associations and academics published open letters supporting the enforcement policy for antibiotic sales, but also demanding a comprehensive strategy to contain antibiotic resistance and improve use of antibiotics, prescription practices included. Except for a few media declarations, no apparent actions were taken by patients, civil society groups, or national/international pharmaceutical companies. Congress, the legislative body in Mexico, manifested individual reactions towards the antibiotics policy, rather than a solid position, for example, through its Health Commission. While legislators of the ruling political party, PAN, stated their support for the policy on the media, members of the centrist PRI and left-wing PRD parties stressed the adverse health and economic effects of policy on the population, who would now be “forced to pay a doctor”, given the limited availability and deficient quality of public-health services. Some legislators in Congress attempted to promote an initiative to revoke the policy on the grounds that it was “a restrictive measure inconsistent with the kind of health policy needed in a country facing a political, economic and social crisis”; that it would trigger a black market of antibiotics.³³ Other members of Congress proposed a law reform involving harsher punishment for those using false prescriptions, among other strategies to intervene with the enforcement policy. They also demanded the executive branch of the government to develop information campaigns and to perform an independent evaluation of policy impact. Towards the end of 2010, members of Congress from the opposing parties organised an initiative requiring the MOH to amend the Agreement, given the logistical difficulties that retaining medical prescriptions would cause for both patients and pharmacies. None of these initiatives succeeded.

With regard to media coverage and public discussions, the most prominent aspects of antibiotic use addressed by the news media during the policy-drafting period and first months of implementation (March-December 2010) were the following: the development of the policy itself and its objectives (29% of newspaper reports); self-medication (13%); and the adverse economic impact of the policy (12%). Self-medication and antibiotic resistance, frequently mentioned with regard to each other, were used as arguments to support the policy. Rational use of medicines, medical prescribing practices, and health systems were mentioned much less frequently.

³³ Elena Michel, “PRD pide posponer la receta obligatoria”, *El Universal*, April 5th, 2010, available at <http://www.eluniversal.com.mx/nacion/176755.html> (accessed on May 15th, 2012).

The preponderance of these themes in the news media relates to the stakeholders whose voices were most frequently replicated. Overall, the MOH –particularly COFEPRIS– dominated media coverage with 35% of newspaper reports. Their declarations focused on justifying the policy and providing counter-arguments to critiques, for instance, by explaining that access to medical services was guaranteed as a result of increased SP coverage. Second ranked were pharmacies and outlet associations, primarily ANAFARMEX, accounting for 23% of news reports. The media presented their position as predominantly against the enforcement policy on antibiotic-sales regulations, alleging economic losses and logistical difficulties for pharmacies as well as negative health and economic effects, especially for the poor populations with scarce access to health care. Editorials and opinion columns, representing 9% of the notes, considered the regulation appropriate, recognising the conflict between the problems of self-medication and antimicrobial resistance on one side and the problems of limited access and low quality of public medical services, on the other. The voices of academic institutions and medical associations, comprising 9% and 6% of reports, respectively, were more salient during the early stages of policy development, highlighting antimicrobial resistance and adverse drug reactions as serious public health problems. At the same time, they stressed the need for an integrated action plan to improve medical prescribing, increase public awareness regarding prudent use of antibiotics, and professionalise pharmacies. Declarations of other groups were much less frequently covered on newspaper notes: legislators (6%), civil society groups (5%), pharmaceutical industry (4%) and other private enterprises (3%). See Appendix 9.

Stakeholder participation in the development of the enforcement policy on antibiotics and media coverage of the process was largely polarised. On one side was the MOH as chief supporter of the policy dominating media coverage. The main argument in favour of regulating antibiotics was the problem of self-medication discussed initially in relation to the influenza pandemic and later to antimicrobial resistance. Policy drafting was largely an enclosed process assigned first to the regulatory agency, COFEPRIS, and then to the National Health Council. No advisory groups were formed with relevant stakeholders to inform policy drafting. The participation of other actors in the policy process consisted mainly of letters and petitions to the government as well as opinions reflected on the media. On the other side of the polarised debate were pharmacy and medicine-outlet associations. As leaders of the opposition, these groups contended that the enforcement policy would exert a negative health and economic impact on the population, given the limited access to medical care; diminish their own revenues; and impose logistical difficulties. They also argued that regulation would trigger corruption,

specifically, a black market of antibiotics and prescriptions. With their views reflected abundantly on the media through press round-ups, these groups developed strategies to delay implementation, and created pharmacy clinics offering cheap or free medical consultation.

Contrasting with the declarations of pharmacy and outlet associations, which abounded on the media during the entire period of policy drafting and early months of implementation, the statements of medical and academic organisations fizzled out over the policy process. The INSP-AMIMC-APUA group concentrated their efforts on drafting the policy proposal and organising its initial dissemination, with far less time devoted to maintaining a continuous dialogue with decision makers and key stakeholders, establishing an effective deliberative process, or communicating with the media. This was due in part to their inexperience in policy advocacy and social communication, and in part to the tightly enclosed policy process headed by COFEPRIS.

The participation and views of other actors, such as legislative bodies, consumers and patient associations, in the policy process were allegedly tangential to the polarised policy debate, as their views were very scarcely reported by the media. The role of medical associations and academic institutions was outstanding in the development and communication of a policy proposal, but their arguments scarcely impacted media coverage or the final policy product as regards the need for developing a comprehensive strategy to combat antibiotic resistance in human and animal health as well as the importance of improving the quality of medical prescription. Nonetheless, their policy proposal was able to reach decision makers, as parts of it were incorporated into official declarations and the Ministerial Agreement on regulation. Their proposal may have thus influenced the shift in the way the problem was framed by public debate: from an issue centred on influenza patients who self-medicated with antibiotics, to one centred on self-medication with antibiotics resulting in antibiotic resistance.

Along the policy process, although the voice of citizens was scarcely reflected within the printed media articles, various on-line newspapers organized discussion forums with regard to the regulation of antibiotic sales. An analysis of one discussion forum³⁴ retrieved 395 commentaries between March 25 and December 31, 2010. Out of these, 184 (47%) were against the regulation, 162 (41%) were neutral or non-classifiable, and

³⁴ *El Universal* <http://www.eluniversal.com.mx>

only 49 (12%) were supportive of the regulation (Dreser, *et al.*, 2011a). Some examples of the entries are:

“We don't believe that this regulation is for the well-being of the population...they only care about giving more profits to the physicians.”
27/09/10

“If they already took the decision of not selling medicines without prescriptions, they also have to put good doctors in public clinics opened the 24 hours, so that we can obtain prescriptions without our pockets being so damaged”. 31/03/10

“I only want to know if medicines for diabetes and high blood pressure neither will be sold without prescription, because we people with diabetes already know which medicines we have to take.” 30/08/10

These quotes illustrate some of the citizen's concerns with the new regulation³⁵

Media coverage of the policy process was high, peaking with the start of policy implementation in August 2010, and declining thereafter. In the following months, few newspaper reports and media declarations occurred on the subject, most of them dealing with the impact of the policy. One year after implementation, the MOH revealed that a 20% drop in antibiotic sales had been attained, and the independent-pharmacy associations underlined the economic losses pharmacies were facing, in part, as a result of the antibiotic policy. Public discussions on the Ministerial Agreement and AMR resumed briefly on two occasions, as described below.

The first occasion was on April 7th, 2011, when the WHO dedicated the World Health Day to the theme of Antimicrobial Resistance and introduced a six-point policy package to combat its spread. That day, a ceremony was organised in the presidential residency with the attendance not only of health officials and representatives of the Legislature's Health Commissions, the Pan-American Health Organization (PAHO) and medical associations, but also of the media. During the ceremony, the PAHO representative underlined the threat posed by antimicrobial resistance and recognised the headway that Mexico had made in regulating antibiotic sales. However, he also stressed the need to develop and implement a wide-ranging national plan on AMR. Contrastingly, President Felipe Calderón focused his speech on acknowledging the work of the health workers, and elaborated on the achievements of his administration regarding health-

³⁵ These concerns may be explained, in part, by the lack of a previous educational campaign. As misunderstandings about antibiotics are common (e.g. people mistake Aspirin and cold-and cough medications for antibiotics) (Gonzales, *et al.*, 2012) people were worried that the regulation would include all medicines, including over-the-counter medicines.

care coverage. He welcomed only briefly the exhortation from the WHO to combat antimicrobial resistance, and declared the following:

Precisely, in Mexico, we have worked in a coordinated manner and have advanced in the global strategy for overcoming drug resistance. It was a difficult step, yes, but we took it. In Mexico, antibiotics are not –and will not– be dispensed without a medical prescription. We will make special efforts to achieve a culture of truly responsible and appropriate use of antibiotics to avoid running out of defences for fighting disease.³⁶

Health Minister Córdova explained that inadequate use of antibiotics became particularly evident during the 2009 influenza pandemic, “and this motivated, among other factors, the re-emergence in Mexico of the strategy to combat antimicrobial resistance presented by the WHO”. He further explained that, apart from sales regulation, the “strategy” in Mexico included health promotion initiatives and training activities for pharmacies. Minister Córdova concluded, however, that Mexico still needed “to combat customs of self-medication and inadequate medical-prescription practices not based on scientific evidence.”

Media coverage of the ceremony underlined the same aspects raised by the President and the Minister of Health: Mexico has already acted upon antimicrobial resistance. Interestingly, during the rest of the administration, there were no more declarations or further evidence of the additional efforts that the president announced would be taken to change the *culture*, or *customs*, of inappropriate antibiotic use.

Finally, the Ministerial Agreement on antibiotic sales was again publicly -but briefly- discussed in October 2011, when a state court judge declared the Agreement as unconstitutional, arguing that it was not adequately justified and undermined free trade. The sentence followed a motion filed by two pharmacy owners against the Agreement. The MOH lodged appeals against the sentence, arguing the protection of the population’s health, and the sentence was ultimately overturned by the Supreme Court of Justice.³⁷

It is important to mention that the rest of the 2006-2012 President Calderón administration was marked by social instability set off by the “drug war” (the armed

³⁶ Office of the President, “Diversas intervenciones en la ceremonia conmemorativa del día mundial de la salud 2011” (Discourses on World’s Health Day ceremony), April 7th 2011, available at: <http://calderon.presidencia.gob.mx/2011/04/diversas-intervenciones-en-la-ceremonia-conmemorativa-del-dia-mundial-de-la-salud-2011/> (accessed on June 10th, 2011).

³⁷ Víctor Fuentes, “Refuta juez recetas para antibióticos”, *Reforma*, October 25th, 2011, available at <http://www.reforma.com/> (accessed April 16th, 2012; password required).

conflict among rival drug cartels and against the Mexican government forces), and by economic contraction linked to the 2009 global recession and the deployment of emergency measures against the influenza epidemic (ECLAC, 2010: 173). The administration was heavily criticised for its perceived inefficacy in dealing with the drug war and the high death toll resulting from its battle against the cartels. It was also reproached for its perceived “overreaction” in responding to the influenza epidemic.³⁸ It is very likely that this context limited the array of policy problems under consideration by the executive, including those that could imply criticism of public health care services.

6.5 Summary and conclusion

Why did AMR reach the health policy agenda during the 2006-2012 administration in Mexico, and how that affected the adoption of related policies? During the 2006-2012 Felipe Calderón administration, an important window of opportunity for placing AMR on the governmental agenda opened as a result of a change in the problem stream. In Kingdon’s terms, a problem window arose and called for solutions. Despite the lack of indicators drawing attention to the problem of AMR, the crisis caused by the 2009 influenza pandemic, specifically, the occurrence of influenza-related deaths caused by self-medication with antibiotics, posited self-medication with antibiotics as a problem in itself, a status that was confirmed by public statements from the Minister of Health. Once the problem was defined as such, a viable solution came forth: the enforcement policy for regulating antibiotic sales. Attempts by other groups at redefining the problem to include other facets of inappropriate antibiotic use, particularly inadequate prescribing practices, in hopes of obtaining a more comprehensive policy solution had minimal impact on the media policy debate and the final policy product. This may be related to the fact that policy-making occurred in a context of national crisis, as discussed below.

With regard to the confluence of the policy stream, the problem window provided an opportunity to push for “pet” solutions: the MOH drove the regulation of medicine sales, while medical and academic associations pressed for actions on AMR. Although, in Kingdon’s terms, the former had been “floating around” as a policy alternative for years, it was considered impracticable by policy makers. It began to appear feasible during

³⁸ “Tras la epidemia originada en México, Influenza AH1N1 costó 0.7% del PIB: Córdova”, *El Economista*, February 8th, 2010, available at: <http://eleconomista.com.mx/sociedad/2010/02/08/influenza-ah1n1-costo-07-pib-cordova> (accessed on March 5th, 2010).

the Calderón administration when SP extended health-care coverage, guaranteeing access to medical services and medicines, and thereby neutralising the main argument raised against regulation. It had become evident that pharmacy regulation was failing to prevent self-medication with antibiotics, and this favoured the serious consideration of a policy alternative involving stricter regulation. Additionally, the policy proposal developed by INSP-AMIMC-APUA and communicated to decision makers aided in coupling problems to solutions; even more, it helped to legitimise a policy solution that had –to a large extent– already been chosen, but was likely to face opposition. Coupling a visible problem with a legitimate solution undoubtedly increased the chances for AMR to rise on the governmental agenda.

Finally, regarding the politics stream, despite the opposition of some interest groups, there were not severe constraints to action, i.e. to adopt the policy to regulate antibiotic sales. Pharmaceutical business groups, through the Federal Commission for Regulatory Improvement (COFEMER) were able raise their voices opposing to the new regulation, but they were not able to withdraw it. The influenza pandemic alongside the health, social and economic crisis in Mexico induced the government to take action to ensure that the Mexican population would never again be exposed to these risks. Convergence of the three streams therefore allowed AMR to reach the decisional agenda, and regulation of antibiotic sales to be enacted.

However, a number of factors prevented the window of opportunity from opening³⁹ wide enough to permit the discussion and development of a comprehensive national policy on AMR. The first of these factors related to governmental processes: the drawing of jurisdictional boundaries. On the positive side, however, the NHP 2007-2012 recognised self-medication as a health hazard, governmental officials publicly expressed their intention to act on the problem, and COFEPRIS was assigned responsibility for action, all of which facilitated the confluence of streams towards the achievement of an AMR policy. Although no steps appeared to be taken in this direction until 2009, the recognition of self-medication with antibiotics as a problem and its incorporation into the governmental agenda created an institutional venue for action and paved the way for policy development. However, the scope of the policy solution was narrowed down to the jurisdictional bounds of COFEPRIS. In the absence of an institutional body to coordinate policies on adequate use of medicines, COFEPRIS was unable to interact with other MOH offices in pursuit of an overarching policy.

³⁹ Kingdon MS does not make reference to this concept. In the discussion chapter, I argue that that institutional arrangements limit the opening of windows. Other authors (Mannheimer, *et al.* 2007) had previously made reference to open, half-open and half-shut policy windows.

Furthermore, the enclosed character of the policy process prevented non-MOH actors from participating in policy drafting, and possibly contributed to the narrow focus of the policy product.

Apart from institutional restrictions, three other factors in the politics stream contributed to the tight window of opportunity for discussing and developing a comprehensive national policy on AMR: a decision-making context immersed in a national crisis; the participation of interest groups in the policy process; and media framing.

Despite attempts by some groups to redefine the problem with the view of achieving a broader policy solution including other facets of inappropriate antibiotic use, particularly, inadequate prescribing practices, health officials confined the problem to self-medication. Again, this may have been the result of a policy-making context entangled in a national crisis that placed the government under enormous pressure to act quickly on the basis of practicable solutions. In this context, the idea of plunging into a wider problem requiring systemic changes in the provision of health services was probably viewed as politically unviable.

With regard to stakeholder participation, the recognition that pharmacy regulation was part of the problem –and part of the solution as well– affected the interests of pharmacies and derived in their active participation. This was particularly clear in the case of independent pharmacies that had no medical offices offering antibiotic prescriptions and lacked the means to mitigate their financial losses. Independent-pharmacy associations acted as pressure groups to influence public opinion and policy development. They also took advantage of the open policy window to promote their own agenda, namely, protecting the interests of small businesses vis-à-vis the growing number of large pharmacy chains. While their actions did not influence the final policy product, they succeeded in using the media to raise their negative view of the policy and shape the public debate. As it was discussed in the previous chapter, stakeholder participation reflects the semi-opened, government-centred process of policy-making in Mexico. This system is characterized by the scarcity of well-defined channels of communication between researchers and decision-makers; but also by an increasing access of organized business to the policy-making process (Cansino, 2012; Camp, 2012; Díez, 2006; Thacker 2012). Given their longstanding lobbying experience and strong organization (such as in the commercial chambers) and their relation to political elites, business groups in Mexico had been able to block the enactment of health policies that affect their interests (Shadlen, 2009; Barquera, et al. 2013)

Finally, media framing of the policy process may have also contributed to the reduced window of opportunity for discussing and developing a comprehensive national policy on AMR. Although the policy process gained wide media coverage, the focus was consistently placed on the problems of policy development, with minimal attention drawn to its objectives and its relation to public-health issues, except for the problem of self-medication. The dominant themes in media debates mirrored the voices of the two major stakeholders: on one hand, the MOH defended the policy by citing the dangers of self-medication; on the other, pharmacy associations opposed it, citing its economic impact and issues of corruption. Besides reflecting the interests and resources of the two main stakeholders, the dominant themes were subject to journalistic conventions characterised by what is known as “episodic framing” of social issues and the tendency to report health news in Latin America under a frame of political conflict (Waisbord 2010). These divergent frames -the problem of self-medication versus the economic impact of regulation- were scarcely addressed by the media on the common ground of a wider public debate concerning rational use of medicines and pharmaceutical policy. Because framing emphasises some aspects of the issues at the expense of others, narrowly focused and polarised media coverage was not conducive to a public discussion on AMR. The absence of debate on the relationship between the policy and promoting rational use of medicines, improving the quality of services provided in pharmacies, and addressing the global public-health threat posed by antimicrobial resistance was in fact a missed opportunity to engage in an in-depth discussion on pharmaceutical policies and the development of a national strategy on antibiotic use.

Concerning the implementation and evaluation of the regulation, surveillance systems for antimicrobial usage, critical to measure its impact, were not established. Similarly, failure to set up mechanisms that allow analysing the valuable information contained in retained prescriptions forfeited a clear opportunity to understand which were the frequent problems underlying antibiotic prescription, and to develop interventions accordingly (Zaidi, *et al.*, 2014). During the first year of implementation only, COFEPRIS carried out assessments of the impact of the regulation on antibiotic sales. The agency concluded initially that a 35% reduction had been attained, but later revised the figure to 20%. It also reported that 85% of pharmacies were compliant with the regulation.⁴⁰ Contrastingly, an independent evaluation indicated that, two years

⁴⁰ “Disminuye 20% la venta de antibióticos en México, por control con receta médica: SSA”, *La Jornada*, August 29th, 2011, p. 44, available at <http://www.jornada.unam.mx/2011/08/29/sociedad/044n1soc> (accessed on September 15th, 2011); “Por decreto de recetas, baja 35% consumo de antibióticos: Cofepris”, *W Radio*, radio programme: “Hoy por Hoy” (interview with Lucio Lastra), October 12th, 2009, available at

after implementation, antibiotic consumption had decreased by only 12% (Santa-Ana-Tellez, *et al.*, 2013). This decrement was smaller than expected, given that self-medication with antibiotics was estimated at around 40% of total antibiotic consumption, and a similar regulation implemented in Chile in 1999 yielded a steeper drop in consumption amounting to 30%. The modest effect of the regulation may be explained, at least in part, by the fact that, since the beginning of enforcement, many pharmacies began to operate in-store medical clinics. With the number of these retail clinics increasing almost 200%, by 2012, they represented circa 15% of all ambulatory medical consultations in Mexico. A study found that the average number of prescribed medicines per encounter was larger in these clinics than in other private or public services (Pérez-Cuevas, *et al.*, 2014), which may indicate antibiotic over-prescription.

It is well known that once a policy window opens, it does not stay open long. As John Kingdon (1995: 169) puts it: “An idea’s time comes, but it also passes.” While antibiotic problems and policies were able to reach the decisional agenda, the window closed rapidly for the following reasons: firstly, the enactment of the Ministerial Agreement was followed by a perception that the problem, narrowly defined as self-medication with antibiotics, had been dealt with, a perception reinforced by declarations from health officials and media coverage. Secondly, policy discussions and enactment were closely associated with the influenza pandemic; consequently, as the health crisis faded away, so did the related interest in its policy solutions. Problem definition and the crisis context favoured the opening of the policy window, but they also caused its rapid closure, especially when subsequent crisis (pertaining to the national economy and security) surmounted the governmental agenda. Even when some groups acted as policy entrepreneurs seeking to redefine the problem and aiming for spillovers of the policy momentum to impact on adjacent areas, namely, rational-use-of-medicine and comprehensive AMR policies, this was not fully attained. Finally, the last declarations of the Health Minister and the President portraying the problem of AMR in the country as related to the *culture* and *customs* of antibiotic use were probably not conducive for this issue to be considered on the decisional agenda for the rest of the administration.

For the time being, curtains are down –again– for AMR policies.

7. DISCUSSION

This long-term analysis of policy-making allowed shedding light on the policy dynamics around AMR in Mexico, including a period of stability and policy inaction, and a short period of conflict and policy change. In the following pages, I first contrast these periods using John Kingdon's three-stream theory of agenda-setting, in order to explain certain factors that affected the development of policies for the appropriate use of antibiotics and containment of antibiotic resistance in Mexico. Secondly, I discuss the results of this study in the light of other studies¹ on agenda-setting and policy development for antibiotic use and resistance.

The chapter goes on to discuss the applicability Kingdon's theory under the specific peculiarities of the Mexican political context, and its usefulness in this study to explaining agenda-setting for AMR at the national level. Finally, based on the results of this study and those found in the literature, I draw lessons for health reformers in Mexico, aiming to promote the adoption of further AMR policies; furthermore, I provide lessons for health reformers in other countries who seek to learn from Mexico's experiences in adopting national AMR policies.

7.1 Barriers and opportunities for action on AMR in Mexico

Data were drawn from official documents and records of the executive and legislative branches, and from interviews held with decision makers. The ensuing analyses indicate that, during the 2000-2006 Vicente Fox administration, the problem of AMR was not high on the health-policy agenda. It was kept off the decisional agenda as a result of the processes operating within each of Kingdon's streams and the absence of active policy entrepreneurs promoting its consideration.

Information derived from interviews with health officials, from MOH documents and from an analysis of printed media indicates that significant changes occurred during the 2006-2012 Felipe Calderón administration. A major change in the problem stream, coupled with favourable factors in the policy and politics streams as well as the active participation of policy entrepreneurs, created a window of opportunity for moving AMR onto the health-policy agenda.

¹ A previous examination of the cases of Chile, Brazil and India described here was presented in Dreser, *et al.*, 2012; Wirtz, *et al.*, 2013; Santa-Ana, *et al.*, 2013.

Table 7.1 summarises the key factors –related to each of Kingdon’s streams and the role of policy entrepreneurs– that hindered policy change during the 2000-2006 administration, and facilitated agenda placement and policy development on AMR during the 2006-2012 administration. These factors are described below in the light of Kingdon’s theoretical framework, as well as other social- and political-science works analysing why some issues receive governmental attention while others do not.

Table 7.1 Key factors related to policy inaction and action on antibiotic use and resistance in Mexico, 2000-2012

	2000-2006 Vicente Fox administration	2006-2012 Felipe Calderón administration
Problem recognition and definition	<ul style="list-style-type: none"> • Low problem visibility. Difficulties in measuring and assessing the problem of AMR; • Poor understanding of problem determinants, given its complexity; • Framing of the problem in cultural or structural spheres, or in the realm of individual behaviour and professional expertise (not within the scope of governmental action). 	<ul style="list-style-type: none"> • The health crisis linked to the 2009 influenza pandemic brought visibility to the problem of AMR –but particularly to self-medication with antibiotics; • Health Minister José Ángel Córdova and other top-level health officials described self-medication with antibiotics and antibiotic resistance as serious problems. They framed AMR as a health risk, which legitimised governmental action on it; • Discussions around the regulation of antibiotic sales received ample media coverage; • High problem visibility and its new framing opened the window of opportunity for AMR to reach the health policy agenda.
Development and perception of policy alternatives	<ul style="list-style-type: none"> • Scarce knowledge of recommended interventions to address AMR; • Limited intervention research on medicine use, and scarce evidence on contextually specific interventions to address AMR; • Anticipation of rejection by patients, pharmacies and physicians for some interventions; • Insufficient access to medicines and health care seen as a major obstacle to enforce regulations on antibiotic sales; • Enclosed policy process to draft the National Pharmaceutical Policy (NPP), with AMR-related specialists excluded. 	<ul style="list-style-type: none"> • Increasing coverage of new insurance system (<i>Seguro Popular</i>) facilitated policy alternative of stricter regulation of antibiotic sales to be seriously considered; • The regulation of antibiotic sales was one of the priorities for action recommended in a policy proposal developed and promoted by a group of policy entrepreneurs on AMR; • The policy process to draft the Agreement on antibiotic sales was enclosed; however, information from the policy proposal promoted by policy entrepreneurs was used for policy drafting.
Political context	<ul style="list-style-type: none"> • No clear institutional responsibility or accountability regarding policies for medicine use or AMR; • Competing issues on the agenda: fostering health reform and improving medicine stocks in public services; • Lack of powerful constituencies supporting policy change. 	<ul style="list-style-type: none"> • An institutional body (COFEPRIS) had been previously designated to control medicine sales; • The crisis context in Mexico resulting from the influenza A H1N1 pandemic placed the Mexican government under close scrutiny and compelled it to take action. However, action was restricted to sales regulation (not a comprehensive policy) given the narrow scope of problem definition,

		<p>the jurisdictional boundaries of COFEPRIS and the urgency to respond to the crisis situation;</p> <ul style="list-style-type: none"> Independent-pharmacy associations opposed the policy; however, there was no opposition from other powerful groups (health professionals, the pharmaceutical industry, and large pharmacy chains).
Role of policy entrepreneurs	<ul style="list-style-type: none"> Fragmented group of specialists advocating for AMR policies within their own area of expertise did not actively engage as policy entrepreneurs and approach decision makers. 	<ul style="list-style-type: none"> Groups of academics and professionals worked together developing and promoting a policy proposal to address AMR, and actively communicated it to decision makers.

7.1.1 Problem recognition and definition

Why was the problem of AMR not on the radar of decision makers during the first period, but gained the attention of governmental officials during the second period? According to Kingdon’s theory, the answer lies in two factors: the means by which officials learned about the problem (visibility and recognition), and the ways in which issues or conditions become framed and defined as problems (Kingdon, 1995: 197).

During the first period, AMR had low visibility: indicators were not available to assess the problem, nor focusing events which could have drawn attention to AMR (in contrast with the problem of insufficient medicine stocks in public-health services). Kingdon argues that it helps when a problem is countable: “The countable problem sometimes acquires a power of its own that is unmatched by problems that are not countable”, such as the “soft” areas pertaining to quality (Kingdon, 1995: 93). While academics and members of professional associations interviewed perceived AMR as a very important problem, decision makers interviewed lacked the information required to assess its scope or severity.

Additionally, AMR was ‘framed away’ of the scope of health and pharmaceutical policies. Some interviewees both in and outside the government perceived AMR as a complex problem related either to the cultural or structural spheres, or to the realm of individual behaviour, where it is difficult to identify determinants and responsibilities and, consequently, to act on problems. Following Deborah Stone’s causal stories (1989: 282) given unclear understanding on AMR causes and consequently difficulties in attributing blame for a problem and responsibility for its solution, AMR was kept off the realm of governmental action. On these same lines, Kingdon (1995) and Baumgartner and Jones (1993) affirm that social issues and conditions are not always recognised as public policy problems (i.e. within the scope of governmental action)

and, hence, do not automatically generate policy actions. According to Baumgartner and Jones (1993:27 “Before a problem is likely to attract the attention of government officials, there must be an image, or an understanding, that connects the problem to a possible governmental solution”. Furthermore, the way a policy problem is defined determines to a great extent how and if it will be acted upon. Definition also has strong implications for determining which groups have the competence to make decisions on it .According to the results presented, the need for a governmental response to AMR was not obvious during the first period.

Many interviewees perceived AMR more as an issue to be addressed through professional expertise: “It is a policy on how things have to be done in a hospital”, or a policy “on improving the doctors’ education”, rather than through governmental action or legal norms, such as a comprehensive pharmaceutical policy and a legal framework for use of medicines. This limited understanding of AMR may explain, on one hand, why it was not discussed as a problem amenable to a governmental response and, on the other, why a governmental body was not designated to address it. Furthermore, the perceived complexity of the AMR issue –together with lack of mobilisation– may have also influenced the AMR agenda status during this period. William Gormley (1983) succinctly asserts that highly complex issues detached from any important conflict are likely to remain far from the public agenda.

Contrastingly, during the second period of the study, covering the 2006-2012 administration, AMR gained unprecedented visibility when the 2009 novel influenza *deaths* were linked to self-medication with antibiotics. This relationship became a strong symbolic reference which, reinforced by media declarations from the Health Minister and other top health officials, brought visibility and a new understanding to the problem of AMR. The official declarations on antibiotic use together with the rising influenza death toll and images of severely ill patients were reproduced on the media during the first months of the new administration, causing self-medication with antibiotics to be publicly perceived as an important problem. Subsequently, figures pushed by specialists on the national rates of antibiotic resistance for common pathogens began to be used by health officials and media reports, reinforcing the severity of the AMR problem. The image of this public-health problem slowly shifted from one centred on self-medication to one integrating antibiotic resistance as well. Nevertheless, MOH officials reinforced the view of AMR as a problem of self-medication, and not medical prescription, which influenced the content of the policy output.

Within the crisis context, self-medication with antibiotics (and later antibiotic resistance) was framed by government officials as a health risk for the population. Importantly, as a result of interventions from other actors and journalists, the risk stopped being related exclusively to a 'culture of self-medication', and was connected to a deficient pharmacy regulation as well. This new and arguably simpler understanding of the problems was indisputably within the scope of a governmental solution. In other words, even if no changes occurred within the issue of AMR itself, its *image* switched from a medical issue to that of a public problem amenable to a governmental solution, allowing it to rise on the health-policy agenda. As Deborah Stone (1989) stresses, policy-making is strongly influenced by changes in the definition of which conditions are subject to governmental response. With regard to the studied case in Mexico, in the midst of the influenza crisis the cause of deaths was attributed to self-medication with antibiotics; and, at a certain point, blame was attributed to the lax regulation of pharmacies, which underlined governmental responsibility. In this way, causal ideas related to self-medication with antibiotics, brought the issue of antibiotic use to the realm of governmental action. This underlines the relevance of the problems stream to open a window of opportunity to place AMR on the governmental agenda.

By comparing the studied periods, it can be concluded that a crisis was a necessary factor for AMR to gain visibility as a problem. However, the influenza crisis was not enough on its own; the response of Health Minister José Ángel Córdova, and the advocacy of external experts helped critically, as is further explained below.

7.1.2 Development and perception of policy alternatives

Why was regulation of antibiotic sales not considered as a viable policy alternative during the first period, but emerged largely as the *only* policy alternative considered for AMR during the second period? According to Kingdon, there are two sets of answers to explain alternative specification: one related to the role of specialists, or 'hidden participants', developing proposals; the other, to a selection process within the policy stream.

Potential alternatives (proposals or solutions) for public-policy consideration are generated in communities of specialists. With regard to the AMR topic in Mexico, these specialists belonged to two main groups: public-health researchers and infectious-disease physicians (with the punctual collaboration of members of some international organisations) and formed a very loosely knit policy community on AMR. Interestingly,

other potential participants in the development of relevant policy proposals, including career bureaucrats in the MOH and legislative figures such as congressional staffers, do not play a part in the case of AMR in Mexico. Throughout the years, specialists in AMR had stressed its relevance, calling for interventions to improve antibiotic use, namely, education for patients and providers, surveillance of resistance, and regulation of medicine sales and advertising, echoing international recommendations. However, these ideas circulated more in academic than in policy forums. Establishing relationships between specialists and decision-makers with regard to AMR was exceptional, even though these inter-personal relationships have been regarded as an important factor for research uptake in Mexico and in other settings (Oliver, *et al.*, 2014; Trostle, *et al.*, 1999). Furthermore, given the scarce research on interventions for improving use of medicines in Mexico (and much of it circumscribed to prescribing practices in the IMSS social security system), there was limited evidence on context-specific ways of addressing AMR. Consequently, during the first period, most decision makers were largely unaware of nationally or internationally promoted interventions for improving antibiotic use and containing resistance. They were uncertain about the priority levels and feasibility of such interventions in Mexico, perceived their implementation as complex, and were concerned about the resources required for their execution. The enforcement of regulation on the sale of prescription-only medicines, including antibiotics, was an idea discussed sporadically among decision makers, but perceived as unfeasible.

Although a policy window opened during this period to draft a new National Pharmaceutical Policy (NPP) during this period, specialists related to AMR and use of medicines were not invited to participate, and these themes were, for the most part, left aside from the policy document. This may be related to the very understanding of what subjects a NPP comprised (an understanding that largely excluded use of medicines). However, it may have also resulted from the tradition of top-down and exclusionary-style policy-making customary in Mexico, which generally excludes representatives of the academia, professional associations and consumers, but favours the participation of business groups (Cansino, 2012; Camp, 2012; Díez, 2006; Thacker 2012). Particularly, the organized pharmaceutical industry has an ample opportunity of influencing pharmaceutical policies, given their formal roles as consultants to the MOH, and political context that favour their participation as consultants (González-Casanova, 1985; Shadlen, 2009). As such, they were able to participate in NPP drafting, and reflected their views in the final document.

Within the policy stream, potential alternatives are narrowed down to the few ones that will actually receive attention. This selection occurs related to some “survival criteria”, which include technical feasibility, congruence with predominant values, anticipation of future constraints, including budget, public and specialist acceptability, as well as politician receptivity (Kingdon, 1995: 200). Although decision makers and stakeholders interviewed for this research delineated some of the required actions to address AMR, they perceived that some of these interventions were likely to be rejected by patients, pharmacies and physicians. For governmental officials, implementing these interventions (particularly restricting antibiotic sales only with prescription, and controlling prescribing) may have constituted a political risk that they were unwilling to take. Insufficient access to medicines and health care was perceived as a major obstacle to enforcing regulations on antibiotic sales, and thus perceived as an unfeasible policy alternative.

Differently from the previous period studied, during the 2006-2012 administration, there were two relevant factors that facilitated the consideration of antibiotic sales regulation as a policy alternative to address AMR, namely, increasing health insurance coverage, and diffusion of a policy proposal with priority lines of action to address AMR in Mexico. Firstly, the enforcement of a sales regulation for prescription-only medicines was perceived more feasible, as the increase in health coverage by SP guaranteed access to medical services and medicines, overturning the main argument against regulation. Regulation was clearly stated as an intended line of action in the National Health Programme (NHP), and considered as a strategy of protection against health / sanitary risks under the leadership of COFEPRIS. There had been no visible actions in this regard before 2010; however, the visibility that the issue of self-medication gained within the 2009 influenza crisis favoured serious consideration of this policy alternative, placing antibiotic sales under stricter regulation. Secondly, differently from the first period, in which groups of public health academics and infectious-disease specialists worked fairly disconnectedly supporting diverse policy alternatives on AMR, during 2010, they were able to collaborate and to agree on a comprehensive policy proposal to address AMR in Mexico, and communicate it to decision makers. The document listed seven priority actions, among which was the regulation of antibiotic sales. Although this group of specialists was not involved later in the drafting of the Ministerial Agreement on antibiotic sales, fragments of their policy proposal were retaken by declarations from health officials and included in the final policy product, specifically, the Ministerial Agreement. It is impossible to conclude with available data whether the policy proposal (particularly figures and arguments regarding antimicrobial resistance) was used by governmental officials only to justify or to gain legitimacy for a policy

alternative already decided upon², or whether it was useful –at least– to persuade decision makers of the need to regulate *all* antibiotic sales, not *some* of them, as they declared initially.

Why weren't the rest of the priority actions pointed out by specialists seriously considered by health officials as policy alternatives to address AMR? No direct evidence (as from interviews) was obtained under the study to answer this question. However, two sets of explanations could be considered: one is related to the fact that the problem was predominantly defined in connection with self-medication and over-the-counter sales of antibiotics, thus calling for solutions only in these areas; the other may be related to the 'recombination' of policy ideas, as worded by Kingdon. Following on from Lindblom's incremental approach to policy-making (1980), Kingdon (1995: 201) suggests that the coupling of already familiar elements ('recombination') is more important than the appearance of totally new elements ('mutation'). In the case of policy alternatives for AMR in Mexico, the proposal of enforcing regulation on antibiotic sales was 'recombined' with the (stated) governmental line of action of stricter regulations for pharmacies; while the rest of the proposed actions –such as the creation of a multidisciplinary advisory group for antimicrobial regulation and licensure, and the development of a national surveillance system for antibiotic usage– were wholly new elements not considered before by that administration. Similarly, Oliver (Oliver, 2006) affirms that, despite consensus on the severity of a public health problem and the appropriateness of governmental action, it is incrementalism (rather than comprehensive reforms) what predominates in almost every area of public health policy. This author explains that major causes of incrementalism and inaction in health policy is typically are decision maker's time and information constraints which favour that they build in existing programmes and policies, the institutional design which disperses capacity for policy development, concentrated interests (for example, in the industry) as well as fiscal constraints in the government. These factors may have influenced the consideration of policies to address emerging issue of AMR.

7.1.3 Political context

John Kingdon explains that, independently of problem recognition or the development of policy proposals, circumstances in the political sphere flow according to their own dynamics, and act as powerful agenda setters. Political factors considered by Kingdon are swings in the national mood (not addressed in this study), the balance of organised

² This could relate to a 'strategic' model of research utilization, according to Weiss' (1979) description.

political forces (including interest group pressure) and changes in the administration (comprising turnover of key personnel and questions of jurisdiction). These factors involve 'visible' participants in the process: the administration itself (president and high-level appointees), members of the legislature, the media and representatives of interest groups. With regard to the present study, what political factors acted as constraints for policy change on AMR during the first period, but favoured policy action during the second period? Further down, changes of administration, jurisdictional borders and interest group activity are discussed to respond to this question.

Governmental turnover and competing issues on the agenda. During the 2000-2006 administration, a new political party, PAN, came to power. The new administration had a very clear health-policy agenda: to foster a health sector reform, in which improving access to and the quality of health care were key preoccupations. Those two priorities were strongly linked to improving medicine stocks in public-health services. Improving medicine use and AMR were kept off the agenda by these competing priorities. The development of the NPP document during this period was very much oriented to improving access to medicines in a context of health system reform, whereas use of medicines was largely disregarded in this policy initiative. As Kingdon explains, there is a limit on the capacity of the system to process a multitude of agenda items. Even when a problem is recognised as such, there is an available solution and there are no political barriers to action, "bigger" agenda items press down "smaller" agenda items in the pipeline (Kingdon, 1995: 184). Furthermore, the new administration did not bring any 'visible' actors pushing the AMR issue. As Kingdon further explains (p. 199), "the chances of a subject rising on the governmental agenda are enhanced if that subject is pushed by participants in the visible cluster, and dampened if it is neglected by these participants".

During the 2000-2006 period, health system reform and the *Seguro Popular* start-up were the subjects dominating the agenda. However, during the 2006-2012 Felipe Calderón administration, the stability given by the same political party in power, the steady implementation of the reform and the increasing health-care coverage gave more space for "smaller" subjects to be considered by health officials. This space allowed decision makers to pay attention to the previously relegated issue of medicine use, and to indicate some lines of action in this regard. There were important developments concerning the preparation of treatment guidelines and the promotion of professional pharmaceutical services in hospitals; however, up to 2010 there had been no evidence of concrete action with regard to other strategies on medicine use relevant to AMR, particularly on regulating antibiotic sales. The crisis context resulting from the

2009 influenza A H1N1 pandemic placed the problem of self-medication with antibiotics on top of the health-policy agenda. This happened following the Health Minister José Ángel Córdova declarations underlining the severe implications of self-medicating with antibiotics, declarations that were supported later by President Calderón and received ample media coverage. It is unlikely that without these elements, the issue of antibiotic use would have reached the agenda. As John Kingdon stresses, the administration (the president and his appointees) is a powerful agenda setter: regarding the roles of various participants, in agenda-setting, a top-down model prevails (1995: 199).

The strenuous response (even criticised as overreaching by some actors) by the Mexican government to the 2006 influenza pandemic –which extended to the regulation of antibiotic sales– can be understood in terms of the international scrutiny in which the country was attributed the worldwide spread of the so-called “Mexican flu”. But two additional factors at the national level have been pinpointed to explain the governmental response. Firstly, the epidemic –and subsequent media coverage– “unveiled” the prevalent weakness of public health-care institutions (specifically problems on access and quality) as well as the lack of credibility in them (González González, *et al.*, 2011). Public discussion of these issues probably derived in the need for the MOH to demonstrate its capability and leadership, and triggered policy action. Secondly, the response to the epidemic has been regarded as a “political weapon”: in early 2009, when the epidemic began, Mexico was in the midst of preparing for the federal elections to be held later that year. These elections were crucial, as they would constitute an indicator of voting trends for the 2012 presidential elections. Because the 2006 presidential election was won by the ruling party’s candidate only by a minimum margin over the left-wing party, the new administration sought to enhance its legitimacy through a policy of stricter national security. This context may have influenced the strict response to the influenza epidemic (González González, *et al.*, 2011: 123). With available data from this study, it is impossible to discern whether the MOH intention to regulate antibiotic sales derived solely from the need to respond to internal and external pressures to act on the subjacent causes of the influenza epidemic’s impact, or whether the health minister had a previous interest in AMR.

Jurisdictional boundaries. During the 2000-2006 administration, one of the factors preventing AMR from reaching the agenda was the drawing of jurisdictional boundaries. Similarly to some aspects of Kingdon’s theory, Baumgartner and Jones (1993) propose that agendas result from an interplay of policy images and institutional venues. As mentioned in a previous chapter, policy image is how a policy problem is understood or defined, and policy venues are the institutional locations or groups in

society that have the authority to make decisions concerning a given issue: the “jurisdiction”, using Kingdon’s term. During the first period studied, there was no clear institutional venue for policies aiming to improve medicines to be discussed. In a way, the issue may be seen as having a shared policy venue: it could simultaneously be subject to the jurisdiction of several institutions, such as offices related with quality of health care, regulation of pharmacies, medicine procurement, and epidemiological surveillance. However, health officials pertaining to these offices did not recognise their full responsibility (or priority) in addressing AMR. In other words, there was no clear institutional responsibility or accountability on policies for use of medicines or AMR. According to Baumgartner and Jones (1993: 33), the lack of a defined policy venue can be explained “because the problems are new and societal responses to them have not become routinized, because there are many possible solutions but no clearly superior ones, or because problems are extremely complex and pose many contradictory or unrelated questions, each of which may interest different groups of people”. All these factors may have determined the lack of policy venue for AMR, underlining the relevance of international recommendations to create a specific and independent governmental body to address use of medicines and AMR policies.

During the 2006-2012 administration, the same situation of a lack of institutional venue for use of medicines and AMR policies remained. Nevertheless, within the NHP, the responsibility of enforcing regulations on medicine sales was assigned explicitly to COFEPRIS. Consequently, the existence of a defined policy venue facilitated the consideration of regulated antibiotic sales as the preferred policy alternative to address AMR during 2010. However, at the same time, the designation of this policy venue may have limited the consideration of other policy alternatives, as discussed later on this section.

Interest group activity. During the 2000-2006 administration, AMR kept limited to a specialised agenda, and did not permeate the larger health agenda. This may be related to the fact that the issue had neither “natural” nor powerful constituencies behind it in the politics stream and thus failed to gain attention without the support of such advocates. In this regard, only a small group of public health officials and infectious diseases specialists were interested in promoting AMR policies. However, for patients, physicians, pharmacies, the pharmacy industry and the government probably it was not evident that they would be better off with AMR policies (particularly, limiting use of antibiotics); consequently, they had no incentives to support them. The contrary –i.e., supporting policies to increase access to antibiotics and other medicines– may have been true. Furthermore, the costs of implementing AMR policies fall in

concentrated interests, particularly retail pharmacies (impact on antibiotic sales) and physicians (restricting their practice). It is well known that lack of support for a policy proposal and perceived opposition by interest groups are important factors that may cause policy advocates to back off. Expanding further on this, Kingdon (1995: 152) explains that governmental inertia is driven by both the building of a clientele in favour of an existing programme (or as in this case, interest favouring by the *lack* of programmes), and the absence of a strong constituency favouring change to counteract the inertia; both elements may explain governmental inertia on AMR.

Regarding stakeholder activity, I found no evidence (neither from governmental nor from interest' group sources) that an interest group explicitly sought to *exclude* AMR from the policy agenda. However, it was interesting that the representatives of pharmacy associations and pharmaceutical industry groups, tended to describe antibiotic misuse more as an issue of culture or poor education than an issue of lax regulation; and representatives of pharmacies associations minimized the figures of antibiotic sales without medical prescription. As was described earlier, Cobb and Howard-Ross (1997) Bachrach and Baratz (1962), argue that major reason that issues are excluded from the agenda (known as agenda denial, or non-decision-making) is that they are deliberately suppressed from agendas or prevented from being matters of decision because they directly threaten the interests of a given group. These authors distinguish non-decision-making from the 'negative' aspects of decision-making related to anticipated reactions: public officials will avoid raising issues likely to provoke a strenuous reaction by *deciding not to decide*. In other words, the perception of intense opposition to a proposal is an important reason for not pushing for it. In this regard, some health officials interviewed in this study anticipated the negative reactions likely to occur if some policy alternatives to address AMR were to be implemented (for example, physicians against control of their prescribing practices; and pharmacies, the pharmaceutical industry and patients against enforcement of regulations on antibiotic sales). Nevertheless, with the available data it is impossible to conclude whether the actions of interest groups (i.e., organised political forces) were directly or indirectly a major influence excluding AMR from the policy agenda during this first studied period.

With regard to the second period analysed (the 2006-2012 administration), the public discussion regarding the regulation of antibiotic sales was an opportunity to analyse the actual position taken by diverse stakeholders vis-à-vis the regulation. Somehow expectedly, independent-pharmacy associations emerged as key opponents to the regulation as their interests –medicine sales– were threatened.

Interestingly, although the policy typology may be defined as regulatory (establishing limits in private activity in the public interest), given its impact on pharmacy revenues – and, arguably, on patients’ expenditures in health care– antibiotic sales regulation was actually a redistributive policy. Furthermore, the policy costs were concentrated in well-organised groups (the pharmacy associations) which rapidly mobilised against the policy, while there were no clear beneficiaries of the policy change which could mobilise political support. It is well known that redistributive policies generate a higher level of controversy and participant mobilisation than regulatory ones, which explains the wide public debate that broke out when the Agreement was announced. However not all industry groups reacted equally: there was no opposition from large pharmacy chains, which could buffer the regulation impact hiring in-situ physicians, nor from the pharmaceutical industry, which presumably could benefit from new physicians’ prescriptions instead of people buying generics over the counter. There was no straightforward opposition from other relevant groups, such as health professionals (some associations even manifested their support), nor from patient associations or organised consumer groups, despite the fact that media-based discussion forums reflected a predominance of negative perceptions of the regulation. Finally, the position of members of the legislature was divided. According to Kingdon, interest-group activity can affect the agenda by seeking to include agenda items or to influence the alternatives considered by policy makers; but, more frequently, they seek to block the consideration of policy proposals they do not prefer, which was the case of the independent-pharmacy associations in Mexico. Apart from the opposition of some groups, other powerful groups refrained from mobilising or were supportive, which favoured the regulatory change.

7.1.4 Policy entrepreneurs

According to Kingdon’s theory, changes in either the problem or the politics stream can open a window of opportunity for an issue to reach the governmental agenda; but for issues to reach the *decisional* agenda and for policies to be developed, the coupling of the three streams is needed. Policy entrepreneurs are essential for stream coupling. They are generally willing to invest their resources to promote policies they favour, motivated by their frank concern about a given problem, their pursuit of self-serving benefits, or others. However, in order to have an effective role, their activity must *precede* high agenda status or enactment. Policy entrepreneurs ‘soften-up’ the system by highlighting indicators that give visibility to problems, pushing for one kind of problem definition, and promoting certain policy alternatives or their ‘pet’ solutions. By developing their ideas and proposals in advance, they can be ready to surface and

push for them when the window opens, and then coupling of the three streams takes place. With regard to the present study, what were the differences in the policy entrepreneurs' activity on AMR in the first versus the second period?

During the 2000-2006 administration, I found no evidence of policy communities or individuals acting as entrepreneurs; that is, actively seeking to promote their ideas on policy problems or policy alternatives related to AMR. There were, however, advocates for AMR policies (specialists in infectious diseases, health-care quality, and public health) organising meetings and disseminating their ideas in very specialised forums. For the most part, these groups of specialists worked disconnectedly, rather than as a tight policy community; they did not actively engage as policy entrepreneurs pushing their ideas in policy forums or in the media. Kingdon emphasises that specialists (i.e., hidden participants) are not agenda setters, but can influence alternative specification. However, it is not clear if, during the first administration, these specialists were even able to agree on and promote specific policy alternatives. During this period, an NPP document was developed, providing an important opportunity to introduce aspects related to AMR; however, according to the interviews, the specialists were not considered to participate in NPP formulation, as discussed before. In addition, the specialists (particularly infectious-disease and public health specialist, the most important promoters of AMR policies) were largely unaware of this policy development, and of their possible role on it.

Differently from the first period, during the 2006-2012 administration, there were key policy entrepreneurs for AMR policies. Firstly, the role of Health Minister José Ángel Córdova was arguably that of an entrepreneur, linking the specific problem of self-medication with antibiotics to the solution of regulating the sales of these medicines (although I found no evidence of previous activity by the Minister promoting antibiotic policies). Secondly, following the Minister Córdova declarations, groups of academics and professionals joined to work together developing and actively promoting a policy proposal to address AMR in the country. They acted as policy entrepreneurs coupling the three streams: they took advantage of the attention paid to the problem of use of antibiotics and the favourable political context in order to push for a policy solution, a comprehensive policy on AMR. Besides pushing their 'pet' proposal among decision makers, this newly formed group (maybe more a loose network than a cohesive policy community) aimed to redefine the problem: from one centred on self-medication alone, to one centred on inappropriate use of antibiotics. This new definition included other aspects such as inadequate medical prescribing and use of antibiotics in animals, as well as the related problem of antimicrobial resistance.

Consequent to this broader problem definition, as part of their communication with decision makers and with the media, these entrepreneurs called for a wider-ranging policy solution including the establishment of a national committee on AMR. Following the policy-proposal dissemination, declarations of health officials and media coverage did incorporate antimicrobial resistance as a central issue, using data and arguments exposed in the policy proposal. Therefore, presumably, the actions of the entrepreneurs were able to change the problem definition to a certain extent, from self-medication alone to antibiotic resistance. However, they were unable to influence the policy problem solution, as it was still directed to only regulating antibiotic sales. With the available data, it is impossible to explain the reasons for this, but at least two factors can be considered. Firstly, an issue of timing: the specialists' proposal was circulated in a very short-time frame, so there was not enough time to soften-up the system; and it probably came up too late, when policy decisions had already been taken. Secondly, factors related to the political context may play a key role in explaining why the new problem definition was not accompanied by a change in the consideration of other policy alternatives, as is discussed below.

7.1.5 Constraints to comprehensive governmental action on AMR

During the second period studied, relevant changes in each of the Kingdon model streams –as well as their confluence– opened a window of opportunity for AMR to move onto the governmental agenda. While this opportunity allowed enacting a regulation on antibiotic sales, it did not attain the development of other strategies, nor a national AMR policy. This may be related to the initial narrow scope of problem definition (focused almost exclusively on self-medication). However, key factors on the politics stream (political institutions, jurisdictional boundaries, stakeholder and media involvement, as well as the crisis context itself) may also explain why the window of opportunity for AMR did not open enough (or closed too soon) for a national policy on AMR to be developed.

Stakeholder participation. The open policy window was an opportunity for diverse stakeholders to use the policy process to push attention to problems and solutions on matters of interest to them. The participation of two stakeholders –MOH and independent pharmacies associations– was most notorious, dominating the public debate. While the MOH stressed the risks of self-medication and actively promoted the regulation of antibiotic sales, pharmacy associations sought to delay policy implementation, and used the media to highlight the problems faced by independent

pharmacies and to stress the negative consequences (economic impact and corruption) of the sales regulation. Within this saturated context of problems and solutions, the participation and views of other groups were less noticeable. Among these, stands out the role of the group organised by INSP-AMIMC-APUA, which aimed to function as policy entrepreneur seeking to reframe the understanding of the policy problem and to influence policy formation, as has been described before. Kingdon (1995: 204) explains that, because open windows are small and scarce, they attract a number of problems (or new problem definitions) and policy proposals, overloading the system. Therefore, in this moment the investment of enough resources by stakeholders is fundamental for their preferred problems and proposals to be acted upon, or to being drifted away from the policy process. With this regard, the MOH and pharmacy associations had an active participation during the whole policy process, investing their resources to widely display their views on the media. Contrastingly, the network organised by INSP-AMIMC-APUA lacked experience and resources for policy advocacy, and only participated during the earlier months of the policy process, which caused that their understandings on the policy problems and solutions did not gain much visibility.

Institutions and jurisdictional boundaries. The dominant role of the MOH in this process should be understood in the context of the “semi-open” political system in Mexico, in which policy-making derives from a strong statist tradition. Despite the democratic transition, neither governmental institutions nor actors are oriented to an open and plural policy process; hence, agenda-setting (as well as other stages of policy-making) continues to be a highly endogenous process (Cabrero Mendoza, 2000). Although Kingdon’s theory is based on a well-established democracy, he reflects on the views of the new institutionalism to stress that the government is at least (and under certain conditions) somewhat autonomous. In other words, rather than only reacting to public opinion or interest groups, government may generate its own agenda through its own processes, and its interaction with the public may involve mainly mobilising support (1995: 230). In the case of agenda-setting for AMR in Mexico during the 2006-2012 period, an inside-access agenda model may have prevailed.

Although later on in the process there were efforts to change the policy image from an issue of self-medication by influenza patients, to the wider problem of antimicrobial resistance, the policy *venue* did not change. COFEPRIS has a clear role in protection against health and sanitary risks, attributed by the General Health Law: medicine and pharmacy regulation as well as risk communication are within its jurisdiction. Nevertheless, other key aspects relevant for addressing AMR, such as health-care

quality, medical prescription, health promotion and antibiotic-resistance surveillance, are not within the competence of this agency. Furthermore, at the time of the policy discussion, COFEPRIS was relatively new, and apparently had not established clear coordination with other health offices with competence on those topics. Finally, although the NHP listed actions for improving use of medicines, no overarching governmental body was created for use of medicines; so, in practice, these actions were implemented largely dissociated one from the other.

As John Kingdon explains, the first consequence of system fragmentation is policy fragmentation (1995: 119). The policy process on AMR was thus circumscribed to the jurisdictional boundaries and responsibilities of COFEPRIS, with scarce participation of other stakeholders, and the final policy product implied a single action that distanced much from a comprehensive national AMR strategy. The designation of COFEPRIS as a policy venue for AMR may have imposed constraints on the policy-making process, as well as on the policy outcomes. As Baumgartner and Jones explain, once a definable institutional structure is responsible for policy-making, that structure limits access to the policy process (1993: 7). Similarly, Kingdon (1995: 230) affirms that institutions, such as governmental forms and procedures, constitute important constraints on policy-making, rendering some policy outcomes possible and others unlikely.

It is important to underline that, although the definition of the policy problem eventually shifted to include antimicrobial resistance, the subject was still largely discussed by decision makers and the media as related mainly to self-medication, not to medical prescribing. As Reich suggest (1983), despite efforts to change or widen the understanding of problems, problem definitions become frozen in bureaucracies and consequently the responsibility over such problems remains unchanged as well. Additionally, there was probably an interest of governmental officials to maintain the problem definition away from the more contentious issues related to prescription (and therefore maintain their envisaged policy solution and responsible administrative body, COFEPRIS), as described below. With this regard, Baumgartner and Jones (1993: 6) underline that interest groups have a major stake in establishing a “monopoly” on the political understanding of any given policy, as well as the institutional arrangement that reinforces that understanding. In this case, the same may apply to the government.

Given that the final policy product, the Ministerial Agreement, only involved a stricter enforcement of a regulation already in place that fell within the jurisdiction of a government department (COFEPRIS) which already had policy competence in that

field, at the end, the 2010 Mexican policy on AMR represented more a form of incrementalism than a radical change. As it was mentioned before, bounded rationality, fragmented political institutions, resistance from concentrated interests, as well as fiscal constraints (Oliver, 2006: 195) lead decision makers to adopt incremental policy changes rather than comprehensive reforms, when facing public-health problems. In the Mexican case, fragmented political institutions may have been a very important factor determining the scope of the policy alternatives considered and the one decided upon.

Media coverage during the policy process. The potential of the media to influence public perceptions of health-policy issues, the political elite's policy considerations, and, eventually, the final policy product has been well recognised (Esmail, *et al.*, 2010; Wallack, *et al.*, 1993). The media can shape public opinion of health-policy issues by framing them; that is, by emphasising particular aspects of an issue, thus influencing how problems are defined and which policy alternatives are considered to address them. Although Kingdon's studies (1995) found that the media did not have a critical and independent effect on the governmental agenda, they may still be important in other ways, such as magnifying or shaping an issue that originated somewhere else, or affecting some of the participants through public opinion. In this way, the media act both as a participant and as an observer of the policy process.

Elite stakeholders elicit their power to reflect their views on the media, whether to reinforce status quo or to force direction of a new policy; but the media can also provide a voice to less powerful actors, which opens a space for media advocacy in public health (Wallack, *et al.*, 1993). However, the role of the media in policymaking is affected by the political system (Buse, *et al.*, 2005: 76). In Mexico, together with the democratic transition, the media has attained a status relatively independent of governmental control, but also increasingly beholden to commercial interests (Lawson, 2002) ; this may explain the extensive coverage of MOH and the pharmacy associations' voices, in comparison with other groups, and thus its overall influence of these groups on public discussion around antibiotics regulation. However, despite the strong opposing voice of pharmacy associations on media coverage, its effect on the policy process appears to be have limited. This suggests that the influence of other political factors (in this case the statist tradition of policymaking in Mexico, in which the MOH has an outstanding role) may outweigh media framing effects on policy-making, as other studies have pointed up (Esmail, *et al.*, 2010).

With regard to Mexico, during 2009, columns and editorials in the printed media as well as some radio and television programmes reflected upon the official declarations connecting self-medication with influenza deaths, and questioned why the current regulation on medicine sales was not enforced. These arguments may have aided a change in the public debate framing of self-medication: from a problem attributed only to individual behaviour to one concerning governmental responsibility. It is probable that this framing change pointing to the need of governmental intervention aided regulation of antibiotic sales to reach the decisional agenda.

During 2010, the ample media coverage of the antibiotic regulation in Mexico aided the problems of self-medication with antibiotics and antibiotic resistance to gain visibility. Additionally, media framing may potentially have influenced the policy alternatives considered by decision makers. Even if media coverage aided AMR to gain visibility, media framing may have also shaped the public debate away from an integrated approach on AMR that addressed issues such as antibiotic prescription and surveillance both in human and animal medicines. The main divergent frames used in media coverage (problem of self-medication versus the economic impact of regulation) put aside a wider public debate on rational use of medicines, quality of care and pharmaceutical policy. This represented a missed opportunity to publicly discuss the development of a national strategy on use of antibiotics (Dreser, *et al.*, 2012). However, as other authors have indicated (Esmail, *et al.*, 2010), even if the results of a media analysis can describe how policy problems and solutions were framed, we can only infer the potential effects of it on the policy process.

Policy-making in a crisis context. As mentioned before, the 2009 influenza pandemic and the subsequent declarations of health officials linking influenza death to self-medication with antibiotics, gave unexpected visibility to the subjects of antibiotic use and regulation. At the same time, the national crisis context placed the government under enormous pressure to act, calling for short-term and implementable solutions, rather than to engage in a process of policy deliberation or developing systemic changes. The prevailing narrow problem definition focused primarily on self-medication was coupled to a narrow problem solution, the regulation of antibiotic sales, favouring the enactment of a limited Ministerial Agreement, but not the discussion and development of a national AMR strategy.

John Kingdon has pointed out the relevance of crisis to act as focusing events capable of opening problem windows and favour policy change. However, not all crisis episodes inevitably drive policy change; this depends largely on the causal ideas behind the

crises (Stone, 1989). Additionally, crises by themselves are not sufficient to drive policy change, if there are no perceived viable solutions, a favourable political climate, and policy entrepreneurs taking advantage of the crisis momentum. Schwartz and MacConell (2009), based on discussions on the politics of crisis management (Boin, *et al.*, 2005), reinforce the understanding of the complexities of agenda-setting and policy change in a crisis context. In the wake of a crisis, they affirm, policy makers are forced in two directions: “They need to offer some ‘learning’ commitment to ensure that never again will society be exposed to the same risks, but they also need to offer reassurance that existing frameworks are essentially robust. This tension between reformism and conservatism in the aftermath of a crisis is both an enabler and a constraint for policy change after the crisis.” (Schwartz and McConnell, 2009: 93). In the case of the influenza pandemic, enacting antibiotic sales regulation was probably a viable policy solution within the crisis context, given the perceived risk of self-medicating with antibiotics. However, even when later governmental officials raised the issue of antimicrobial resistance, health professionals pointed to inadequate prescribing practices and advocates called for a comprehensive AMR strategy, discussions on the functioning of health services and the quality of medical prescription were –reassuringly– left aside of official declarations and of the final policy product. This political interest in reassuring the adequacy of medical services may have been an additional factor determining why the crisis context was not conducive to a wide-ranging policy change to address AMR.

Finally, within this crisis context, the policy window closed rapidly and antibiotic problems and policies lost their agenda status. This was related to the following factors: firstly, with the enactment of the Ministerial Agreement on antibiotic sales regulation, there was the perception that the problem (as understood and defended by government officials: self-medication with antibiotics) had been taken care of and, consequently, decision makers could turn their attention to other problems. And indeed, towards the end of the administration, the executive was being severely criticised for its response to the influenza epidemic, and was facing an economic contraction as well as the insecurity crisis set off by the drug war. This political climate was not favourable to introduce further changes in the system. Furthermore, the dominance of these high-politics issues contributed as well to the fading of the low-politics issue of antibiotics regulation. Secondly, changes in the conditions that gave rise to the problem also caused its loss of agenda status. Given that the policy discussion and enactment on antibiotics was closely associated to the influenza pandemic, when this health crisis waned, so did the interest in the policy solutions related thereto. Thirdly, external policy entrepreneurs did not sustain their efforts (such as communication with decision

makers and efficient use of the media) to maintain AMR on the public and political agenda. As such, the opportunity window closed and the problem, as understood and advanced by health professionals and academics (i.e., improving use of antibiotics, including prescription, and containing AMR) remained largely unaddressed.

It can be concluded that, during the 2006-2012 administration, the following factors were key to enable use of antibiotics reaching the health-policy agenda: the health crisis context, the response of Health Minister Córdova (emphasising the connection between the influenza crisis and the issue of self-medication with antibiotics), and the existence of a governmental body, COFEPRIS, specifically in charge of regulating medicine sales. However, these same factors acted as constraints for policy-making, narrowing the array of participants and policy solutions to be considered. Consequently, only an incremental policy change, rather than a comprehensive national AMR policy, was pursued.

7.2 How does the health-policy agenda-setting for AMR in Mexico compare with other countries?

In this section, I will discuss the constraints and opportunities to place AMR on the Mexican health-policy agenda identified in the present case-study, in the light of (a) efforts to place AMR on the global agenda; (b) other country-level experiences where AMR has reached the national health-policy agenda; and (c) country-level experiences concerning other health policy problems that have been kept off the decisional agenda, or have not attained public-health action.

Since 1998, the WHO has urged member countries to promote appropriate use of antimicrobials and to contain the global public-health threat caused by antimicrobial resistance. In 2001, the organisation launched its Global Strategy for Containment of Antimicrobial Resistance. The Strategy suggested a range of interventions to be organised under the umbrella of national health and medicine policies. However, as other authors have pointed out before, few –mainly high-income– countries have developed national strategies to promote appropriate use of antibiotic. It has been suggested that the WHO Strategy has not fully attained its objectives of either raising awareness among policy makers and the public, or prompting governments to pursue the recommended policy changes (Leung, *et al.*, 2011; WHO, 2012). The international response to AMR has been described as vague, and it has been recognised that

existing knowledge has failed to be translated into concrete action (Cars and Nordberg, 2005).

One of the suggested reasons behind the WHO Strategy failure to spark national and global responses was that its official launch coincided with the attacks of September 11, 2001 in the United States, and consequently, any momentum was lost in the following turmoil (Chatterjee and Fleck, 2011). However, other arguments are linked to the understanding of the problem itself. Some authors have pointed to the failure of international initiatives to define or to frame the problem of AMR in a way that is conducive to place this issue on the political agenda and to elicit governmental action. To begin with, antimicrobial resistance has been considered as a “faceless threat” in the sense that it is not of itself a disease entity, making it unknown for people outside the medical field (Cars and Nordberg, 2005). On the other hand is the issue of AMR framing within global health agendas. In some countries, the problem of antibiotic resistance was at first closely related to the problem of intra-hospital infections, such that the public understanding of the issue was narrowed down to cleanliness; and this, in turn, has been the only focus of some governmental policies (Nerlich and James, 2009). Furthermore, other efforts to raise the public profile of AMR and get it on the governmental agenda may have been counterproductive. Aiming to stimulate the discussion of policy alternatives and arguing against oversimplified problem definition and responses, more recently, antibiotic resistance has been reframed by using the “post-antibiotic apocalypse” metaphor. It has been argued that, while this political framing device is capable of alerting politicians to a severe problem that needs urgent attention, it also evokes negative emotions. The apocalypse is usually seen as something that is inevitable, against which one cannot do anything; thus, the use of this metaphor may have stifled behavioural and policy change (Nerlich and James, 2009).

Besides the aspects discussed above with regard to the difficulties that AMR recognition and framing place for eliciting national and global responses, another aspect to take into consideration is the potential conflict implicit in actions directed to promote rational medicines use (see Box 2.4). But differently from other health problems (for example, alcoholism or malaria) in which policy solutions undoubtedly benefit both individual patients and the community, the problem of AMR may represent in itself a dilemma between the short-term individual care of patients and the longer-term global population health³. Public policies directed to reduce use of antibiotics (and

³ Importantly, access to antibiotics is needed to contain infectious diseases and antibiotic resistance, while excess is the main driver of resistance; on the other hand, excess or overuse also contributes to the problem of antibiotic access, by depleting antibiotics stockpiles in health

therefore contain antibiotic resistance) face the need to balance the best interest of the individual patient with the global need for sustainable access and use of antibiotics. This dilemma mirrors what has been termed the “tragedy of the commons” (Baquero and Campos, 2003) bringing uncertainty to AMR policy solutions and therefore hampering policy change. In practice, the apparent short-term advantages of use of antibiotics for patients (which could be life-saving), health-care providers and medicine distributors seem to have outweighed concerns about future consequences on antibiotic resistance (Cars and Nordberg, 2005; Laxminarayan, *et al.*, 2013). On these same lines, globally, important efforts to improve access to medicines may also have deviated attention to efforts to improve (and limit) medicines use, which is a key component of AMR policies. A clear example of this is the Millennium Development Goals, the majority of which include, to a greater or lesser extent, increasing access to medicines. Even more, as a response to the emergence during the last decades of new global health treats (including AIDS, pandemic influenza, and bioterrorism) national governments are increasingly incentivising the regulatory approval and building stockpiles of medicines to treat these diseases (Avery, 2004; Elbe, *et al.*, 2014). As such, presently is not only the pharmaceutical industry that has pushed consumers and governments to acquiring more medicines; but it is also governments that are contributing to the pharmaceuticalization of society (Elbe, *et al.*, 2014). Within this global context that stresses the development, acquisition and access to medicines, restricting the use of antibiotics may be a rather dissonant discourse.

Other documented factors that hinder the development of national AMR policies and interventions to improve use of medicines are related to the weaknesses of health systems: insufficient human resources and information systems, and weak governance. Among them are the high transaction cost associated with the bureaucracy of regulating and monitoring antimicrobial use, as well as its potential conflict with clinical freedom (Smith and Coast, 2002). Other health-system-related factors are the insufficient microbiology laboratory facilities and information networks that lead to a paucity of antimicrobial-resistance-surveillance data and, consequently, to a poor understanding of the scale of the problem, hampering an effective response (Leung, *et al.*, 2011; Smith and Coast, 2002). Additionally, authors have also pointed to the lack of commitment or political will to develop AMR policies and interventions for improving use of medicines. These issues have not been prioritised by national governments due to a poor understanding of the problems, the complexities of

services and by rendering antibiotics useless because of resistance. In this “access and excess dilemma” rational use of antibiotics is central challenge (Laxminarayan, *et al.*, 2013: 15).

stakeholder coordination, and the perceived priority of improving access to medicines (Gasman, 1995; Leung, *et al.*, 2011; Ventura, 2008).

The studies described before shed light on some of the factors related to the difficulties for placing AMR on the global health agenda, as well as some of the factors that obstruct translating global initiatives into national action. Many of these factors coincide with the findings of this study in Mexico, explaining the low agenda status and policy inaction on AMR: low problem visibility and problem framing not conducive to governmental action; uncertainty about the technical feasibility and acceptability of recommended policy solutions; and governmental policies and institutions that favour improved access to medicines over improved use of medicines. Nevertheless, there is scarce information available that allows, on one hand, understanding in depth the policy-making process –particularly the processes, context and actors involved in agenda-setting– for AMR in low- and middle-income countries; and, on the other, comparison with the present study in Mexico. Antibiotic policies developed in Chile (1999), Peru (2007), Brazil and India (2010) are worth considering.⁴ Even if the available literature does not provide thick descriptions of these policy processes, it is possible to identify some factors related to agenda-setting and the subsequent policy development in these countries, both in contexts of “politics as usual” (Chile and Peru) and in crisis contexts (Brazil and India).

In the case of Chile, it was a group of infectious-disease specialists who began to call attention to the problem of AMR. Worried about the evidence drawn from national and regional studies regarding the rise in consumption of antibiotics in the 1990s, and the resulting levels of resistance, they began to discuss policy alternatives to improve use of antibiotics. In 1998, the Pan American Conference on Antimicrobial Resistance in the Americas. organised by the PAHO and the Pan American Association of Infectious

⁴ The case of South Korea is worth mentioning as well. In 2000, a health-care reform was introduced to separate drug prescribing by physicians from dispensing by pharmacists. In 2001, a new payment system was introduced to correct inefficiencies in health-care delivery by the prevailing fee-for-service system. While these reforms were not focused on AMR, they did have a positive impact in reducing antibiotic over-prescription. Kwon and Reich (2005) explain that even if the financial incentives for prescribing had been recognized for a long time, policy change had not been possible given the influence of physicians and pharmacists. However, the change of government and the new president’s keen interest in health policy open a window of opportunity for reform. Democratization and the movement to a more pluralistic political context favoured the participation and support for reforms by civic groups, which succeeded in quickly setting the reform agenda, despite the opposition of powerful stakeholders. These reforms reached the agenda not by events in the problem stream (there were not major shifts in health care indicators) but rather by changes in the political context. Civil groups (mainly progressive academics) served as policy entrepreneurs, pushing the presidents of the Korean Medical Association and the Korean Pharmaceutical Association to the table, and helping formulating the content of the reforms (Kwon and Reich, 2005).

Diseases, recommended key actions to improve antibiotic use. The conference provided new impetus to the work of infectious-disease specialists, who then approached health officials of the Chilean MOH. A steering committee was organised, which took the lead in developing and implementing enforcement measures prohibiting antibiotic sales without medical prescription in 1999 (Bavestrello and Cabello, 2011; Wirtz, *et al.*, 2013a). Enforcement was accompanied by information campaigns directed to the public and the involvement of pharmacies. One key factor that facilitated the regulatory changes was the previous experience (1995) of the Chilean MOH medicine agency in regulating the sales of benzodiazepines only with medical prescription (Interview 1, Chile). Shortly after the regulatory change on antibiotics was introduced, antibiotic consumption decreased sharply, circa 30%. However, two years after the introduction of the regulation, consumption slowly began to increase. This reverse of the initial impact has been related to the lack of further monitoring of antibiotic consumption, and the subsequent lack of reinforcement of the regulation and informative campaigns (Bavestrello and Cabello, 2011; Wirtz, *et al.*, 2013a). As one interviewee from the Chilean MOH explained about the relevance of monitoring to recognize problems with antibiotic consumption: “If we don’t measure it, then it doesn’t exist” (Interview 2, Chile).

The Chilean process for agenda-setting on AMR differs substantially from that in Mexico in various aspects. Firstly, attention to the problem of AMR was not sparked by a crisis, but by available indicators on antibiotic consumption and antibiotic resistance. Infectious-disease specialists acted as policy entrepreneurs calling the attention of health officials to these problems and to policy alternatives recommended by the PAHO at the Pan American Conference. The feasibility and serious consideration of the policy alternative of regulating antibiotic sales only with medical prescription by the Chilean MOH was further facilitated by a positive previous experience in regulating benzodiazepine sales. AMR was thus able to reach the health-policy agenda and a policy was developed.

The case of the development of antibiotic policies in Peru is similar to Chile and different from Mexico in the sense that it was not triggered by a crisis. In the Peruvian case, the role of international agencies was central for governmental action on AMR. In 2005, the South American Infectious Disease Initiative – SAIDI, organised by USAID, PAHO, APUA and other international organisations, began a regional initiative in Peru, Bolivia and Paraguay, offering technical support to local organisations in order to

improve use of antibiotics.⁵ SAIDI, in cooperation with national and local organisations in Peru (among them, diverse offices at the MOH, and the Health Action International-HAI group), developed an assessment on use of antibiotics, and began an intervention in 2007 in the Peruvian district of Callao. The intervention was comprehensive, involving local physicians and hospitals, a social responsibility campaign with local pharmacies, as well as a social marketing campaign and activities for community mobilisation. The development of the SAIDI initiative in Peru was facilitated by three relevant contextual factors: an already very active civil society organisation advocating on medicine policy issues (the national branch of the NGO HAI-Health Action International); the National Medicine Policy enacted in 2004, including rational use of medicines as one of its objectives; and the existence of an office within the MOH specifically devoted to promoting rational use of medicines. Despite the success of implementing interventions within the SAIDI initiative, institutionalising and scaling-up these interventions remain a challenge (Meza, 2011). The Peruvian policy process on AMR diverges sharply from the experience in Mexico in terms of the crucial roles of international agencies and national civil society organisations.

In contrast to the previous cases discussed, in India and Brazil, AMR gained visibility as a policy problem and was able to reach the health-policy agenda interconnected with antimicrobial-resistance-related health crises, which were widely covered by the media (Dresler, *et al.*, 2012).

In India, infectious-disease specialists had been flagging for some time the urgent need for stricter guidelines on antibiotic prescriptions and policies in order to contain antimicrobial resistance (Chatterjee and Fleck, 2011; Lakshmi, 2008). During 2010, international attention turned to a novel type of resistance linked to the New Delhi *metallo-beta-lactamase 1* (NDM-1) enzyme. Firstly identified in 2009 in a Swedish medical tourist who had returned from New Delhi, by 2010, the resistant NDM-1 bacteria has spread across India, Pakistan and the United Kingdom. Experts were particularly concerned because many strains of commonly encountered bacteria containing this enzyme appeared to be resistant to all known antibiotics, and warned that other medical tourists might be at risk. The Indian government and physicians reacted with anger at these warnings and at the very naming of the enzyme (“New Delhi”), arguing that it unfairly ruined the reputation of the country’s health system and its booming medical tourism industry (Shah, 2012). The NDM-1 spread and its

⁵ See South American Infectious Disease Initiative <http://www.usaidsaidi.org/>. A more detailed account of this initiative is presented in the case study by Anya Levy and Michael Reich “Changing the use of antibiotics in Peru”, in Roberts and Reich (2011: 279-286).

surrounding controversy were followed by intense media coverage and public debate in India, all of which finally pressed the Indian government into action to address AMR (Shetty, 2011). In 2011, the Indian government published the National Policy for Containment of Antimicrobial Resistance. The policy included, among other interventions, educational programs for physicians and the banning of over-the-counter antibiotic sales, as well as registering antibiotic prescriptions in pharmacies. However, soon after, pharmacy associations showed their opposition and staged a strike; they argued that the policy would cause inaccessibility to medicines in rural areas, would push people to use the black market, and would inflict loss of revenues and extra administrative chores to pharmacies⁶ (Easton, 2011). Finally, the government decided to put this regulation on hold indefinitely arguing it was not implementable, particularly due to concerns over access to antibiotics in remote rural areas (Ghafur, *et al.*, 2013; Shah, 2012).⁷ Furthermore, it has been suggested that the policy was nothing more than a “gesture”; it had little chance of being implemented as, in India, health policy is implemented at the state level, not the federal level (Shah, 2012). In 2012, a high-level meeting in Chennai with the participation of medical associations, the WHO and the Medical Council of India gave new impetus to the development of the policy; the “Chennai Declaration” was launched, proposing a 5-year strategy to control antibiotic resistance (Ghafur, *et al.*, 2013).

In the case of Brazil, the National Health Surveillance Agency (ANVISA, by its Portuguese initials) had been discussing the need to improve the control of antibiotic sales since 2009. However, it was the spread of the multi-resistant KPC bacteria (*Klebsiella pneumoniae carbapenemase*) and related deaths from hospital infections during 2010 –also followed widely by the media– which speeded up the regulation process (Dresler, *et al.*, 2012). ANVISA Resolution RDC 44/2010 was implemented in November 2010, establishing that antibiotics were to be sold by prescription only and retained in pharmacies. The resolution was supported mainly by medical groups, but faced the opposition of pharmacy and commerce associations. Arguing the social impact of the regulation, namely, insufficient infrastructure of public medical services and scarce access for the poorest populations, as well as the risk of triggering a

⁶ “Regulating Over-the-Counter Antibiotic Sales: What Will “Schedule HX” Mean for India?” Alice Easton, A. August 2nd, 2011.

https://www.cddep.org/blog/posts/regulating_over_the_counter_antibiotic_sales_what_will_schedule_hx_mean_india/ (accessed August 19th, 2014.)

⁷ See also: “Govt holds antibiotic policy, not to restrict access to drugs”, *Daily News and Analysis* (India), October 3rd, 2011 <http://www.dnaindia.com/health/report-govt-holds-antibiotic-policy-not-to-restrict-access-to-drugs-1594660> (accessed August 19th, 2014). A previous attempt to restrict the sale of certain medicines only with prescription or by trained pharmacists was opposed by druggists who responded with a boycott and a national strike (Shiva, 1985).

parallel black market of antibiotics, these associations conducted actions seeking the postponement or withdrawal of the resolution. Some of the arguments exposed and reflected upon by the media were: “What will happen to a child who is burning in fever with tonsillitis or an intestinal infection, but lives in a distant community, where a physician is available only once a week? [...] Infections can’t wait!”; or “Leaving people without treatment [...] is, to say the least, to deny them access to health”.⁸

Nevertheless, the resolution was implemented. According to a study, antibiotic consumption in the private sector had decreased by nearly 24% within two years (Santa-Ana-Tellez, *et al.*, 2013). However, following anecdotal reports of problems in the verification of pharmacy compliance with the resolution, a stricter regulation was introduced in April 2013, incorporating antibiotics into the ANVISA national system for management of controlled substances.

There were similarities in the processes of agenda-setting and policy development for AMR in Mexico, India and Brazil. Salient among them is the relevance of focusing events (for instance, the spread of influenza, NDM-1 and KPC) to give visibility to antibiotic use and resistance, and to open a window of opportunity for placing the issue on the health-policy agenda.⁹ In addition to problem visibility, however, other factors aided the health crises to spur the development of AMR policies: previous efforts in the policy stream led by infectious-disease specialists and medicine regulatory agencies; a political context conducive to governmental action, which can be determined, at least in part, by extensive media coverage; and international pressure. Taken together, the contemporaneous policy processes in Mexico, India and Brazil also indicate that a perceived health crisis and pressure for action can lead to a knee-jerk governmental response which, in the cases of Mexico and Brazil, concluded with a narrow problem definition and a narrow policy response directed only to antibiotic sales. Urgency for action can also lead to policy processes with scant involvement of stakeholders and insufficient analysis of implementation feasibility. Leung and colleagues (2011) point out that the scarce action on AMR at the national level tends to be taken forward by individual programmes and institutions; however, these efforts are fragmented and not comprehensive. Similarly, they conclude that though sensational individual events,

⁸ “Entidades dizem que novas regras para antibióticos restringem o acesso da população à saúde” *Jornal Na Net*, November 28th 2010, available at: <http://www.jornalnanet.com.br/noticias/1698/entidades-dizem-que-novas-regras-para-antibioticos-restringem-o-acesso-da-populacao-a-saude> (accessed on August 19th, 2014).

⁹ This was also the case in France. The rapid spread and hyper-endemic occurrence of MRSA (Methicillin-resistant *Staphylococcus aureus*) observed in hospitals, together with benchmarking data demonstrating the high consumption of antibiotics in France amongst other European countries, raised awareness on AMR. After a consultative process involving health professionals in human and animal health from the public and private sectors, a national plan of action to control antibiotic resistance was drafted (WHO, 2012; Aubry-Damon, *et al.*, 2000).

such as the NDM-1 spread, were able to attract attention to AMR, these events have not been able to prioritise governmental attention to the wider threat of antimicrobial resistance, and the need for sustained containment efforts.

Interestingly, stakeholder participation during policy development in Mexico, India and Brazil was similar: while medical and infectious-disease associations were supportive of the policies, pharmacy associations appeared as important opponents. The arguments exposed against regulating antibiotic sales by these last groups were surprisingly alike in the three countries: restricted access to life-saving medicines; boost of the medicine black market; and an adverse economic and administrative impact on pharmacies. Taken together, these cases also show that an apparently technical issue –for instance, regulating antibiotic sales– can be very politically sensitive because economic interests are affected and because of its relation to wider complex societal issues such as the functioning of health systems. Indeed, besides being a central component of health systems, medicines serve multiple social, psychological and political functions; these material and symbolic functions render medicines a potentially powerful issue in public debate (Reich, 1987: 45). This underlines the need to discuss antibiotic policies within the common framework of a pharmaceutical policy, and to mobilise political support from the beginning of policy development (Dresler, *et al.*, 2012).

Together with the second period analysed in this study in Mexico, the cases of Chile, Peru, Brazil and India allow describing the actors, processes and contexts in which AMR *did* arrive to the national health-policy agenda. However, no country-level-policy studies are available providing thick descriptions of the factors that have *prevented* AMR from reaching the health-policy agenda, which would allow comparison with this study in Mexico. Nonetheless, valuable examples of governmental inaction for other health-related-policy problems may shed light on the factors related to inaction on AMR in Mexico, which are set out in more detail below.

In a study on policy-making for injuries in central and Eastern Europe, McKee *et al.* (2000) identify the factors that have inhibited policy development on this topic. Among these factors were the low visibility of injuries as a health problem given insufficient data to identify the burden of disease they constitute, as well as the insufficient capacity of public-health authorities to assess the scope of the problem and to develop strategies to address them. Other identified factors were uncertainty and fragmentation regarding the responsibility of the policy problem; no tradition of intersectoral working; lack of related non-governmental organisations (which in other countries had been

central for placing the topic on the health-policy agenda); and the null role of international donors, which centred efforts on health-care reform. These factors on public-health (in)action are similar to those found in the first part of this study in Mexico, and can be related to weaknesses in each of Kingdon's streams: visibility (problems), public-health capacity (policy alternatives), ownership and intersectoral action (politics), as well as the lack of entrepreneurs advocating for policy change.

During the second period analysed in this study, it was a health crisis that caused the problem, politics and policy streams to converge and to open a window of opportunity for AMR. Even when the policy window allowed a regulation on antibiotic sales to be passed, it did not allow a comprehensive national policy on AMR to be developed. As Schwartz and McConnell (2009) demonstrate, crises do attract attention to problems, but are not sufficient factors to elicit policy change: the political context is crucial. In their comparative study, the authors analyse how a health crisis resulting from a safety problem in drinking water in Walkerton, Canada, led to regulatory changes, while the disaster caused by the collapse of a banquet hall in Jerusalem, in Israel, did not. The authors conclude that, despite the fact that recommendations for governmental action on these two disasters received broad public support, the political context and stakeholder participation were quite different. One relevant aspect was related to the locus, or policy venue, of administrative authority: policy changes in the Jerusalem case were less feasible because they required a radical administrative creation, contrary to the Walkerton case, which only involved a form of administrative incrementalism. While in Canada there was a sustained action of an organised group of citizens advocating for policy change and using the media to ensure that water-reform issues stayed on the political agenda, this did not happen in Jerusalem. Finally, in the Jerusalem case, the dominance of high politics, the threat of terrorist attacks, and a system overloaded with crisis, did not allow more than a very short issue attention, in which policy solutions were not able to be discussed and developed.

There were some similarities in the agenda-setting processes within the crisis contexts of Jerusalem and Mexico. While building safety and antibiotic use gained visibility with the crises, the complexities related with the need to create an administrative body to address these issues, the insufficient efforts of policy entrepreneurs and the concurrence of other crises prevented these issues from being maintained on the governmental agenda and ad hoc policies from being developed. As Schwartz and McConnell conclude with regard to building reforms in the Jerusalem case: rather than "an idea whose time had come," the prospect of developing a national antibiotic policy

in Mexico was “more akin to an idea that got lost in the ether of national politics” (2009: 108).

7.3 Applicability of Kingdon’s theory for the case study, and limitations of the study

This long-term analysis of agenda setting for AMR in Mexico coincides with Baumgartner and Jones’ characterization of policy agendas: a long period of stability and policy inaction, which is punctuated by a short period of conflict and policy change. The structural elements of Kingdon’s MS theory were used as independent variables to explain both when the issue of AMR was denied a position on the agenda (first period studied) and when the issue gained agenda status and a policy change occurred (second period studied). In this way, by using Kingdon’s MS, it was possible to understand the process of agenda setting for AMR in Mexico; this theory proved to be useful to explain why the issue of AMR was not able to reach the policy agenda during the first studied period, as well as to explain why a policy window opened during the second studied period.

However, with regard to the second period studied, using MS theory only offered a limited insight in explaining the policy outputs, i.e. the policies that were adopted as a result of agenda-setting. This limitation on using MS for explaining agendas *and* policy change has been raised before by other authors (Hewlett, et al. 2013; Capano, 2009), as described in Chapter 3 in this thesis.

An important issue that was raised up in the present study is that, despite the fact that AMR was able to reach the public and policy agenda, the outcome, was a narrow-focused regulation, which was –largely– already decided upon. In fact, John Kingdon (1995: 176) asserts that, once policy window opens, the outcomes can be quite unpredictable. In open windows, the system is often overloaded with an unmanageable multitude of problems and alternatives. In this situation, some problems and alternatives will drift away, leaving a set behind that is more manageable. As was discussed in section 7.1.5, given the initial problem definition (focused in self-medication) and the crisis context, most probably the ‘manageable’ choice was regulating antibiotic sales, but not acting upon medical prescribing practices, for example. But an alternative view can be that the institutional design of policy-making in Mexico did not allow the window to open widely: in the AMR case, the state-centred processes limited the participation and impact of other actors in the policy process,

particularly of that of the INSP-AMIMC-APUA group; the media favoured the coverage of governmental voices; jurisdictional borders confined decision making to a closed governmental group. Within this constrained policy process, few problems and policy solutions can be included in the agenda, thus limiting the possible outputs.

The state-centred political system in Mexico could have caused only a narrow window to be opened. Even though Kingdon does not refer to wide or narrow windows, he recognises the importance of institutions and (to a certain extent) governmental autonomy on constraining policy-making. Governmental forms and procedures, he asserts, make some outputs possible, while others unlikely (1995: 229-230). Similarly other authors have stressed in impact of institutions in mediating the impact of ideas (Béland, 2015), or as acting as veto points to block policy proposals, especially in settings different than the American liberal democracy in which MS theory was based (Powers et al, 2015).

Findings of the present study suggest that the relevance of institutions in constraining agenda-setting and policy outputs could be more important in non-liberal-democracies, like the Mexican system. Institutions such as legal systems and bureaucracies structure policy decisions, constrain how decision makers behave, and favour the participation of some groups above others. This aspect has to be considered when applying the MS theoretical framework to statist or less plural settings. To explore these aspects more in-depth, the present study could have benefited of including insights of institutional approaches on policy determination. An in-depth comparative study, for example, between agenda-setting on AMR in Mexico and in India, would have also provided more understanding of the relative role of that idea, interests, and institutions have in forming agendas.

Other authors have argued before that, because Kingdon's theory is largely based on assumptions –such as the openness of the political system– that coincide with American pluralism, its applicability in other governance systems can be questioned (Sabatier, 2007). Similarly, Enrique Cabrero (2000) warns against a non-critical application of perspectives proposed by the traditional American school of policy sciences to culturally and politically different environments, as in the case of Mexico. This author underscores that policy sciences derive from open and plural democratic contexts of policy-making, and follow a pluralist perspective. But policy-making in Mexico derives from an authoritarian and statist tradition of policy-making; and, even if immersed in the dynamics of democratic transition, weak participation persists. However, Walt, *et al.*, (2008) affirm that much of the theory from policy analysis in high-

income countries still has resonance for health and developing countries, and can be used to inform research in those areas. Transferring such concepts, though, needs to be undertaken with caution; it is necessary to contextualise the health-policy environment in order to understand the challenges to methodology and theory. Regarding the application of the MS theoretical framework in the present study, references to the political traditions of policy-making in Mexico were provided when discussing the study results, in order to contextualise the health-policy environment in this country. For example, Kingdon underlines the major impact that high governmental appointees have to set the agenda, which was also found in this case study in Mexico; but differently from what Kingdon discusses, the role of the legislative in the case presented here seems much minor, which can be explained by the particularities of the Mexican political system centred in the executive. The institutional constraints mentioned before is other aspect to consider when applying Kingdon's theory in non-liberal-democracies.

Finally, with regard to the theoretical framework used, Kingdon's MS, despite some critiques, has been acknowledged as a synthetic (John, 2002) or comprehensive approach of policy-making which addresses the broad set of factors traditionally deemed important in public policy-making (Sabatier, 2007). However, theoretical frameworks are based on a set of simplifying presuppositions aiming to understand the extreme complexity of public policy-making; as such, while they indicate to the researcher a number of factors which are likely to be critically important, they leave other factors aside. Consequently, Sabatier (2007) advises to be aware of applying several different theoretical perspectives in empirical research. With this respect, a limitation of the present study is that it is based only on Kingdon's MS theory, and did not contrast the results in the light of two different theoretical perspectives.

Other frameworks propose that the adoption of specific policies is not only function of internal determinants (extensively addressed in the present study), but also results from a process of innovation and communication between one political setting and another, which allows policies to be built on what has occurred elsewhere (aspects scarcely attended in this study). Indeed, in a world of heightened globalisation and global health policies, the role of international actors, policy transfer and learning from abroad are of much relevance. Along these lines, Parkhurst and Vulimiri (2013) underscore that applying policy transfer theories may provide additional understanding on individual country decision-making as well as the grade in which global recommendations are adopted. This approach of policy transfer may have complemented well the present study, aiding to respond the following questions related

to agenda-setting for AMR at the national level: How have global initiatives on AMR such as WHO's *Global Strategy for Containment of Antimicrobial Resistance* influenced national agendas on AMR? How may experiences on AMR policies in one country affect adoption of similar policies in other countries?

Finally, as other authors have pointed before, there are some practical issues when applying Kingdon's MS to an empirical study. One of them is that events in the policy process can exist in more than one stream (Shroff *et al*, 2015:115), as there is not complete independence among streams. For example, in the first period studied as part of this thesis, the development of the NPP proposal was analysed both in the politics and policies streams. Secondly, events in the policy process can be classified in different way by different authors. While in this thesis I analysed the WHO recommendations as part of the policy process, Shroff *et al*. (2015) analysed global policies as part of the political context.

Limitations of the study.

Some limitations of this study should be considered with regard to the study design and the methods employed. The methodological limitations are discussed in detail in section 4.8.

The single-case and longitudinal approach that this study follows is well suited to study the rise and fall of issues from the public agenda. It allows assessing the slow changes in the understanding of issues, policy contents, and the mobilisation of participants in the policy process, as well as the occurrence of focusing events that prompt a sudden shift in attention paid to a certain issue. However, it has been recognised that this approach has drawbacks in terms of generalizability and comparability (Baumgartner and Jones, 1993: 47; Yin, 2003). A multiple-case study would have brought more understanding on policy variation and a better insight into the determinants of AMR policy formation. Alternatively, adopting a comparative approach based on two different health policies in Mexico: a policy problem that was able to quickly escalate the health agenda and be enacted as a comprehensive national law (tobacco policy) in contrast to the problem of AMR, would have shed more light on the specific issue characteristics, policy solutions and participants in the policy process that acted as facilitators or constraints for policy change. A comparative analysis of the Mexican case on AMR policies with other countries would have provided more insight into the political-context factors that may act as determinants for the AMR agenda status and policy formation. Nevertheless, this study still provides a thick description of the policy process in Mexico. By reformulating the single case study into one with two observations

belonging to two time periods (diachronic or longitudinal comparative study) (Bartolini, 1993) it was possible to analyze policy variation or dynamics across time. By using this approach in the thesis, it was possible –within a single (conventionally labelled) case-study– to observe two separate instances of AMR agenda setting in Mexico, applying Kingdon’s theory. In this way, the range of variation of the explanatory variables as well as the dependent variable was extended (King, Keohane and Verba 2001: 218-21). As such, the present study allowed to draw a series of propositions on the factors influencing the process of AMR agenda-setting at the national level in Mexico, which can be used in future studies on AMR agenda setting in other countries.

7.4 Lessons learnt: setting the agenda for AMR

It has been stressed that policy analysis plays an important role not only in understanding past policy failures and successes, but also in planning for future policy development (Walt, et al., 2008). Research results are important for advancing the health policy agenda and influencing policy outputs and outcomes in both developed and developing countries (Grindle and Thomas, 1991: 141; Walt and Gilson, 1994: 366).

The present longitudinal case-study in Mexico aimed to generate understanding, by applying a policy-analysis approach, of the potential factors influencing policy inaction and policy change with regard to antimicrobial misuse and resistance (AMR) at the national level. By additionally discussing these findings on the light of others reported from other countries, some lesson can be drawn for stakeholders in Mexico and in other countries aiming to move forward the issue of AMR in governmental agendas to favour the adoption of related policies.

Despite efforts to place AMR on the global health-policy agenda and the promotion of global strategies and policy ‘packages’ to address these issues, there is still much room for eliciting political action in low- and middle-income countries. As most health issues, AMR is seen as a low-politics issue and, hence, does not tend to attract the attention of decision makers. However, as the described cases demonstrate, windows of opportunity can open –both in “politics as usual” and in crisis contexts– to place AMR on the governmental agenda. Therefore, it is possible for health professionals, academics, civil society organisations and health officials to advance the health-policy agenda on AMR, firstly, by moving ahead factors related to agenda-setting in each of the three streams; secondly, by taking a policy entrepreneur role, actively seeking to couple these streams.

(a) **Facilitate AMR visibility and understanding as a public problem.** Theorists on agenda-setting underscore that for a problem to elicit a response, it must be made visible to those with the power to initiate action. Furthermore, because problems get attention based on how they are framed or defined by participants who compete for attention, it is fundamental to redefine AMR in a way that is amenable to a governmental solution. Therefore, it is necessary to change the public and governmental perceptions regarding the severity of the AMR problem, emphasise that it can potentially affect the entire population, and stress the government's responsibility in its solution.

- In order to attain problem visibility, surveillance systems for antibiotic use and resistance should be strengthened in a way that its results allow decision makers to assess the scope of the problem. In Mexico –as in other countries– antibiotic-resistance surveillance is largely undertaken in a piecemeal fashion; diverse systems report their own results, mostly in biomedical scientific papers or in infectious-disease-specialist meetings. Consequently, antibiotic resistance tends to be reduced to a “natural” or scientific issue, not clearly identified as a public-health risk, and consequently kept distant from governmental action. The recent report, “Antibiotic Resistance Threats in the United States, 2013” (CDC, 2013) is a valuable example of how data on antimicrobial resistance can be reported to demonstrate that it is a “serious threat” for the country, indicating the “catastrophic consequences of inaction”, as well as proven public-health strategies to address it. The report summarises the disease burden, death toll and associated costs (topics largely disregarded by research and surveillance in Mexico), in a manner that is attractive and understandable for the media, the public, and decision makers. Additionally, there are opportunities to improve the surveillance of antibiotic consumption. Recent efforts to document national (Wirtz, *et al.*, 2010) and hospital trends (Rodríguez-Ganen and Asbun-Bojalil, 2012) on antibiotic consumption IN Mexico should be complemented with routine monitoring of indicators and benchmarking data on antibiotic consumption in all health services. Creating and communicating evidence-based information on antibiotic consumption patterns is needed in order to raise the visibility of inadequate antibiotic utilisation as a public-health problem (see below). Further evidence on antibiotic-related adverse drug events (Linder, 2008) at the national level (an

issue scarcely addressed by health officials or in the news media) is needed as well for the issue of antibiotic misuse (particularly over-use) to be perceived as a problem in itself.

- As other authors have pointed before (Parkhurst and Vulimiri, 2013), health-policy agendas are not set only through evaluations of burden or distribution of the disease, neither evidence on problems and potential solutions speak for themselves: an adequate framing process is necessary to facilitate policy attention. Antibiotic resistance is a complex issue difficult to understand as a policy problem in itself. In Mexico, as in other countries, this topic has been related to intra-hospital infections and, consequently, interventions have been focused on preventing antibiotic-resistance transmission. However, there is ample consensus that the primary goal to contain this problem should be avoiding the emergence of resistance. Given that the use of antibiotics is the single most important factor leading to antibiotic resistance around the world, national strategies to ensure the appropriate and rational use of existing antibiotics are of utmost relevance (Smith and Coast, 2002).

However, the concept of antibiotic misuse (which includes practices like self-medication and inadequate prescription) is not easy to grasp. As the present study shows, the concept tends to be related with individual or cultural practices, frames that are not conducive to governmental intervention. Consequently, it may be necessary to reframe antibiotic misuse as an issue related to “public policy failure”; this is, a condition that stems from government sources or is at least amenable to such solutions (Baumgartner and Jones, 1993: 27).

In Mexico, the public discussion on self-medication with antibiotics during 2009 and 2010 was able to shift the problem understanding from only a cultural practice to a problem related to the failure in pharmacy regulation and the insufficient access to health care. Once pharmacy regulation has been at least partially addressed in Mexico, there will still be room to discuss the structural causes of inadequate medical prescribing, and to reframe the problem stressing the need for more categorical governmental action with this regard, such as undergraduate education and prescription auditing. The potential of using metaphors and strategic issue framing to shape health agendas and to shift support

for determined health policies has been suggested before (Barry, *et al.*, 2009; Geneau, *et al.*, 2010; Parkhurst and Vulimiri, 2013). There are examples empirically demonstrating how public-health advocates can deliberately redefine policy issues, and how the change in policy-debate framing has favoured health-policy change (Breton, *et al.*, 2008; Vittal Katikireddi, *et al.*, 2014).

- Efforts directed to enhance the visibility and understanding of AMR as a public problem may be supported by sensitising the public and actively involving the news media. There is an opportunity for improving media reporting on issues of antibiotic resistance, antibiotic use and pharmaceutical policies in Latin America and other middle-income countries. The scarcity of in-depth reporting on these topics has been related to the limited availability of specialised journalism and independent information sources (Sánchez and Sivaraman, 2010). Aiming to overcome these limitations, the South American Infectious Disease Initiative - SAIDI has worked with the news media in three countries, achieving an improvement in the quantity and quality of coverage of these themes; this experience is worth replicating in other countries (Sánchez and Sivaraman, 2010). The experience in Mexico showed that even if the voices of governmental and business-related groups were favoured in media coverage, the views of other groups also achieved visibility in the media. Consequently, medical and public-health professionals advocating for AMR policies have an opportunity to improve their capability of interacting with the media, which may contribute to reframing the policy debate on AMR, as well as to developing a more informed policy process (Dresler, *et al.*, 2012).

(b) Foster research development and evidence uptake to inform context-specific policy alternatives for addressing AMR.

As has been discussed earlier, research and action regarding AMR in Mexico has largely been conducted from a biomedical perspective. Much less operative research in this field has been conducted, especially that directed to the determinants of antibiotic misuse, and interventions directed to address this problem. There is much room for enhancing research on AMR from a health-system and policy perspective, which is necessary to guide decisions on policy alternatives according to evidence regarding cost-effectiveness, technical feasibility and support for interventions to improve use of antibiotics. Furthermore, generating

evidence on interventions to improve use of antibiotics and other medicines is of utmost relevance for current efforts in Mexico striving to raise the quality and safety of health services, as well as for this and other countries undertaking health-system reforms that imply increasing access to medicines through universal health coverage.

Health-policy decision makers should be sensitised about this linkage. Indeed, inappropriate use of medicines, including overuse of antibiotics, are among the top causes of waste of scarce health system resources that threaten the sustainability of universal health-coverage schemes (Wagner, *et al.*, 2014). It is important, therefore, to move research and action on AMR from its usual venue in infectious-disease forums, and bring it into health-system forums. Indeed, the WHO (2012: 93) has underlined the need to strengthen the collaboration between those involved in promoting the rational use of medicines, and those involved in infectious diseases prevention and control. In addition, a much more systemic thinking on AMR problems and solutions is needed. This system-wide approach centres on the *use* of antibiotics (rather than in the spread of antimicrobial resistance) involving related actors and structures –health care facilities and providers, dispensers, patients, and governments (Nordberg, *et al.*, 2005; WHO, 2012: 35); but also should stress the relation between the use of antibiotics and each of the health-system “building blocks”: human resources for health, health-information systems, financing, etc. (Bigdeli, *et al.*, 2013). Addressing the potentially conflictive objectives of improving access to medicines and attaining their rational use is a key issue to be considered.

Importantly, research, diffusion and softening up of policy alternatives to address AMR have to be undertaken *before* a new policy window opens. The country-level cases of Mexico and other countries underline the constraints that a crisis context imposes on policy-making and, consequently, the need to advance the agenda before a crisis is recognised. In the process of softening up policy alternatives, it would be relevant to tie the understanding of proposed strategies with policies or programmes already in place (the recombination of new and already familiar policy elements, which has been mentioned before). Kingdon (1995: 80) points out that politicians, apprehensive about not fully understanding the unanticipated consequences of radically new policies or programmes, are sometimes reluctant to take big steps. Consequently, those who advocate for major policy changes often benefit from pushing for one small part at a time, in order to gradually attain the desired policy change.

Finally, the work developed by the INSP-AMIMC-APUA group in Mexico, as well as the experiences in Chile, Peru and India, underline the capacity of multidisciplinary groups in advocating for AMR policies. At the same time, these experiences stress the need for these groups to engage in a long-term deliberative process with decision makers (Lomas, *et al.*, 2005), in order to inform policy development. In conclusion, there are opportunities for AMR advocates to disseminate evidence on the burden placed by AMR and on its policy solutions, to reframe the public debate, and to take an entrepreneur role by identifying and creating political opportunities to advance the health-policy agenda on AMR. To attain this, policy advocates should be prepared to get fully involved in a process of argumentation and persuasion (Parkhurst and Vulimiri, 2013) with other health-policy participants. The recent capacity-building initiatives to improve advocacy for AMR in Africa are worth reviewing in-depth (Joshi, *et al.*, 2011).

(c) **Considering the political dimension of public-health policy.** John Kingdon warns that the politics stream flows along separately of the other two, quite independently of what other actors may be doing with relation to bringing attention to selected problems or preferred policy alternatives. Nevertheless, the political context and the involvement of highly visible governmental and interest group participants have a powerful effect on agendas. Diverse authors have drawn the attention to the relevance of taking into consideration the political dimension when analysing public-health policy both retrospectively and prospectively, as for policy advocacy (Bernier and Clavier, 2011; Oliver, 2006; Walt and Gilson, 1994). Furthermore, given the social relevance of medicines, the potential conflict between public and private medicine-related actors, concentrated political costs in well-organised and powerful groups (the pharmaceutical industry and medicines commercialisation sector) and the amount of expenditures medicines signify for health systems, among other factors, formulating and implementing pharmaceutical policies are profoundly political processes (Reich, 1995b, 2002). And indeed, as some of the national-level studies on AMR policies discussed here point out, an apparently technical issue such as enforcing the regulation of antibiotic sales can be politically very sensitive, given the diverse interests and the social and economic importance of the issues involved.

- With regard to interest group pressure, during the first period of the Mexican study, some of the MOH interviewees perceived that AMR may face opposition from prescribers (if their prescribing freedom was going to be limited), or from the pharmaceutical sector and the public (if antibiotics sales were going to be regulated). This perceived opposition may have backed policy inaction on AMR. During the second period of this study in Mexico, the opposition of some interest groups (pharmacy associations) vis-à-vis antibiotic sales regulation was manifest, as it was in the cases of Brazil and India, making use of practically the same arguments. From this, an important lesson can be drawn for other countries considering enforcing antibiotic sales regulation: active opposition by some stakeholders should be expected, particularly arguing the adverse health and economic impact on the population. AMR policy advocates should be prepared to counteract these arguments, (in the same way that there has been learning of strategies and arguments deployed by the tobacco and food industries national public health policies affecting their interests are attempted (Brownell and Warner, 2009) and to identify ways of working with opponents, before regulation is introduced.

Emphasising the potentially severe adverse drug events related to antibiotic use and, therefore, the need for medical supervision of antibiotic treatment, may be used as a counter argument against those opposing sales regulation. It may be worth replicating the experience of Peru and, to a certain extent, Chile involving pharmacies, specifically the manner in which these countries publicised the professionalism and social responsibility of pharmacies in complying with the regulation and promoting rational use of antibiotics. None of the national-level cases discussed allow analysing in depth the position of organised medical groups with regard to strategies focused on improving medical prescription. However, the favourable declarations of some medical associations with this regard in Mexico indicate that it may be important to involve them as active AMR policy supporters. Nevertheless, as political contexts vary from country to country, AMR policy advocates may benefit from analysing relevant political conditions in each country, and from shaping major political factors in favour of AMR policies; for example, by means of mobilising or de-mobilising certain groups. For

this, Political Mapping (Reich, 2002) or stakeholder analysis methods are of much relevance.

Finally, as has been pointed out before, in order to improve the political feasibility of pharmaceutical policies, it is important to identify political allies susceptible of supporting agenda placement, and maintain their support throughout the processes of policy formulation and implementation (WHO, 2001b). The need of stronger political leadership and commitment for AMR policies, including the involvement of highly visible actors, is becoming evident in other contexts. This can be illustrated by the recent declarations of Prime Minister Cameron in the United Kingdom.¹⁰ However, as has been argued in this study, political commitment is only one of many other factors that could influence AMR agenda status.

- Another important lesson that can be drawn from the experiences of Mexico, Brazil and India is that, even if governmental action focuses on a single problem and a single intervention (for example, enforcement of sales regulation to avoid self-medication), other medicine-related issues will soon arise in public debate. These issues include access to health care and medicines (very sensitive issues for the population), the quality of medical services, and pharmacy regulation. These concerns highlight the need to publicly discuss and formulate AMR policies, not in an isolated manner, but within the common framework of national health and pharmaceutical policies (Dresler, *et al.*, 2012). Similarly, it is necessary to engage, in the early moments of the policy process, the multiplicity of governmental and non-governmental actors related to medicine policy and quality of care.

Given the array of actors and offices involved in policy responses to face AMR as well as the linkage of these policies with other health-system components, AMR responses cannot be led solely from infectious-disease-oriented venues or medicine regulatory agencies (as was the case in Mexico). AMR policies should be owned by a governmental organisation or institution oriented to the quality use of medicines, with

¹⁰ Press release, "Prime Minister warns of global threat of antibiotic resistance" UK's Department of Health and Prime Minister's Office, July 2nd, 2014, available at: <https://www.gov.uk/government/news/prime-minister-warns-of-global-threat-of-antibiotic-resistance> (accessed on August 23 2014).

sufficient capacity to design and implement programmes that incorporate the variety of strategies needed to address AMR, as well with sufficient capacity for intra-sectorial and inter-sectorial coordination. These recommendations on a system-wide approach on AMR and clear designation of responsibility to an institutional body have previously been proposed (Holloway and van Dijk, 2011; WHO, 2012), and are stressed by the findings of the present study.

8. SUMMARY AND CONCLUSIONS

Worldwide, the inappropriate use of medicines is contributing to the increase of adverse clinical outcomes, unnecessary expenditures by consumers, and a heavy economic burden to health-care systems. The misuse of antibiotics is of particular concern, because it triggers the spread of antimicrobial resistance, which poses a major threat to public health. In 1998, the World Health Assembly Organization urged member States to advance practices to contain antimicrobial resistance and to promote appropriate antibiotic use in health care facilities and in the community, by improving prescribing, dispensing, information, surveillance and legislation. Over the years, similar policy recommendations have been stressed by the World Health Organization and a number of other international organizations. Overall, the progress has been slow; few low- and middle-income countries have fully incorporated strategies to address antibiotic misuse and resistance (AMR) into their national health and pharmaceutical policies. It has been concluded that political commitment on AMR has been scarce, and that AMR has not been prioritized by national governments. Nevertheless there is a paucity of research on the reasons behind that lack of prioritization, and on factors that affect the development and adoption of antibiotic policies at the national level. The present study addresses this gap by applying a policy-analysis approach to understand the determinants of policy inaction and policy change with regard to AMR, focusing on the case of Mexico.

The main argument in the present thesis is that policy action (and inaction) on AMR can be understood –at least in part– by understanding whether AMR is on the policy agenda and the factors that affect AMR agenda-setting. The aim of this study was, consequently, to explain the process of AMR agenda-setting (AMR) in Mexico, and how that affected the adoption of related policies.

The present study looked at events between 2001 and 2012, which cover two periods of government (2000-2006 and 2006-2012 presidential administrations). The study used Kingdon's multiple streams (MS) theory of agenda-setting to guide the analysis, explaining both when the issue of AMR was denied a position on the agenda (first period studied) and when the issue gained agenda status and a policy change occurred (second period studied). The longitudinal case-study undertaken, involving two governmental administrations, proved to be useful to understand how conditions related to problem recognition, policy alternatives, policy entrepreneur activity and political events changed over time, and affected agendas differently.

John Kingdon's theoretical framework on agenda setting, although largely applied in developed countries and liberal democracies, has scarcely been applied in low- and middle income countries or statist regimes like the one in Mexico; and has not been used before specifically to understand AMR agenda setting. In the present study, the application of Kingdon's MS theory proved to be useful to explain both the lack of agenda status and how a policy window was opened to bring AMR to the decision agenda and trigger a policy change. Nevertheless, using MS provided less insight the *scope* or nature of the policy change (i.e. which policy was adopted as a result). This could be related to a limitation of MS theory itself on explaining windows outputs, as Kingdon underlines (1995: 177) but also to the MS application within the Mexican political system.

The main empirical findings of the present study were summarized within the two results chapters concerning agenda-setting for AMR in Mexico during the President Fox 2000-2006 administration, and the President Calderón 2006-2012 administration. Below, these empirical findings are synthesized to answer the study's two research sub-questions following the study conceptual framework.

1. *Why did AMR not reach the health policy agenda during the 2000-2006 administration in Mexico, and how that affected the adoption of related policies?*

Processes within each of Kindon's streams acted as impeding factors that prevented a window of opportunity opening to place AMR on the policy agenda.

With regard to the problem stream, there were two relevant aspects: the recognition of AMR as a problem (and its nature, such as severity) and the definition (or framing) of such problem. Most interviewees were aware about the problems of antibiotic misuse (self-medication and inadequate prescription) and antibiotic resistance; the economic impact and adverse drug reactions related to antibiotic misuse were less recognized. While academics and NGOs stressed the relevance of AMR as a problem, governmental officials alluded to the lack of indicators with which assess it, and perceived it as a secondary issue in relation to the priority problem in the administration: improving access to medicines. In addition, during this period there were not focussing events that may draw attention to the problem. There were neither efforts to link AMR to a more visible problem or to a policy solution, such as evidence on medicines stock outs, out-of-pocket expending on medicines and the implementation of the *Seguro Popular* (SP), which had an important momentum during

president Fox administration. Besides the scarce visibility of AMR and the fact that it was not recognized as a severe problem nor as a priority, the way in which the problem was defined and framed also prevented it to gain agenda status. The majority of respondents perceived antibiotic misuse as a complex issue, connected to difficulties intrinsic to the health system (particularly limited access to health services); to the national culture (self-medication) or to the individual realm (prescription habits difficult to change). AMR was not defined with regard to public policy failures (such as the failure to auditing prescribing or regulating antibiotic sales). Understood as such, for these respondents there were not obvious or straightforward solutions to address AMR.

With regard to the policy stream, two factors outstand: the lack of clarity on the policy alternatives available and their feasibility; and the absence of policy entrepreneurs promoting these policies. Research in Mexico has disregarded operative research on interventions to improve antibiotic use and contain antibiotic resistance that could inform policy-makers about the available options to address AMR. Additionally, MOH officials had, in general, scarce awareness of international policy recommendations on AMR, and lack of knowledge of the *Global Strategy for the Containment of Antimicrobial Resistance* published in 2001. AMR containment was backed by a loosely knit community composed mainly by infectious-disease specialists and public health researchers who, however, did not adopt the role of policy entrepreneurs. Information on antibiotic resistance was shared in medical and academic forums, but not in health policy forums, and there was scarce interaction between these specialists and policy-makers. Even when a national pharmaceutical policy proposal (NPP) was developed by the MOH, AMR was not considered an issue to be included, and thus infectious-diseases and public health specialists were not invited to participate. In exploring the perception of policy options to address AMR, interviewees highlighted obstacles rather than enablers, namely scarcity of resources to implement programs (such as standard treatment guidelines), perception of opposition of physicians if limiting or auditing antibiotics prescription was attempted, difficulties training physicians, and the impossibility to regulate antibiotics sales only with prescription when universal health coverage has not been attained. As enforcing restrictions on antibiotics sales or antibiotic prescription had not been attempted, there was no evidence of frontal opposition to these strategies; nevertheless, many of the MOH interviewees anticipated the opposition of involved groups (particularly medical doctors) which could denote the power of this group to restrict agenda items.

Finally, regarding events in the political stream, two main factors emerge as relevant to explain the low agenda status of AMR; namely, competing issues on the agenda

and the drawing of jurisdictional boundaries. First, within the implementation of the SP –the most relevant social policy during President Fox administration, which had been intensely promoted by the newly appointed Minister of Health Frenk– improving access to medicines was a priority; according to MOH interviewees, much of their activity was directed towards that initiative. Even for freshly implemented National Crusade for Health Care Quality, improving medicines stocks and supply in health services (and not improving medicines prescribing or dispensing) was a priority. This is not a surprise, given that medicines are a visible output of health services, and often legitimize them. But moreover, in Mexico, improving medicines supply was commitment made during the presidential campaign; and out-of-pocket expenses on medicines was a key justification for (or was the problem attached to) the policy proposal that led to the creation of the SP. In the legislature, health policy topics discussed were those brought by the executive; but also those raised up by the pharmaceutical industry, which has a formal role as consultant to the legislature. This contrast with the absence of permanent channels of communication between health commissions in the legislature and academics or specialists, which could have risen up the issue of AMR. A second relevant factor in the problems stream is that improving medicines utilisation and containing antibiotic resistance was not explicitly assigned by regulations and programmes at that time to a specific governmental office, Furthermore, the majority of MOH interviewees did not perceive addressing AMR as a direct responsibility pertaining to their offices. These factors acted as institutional constraints to trigger action on promoting medicines use and address AMR.

Conclusively, during this period impeding factors within each of Kingdon's streams, and the absence of policy entrepreneur activity, prevented AMR reaching the agenda. Borrowing from Baumgartner and Jones' punctuated equilibrium theory, the policy image on AMR was not conducive to political action, and there was not a clear policy venue to deal with this issue. Even in when the new administration and health policy reform opened a 'political window' to develop a NPP, this open window was a lost opportunity to advocate for AMR proposals. At the end, the absence of individual agents actively pushing proposals on AMR, competing agenda items, and the entrenched institutions and interests favoured the status quo; that is, policy inaction on AMR. These factors explain policy stability regarding AMR during the 2000-2006 presidential administration.

2. *Why did AMR reach the health policy agenda during the 2006-2012 administration in Mexico, and how that affected the adoption of related policies?*

During this period, the national health crisis posed by the 2009 influenza pandemic opened an unpredictable 'problem window'. Favourable processes on the policies and politics stream enabled the three streams to converge, which brought AMR to the policy agenda; however, this streams convergence did not allow the formation of a comprehensive national policy on AMR.

With regard to the problems stream, the problem of antibiotic misuse (but particularly self-medication with these medicines) gained visibility when it was related to inadequate treatment and death among influenza patients. Later on, the sales of antibiotics without prescription, and laxity in the regulation of pharmacies emerged in the public discussion. Although the AMR problem itself or related indicators did not change at all, there was an important shift on causal ideas regarding AMR; that is, a change in the problem's framing or image, which was reflected on the media. The relation between inadequate antibiotics use, insufficient regulation and patient deaths acted as a strong symbolic device, which opened a problem window. This open window, in a crisis context, called for readily implementable solutions from the policy stream.

Given the crisis context and the initial problem definition (i.e. self-medication with antibiotics, which was underlined by governmental health officials, in dismiss of inadequate medical prescription) the regulation of antibiotic sales became a reasonable solution. However, this narrow problem-solution duo (self-medication as a problem, antibiotics sales regulations as solution) was challenged by two groups. Pharmacy owners association emerged as leading opponents to the policy, alluding to its adverse economic effect of the sector and on the population, themes with ample coverage on media coverage. On the other hand, a network of specialists did take advantage of the open window (differently from the previous administration) to push their proposal on AMR. They sought to reframe the problem to include inadequate use (both in human and animal sectors) and antibiotic resistance, calling for a more comprehensive strategy as solution; these themes were less covered by the media. While, consequently, health officials did incorporate (in public speeches and official documents) antibiotic resistance as part of the problem for which the new regulation was being introduced, this did not imply an important change in the solution already chosen; probably, it just

reinforced it. Inadequate medical prescribing, a problem raised up by medical and public health specialist, was largely left aside the policy debate; this could be related to an anticipation of opposition, or because it was contrary to an important message disseminated by MOH during the pandemic: to seek medical care.

There were favourable factors on the politics stream that facilitated the consideration of regulating antibiotic sales. Although this solution was politically unacceptable during the previous administration given the insufficient coverage of health services for the population, it was now acceptable given the SP implementation. Furthermore, this solution was favoured because the stricter regulation of medicines sales was already contemplated by the National Health Programme, and there was an institutional venue (COFEPRIS, the MOH regulatory agency) designated to implement it. Despite the opposition of vested interests (pharmacy owners) to the regulation, probably other factors (national and international pressure to act upon the influenza pandemic) had more weight in advancing the regulation.

Conclusively, during this period, the unexpected problem window opened by the influenza crisis, the role of the Health Minister and policy entrepreneurs defining the problem and promoting solutions, as well as a favourable political context were conducive for AMR to reach the public and policy agenda. Despite the open window, the initial problem definition, the crisis context that called for rapid solutions and the assignation of responsibility to the regulatory agency COFEPRIS (whose realm of action is not medicines utilisation, and drafted the policy in an enclosed process) resulted in a narrow-focused regulation (an incremental change), and not in the consideration and formation of a comprehensive national policy on AMR. The policy process reflected the predominant role of the state in health policymaking in Mexico, the capacity of ideas and individual agency to spark policy action, the role of the media in expanding issues, and the constraints imposed by institutions to health policy-making.

Lessons learnt

Based on the results from this study and findings from the literature, some lessons can be drawn for Mexico and for other countries seeking to develop AMR policies.

There is scarce literature providing thick descriptions on the agenda-setting processes with regard antibiotic use and resistance that could provide empirical findings to compare with the present study. Nevertheless, experiences on the promotion of rational use of medicines (described in the literature review chapter) as well as the

country-level experience on agenda-setting and AMR policies examined in the discussion chapter, allowed to identify some key factors on AMR policy determination that could be helpful for policy advocates. Key factors related to agenda-setting have been found within each of Kingdon's streams, and the activity of policy entrepreneurs:

Problems streams:

- Challenges: Low problem visibility, and scarce data to assess its severity; framing of the problem away from the scope of governmental action.
- Opportunities: Crisis that, directly or indirectly, call the attention to AMR. Media coverage that reinforces AMR as a public policy problem.

Policies stream:

- Challenges: Insufficient information regarding context-specific policy alternatives, including cost-effectiveness, technical feasibility and support on interventions to improve use of antibiotics. Scarce communication between researchers and advocates on AMR with decision-makers.
- Opportunities: Persistent activity of policy entrepreneurs, promoting in advance their policy proposals. Strengthening of policy communities.

Politics stream:

- Challenges: Competing issues on the policy agenda; absence of a clear institutional venue for AMR. Opposition of powerful stakeholders.
- Opportunities: Involvement of highly visible social actors.

An important lesson derived from this study is that, given the nature of the problem and solutions implicit on AMR policies, opportunity windows to advance such policies are likely to be scarce. This is particularly true in low- and middle-income countries, in which much of policy effort are directed to improving access to medicines and not improving their use (Falkenberg and Tomson, 2000; Kanji, 1992; LSHTM/KIT, 1989; Reich, 1987, 1994, 1995b; Summers, 2004; WHO, 1988, 1997). Crisis can, nevertheless, open unexpected windows of opportunity to bring AMR into the agenda. However, to take advantage of them, policy advocates should be prepared in advance, 'softening-up' the system with persistence and argumentation. Evidence on problems and potential solutions do not speak for themselves; as such, data on antimicrobial resistance or WHO policy recommendations are not enough to place AMR on the agenda. Policy advocates should be aware and could benefit from:

- a) Facilitate AMR visibility and understanding as a public problem

- b) Foster research development and evidence uptake to inform context-specific policy alternatives for addressing AMR
- c) Considering the political dimension of public-health policy

Finally, it is important to underline that this single-case study has drawbacks in terms of generalizability and comparability of its findings. A multiple country- case study would bring more understanding on policy variation and a better insight into the determinants of AMR agenda-setting and policy formation. Even so, this study allowed drawing testable propositions on AMR policy determination and changing in Mexico. Future research on agenda-setting for AMR could benefit for exploring, in other settings, the relevant factors found on this study.

APPENDIX 1: Publications and presentations derived from this thesis

Information obtained from the literature review, interviews, as well as document and media analysis –undertaken as part of the present thesis– has been incorporated in the following publications and conference presentations.

Articles

- Dreser, Anahí, Veronika J. Wirtz, Kitty Corbett and Gabriela Echaniz. 2008. "[Antibiotic use in Mexico: review of problems and policies]." *Salud Publica Mex*, 50 Suppl 4, pp. S480-7.
- Wirtz, Veronika J., Michael R. Reich, René Leyva Flores and Anahí Dreser. 2008. "Medicines in Mexico, 1990-2004: systematic review of research on access and use." *Salud Publica Mex*, 50 Suppl 4, pp. S470-9.
- Gonzales, Ralph, Kitty Corbett, Veronika J. Wirtz and Anahí Dreser. 2008. "Drug Resistant Infections in Poor Countries: A shrinking window of opportunity." *British Medical Journal*, 336:7650, pp. 948-49.
- Wirtz, Veronika J., Anahí Dreser, Ralph Gonzales. 2010. "Trends in antibiotic utilization in eight Latin American countries, 1997-2007." *Pan American Journal of Public Health*, 27: 3, pp. 219-225
- Dreser, Anahí, Edna Vázquez-Vélez, Sandra Treviño and Veronika J. Wirtz. 2012. "Regulation of antibiotic sales in Mexico: an analysis of printed media coverage and stakeholder participation." *BMC Public Health*, 12, pp. 1051.
- Wirtz, Veronika J., Anahí Dreser and Ileana Heredia-Pi. 2012. "Challenges and opportunities for the development of a national pharmaceutical policy in México" *Salud Publica Mex*, 55:3, pp. 329-36.
- Wirtz, Veronika J., Juan José Herrera-Patino, Yared Santa-Ana-Tellez, Anahí Dreser, M. Elseviers and R.H. Vander Stichele. 2013. "Analysing policy interventions to prohibit over-the-counter antibiotic sales in four Latin American countries." *Tropical Medicine and International Health*, 18:6, pp. 665–73.
- Santa-Ana-Tellez Yared, Aukje K. Mantel-Teeuwisse, Anahí Dreser, Hubert G. M. Leufkens, Veronika J. Wirtz, 2013. "Impact of Over-the-Counter Restrictions on Antibiotic Consumption in Brazil and Mexico" *PLOS ONE*, 2013; 8; 10 ; e75550-e75550
- Zaidi, Mussaret, Dreser, Anahí and Ina Marcela Figueroa. 2014. "A collaborative initiative for the containment of antimicrobial resistance in Mexico." *Zoonoses and Public Health*, 61:2, pp. 1-6.

Book review

- Leyva-Flores, René, Veronika J. Wirtz, Anahí Dreser and Michael R. Reich. 2006. "Review. Hacia una política farmacéutica integral para México." *Salud Publica Mex*, 48:2, pp. 179-80.

Book chapter

Dreser, Anahí, Veronika J. Wirtz and René Leyva Flores. 2011. "Las farmacias mexicanas: regulación y políticas" [Mexican pharmacies: regulation and policies] in *Las farmacias, los farmacéuticos y el uso adecuado de medicamentos en América Latina*. Antonio Ugalde and Núria Homedes eds. Buenos Aires: Lugar Editorial.

Conference and seminar presentations

Dreser, Anahí, Veronika J. Wirtz, Kitty Corbett and Stuart Anderson. 2009. "Inappropriate antibiotic use and the health policy agenda in Mexico." *12th World Congress on Public Health: Istanbul, Turkey*
<https://wfpha.confex.com/wfpha/2009/webprogram/Paper6033.html>.

(Case study summarized as "Antibiotics in Mexico" in *Global health: diseases, programs, systems and policies* 2012. Michael H. Merson, Robert E. Black, Anne J. Mills, Eds. Jones & Bartlett Learning, 3rd ed. Exhibit 14-15 (page 739).

Dreser, Anahí. 2009. "Antibiotic use in Mexico: An Analysis of Problems, Policies and Politics" Pharmaceutical Policy Research Seminar, Harvard Drug Policy Research Group and WHO Collaborating Center in Pharmaceutical Policy. Boston, Massachusetts.

Dreser, Anahí. 2010. "Regional Strategies to Respond to Antimicrobial Resistance in Latin America". 19th Annual Global Health Education Consortium conference and 1st Latin American and Caribbean Congress on Global Health. Cuernavaca, Mexico.

Dreser, Anahí, Edna Vázquez-Vélez, Midiam Ibáñez-Cuevas, Sandra Treviño-Siller, Veronika J. Wirtz. 2011. "Impact of implementing antibiotic sales restrictions: Reactions of key stakeholders and citizens in Mexico". Third International Conference for Improving the Use of Medicines (ICIUM). Antalya, Turkey.
<http://www.inrud.org/ICIUM/ConferenceMaterials/509-dreser-mansilla-a.pdf>

APPENDIX 2: Research objectives, questions and methods

Aim		Theoretical framework	Research design
The aim of this study is to explain the process of agenda-setting for the appropriate use of antibiotics and containment of antimicrobial resistance (AMR) in Mexico, and how that affected the adoption of related policies.		Multiple Streams theory on agenda setting (J. Kingdon, 1984)	Case study Longitudinal, single case, explanatory (Yin, 2003)
Specific objectives	Research questions	Dimensions in conceptual framework	Methods of data collection and analysis
1. To analyse the factors related to AMR agenda placement in Mexico during the 2000-2006 administration, and the adoption of related policies, by focusing on problem definition and recognition, the political context, the development and perception of policy alternatives, and the role of policy entrepreneurs.	1) Why did AMR not reach the health policy agenda during the 2000-2006 administration in Mexico, and how that affected the adoption of related policies??	Problem definition and recognition (<i>Problems stream</i>) Development and perception of policy alternatives (<i>Policies stream</i>) Political context (<i>politics stream</i>)	Documents (official documents from the legislative and executive; 'grey' literature about stakeholders) Interviews with stakeholders Content and thematic analysis
2. To analyse the factors related to AMR agenda placement in Mexico during the 2006-2012 administration, and the adoption of related policies, by focusing on problem definition and recognition, the political context, the development and perception of policy alternatives, and the role of policy entrepreneurs.	2) Why did AMR reach the health policy agenda during the 2006-2012 administration in Mexico, and how that affected the adoption of related policies?	Role of policy entrepreneurs Policy windows Policy adoption	Documents (official documents from the legislative and executive; 'grey' literature about stakeholders) Interviews with stakeholders Media documents (newspaper articles) Content and thematic analysis

APPENDIX 3: Interviewees list

Round 1: January - November 2006 (2000-2006 administration)			
Group	#	Identifier Code	Interviewee profile and institutional affiliation
Government	1	MOH1+	Ministry of Health official, Health Economics Unit
	2	MOH2+	Ministry of Health official, Health Economics Unit
	3	MOH3+	Ministry of Health official, COFEPRIS
	4	MOH4+	Ministry of Health official, Health Quality
	5	MOH5	General Health Council
	6	MOH6	Ministry of Health official, COFEPRIS
	7	MOH7	Ministry of Health official, Health Quality
	8	MOH8	General Health Council
	9	MOH9	Ministry of Health official, Health Promotion
	10	MOH10	Ministry of Health official, COFEPRIS
	11	MOH11	Ministry of Health (retired)
	12	MOH13	Ministry of Health official, COFEPRIS
	13	MOH14	Ministry of Health official, Health Promotion
	14	GOV1	Health Commission, Legislative
Academics	15	ACAD1+	Pharmacist, University
	16	ACAD3	Infectious diseases researcher, IMSS
	17	ACAD4	Infectious diseases researcher / Professional association AMIMC
	18	ACAD5	Health systems researcher, IMSS
	19	ACAD6	Pharmacist, University
	20	ACAD7	Infectious diseases researcher, hospital / Professional association AMIMC
	21	ACAD8	Infectious diseases researcher, INSP
	22	ACAD9	Health systems researcher, INSP
	23	ACAD10*	Pharmacist, University
	24	ACAD11*	Pharmacist, University
	25	ACAD12* (**)	Infectious diseases researcher, University / MOH Epidemiological Surveillance
	26	ACAD13*	Pharmacist, University
Health professionals	27	PROF1	Pharmacist, Pharmaceutical association
	28	PROF4*	Pharmacist, hospital
	29	PROF5*	Infectious diseases specialist, hospital
	30	PROF6*	Pharmacists, Pharmaceutical association
	31	PROF7	Infectious diseases specialist / Professional association AMIMC
Pharmaceutical industry	32	INDUS1	Pharmaceutical industry association
	33	INDUS2	Pharmaceutical industry association
	34	INDUS3*	Representative pharmaceutical company
	35	INDUS4*	Representative pharmaceutical company
	36	INDUS5*	Representative pharmaceutical company
	37	INDUS6*	Pharmaceutical industry association

	38	INDUS7*	Representative pharmaceutical company
	39	INDUS8*	Representative pharmaceutical company
Pharmacies and distributors	40	PHAR1*	Representative, pharmacy association
	41	PHAR2*	Representative, pharmacy association
	42	PHAR3*	Medicines distributor company
	43	PHAR4*	Medicines distributor company
Non-governmental organisations	44	ORG1	Physician, NGO Health Action International
	45	ORG2	Physician, NGO Salud y Fármacos
	46	ORG3	Infectious diseases specialist, NGO Alliance for the prudent use of antibiotics
Round 2 (March 2007- February 2008) (2006-2012 administration)			
Health professionals	47	PROF2	Infectious diseases specialist / Professional association AMIMC
	48	PROF3	Infectious diseases specialist / Professional association AMIMC
Government	49	MOH15	Ministry of Health, COFEPRIS
	50	MOH16	Ministry of Health official, Health Quality
	51	MOH17	Ministry of Health official, Health Quality
Non-governmental organisations	52	ORG4	Infectious diseases specialist, Pan American Health Organization
	53	ORG5	Public health researcher, World Health Organization

(+) These interviews formed part of the pilot study.

(*) These interviews were conducted by Dr. Kitty Corbett and Dr. Veronika Wirtz, researchers at the Mexican National Institute of Public Health.

(**) This informant was interviewed again in 2008, as a MOH official during the 2006-2012 administration.

APPENDIX 4: General interview topic guide

I. General information

1. Can you tell me what is your profession, your position, and which are your main responsibilities?

II. Medicines on the health sector agenda

2. Which do you think is the relevance of medicines within the actual health sector agenda? Why?

- a) Has there been much change on the relevance of this issue on the last years / in comparison with the previous administration ? If yes, why has that change taken place?

3. Of the different aspects regarding medicines (including production, procurement, commercialisation, regulation, information, use...) what do you think are the major problems that are being addressed by the health sector?

- a) Why do you think these particular problems are the ones receiving attention? How have they come to be considered top issues?
b) *Explore answers on the introductory questionnaire (see at the end of this appendix).*

4. What are the major problems related to medicines that you and others on this office are paying attention to?

- a) How and why these issues became a priority?
b) What are the strategies or programmes that are being developed to tackle this problem?

III. Appropriate use of medicines, antibiotics and antibiotic resistance

5. What is your opinion on the issue of inappropriate use of medicines (prescription, dispensing and patient use) in Mexico?

- a) What is the scope of inappropriate use of antibiotics and the problem of antibiotic resistance in Mexico?

6. What do you think are the factors that determine the inappropriate use of antibiotics?

7. Can something be done about these factors? Which are, in your opinion, the main strategies to improve the use of antibiotics?

8. Whose responsibility is to promote the appropriate use of antibiotics and contain antibiotic resistance?

9. During the time that you have worked in this office, has there been any initiative to develop a strategy or programme to promote the adequate use of antibiotics? Can you comment on this?

- a) Are you aware of any person or group promoting aiming to raise awareness about antibiotic misuse and resistance or strategies to address this issue?

10. Do you know WHO/PAHO recommendations to improve the use of antibiotics and contain antibiotic resistance? How have they been incorporated on the work you develop in this office?

11. What do you think is the relevance and feasibility of the following alternatives that could be considered to improve antibiotic use?

(Different strategies are mentioned according to the interviewee background and position, e.g.: regulation of antibiotics sales only with medical prescription, professional

dispensing, medical education, training of pharmacy employees, consumer's information, antibiotic surveillance in hospitals, etc.)

IV. Linking between research antibiotic use and resistance and policy formulation (For key informants on the academic field.)

12. How have the research results obtained by you and your colleagues been communicated to the Ministry of Health?

- a) Do you think they have been taken into account for the formulation of pharmaceutical policies? Please comment on this.
- b) What are the factors that favour or impede the linking between research developed by you and policy formulation?

13. Recently, a new national pharmaceutical policy has been published, titled "*Hacia una política farmacéutica integral para México, SSA-COFEPRIS 2005*".

- a) Do you know this document? Did you participate somehow on it?
- b) What is your opinion on this document?

V. Formulation of the new national pharmaceutical policy draft (only for key informants which participated on the development of the document).

14. Recently, a new national pharmaceutical policy has been published, titled "*Hacia una política farmacéutica integral para México, SSA-COFEPRIS 2005*". About this document,

- a) Where and when did the initiative come from?

15. Which was your (and the people you work with) participation in the process of development of the document?

16. Could you describe which was the process by which this document was developed?

- a) Who participated on the process?

17. How were WHO guidelines on national pharmaceutical policies taken or not into account during this process?

18. What were the discussions around improving prescribing and dispensing, or promoting the rational use of medicines?

- a) Was antibiotic misuse and resistance a topic discussed? How?

19. What do you think is the objective of the document?

- a) Are these objectives been accomplish?
- b) What do you think is the future of this document?

VI. Identification or other informants

20. Which organizations (within and outside the government) do you think should be involved on the design and implementation of an intervention focussed on improving the use of antibiotics on Mexico?

21. Could you mention the name of people that are involved on the topic of antibiotic use and resistance in Mexico that I might be interested on talking to?

Introductory questionnaire

Within the actual health sector agenda, which priority do you think is being given to the following aspects regarding medicines?

(1= Less priority, 5= Greater priority)

- | | | | | | |
|--|---|---|---|---|---|
| a) Formulate and implement a National Pharmaceutical Policy | 1 | 2 | 3 | 4 | 5 |
| b) Improve medicines procurement and stock in public health services | | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| c) Assure the quality, safety and efficacy of medicines | 1 | 2 | 3 | 4 | 5 |
| d) Achieve equitable access to medicines | 1 | 2 | 3 | 4 | 5 |
| e) Improve the prescription, dispensing and use of medicines | 1 | 2 | 3 | 4 | 5 |
| f) Improve the use of antibiotics and contain antibiotic resistance | 1 | 2 | 3 | 4 | 5 |
| g) Achieve greater innovation, research and development of medicines | 1 | 2 | 3 | 4 | 5 |

APPENDIX 5: Thematic matrix and transcription indexing example

		Problem evidence	Quotations	Problem perception and framing	Quotations	Possible solutions and responsibility	
Interviewee		How aware were stakeholders about the issue of AMR in Mexico? How do they become aware (or not) of this issue? Interest groups, scientific info) What were the available indicators? Focusing events?		How do they frame this issue? Causal ideas? Blame? Do they define it as a problem? Severity, novelty, proximity, specificity, significance? Problem populations (individuals/ government/ industry...)		Do they perceive a need to address this problem? possible solutions, and responsibility (ownership, jurisdictional control)	Quo
MOH1	Health economics office	The inadequate use of medicines is an important problem especially in the private sector. On the public sector or when there are insurance systems there is more guidance and control. It is differently also depending the disease: in TB treatments there is lot of guidance, but regarding antibiotics in "the private sector is a mess". [Evidence: refers to a study demonstrating that most of the expenses in antibiotics is out-of-pocket.]	"si te vas al mercado privado de antibióticos, es un desorden". " Si te vas a analgésicos o a antibióticos, casi todo es sector privado, gasto de bolsillo"	The inadequate use of antibiotics is regarded as a problem which has to be acted upon, although it is difficult to do so. he mentions that a determinant factor of this problem is the lack of insurance. The main action is to improve access. Improving access, self-prescription is avoided. The majority of people buying AB self-prescribes them, and this is a critical problem because of the generation of resistance. [AMR LINKED TO SELF-PRESCRIPTION AND LACK OF ACCESS TO HEALTH CARE]. There has to be more control on medicines dispensing, although this is not easy. (When prompted about inadequate prescribing). The problem is that there is not continuing medical education, guidelines, and there is excess marketing, specially in the private sector. This is related to absence of someone overseeing what the physician is prescribing. The solution is to have a third-payer.	Mejorar el acceso. Lo que necesitas es evitar la auto-prescripción. La mayoría de la gente que compra antibióticos se los auto-prescribe y si es un problema gravísimo porque estás generando resistencias. // [AMR] Yo no veo esas cosas, son aspectos clínicos, no son temas económicos. La adherencia terapéutica y todas esas cosas... digo, no me ha tocado verla, hay una concientización de la problemática pero no sé exactamente quien está haciendo eso y si hay una política explícita sobre el asunto. Factores que determinan el mal uso de medicamentos? R: La falta de aseguramiento.	Solution to the problem of self-prescribing antibiotics: Improve access to health care. Problem of inadequate prescription: The solution is to have a third-payer, the SPP or private health insurance to oversee prescriptions. This does not occur in the prevalent private out-of-pocket consumption of medicines. The solution is to "institutionalize" doctors, to avoid them to be independent or autonomous actors. Regarding controlling excess marketing, he points out that "good practices" could be promoted. His office is not directly involved here, because these are more "clinical issues", not economic issues.	
MOH3	Regulatory agency Cofepris	mentions that inadequate use of Ab is an important problem in diarrhoeal diseases and respiratory infections. Evidence. Mentions work developed by IMSS groups about these topics.		AMR is a problem. As determinants of antibiotic misuse : problem of doctor-patient relationship (in part because of the patients demanding AB). [AMR: MEDICAL CARE PROBLEM]	Cofepris hace lo que puede porque su ámbito de competencia no es el uso racional realmente	AMR is a problem, but not within the competence of the regulatory agency, which is focused on assuring the quality and safety of medicines. Mentions that it is responsibility of the quality assurance office of the MOH. This problem should be addressed with campaigns directed both to physicians and patients (and should be developed by the quality of care office)	Cofi
NGO1	Health Action International			AMR: related to lack of knowledge of physicians, and scarce communication among them and patients. And the believe among the population that Ab give a "quick fix". Solutions: Educative public campaign. Physician education. NGO has promoted the use of WHO manual "good prescription Practices". Difficult to try to improve prescription with MD, better to work with students in medical school. Stresses that it is the responsibility of the government to develop (and pay for) a public education campaigns and to work to improve medical curricula, NGOs, academics do not have the resources to do that. It is public health problem, so it has to be addressed by the government. [AMR: PUBLIC HEALTH PROBLEM]	Por ignorancia, por mala prescripción... la percepción que tiene la gente del uso de medicamentos también es muy interesante: la gente necesita, siempre quiere algo rápido, efectivo que le quite las molestias en un ratito, [...] o sea no hay la otra parte que implica la educación al público [...]. Porque pensamos que uno de los problemas mas serios para el uso irracional de los medicamentos es la forma en que los médicos aprenden a prescribir. [] o sea si lo quieres llevar a la población y resolver el problema de raíz tiene que ser medios masivos de comunicación pagados por el gobierno [] esto ya es un problema de salud pública y tiene que ser abordado por el gobierno.	Government has to develop public education campaigns and to work to improve medical curricula	

P: ¿Doctor cuál es su visión de la importancia que se le está dando a este tema desde la secretaria de salud, o sea está la secretaria de salud preocupada por el mal uso de antibióticos en México, están haciendo algo al respecto?

R: Yo creo que sí, yo creo que sí, de la Subsecretaría de Educación, la subsecretaría de calidad, **innovación y calidad tiene el programa justamente de calidad para todo el país, uno de los rubros que ha adoptado que me parece muy correcto es el de infecciones nosocomiales, entonces en ese contexto creo que sí. Ahora mi pregunta es ¿puntualmente están abordando políticas de prescripción de antibióticos?, no lo sé, porque ya no estoy en la secretaria no lo creo porque no les corresponde ¿sea las instancias porque finalmente son instancias que dictan la política de estado o la normatividad pero no hay rubro específico donde, exceptuando los institutos Nacionales de Salud donde se dictan políticas de atención médica, esa es mi percepción**

P: ¿A quién le correspondería tomar las riendas...?

R: A los consejos médicos, a la academia nacional de medicina, más a las sociedades médicas

Comentario [A1]: AMR Agenda placement. MOH is paying attention to the issue of intra-hospital infections

Comentario [A2]: Institutional boundaries. Some aspects related to AMR are jurisdiction of the MOH Quality office. But regarding antibiotic prescription, it does not correspond to the MOH to dictate medical care policies; there is not a 'specific field' for that. Antibiotic prescriptions is within the scope of professional medical association, but are not ministerial policies [INSTITUTIONAL LIMITS]

Comentario [A3]: Solutions and responsibility. AMR policies perceived narrowly as medical care policies, rather than a national health policy involving diverse strategies and actors.

APPENDIX 6: Study index with themes and subthemes (for interviews)

MAIN THEMES AND SUB-THEMES	INCLUDED CONCEPTS
AMR problem recognition and definition	
Problem evidence	How aware were stakeholders about the issue of AMR in Mexico? How do they become aware of this issue? What were the available indicators? Focusing events?
Problem perception and framing	How do they frame this issue? Causal ideas? Blame? Do they define it as a problem? Severity, novelty, proximity, specificity, significance? Problem populations involved (individuals/ government/ industry...)
Possible solutions and responsibility	Did they perceive a need to address this problem? Possible solutions, and responsibility (ownership, jurisdictional control)
AMR Policy alternatives	
Perception of policy alternatives	Did stakeholders know international policy recommendations on AMR? Which was their position on different policy alternatives regarding AMR and the reasons for this. Experience of previous policies implemented to address this problem. Budgetary considerations. Proposed solutions for AMR seen as technically, economically and politically viable? Would they support them?
Policy formation (NPP)	How was the process of developing the NPP? Who participated and who did not? Which alternatives regarding AMR were discussed?
Connection between research / international recommendations and AMR policies	How did researchers on medicines use and AMR communicate their findings to decision-makers? Did decision-makers recognize research findings or international recommendations as an input of policy-making (raising awareness about AMR or about its solutions)?
Political Context	
AMR placement in health policy agenda	What were the issues higher on the health policy agenda, and the reasons for this. Perceived agenda placement for AMR, and the reasons for it. Competing issues on the health policy agenda
AMR in own organizational agenda	How relevant was this problem within their own agenda? Competing issues on their organizational agenda.
Responsibility of medicines use and AMR policies	Did stakeholders perceive AMR and medicines use as within the competence of their organization? Who, do stakeholders perceive, holds responsibility for addressing these issues? Governmental jurisdiction.
Interest group activity	What were the interests / position of organized political forces regarding AMR? Stakeholders' perceptions, and accounts on present of past experiences of own / other organizations advocating for / opposing policies on AMR and medicines use.
Role of policy entrepreneurs	
Role of policy entrepreneurs	Did informants recognize their role as policy entrepreneurs investing time and resources to promote AMR policies? Did they have access to policy-makers? Did they acknowledge other individuals or groups taking this role? Did decision-makers make reference to individuals or groups advocating for AMR policies?

APPENDIX 7: Media analysis codebook

Thematic category	Description of the category and subcategories included
Self-medication (SM)	Purchase and use of prescription-only-medicines, including antibiotics, without medical prescription. Subcategories: i) SM to treat viral infections (influenza, other respiratory or gastro-intestinal infections); ii) causes and scope of SM; iii) solutions to the problem of SM, including the new policy to enforce sales regulation.
Bacterial resistance (BR)	Microbial or bacterial resistance. Subcategories: i) causes and scope, including relation to self-medication and prescription ii) solutions, ii) using BR as an argument to support the new policy to enforce regulation on antibiotic sales.
Prescription (PM)	Medical PM of antibiotics. Subcategories: i) unjustified PM of antibiotics (for instance, for influenza and other respiratory diseases) ii) perception of low quality of PM; iii) need to train physicians and improve their PM of antibiotics
Economic impact (EI)	Direct and indirect EI resulting from the enforcement policy. Subcategories: i) EI in the private sector such as pharmacies and the pharmaceutical industry; ii) EI in the population.
Corruption (CO)	Corruption in the pharmaceutical sector derived from the enforcement policy. Subcategories: i) Black market of counterfeit medicines; ii) Black market of prescriptions; iii) CO in the process of pharmacy supervision; iv) physicians involved in CO.
Regulation (RE)	Regulation and policies related to the sales of antibiotics in Mexico. Subcategories: i) Legislative framework and lack of enforcement; ii) processes of drafting and implementing the enforcement policy; iii) need to develop an impact evaluation of the enforcement policy; iv) objective of the enforcement policy; v) need to disseminate information about the enforcement policy.
Health System (HS)	Functioning of the Mexican health system in relation to antibiotic use or the enforcement policy. Subcategories: i) problems of the HS; ii) impact of the enforcement policy on the health services provided in the HS; iii) access to health services for the population without health insurance.
Rational use of medicines (RUM)	Rational use of medicines in the national and international context. Subcategories: i) International guidelines on RUM; ii) recommendations to achieve RUM in Mexico; iii) causes and consequences of inappropriate use of antibiotics, including adverse reactions (but excluding references related solely to self-medication).
Pharmacies (PH)	Functioning of pharmacies in relation to antibiotic use or the enforcement policy. Subcategories: i) Operation of PH, ii) quality of services provided by pharmacy staff, and training of pharmacy staff; iii) position of pharmacy associations towards the enforcement policy; iv) demand of the pharmacy associations owners towards the government.

Reproduced from: Dreser, *et al.* (2012): Regulation of antibiotic sales in Mexico: an analysis of printed media coverage and stakeholder participation. *BMC Public Health* 12:1051.

APPENDIX 8: Information and consent forms



Instituto Nacional de Salud Pública
London School of Hygiene and Tropical Medicine



INFORMATION SHEET

Research Project: Analysis of pharmaceutical policies and practices in Mexico

My name is Anahi Dreser, I am a PhD student in the London School of Hygiene and Tropical Medicine (LSHTM) in the United Kingdom. Currently, I am working in the Mexican National Institute of Public Health (INSP) with the Medicines Research Group coordinated by Dr. René Leyva. We are undertaking a study that aims to analyse the factors that affect – positively and negatively– the development of pharmaceutical policies in Mexico.

Your participation as a key informant is very important in order to complete this study. I am interested on your opinion and experience concerning various topics related to pharmaceutical policies through an interview. Your participation is voluntary. The interview will last approximately 40 minutes, and will be tape-recorded if you agree with this. You can interrupt the interview and / or the recording at any moment if you wish so. The information that you provide will be handled with strict confidentiality, and will be used in a manner that does not publicly disclose your identity. In case I need to cite a quotation from your interview, I will only mention the general area where you work, and never your name or your position. Recordings will be kept under lock and will only be available to our research group. Once the investigation is concluded, the recordings will be destroyed. The information you provide us with will be analysed as part of my doctoral thesis, and could be used in scientific articles and to inform future pharmaceutical policies. You will have access to the recording and transcript of your interview, as well as to the executive report of the project.

If you need more information about this research project, you can contact Dr. René Leyva or me. Our contact details are shown below. The Ethics Committees of LSHTM and INSP have approved this research project. If you have any questions concerning your rights as participant in this study, you can contact the President of the INSP Ethics Committee, Dr. Lynnette Neufeld (business card attached).

Anahí Dreser (Principal investigator)

Health Services Research Unit
Department of Public Health and Policy
London School of Hygiene and Tropical Medicine
Keppel St. WC1E 7HT London, UK
Telephone (Mexico): (777) 315 0635
E-mail: anahi.dreser@lshtm.ac.uk

René Leyva Flores (Coordinator)

Grupo de Investigación en Medicamentos
Centro de Investigación en Sistemas de Salud
Instituto Nacional de Salud Pública
Av. Universidad 655, Cuernavaca, Mor. 62508
Telephone: (777) 329 3049
E-mail: rlayva@correo.insp.mx



CONSENT FORM

Research Project: Analysis of pharmaceutical policies and practices in Mexico

Code identifier: _____

I have read the information sheet concerning this study and all my questions about my participation have been answered. I understand what will be required of me and that I may choose to withdraw from the study at any moment without giving a reason.

I agree to have my interview audio-recorded (please circle one):

YES

NO

I agree to take part in the interview:

Signature: _____

Date: _____

APPENDIX 9: Results of media coverage analysis

(Reproduced from Dreser, *et. al*, 2012)

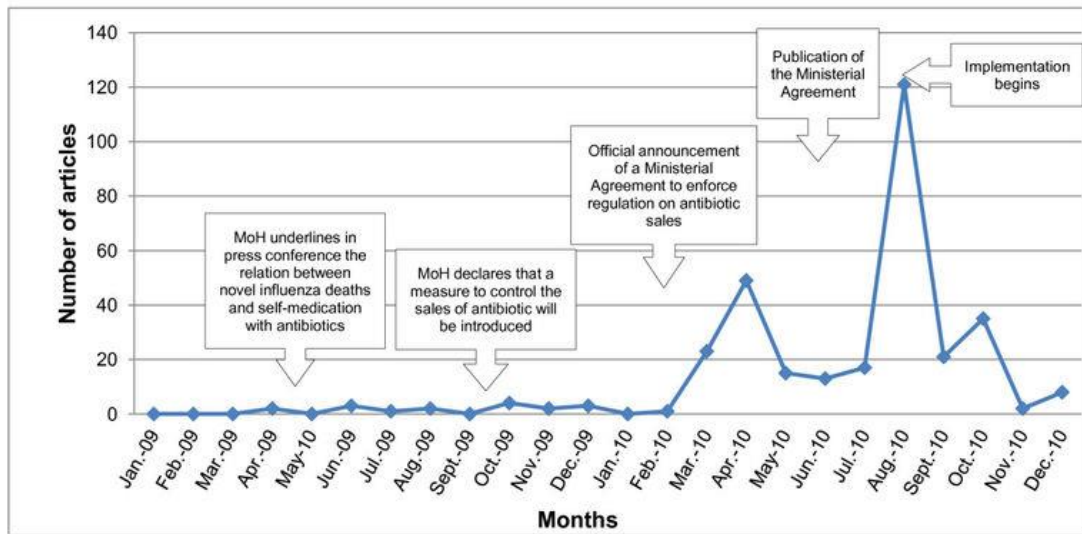


Figure 1

Monthly coverage on antibiotic use and regulation in Mexican printed media, and main policy milestones 2009-2010.

Source: Dreser, A., Vázquez-Vélez, E., Treviño, S. and Wirtz, V.J. (2012). Regulation of antibiotic sales in Mexico: an analysis of printed media coverage and stakeholder participation. *BMC Public Health*, 12, 1051

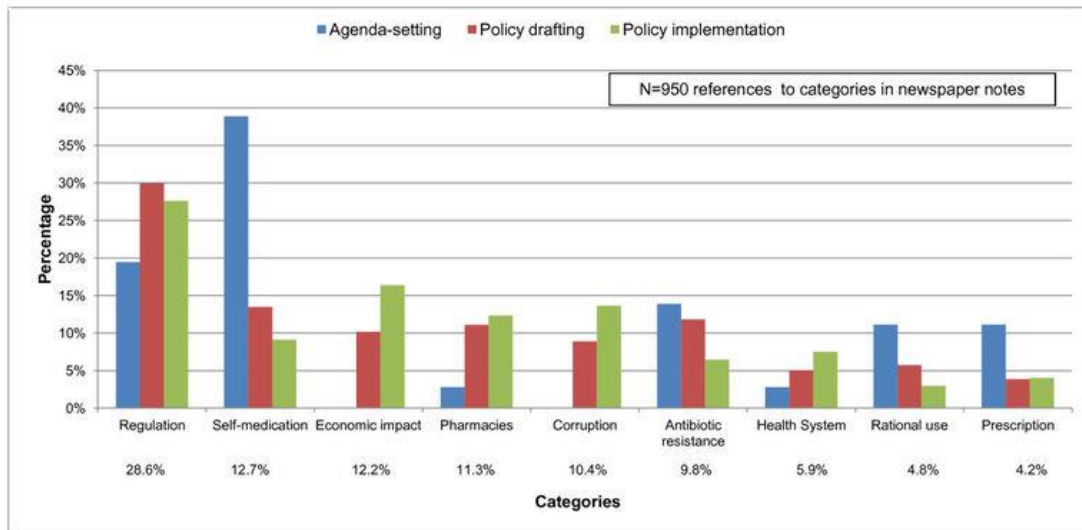


Figure 2

Theme categories covered by the printed media by stage of the policy process.

Source: Dreser, A., Vázquez-Vélez, E., Treviño, S. and Wirtz, V.J. (2012). Regulation of antibiotic sales in Mexico: an analysis of printed media coverage and stakeholder participation. *BMC Public Health*, 12, 1051

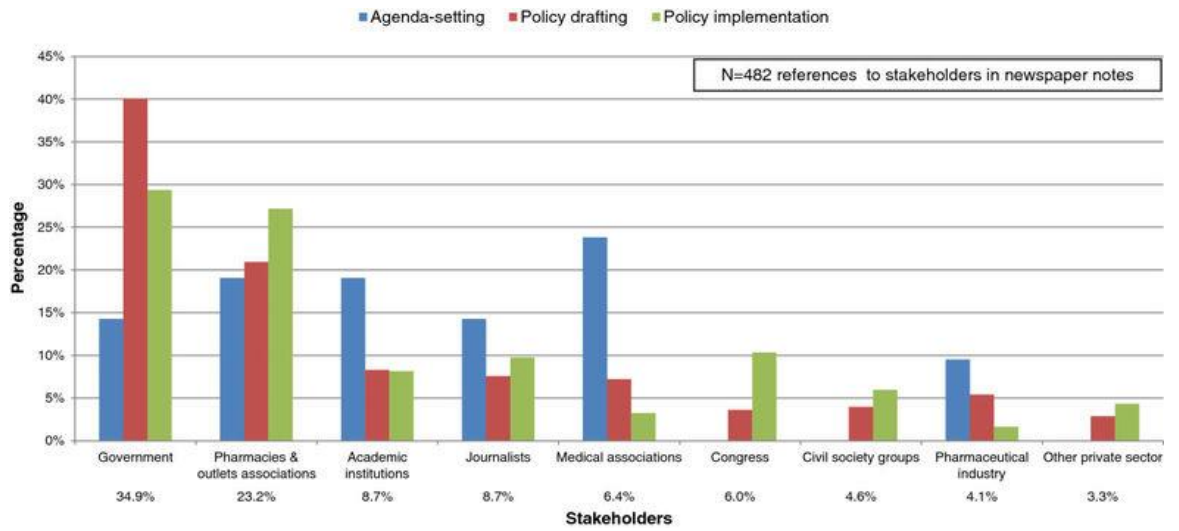


Figure 3
Printed media coverage of stakeholders by policy stage.

Source: Dreser, A., Vázquez-Vélez, E., Treviño, S. and Wirtz, V.J. (2012). Regulation of antibiotic sales in Mexico: an analysis of printed media coverage and stakeholder participation. *BMC Public Health*, 12, 1051

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