Health Policy and Systems Research

A Methodology Reader

Edited by Lucy Gilson

Alliance for Health Policy and Systems Research

World Health Organization

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Health Policy and
Systems Research**

**World Health
Organization**

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What does this Reader offer?

Health Policy and Systems Research (HPSR) is often criticized for lacking rigour, providing a weak basis for generalization of its findings and, therefore, offering limited value for policy-makers. This Reader aims to address these concerns through supporting action to strengthen the quality of HPSR.

The Reader is primarily for researchers and research users, teachers and students, particularly those working in low- and middle-income countries (LMICs). It provides guidance on the defining features of HPSR and the critical steps in conducting research in this field. It showcases the diverse range of research strategies and methods encompassed by HPSR, and it provides examples of good quality and innovative HPSR papers.

The production of the Reader was commissioned by the Alliance for Health Policy and Systems Research (the Alliance) and it will complement its other investments in methodology development and postgraduate training.

Why is the Reader needed?

Health systems are widely recognized to be vital elements of the social fabric of every society. They are not only critical for the treatment and prevention of ill-health but are central strategies for addressing health inequity and wider social injustice (Commission on the Social Determinants of Health, 2008). Health systems also provide the platform from which to launch dedicated efforts to address major diseases and health conditions that burden low-income populations, such as HIV/AIDS, tuberculosis and malaria. Given these roles, the early 2000s saw a significant expansion of international and national interest in health systems as one component of sustainable development in LMICs. Health system strengthening is now seen to be essential for the achievement of the Millennium Development Goals (Travis et al., 2004).

However, the knowledge base to support health system strengthening and policy change in LMICs is surprisingly weak (World Health Organization, 2009). The body of available work is quite limited compared to other areas of health research and suffers from various weaknesses. Thus, HPSR is criticized as being unclear in its scope and nature, lacking rigour in the methods it employs and presenting difficulties in generalizing conclusions from one country context to another (Mills, 2012). Review of health policy analysis work, in particular, also shows that research in this area is often weakly contextualized and quite descriptive, and offers relatively limited insights into its core questions of how and why policies are developed and implemented effectively over time (Gilson & Raphaely, 2008). As HPSR remains a 'cinderella', or marginal, field in health research these weaknesses are not particularly surprising. Within LMICs there are very few national researchers working on health policy and systems issues, and there is a lack of relevant training courses (Bennett et al., 2011). Yet the need is clear – as Julio Frenk, Dean of the Harvard School of Public Health, stated at the First Global Symposium on Health Systems Research held in Montreux, Switzerland, in 2010:

> we need to mobilise the power of ideas in order to influence the ideas of power, that is to say, the ideas of those with the power to make decisions.

What does the Reader aim to do?

This Reader aims to support the development of the field of HPSR, particularly in LMICs. It complements the range of relevant texts that are already available (see examples at the end of this section) by providing a particular focus on methodological issues for primary empirical health policy and systems research.

More specifically, the Reader aims to support the practice of, and training in, HPSR by:

- encouraging researchers to value a multidisciplinary approach, recognizing its importance in addressing the complexity of health policy and systems challenges;
- stimulating wider discussion about the field and relevant research questions;
- demonstrating the breadth of the field in terms of study approaches, disciplinary perspectives, analytical approaches and methods;
- highlighting newer or relatively little-used methods and approaches that could be further developed.

The Reader is mainly for use by:

- researchers and health system managers who wish to understand and apply the multidisciplinary approaches of HPSR in order to identify comprehensive strategies that address the complex challenges of health system development;
- teachers and facilitators involved in HPSR training;
- students, from any discipline or background, who are new to the field of HPSR.

How is the Reader structured?

There are four main sections in the Reader:

Part 1 provides an overview of the field of HPSR in LMICs and some of the key challenges of this kind of research.

Part 2 outlines key steps to follow when conducting HPSR studies.

Part 3 presents some key references of papers which provide overarching conceptual frameworks for understanding health policy and health systems.

Part 4 is the main body of the Reader and presents a set of empirical papers drawn exclusively from LMICs. The papers were selected because they:

- together demonstrate the breadth and scope of HPSR work
- provide good examples of different forms of research strategy relevant to HPSR
- are high quality and innovative.

Part 5 presents a set of references for papers that reflect on specific concepts or methods relevant to HPSR as well as some of the particular challenges of working in this field.

Doing HPSR: from research questions to reseach strategy

The defining feature of primary HPSR is that it is problem- or question-driven, rather than, as with epidemiology, method-driven. Therefore, as outlined in Part 2, the first step in doing rigorous and good quality research is to clarify the purpose of the research, what the study is trying to achieve, and to identify and develop relevant and well-framed research questions.

Good quality work then demands an understanding of the research strategy that is appropriate to the questions of focus. The strategy is neither primarily a study design nor a method, but instead represents an overarching approach to conducting the research; it considers the most appropriate methods of data collection and sampling procedure in terms of the research purpose and questions. The art of study design in HPSR, as with all 'real world research', is about turning research questions into valid, feasible and useful projects (Robson, 2002).

The papers in Part 4 are grouped by research strategy in order to encourage critical and creative thinking about the nature and approach of HPSR, and to stimulate research that goes beyond the often quite descriptive cross-sectional analyses that form the bulk of currently published work in the field. The research strategies were chosen to demonstrate the breadth of HPSR work, covering both dominant and emerging approaches in the field.

They are:

1. Cross-sectional perspectives
2. The case study approach
3. The ethnographic lens
4. Advances in impact evaluation
5. Investigating policy and system change over time
6. Cross-national analysis
7. Action research

Each of the sections in Part 4 includes: a brief overview of the relevance of the research strategy to HPSR; critical elements of the strategy that must be considered in conducting rigorous work; and an introduction to the selected papers.

We note that secondary research or synthesis methods are not addressed here, and readers interested in that particular research area are encouraged to use relevant supporting materials. These include, for example, a Handbook developed with the Alliance support and downloadable from:

http://www.who.int/alliance-hpsr/projects/alliancehpsr_handbook_systematicreviewschile.pdf

Three broader texts of use to those doing HPSR are:

Fulop N et al., eds (2001). Issues in studying the organisation and delivery of health services. In: Fulop N et al., eds. *Studying the organisation and delivery of health services: research methods.* London, Routledge.

Robson C (2011). *Real world research: a resource for social scientists and practitioner-researchers,* 3rd ed. Oxford, Blackwell Publishing.

Thomas A, Chataway J, Wuyts M, eds (1998). *Finding out fast: investigative skills for policy and development.* London, Sage Publications.

How was the Reader developed?

The Reader was developed through a process of five steps:

1. engagement with relevant researchers across the world to identify potential papers for inclusion and comment on an initial draft of Part 2;

2. development and teaching of a new course, "intoduction to Health Systems Research and Evaluation" as part of the University of Cape Town's Master's in Public Health (health systems) degree programme;

3. review of papers and selection of an initial "long list" for possible inclusion in the Reader;

4. presentation and discussion of the initial ideas for the Reader and the long list of papers, at the 2010 Montreux, First Global Symposium on Health Systems Research;

5. final selection of papers and finalization of the section introductions.

The team

A multidisciplinary group of researchers, with a range of relevant experience and organizational bases, supported the Reader's development process. The team was led by:

- Lucy Gilson (health policy/health economics, South Africa/United Kingdom of Great Britain and Northern Ireland)

and included:

- Sara Bennett (health policy/health economics, United States of America)
- Kara Hanson (health economics, United Kingdom of Great Britain and Northern Ireland)
- Karina Kielmann (medical anthropology, United Kingdom of Great Britain and Northern Ireland)
- Marsha Orgill (health policy/health systems, South Africa)
- Helen Schneider (public health/health policy, South Africa).

Irene Agyepong (public health manager/health policy, Ghana), Kabir Sheikh (health policy/public health, India) and Freddie Ssengooba (health systems/health policy, Uganda), also contributed greatly to conceptualizing Part 2, in part through their collaboration with Sara Bennett, Lucy Gilson and Kara Hanson in a set of parallel papers published in PLoS Medicine (Bennett et al., 2011; Gilson et al., 2011; Sheikh et al., 2011).

A range of inputs or comments on the Reader's development were also received from a broader group of colleagues who deserve a special note of thanks (see below).

Ultimately, however, the selection of papers in this Reader reflects the particular perspectives of those most closely involved in its development – both on the nature of the field and on what constitutes a good quality or unusual study and paper. The Reader is, therefore, a starting point for reflection on HPSR, not an end point. It must be seen as a living document that will develop over time.

Please note that this Reader is mostly available online at: http://www.who.int/alliance-hpsr/resources/reader/en.

For their comments and ideas, particular thanks to:

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Lydia Bendib managed the overall production of the Reader.

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Grateful acknowledgement is made to the various publishers for permission to reproduce in this Reader, the full text articles included in Part 4.

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Part 1

Introduction to Health Policy and Systems Research

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1. What is Health Policy and Systems Research?

This part of the Reader provides an overview of Health Policy and Systems Research (HPSR) and the key elements and issues with which it is concerned. It includes an outline of the main knowledge paradigms that are encompassed within this field of research.

Key points from this section

Features that define HPSR are:
- the types of issues it addresses
- the fact that it seeks to address real-world situations and issues
- it is multidisciplinary, drawing on methods and perspectives from a range of disciplines.

HPSR investigates issues such as: how health care is financed, organized, delivered and used; how health policies are prioritized, developed and implemented; and how and why health systems do or do not generate health and wider social goals.

It brings together health policy and health systems work into one integrated field. This combined focus on health policy and health systems issues provides a strong basis for identifying what can be done to:
1. strengthen health systems so they can better achieve their health and broader social goals; and
2. ensure that the related research is applied research that has the potential to support the implementation of health policies and health system development.

Key characteristics of HPSR

Health policy and systems research (HPSR) is defined as a field:

… that seeks to understand and improve how societies organize themselves in achieving collective health goals, and how different actors interact in the policy and implementation processes to contribute to policy outcomes. By nature, it is inter-disciplinary, a blend of economics, sociology, anthropology, political science, public health and epidemiology that together draw a comprehensive picture of how health systems respond and adapt to health policies, and how health policies can shape – and be shaped by – health systems and the broader determinants of health. (Alliance for Health Policy and Systems Research, 2011.)

This definition also highlights its key characteristics (Alliance for Health Policy and Systems Research, 2007; Mills, 2012).

Health Policy and Systems Research:

- is a multidisciplinary research field, distinguished by the issues and questions addressed through the research rather than by a particular disciplinary base or set of methods;

- includes research that focuses on health services as well as on the promotion of health in general;

- includes concern for global and international issues as well as national and sub-national issues, as global forces and agencies have important influences over health systems in low- and middle-income countries;

- encompasses research on or of policy, which means that it is concerned with how policies are developed and implemented and the influence that policy actors have over policy outcomes – it addresses the politics of health systems and health system strengthening;

- promotes work that explicitly seeks to influence policy, that is, research for policy.

An integrated approach

Importantly, HPSR brings together health policy and health systems work into one research field, as there are four linkages between these apparently separate areas of work, as listed below.

1. Health policies can be seen as the purposeful and deliberate actions through which efforts are made to strengthen health systems in order to promote population health.

2. Health policy actions must not only be informed by an understanding of the current dynamics of health system functioning and performance, but are also sustained, or undermined, by whether and how they find expression in the health system.

3. A better understanding of the politics of health policy change, the actors and interests driving the processes through which policies are developed and implemented, contributes to understanding how to influence policy and take action to strengthen health systems.

4. A specific focus on policy implementation allows for and requires a better understanding of the organizational dynamics of health systems, which is a critical and often overlooked element of health system functioning.

In practice, therefore, the two apparently different areas of work – health policy and health systems – overlap. Together they provide the knowledge base relevant to strengthen health systems whilst also showing how knowledge and other forms of power together influence policy decision-making. In these ways, HPSR work always seeks to be policy relevant.

Key areas of HPSR

Each of the four central elements in HPSR are considered in the following sections. Some key definitions, concepts and frameworks are discussed. These provide a foundation for thinking about issues related to HPSR, defining appropriate research questions and analysing the findings of such research.

Key points from the following four sections

Four central elements in HPSR are:

- health systems
- health system development or strengthening
- health policy
- health policy analysis.

The issues related to each of these elements can be understood through a range of definitions, concepts and frameworks, which also help to generate relevant and appropriately framed research questions. Such frameworks allow us to understand the various elements, characteristics and dimensions of a health system; and to identify the different connections and interrelationships within a health system that need to be considered in order to strengthen them.

New health policies represent efforts to introduce deliberate and purposeful change within health systems. Ideas and concepts related to policy and the analysis of such policy are an important part of HPSR. In seeking to support better policy implementation, it is critical that we understand the factors that influence policy outcomes. Through understanding the nature of policy and the processes of policy change, we gain new insights that help to explain how health system actors, and the relationships of power and trust among them, influence health system performance.

2. Health systems

Health systems can be defined either by what they seek to do and achieve, or by the elements of which they are comprised.

Goals

The defining goal of health systems is generally seen as health improvement – achieved not only through the provision of curative and preventive health services but also through the protection and promotion of public health, emergency preparedness and intersectoral action (Mackintosh & Koivusalo, 2005).

However, health systems are also part of the social fabric in any country, offering value beyond health (Gilson, 2003; Mackintosh, 2001). Their wider goals include equity, or fairness, in the distribution of health and the costs of financing the health system as well as protection for households from the catastrophic costs associated with disease; responsiveness to the expectations of the population; and the promotion of respect for the dignity of persons (World Health Organization, 2007). These last two goals specifically require:

- ethical integrity, citizen's rights, participation and involvement of health system users in policy development, planning and accountability and respect of confidentiality as well as dignity in service provision (Mackintosh & Koivsualo, 2005);

- building and maintaining the social relations that support sustained resource redistribution, through strategies and activities that include, rather than exclude, socially marginalized population groups within all decision-making activities (Freedman et al., 2005).

Therefore, health systems, through both their service provision role and their influence over societal relations, are a critical field of action to address the social determinants of health and the related health inequities (Commission on the Social Determinants of Health, 2008; Gilson et al., 2008).

Elements and characteristics

In terms of the elements they comprise, health systems can be understood as:

1. Encompassing the population the system serves, as well as the supply or delivery of services, interventions and activities intended to promote health and wider value. Members of the population play five critical health-related roles. They are:

   - patients with health needs requiring care
   - consumers with expectations of how they will be treated
   - taxpayers who provide the main source of financing for the system
   - citizens who may have access to health care as a right
   - co-producers of health through their healthseeking and health-promoting behaviours (Frenk, 2010).

2. A set of six functions, or building blocks, some of which are clearly represented in the goals outlined above (World Health Organization, 2007):
   - service delivery
   - health workforce
   - information
   - medical products, vaccines and technologies
   - financing
   - leadership/governance.

3. Incorporating, within the service delivery function (Van Damme et al., 2010):
   - general curative and preventive health services and services aimed at specific health problems, including specific disease control programmes and personal and population-based services;
   - a range of modes or channels of service delivery including various levels of facility, other outlets for health goods (such as pharmacies or shops) and other strategies (such as community-based health workers and activities);
   - a complex mixture of service providers – public and private, for profit and not-for-profit, formal and informal, professional or non-professional, allopathic or traditional, remunerated and voluntary – the pluralistic health care system (Bloom, Standing & Lloyd, 2008).

Multi-levels of operation

Health systems operate at, and across, the macro, meso and micro levels (Fulop et al., 2001; Van Damme et al., 2010). This is illustrated in Figure 1.

As Figure 1 suggests, the macro level has traditionally focused mainly on the national, or domestic, health system whilst recognizing that this system is also influenced by a wider national and international context. Key system roles at the national level include:

- balancing policies, strategies, resource allocation and health worker reward systems in line with overall system goals;
- coordination across functions and service delivery activities and interventions;
- the development of policy and regulations;
- engaging with health system actors, including citizens;
- interactions with other national agencies that influence health as well as international agencies and processes.

There has, however, been growing realization of the strong influence of the broader global context over population health and health care (Smith & Hanson, 2011). Critical influences include international trade, international aid and global changes, such as economic trends or climate change. There are also a range of very influential global organizations and actors, including multilateral and bilateral organizations, and global public-private initiatives. Therefore, the domestic health system must be understood as an open system within the global context, influenced by and influencing global forces.

The meso level comprises both the local health system, often called the district health system, and the organizational level, such as hospitals. System roles at this level include:

- responding to local needs and circumstances, in terms of provision of health services and wider health promoting activities;
- coordination among local actors;
- management of health services, activities and health workers;

Figure 1   The different levels of health systems
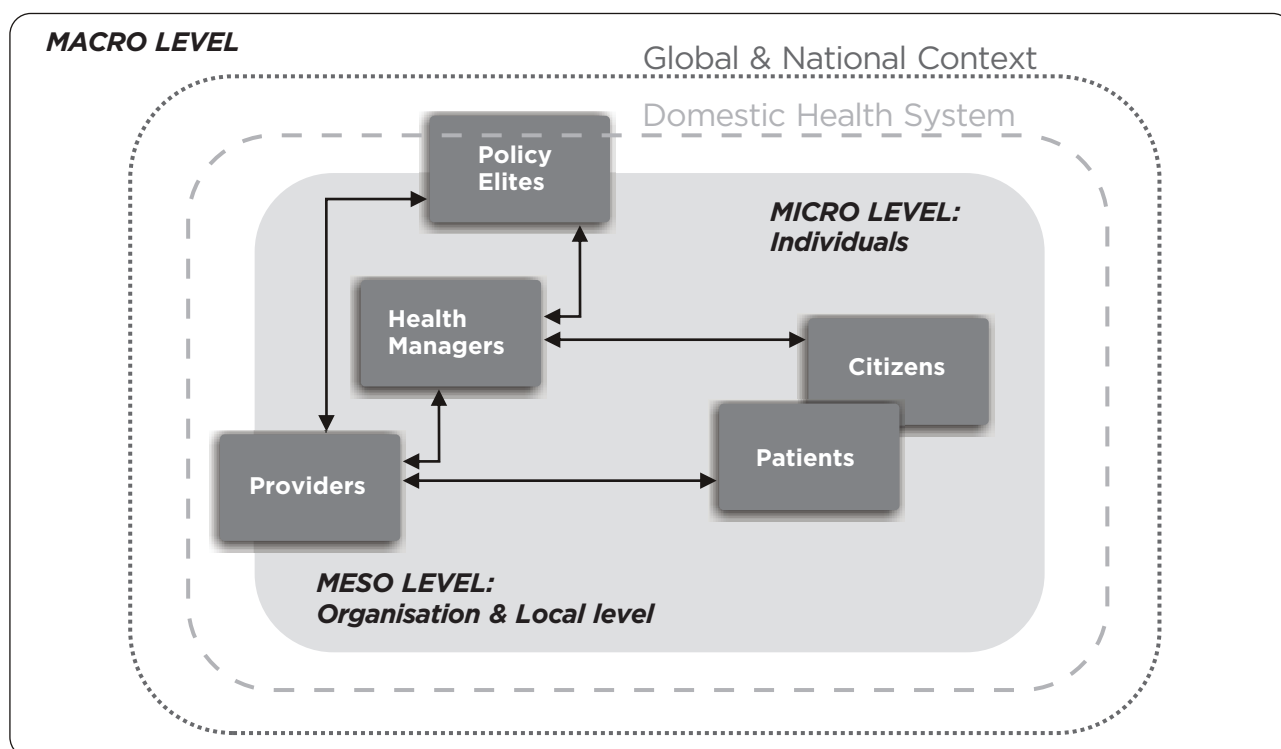
- supervision and training of service providers;
- adaptation of national policy and guidelines to local circumstances.

Finally, the micro-level is the level of the individuals in the system. It includes providers and patients as well as citizens, managers and policy elites – and the interactions between them. Critical roles of individuals at this level include:

- the search for care, compliance with health advice and broader health behaviours;
- the provision of health care and health promoting activities;
- the development of new forms of provider–patient interaction, such as the use of patient information for follow-up;
- the development of broader local relationships between health system agents and the population;
- managerial decision-making and leadership across the health system.

Interactions and interrelationships

Health systems encompass not only various elements but also the interactions and interrelationships between those elements and between the various individuals within the system (Frenk, 1994). These relationships not only support service delivery towards health improvement but are also central to the wider social value generated by the health system (Gilson, 2003).

> *The building blocks do not alone constitute a system, any more than a pile of bricks constitutes a functioning building. It is the multiple relationships and interactions among the blocks – how one affects and influences the others, and is in turn affected by them – that converts these blocks into a system (de Savigny & Adam, 2009:31; see Figure 2).*

The relationships are, moreover, shaped and influenced by both the hardware and the software of the health system and, in turn, influence levels of system performance.

Figure 2   The interconnections among the health system building blocks
(Source: de Savigny & Adam, 2009:32.)
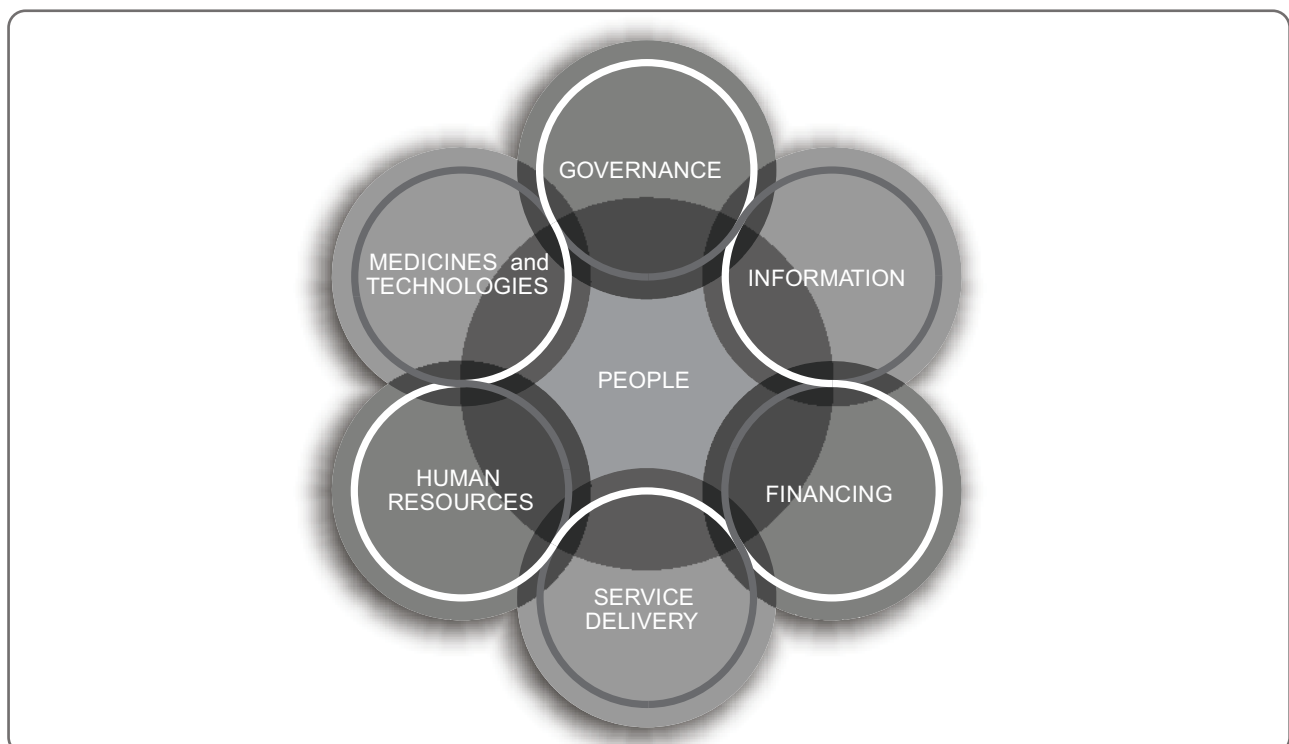
Health system hardware includes the particular organizational, policy, legal and financing frameworks that structure any health system, as well as its clinical and service delivery requirements. The software encompasses the institutions (norms, traditions, values, roles and procedures) embedded within the system.

These two health system dimensions are often tied together. For example, financing mechanisms not only influence the level of funding available for the health system, but also indicate what is valued by that system. Here is an example: the taxation-based elements of the system signal the extent to which society is prepared to take collective action to support redistribution; whilst the level of fee for service within the system signals the extent to which society values choice, allowing those who can afford to, to pay for health care to buy more or better services. The set of financing mechanisms, moreover, influence relationships between the state and its citizens as well as between providers and patients, and has a direct influence over levels and patterns of health care utilization, the extent to which the health system offers financial protection in times of health crisis and the contribution of the heath system to generating social solidarity (Gilson et al., 2008).

The recent attention on systems thinking, therefore, encourages a focus on the nature of health system relationships and the synergies emerging from them, recognizing that the sum of the whole is more than the sum of the parts (de Savigny & Adam, 2009).

3. Health system development or strengthening

As explained in the previous section, health systems are shaped by both structural (hardware) components and social (software) elements. Therefore, in order to identify actions to develop or strengthen health systems, researchers need to consider:

- changes in the structures of the system that are likely to generate performance gains; as well as
- what can be done to influence the behaviour and practices of health system agents; and
- how to implement both sets of changes in ways that are most likely to secure intended effects (Roberts et al., 2008).

These system-level interventions sometimes focus on more than one of the building blocks, such as pay-for-performance systems that together address human resource and financing issues.

Alternatively, through the governance or information building blocks, such intervention can encompass processes and strategies that bring about change across the system as a whole – that is, across system building blocks, levels and/or dimensions (de Savigny & Adam, 2009). The hardware and software dimensions of health systems may together be addressed by, for example, new accountability mechanisms, or processes, and monitoring and evaluation strategies. There is also potential for new leadership and management approaches to focus on the deliberate development of the institutional and relational nature of the health system (Gilson, 2012).

Some disease or programme-specific interventions also have system-wide effects, such as scaling up anti-retroviral therapy or integrating vouchers for malaria-preventing bednets into ante natal care (de Savigny & Adam, 2009). However, most disease programme or service-specific strategies are unlikely by themselves to bring about improvements across the health system. Such strategies suffer one or more of the following weaknesses (Travis et al., 2004).

They may:

- limit the policy options considered in system improvement by focusing more on actions at the micro level (individual) rather than meso level (local and organizational) or macro levels (national and global);

- crowd-out routine activities (as when a number of training activities occurs at the expense of service delivery);

- achieve short-term goals but prevent the development of long-term strategies to sustain those goals (as when donor-funded financial incentives encourage performance gains in one programme that cannot be sustained over time or do not benefit all services due to resource constraints).

In contrast, Table 1 shows that system-level responses to the common constraints that particular services or programmes may face are broad in focus and aim to tackle the root causes of the problems. However, such responses generally take longer to have effect and their implementation is likely to be more difficult to manage.

Table 1   Typical system constraints and possible disease-specific and health-system responses
(Source: Travis et al., 2004)

Constraint	Disease-specific response	Health-system response
Financial inaccessibility: inability to pay, informal fees	Exemptions/reduced prices for focal diseases	Development of risk-pooling strategies
Physical inaccessibility: distance to facility	Outreach for focal diseases	Reconsideration of long-term plan for capital investment and siting of facilities
Inappropriately skilled staff	Continuous education and training workshops to develop skills in focal diseases	Review of basic medical and nursing training curricula to ensure that appropriate skills included in basic training
Poorly motivated staff	Financial incentives to reward delivery of particular priority services	Institution of proper performance review systems, creating greater clarity of roles and expectations regarding performance of roles, review of salary structures and promotion procedures
Weak planning and management	Continuous education and training workshops to develop skills in planning and management	Restructuring ministries of health, recruitment and development of cadre of dedicated managers
Lack of inter sectoral action and partnership	Creation of special disease-focused cross-sectoral committees and task forces at national level	Building systems of local government that incorporate representatives from health, education, agriculture, and promote accountability of local governance structures to the people
Poor quality care amongst private sector providers	Training for private sector providers	Development of accreditation and regulation systems

4. Health policy

Health policy can be understood as the:

> *...courses of action (and inaction) that affect the sets of institutions, organizations, services and funding arrangements of the health system. It includes policy made in the public sector (by government) as well as policies in the private sector. But because health is influenced by many determinants outside the health system, health policy analysts are also interested in the actions and intended actions of organizations external to the health system which has an impact on health (for example, the food, tobacco or pharmaceutical industries (Buse, Mays & Walt, 2005:6)).*

Commonly, health policies are understood as the formal, written documents, rules and guidelines that present policy-makers' decisions about what actions are deemed legitimate and necessary to strengthen the health system and improve health. However, these formal documents are translated through the decision-making of policy actors (such as middle managers, health workers, patients and citizens) into their daily practices (for example, management, service delivery, interactions with others). Ultimately, these daily practices become health policy as it is experienced, which may differ from the intentions of the formal documents (Lipksy, 1980). Therefore, policy can be seen not only as the formal statements of intent but also as the informal, unwritten practices (Buse, Mays & Walt, 2005).

5. Health policy analysis

Health policy analysis is a central strand of HPSR. It is sometimes understood as the technical work that underpins the development of new policies or the central element of their evaluation. It includes, for example, epidemiological analysis that identifies risk factors for particular diseases and the important targets for health interventions; or cost-effectiveness analysis that identifies which of several possible interventions to address a particular health problem provides the best value for money. However, a more political and organizational approach to policy analysis sees policy itself as a process, the process of decision-making, rather than focusing only on policy as the output of that process or as a management input (Harrison, 2001; Thomas, 1998).

Technical analysts often conceive of policy analysis as including several stages, such as getting a problem or issue prioritized for policy action, defining what the problem is and what objectives would represent an improvement to it, identifying the causes of the problem and how they are inter linked, identifying possible interventions that would address the factors causing the problem, considering options for intervention, implementing selected options, evaluation and feedback (Harrison, 2001).

However, analysts adopting a political and organizational approach to policy analysis do not assume that these stages are sequential or that they always occur in every decision-making process. Indeed, these policy analysts often describe the policy process as a mess, a set of incremental decisions:

> *not only is policy designed to change a given situation but the situation is changing anyway and giving rise to changing pressures for changes in policy. The fact that policy is constantly developing in this way makes it useful to think of policy itself as a process. (Thomas, 1998:5.)*

The focus of this form of policy analysis goes beyond the content of particular policies and gives greater attention to the behaviour of health policy actors: their processes of decision-making and the actions they take; their lack of action and unintended actions; the influence of content on those actions; and the context that influences and is influenced by these behaviours (Walt & Gilson, 1994). Such analysis offers insights that can be well combined with those of systems thinking (Gilson, 2012).

For some, health policy is "synonymous with politics and deals explicitly with who influences policy-making, how they exercise that influence, and under what conditions" (Buse, Mays & Walt, 2005:6).

Policy actors

Within national settings, policy actors include those who:

- have specific responsibility for developing formal policies in the public or private sectors, including those outside the health sector working on health-influencing policies, and international agencies and organizations;

- influence how policies are translated into practice (such as middle managers, health workers, patients and citizens);

- seek to influence the formal policy process (such as civil society groups or interest groups at national and international levels).

At global level, policy actors include the range of multilateral and bilateral organizations engaged in activities that are likely to influence health, as well as the newly powerful global public–private initiatives (such as the Gates Foundation), and transnational civil society movements.

The focus and forms of policy analysis

Policy analysis specifically considers: (a) the roles of actors who influence policy change at different levels – from individual, organizational, national to global – and their interests; (b) the influence of power relations, institutions (the rules, laws, norms and customs that shape human behaviour) and ideas (arguments and evidence), over health system operations and policy change within them; and (c) global political economy issues. It also seeks to understand the forces influencing why and how policies are initiated, developed or formulated, negotiated, communicated, implemented and evaluated, including how researchers influence policy-making (Overseas Development Institute, 2007). The latter includes considering whether and why routine practices differ from, and may even contradict, formal policies, and generate an implementation gap between policy intentions and routine practice.

Finally, although policy analysis may be conducted retrospectively, to understand past experience, it can also be used prospectively to support health policy change and health system strengthening. Prospective policy analysis has been proposed as an important support for advocacy efforts (Buse, 2008) and as a key component of health system leadership and governance activities (Gilson, 2012).

A new approach to health system development, global health diplomacy (Smith & Hanson, 2011), also recognizes that health policy actors must increasingly negotiate and engage with a range of actors at national and international levels, and outside the national health system. Examples of global health diplomacy include action to influence the global tobacco trade or to develop the World Health Organization Code on the Ethical Recruitment of Health Personnel; and, at national level, efforts to secure increased health budgets in African countries – in line with the Abuja target of 15% of total government budget.

6. The boundaries of HPSR

This section focuses on the types of issues addressed through HPSR. As HPSR is a new and emerging field, the issues it addresses and how it differs from other related areas of health research are not always understood. The four elements outlined in the previous section – health systems and their development, health policy and policy analysis – provide the basis for the ideas presented in this section. Figure 3 illustrates key elements of the field of HPSR.

Key points from this section

HPSR is an emerging area of health research. It focuses on health policies and health systems – what they are; how policies are implemented; how health systems work; and what can be done to improve policy implementation and the functioning of health systems.

Issues relevant to HPSR are wide ranging, include a variety of actors, and may be studied at local, national and global levels.

HPSR can be distinguished from research focused on specific health programmes, for example those relating to malaria or HIV/AIDS, by its focus on the broader setting in which such programmes are implemented. HPSR includes, for example, work on the financing, human resource or governance elements of the health system that underpin all service provision.

However, HPSR has fuzzy boundaries – it has overlaps with health services research and operational research, and there are some grey areas between HPSR and aspects of management and some discipline-specific research.

Figure 3   The terrain of HPSR
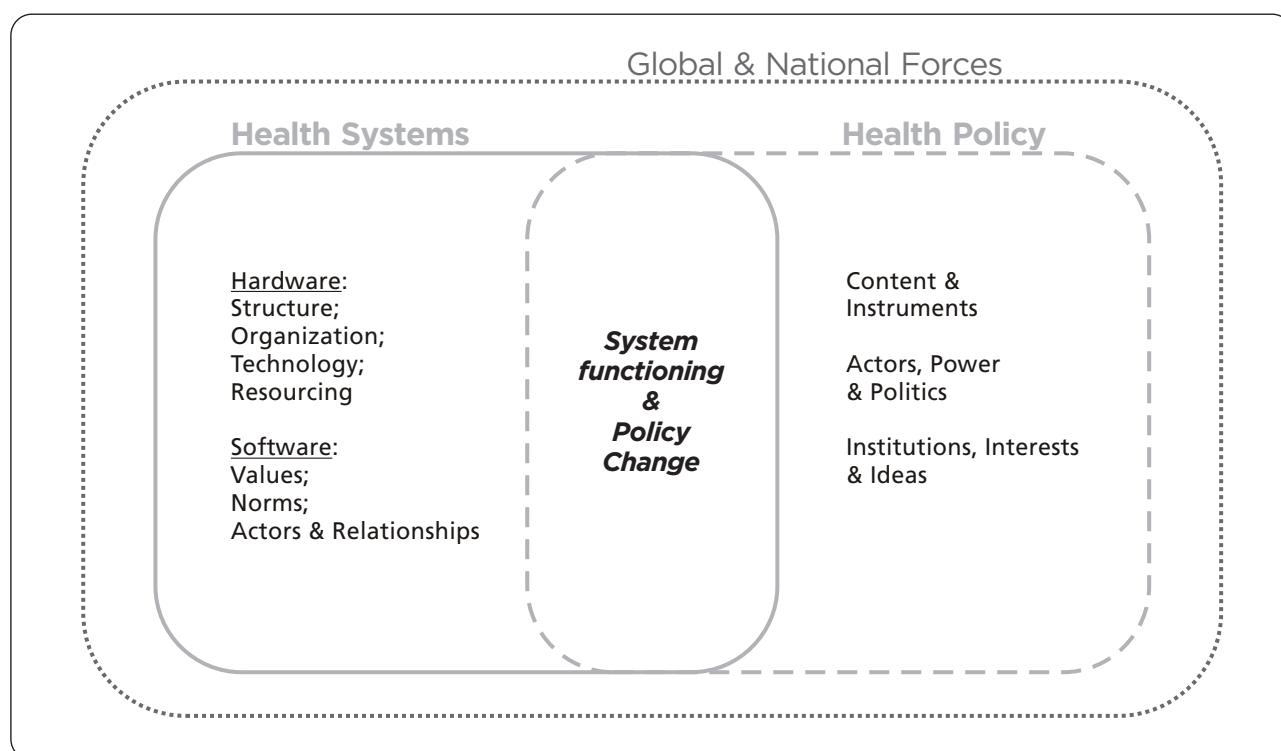
What HPSR is

HPSR encompasses research on the policies, organizations, programmes and people that make up health systems, as well as how the interactions amongst these elements, and the broader influences over decision-making practices within the health system, influence system performance.

HPSR seeks to understand:

- *what* health systems are and how they operate

- *what* needs to be done to strengthen health systems in order to improve performance in terms of health gain and wider social value

- *how* to influence policy agendas to embrace actions to strengthen health systems

- *how* to develop and implement such actions in ways that enhance their chances of achieving performance gains

The scope of HPSR covers work implemented across the various elements and dimensions of the health system (see Figures 1 and 3). An HPSR study may involve considering one or more of the following aspects:

- the wider arena in which policy is made (macro level analysis);

- the processes and institutional arrangements within which policy change is developed and implemented (meso level analysis);

- the impact of specific people on policy change and its impacts (micro level analysis) – the balance of structure (institutional influences) and agency (autonomy) that shapes such actions (Hudson & Lowe, 2004).

HPSR considers the full range of policy actors, not only those with formal policy influence, or in formal policy-making positions at the top or centre of the system. As important are the patients, citizens, front line providers and managers at the bottom or periphery of the system. Their actions and interactions represent the practices that are ultimately experienced not only as health policy but also as the health system (see, for example, Ssengooba et al., 2007; Walker & Gilson, 2004), and through which health improvement and wider social value is achieved.

HPSR may also be undertaken through studies implemented at national or sub-national levels, and through studies implemented in multiple countries.

The variety of issues that are relevant for HPSR is shown in Boxes 1 and 2.

Box 1: Suggested topics for health systems research

Financial and human resources:
- Community-based financing and national health insurance
- Human resources for health at the district level and below
- Human resources for health at the national level

Organization and delivery of health services:
- Community involvement
- Equitable, effective, and efficient health care
- Approaches to the organization of health services
- Drug and diagnostic policies

Governance, stewardship, and knowledge management:
- Governance and accountability
- Health information systems
- Priority-setting and evidence-informed policy-making
- Effective approaches for inter-sectoral engagement in health

Global influences:
- Effects of global initiatives and policies (including trade, donors, and international agencies) on health systems

Source: Sanders & Haines, 2006

HPSR has been undertaken to investigate a wide range of health policy and system issues, such as:

- describing and assessing particular system building blocks (such as decentralization; health financing);
- describing particular experiences of policy change in particular settings;
- explaining how multinational corporations influence transnational and national policies (for example tobacco companies);
- explaining the influences over aspects of particular policy actors' decision-making (such as health-seeking behaviour studies; health worker motivation studies);
- assessing whether new interventions generate performance gains, and of what level (conditional grant assessments), as well as the cost-effectiveness of alternative interventions;
- understanding stakeholder power and positions around specific new policies or actions, and assessing the likely implications for the acceptability of new policies or interventions;
- understanding particular experiences of policy implementation, or explaining variations between settings in the experience of implementing a particular policy;
- explaining overall health system performance impacts and their variation across health systems (for example cross-national analysis of catastrophic health expenditure levels).

What HPSR is not

Falling outside the definition of HPSR are more traditional medical and public health research issues, such as:

- basic scientific research on new pharmaceutical products or medical technologies;
- assessing the clinical efficacy and effectiveness of particular treatments or technologies;
- the measurement of population health profiles and patterns.

The distinction between HPSR and service delivery/ disease programme research

HPSR is concerned with the system-level factors and forces that cut across actions dedicated to tackling particular health problems, as well as those that underpin and shape the performance of health programmes that target specific health conditions. From a service delivery perspective this includes, for example, assessing new organizational models of care or new roles for different types of health-care providers. However, much HPSR broadens the focus, or goes upstream, from particular health conditions, services or programmes to consider their health system and policy context. This context has critical influence over sustained action to tackle particular health conditions and sustained delivery of particular services or programmes (Travis et al., 2004).

HPSR, therefore, addresses the full range of health system building blocks rather than being primarily concerned with aspects of the service delivery block. HPSR has particular concern for the horizontal dimensions of the health system (for example, planning, management, organizational functioning). Nonetheless, it may involve research within certain programme areas (which are often called the vertical elements of the system) in order to understand the systemic challenges of responding to different health conditions and of sustaining different types of health programmes. In HPSR, the health problems or programmes of focus are selected because they have system-wide demands (as with anti-retroviral therapy for HIV/AIDS) or because they serve as tracers for understanding and/or influencing health policy and system dynamics (Alliance for Health Policy and Systems Research, 2007).

Fuzzy boundaries

A range of terms are used by different groups of people to address slightly different aspects of HPSR.

The older term 'health services research' is perhaps more commonly used in higher income countries, and its starting point is the service delivery function of health systems, sometimes in relation to other functions. Health services research may, for example, study the patient –provider relationship and interventions to improve uptake of clinical guidelines by health-care practitioners. The term 'health policy and systems research' was introduced by the Alliance for Health Policy and Systems Research to cover a broader terrain of work, and although the Alliance has particular concern for work in low- and middle-income countries, the term HPSR is now being more widely embraced. HPSR may start from any of the health system building blocks, and includes concern for the policy process as well as global influences. Other areas of research related to HPSR include implementation and operational research – and there is some degree of overlap between these particular forms of research and management activities. Rather than trying to establish explicit and clear boundaries between these different areas of work it might be better to see most of them as, essentially, sets of overlapping areas with fuzzy boundaries.

However, the differences between HPSR and the emerging field of *implementation science* illuminate some key differences in perspective (Sheikh et al., 2011). As currently discussed in international health debates, implementation science can be seen to be primarily concerned with improving the delivery of particular services or treatment interventions that have already been proven to be clinically effective. For example:

> *Implementation research is the scientific study of methods to promote the systematic uptake of clinical research findings and other evidence-based practices into routine practice, and hence to improve the quality and effectiveness of health care. It includes the study of influences on health-care professional*

and organisational behaviour.
(http://www.implementationscience.com/about, accessed 13 January 2011)

In contrast, HPSR adopts a broader approach to implementation research that is rooted in the decades-old and rich body of policy implementation theory (Hill & Hupe, 2009), among other research traditions. It sees research on implementation as being both central to the study of governance in health systems and focused on understanding how change is driven or shaped. Asking 'What actually happens and why?' rather than 'Why is there an implementation gap?', this approach sees implementation as an organizational, social and political process to be enabled rather than as a centrally controlled and almost mechanical process. It considers, therefore, the practices of management and communication that support the scale-up of a new idea or intervention within a health system, rather than focusing more exclusively on, for example, new ways of shaping provider behaviours. It also acknowledges the practices of power or relationships of trust that shape implementation experience.

As HPSR draws insights from a range of disciplines, a second set of fuzzy boundaries are those between more specialist disciplinary work and HPSR. For example, most epidemiological work would not fall within HPSR, but those analyses which shed light on health system performance and change over time are relevant (see Masanja et al., 2008, in Part 4 of this Reader). Similarly, the anthropological work that sheds light on health system functioning and performance includes, for example, research focused on relationships among health system actors (George, 2009, later) or on policy itself (Behague & Storeng, 2008, see Part 4). More classical anthropological work, perhaps addressing lay perspectives around particular health programmes, is less directly relevant to HPSR. Political science and sociology also have much to offer HPSR (for example, Shiffman et al., 2004 and Murray & Elston, 2005, see Part 4), although not all work from these disciplinary perspectives would fall squarely into the field of HPSR.

Finally, whilst health economics is a central discipline of HPSR, the analyses most centrally falling within HPSR include work focussed on financing (for example O'Donnell et al., 2007, see Part 4), and human resource issues (for example Blaauw et al., 2010, see Part 4), rather than, for example, cost-effectiveness analysis of specific disease technologies.

Ultimately, by definition, studies falling within the field of HPSR must address health policy and systems issues, as defined here, and offer insights that have fairly clear policy relevance.

7. Understanding the nature of social and political reality

This section outlines different ways of understanding researchers' views of the world they investigate, views which influence the type of research they choose to do. Discussion of these issues is a common feature of wider social and development research but is more rare in health research.

Key points from this section

All research is influenced by the researcher's understanding of what reality and knowledge mean.

As a researcher, it is always important to acknowledge the way you understand the world – as this influences the types of question you ask, and the types of research strategy you choose.

Positivism, relativism and critical realism are terms describing three key ways of looking at the world and finding out about it.

Because HPSR draws on a range of disciplinary perspectives it embraces a wider range of understandings of social and political reality than most health research. This also influences the understandings of causality, generalizability and learning accepted within the field. More specifically, HPSR seeks to investigate complex causality; draws on comparative analysis to generate conclusions that are relevant in various settings; and takes a fairly engaged approach to promoting learning from research.

A fundamental difference between HPSR and wider health research lies in their different understandings of the nature of reality, what is out there to know, and how to gather knowledge about that 'reality'. Biomedical and clinical research, and some epidemiological and economics research, is founded on the same positivist understandings as natural and physical sciences.

However, unlike the dominant health research traditions HPSR draws strongly on social science perspectives, embracing not only the critical realist but also the relativist paradigm of knowledge – and related sets of research

questions and approaches (see Table 2). The differences between these paradigms underlie some of the common criticisms of HPSR, as well as the different research strategies used compared to biomedical and epidemiological research (Gilson et al., 2011). The following brief overview of these differences draws particularly on Grix, 2004; Harrison, 2001; Robson, 2002.

Table 2 Key elements of knowledge paradigms as applied in HPSR

Knowledge paradigm	◄---►		
	Positivism	Critical Realism	Relativism (interpretivism / social constructionism)
Types of questions addressed	Is the policy or intervention (cost)-effective?	What works for whom under which conditions?	How do actors experience and understand different types of interventions or policies? What are the social processes, including power relations, influencing actors' understandings and experiences?
Related disciplinary perspectives	Epidemiology Welfare economics Political science (rational choice theory)	Policy analysis Organizational studies	Anthropology Sociology Political science (sociological institutionalism)
Key research approaches and methods	Deductive: Hypothesis driven Measurement through surveys, use of archival and other data records Statistical analysis Qualitative data collected through, for example, semi-structured interviews and interviewing procedures	Deductive and inductive (theory testing and building) Multiple data collection methods including review of documents, range of interviewing methods, observation	Inductive (maybe theory building and/or testing) Multiple data collection methods including in-depth interviewing (individuals and groups), documentary review but also participant observation or life histories, for example.
HPSR articles that illustrate the paradigm (see Part 4)	Björkman & Svensson, 2009	Marchal, Dedzo & Kegels, 2010	Riewpaiboon et al., 2005 Shiffman, 2009 Sheikh & Porter, 2010

Positivism

Positivist research, such as biomedical or epidemiological research, starts from the position that the phenomena or issues of investigation exist independently of how they are understood and seen by people. Research in this tradition works with the understanding that these phenomena comprise a set of facts that can be observed and measured by the researcher, without disturbing them, and that there are patterns and regularities within them, causes and consequences, that can be identified through empirical research. Indeed, the central task of such research is considered to be to detect the laws of cause and effect that operate in reality and that remain 'true' in different contexts and times, by describing them and testing hypotheses (or predictions) against the evidence. HPSR rooted in this paradigm has a central focus on identifying what interventions work best and have most impact.

Relativism

The social sciences, however, encompass the understanding that the phenomena being investigated (such as health policies and systems) are produced through interaction among social actors. Such phenomena do not, therefore, exist independently of these actors but are, in essence, constructed through the way the actors interpret or make meaning of their experience, and these interpretations change over time.

From this perspective, facts are not clearly distinct from the values people hold, and searching for laws of cause and effect is an almost irrelevant task. Instead, research grounded in this tradition focuses on people's intentions, beliefs, values, reasons and how they make meaning. It acknowledges that the researcher also constructs knowledge through how they interpret what they hear and observe. The central task of HPSR in this tradition is, thus, not to explain but rather to understand the meanings given by actors to social phenomena, including the language used to construct reality.

Critical realism

A third perspective, critical realism, can be seen as placed somewhere between the other two perspectives. Like positivism, this perspective understands social reality to exist independently of social actors, although it accepts that actors' interpretations of that reality have influence over the nature of social change. The pre-existing structures and processes of society therefore affect, and are affected by, actors; and human action is influenced by a range of individual, group, organizational and societal processes and structures.

Like positivists, critical realists seek to identify the causal mechanisms underpinning social phenomena (such as health policies and systems), but they also adopt an interpretive understanding. In other words, they do not accept that cause and effect mechanisms hold across context and times, but believe that there are a range of mechanisms mediating between cause and effect, including those linked to actors and to contexts.

For critical realists, therefore, the task of research and evaluation is to generate theories that explain the social world and, in particular, to identify the mechanisms that explain the outcomes of interventions. The dominant HPSR question from this perspective is 'What works for whom in which conditions?' (Pawson & Tilley, 1997).

HPSR perspectives on causality, generalizability and learning

The broader understandings of knowledge and social reality incorporated within HPSR, as compared to positivist research, underpin its recognition of the socio-political and ideological influences over health policies and health systems. It also leads to important differences in perspectives on causality, generalizability and learning between these research fields.

Causality

HPSR embraces complex causality – the understanding that an effect is not linked by a linear and predictable path to a cause, but that there are multiple-interacting causes generating a set of often unpredictable effects. Such complex causality can be seen as a result of the influence of actors and their interpretations over how problems are defined, which form interventions or policies take in implementation, how health systems work and how interventions or policies play out through health systems (Pawson & Tilley, 1997).

Complex causality also results from the open nature of health systems – there are multiple, interacting influences over them and embedded in them. Therefore, interventions and policies often do not generate the same impacts over time and in different places (de Savigny & Adam, 2009). In addition, research takes place within the health system, even as it changes in ways that may have nothing to do with the particular focus of inquiry (Robson, 2002). HPSR must therefore adopt research strategies that allow investigation of complex causality. In particular, systems thinking is increasingly seen to offer insights and perspectives of relevance to HPSR (Atun & Menabde, 2008; de Savigny & Adam, 2009).

Generalization

HPSR recognizes various approaches to generalization. Research from the positivist tradition looks for conclusions that have external validity and that can be statistically generalized beyond the initial study setting and population. In evaluation work, randomized control trials have become the gold standard study design because they allow such generalizations. However, HPSR also embraces analytic or theoretical generalizability, as commonly applied in case study research. General insights derived from one or a few experiences, or cases, through a careful process of analysis, are judged to hold a sufficient degree of universality to be projected to other settings (Robson, 2002).

The process of analysis involves the development of conclusions from detailed findings about context, processes and outcomes in one or more settings; conclusions that are lifted to a sufficient level of abstraction or generality to have resonance in a different context. Comparisons across similar cases also allow such middle range theory ("ideas about how the world works, comprising concepts derived from analysis and ideas about how these concepts are linked together", Gilson et al., 2011:2) to be tested and revised in repeated cycles of theory-building and theory-testing.

In comparative case study analysis, generalization is not grounded in the representativeness of the population sampled but instead in a process of abstracting from the specifics of one case to ideas that encompass several cases. There is, therefore, growing interest in comparative case study analysis among health policy and systems researchers interested in explanation (Gilson & Raphaely, 2008; Marchal, Dedzo and Kegels, 2010). Nonetheless, it should also be noted that HPSR encompasses research that does not seek to generalize (for example about actors and their meaning-making) but works instead with the particular and specific, aiming to illuminate and understand these experiences (for example, George, 2009; Sheikh & Porter, 2010).

Knowledge generation and learning

Finally, HPSR embraces different understandings of knowledge generation and learning to that of biomedical and epidemiological work. Research in the positivist tradition tends to see learning as an act of engineering – the transfer of knowledge from one setting to another – whereas the relativist perspective of social science sees learning as an integral part of the process of policy development and implementation (Freeman, 2006). As Rose (2005), for example, has argued, policy lessons are not just direct copies of interventions implemented in one setting. Instead, they are ideas drawn from observations of interventions in other settings, observations that are abstracted, generalized and then and re-contextualized in a new setting.

In the positivist tradition, the researcher's job is to identify the causal mechanisms that can be transplanted from one setting to another. In the relativist tradition the researcher's job is to assist in the process of understanding and promoting change – including through understanding how social actors interpret and make meaning of their realities and through helping policy actors to negotiate mutually acceptable solutions to problems (Harrison, 2001).

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Part 2

Doing Health Policy and Systems Research: Key steps in the process

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This part of the Reader outlines the four critical steps in developing a primary Health Policy and Systems Research (HPSR) study that should be addressed by all researchers:

1. identify the research focus and questions
2. design the study
3. ensure research quality and rigour
4. apply ethical principles.

When assessing the quality of empirical HPSR work, it is important to consider all steps, not only Step 3.

Step 1: Identify the research focus and questions

The process of developing an HPSR study begins with identifying the topic of focus – the issue or problem you want to investigate – and the related questions. There are two main reasons for this:

1. HPSR is defined by the topics and questions it addresses rather than the disciplinary perspective or the particular approach to data collection and analysis it adopts.
2. HPSR always aims to be policy relevant and to inform the decisions taken by those who influence how health systems evolve and perform – the policy actors, from household to global levels. (Note that policy relevance is a key criterion used to assess the ethical value of HPSR research, Henning, 2004).

As policy relevance is always important to HPSR, those working in the field have paid increasing attention to the process of setting research priorities. A particular concern has been the influence of global actors (conventional multilateral and bilateral research funders as well as global public–private initiatives) over priority-setting within low- and middle-income countries. The priorities of these global actors have often emphasized upstream health research or commodity procurement, rather than systems strengthening questions and initiatives. Even amongst national research communities, HPSR questions may receive less attention than other research questions

due to the influence of other health researchers or specific interest groups. National research priority-setting processes are, therefore, important as a means of ensuring dialogue and engagement between researchers and health policy-makers and managers. The aims of such engagement are to turn health system and policy problems into researchable questions, identify priorities among them and, ultimately, support the uptake of research findings. Greater national funding for HPSR may be a further consequence (Green & Bennett, 2007).

Examples of international research priority-setting processes include those convened by the Alliance for Health Policy and Systems Research in 2007-2008 which identified priority topics for research in human resources, financing and the role of the non-state sector (see Table 3). At national level, the Essential National Health Research approach has provided a framework for priority-setting that has been applied in various countries (Green & Bennett, 2007; Alliance for Health Policy and Systems Research, 2009). See also the work of the Council on Health Research for Development at http://www.cohred.org.

Beyond networking with policy actors and other researchers, identifying an HPSR topic and related research questions should involve:

- thinking creatively, for example to identify new areas of work or different approaches to an investigation;
- exploring theory and conceptual understandings relevant to HPSR generally, and the topic of focus;
- conducting a literature search to identify relevant publications and research studies.

Finally, pragmatism is important when identifying a research question. The research needs to be feasible, for example, the scope and size of the study must be considered relative to the resources and time available (Robson, 2002; Varkevisser, Pathmanathan & Brownlee, 2003).

Table 3   Priority research questions in three health policy and systems areas, results of international priority-setting processes (Source: Alliance for Health Policy and Systems Research, 2009)

	Human resources for health	Health system financing	Non-state sector
1st	To what extent do financial and non-financial incentives work in attracting and retaining qualified health workers to under-serviced areas?	How do we develop and implement universal financial protection?	How can the government create a better environment to foster non-state providers in the achievement of health systems outcomes?
2nd	What is the impact of dual practice (i.e. practice by a single health care worker in both the public and the private sectors) and multiple employment? Are regulations on dual practice required, and if so, how should they be designed and implemented?	What are the pros and cons of the different ways of identifying the poor?	What is the quality and/or coverage of health care services provided by the non-state sector for the poor?
3rd	How can financial and non-financial incentives be used to optimize efficiency and quality of health care?	To what extent do health benefits reach the poor?	What types of regulation can improve health systems outcomes, and under what conditions?
4th	What is the optimal mix of financial, regulatory and non-financial policies to improve distribution and retention of health workers?	What are the pros and cons of implementing demand-side subsidies?	How best to capture data and trends about private sector providers on a routine basis?
5th	What are the extent and effects of the out-migration of health workers and what can be done to mitigate problems of out-migration?	What is the equity impact of social health insurance and how can it be improved?	What are the costs and affordability of the non-state sector goods and services relative to the state sector? And to whom?

Networking and creative thinking

Engaging with policy actors and other researchers helps to ensure that the topic and research questions are policy relevant. Both groups, through their experience in different settings, will have insights into the challenges and opportunities that face health systems. The types of questions that may interest national policy-makers are shown in Box 3. Such questions focus on both policy content and policy processes.

Networking can also help to stimulate creative thinking. In addition, exploring conceptual understandings and theory can highlight new areas of work rarely considered in the past, or new ways of understanding how to investigate a topic on which there is already some research.

Box 3: Broad research questions of interest to national policy-makers

Policy formulation

- What is the nature and extent of problem X?
- What happened before in response to problem X, and what were the consequences? What were the unexpected consequences?
- What are cost-effective responses to the problem?
- How long will it be before the impacts of response Y are seen? How can popular and political support be sustained until the impacts are seen?

Policy implementation

- What happens in practice when policy Y is implemented, and why?
- Do policy implementors have the same understanding of the problem that the policy aims to address, and the same policy goals, as the policy-makers? If not, how does that difference affect policy implementation?
- Is the organizational response adequate/sustained?

Policy evaluation

- Were the policy, or programme, objectives met?
- What were the unexpected outcomes?
- Did the policy objectives remain the same over time?
- Did the condition being addressed change over time?
- Was the programme [or policy?] implemented effectively?

Source: Rist 1998

Literature search

It is important to find out what relevant research has already been conducted in order to avoid unnecessary duplication and to build on existing research.

Although researchers can draw on their own knowledge of a particular setting, it is always important that they conduct more formal literature reviews of research previously conducted in other settings and not only in the area with which they are familiar. While there is value in *replication studies* (deliberately replicating work previously conducted in one setting in a new setting to generate new insights, for example (Robson, 2002)), the *duplication* of a research study simply because of limited knowledge about existing research is a waste of resources and so unethical (Emanuel et al., 2004).

New studies must always offer value, that is they must build on existing work, for example by addressing a question not previously considered in a particular setting,

or developing new ideas on topics that have already been considered.

The growth of interest in systematic reviews and syntheses of existing research reflects, in part, the concern that existing primary research is frequently not used as a basis for changing policy and practice, or for developing new research work. An important resource for health policy and systems researchers is, therefore, the Health Systems Evidence web site at http://www.healthsystemsevidence.org.

This is a continuously updated and searchable repository of syntheses of research evidence about governance, financial and delivery arrangements within health systems, and about implementation strategies that can support change in health systems.

Key challenges

Two key challenges related to identifying appropriate research questions are discussed below.

1. *Framing policy relevant and valuable HPSR questions through networking with research users.*

   A challenge of generating new research ideas through networking with policy actors is that the types of topics and questions identified as important will vary between policy actors, depending on their roles and responsibilities within the health system (as illustrated in Box 4). For example, policy actors working at lower levels of the health system have particular operational needs which, while important, might limit the wider application of the work if other policy actors do not see its relevance to them or if it requires the duplication of research already conducted elsewhere. Similarly, managers of a particular health programme, be it HIV/AIDS, nutrition or school health, tend to be most interested in research about how to strengthen their particular programme and less interested in the systemic support needs across programmes. Yet, as discussed earlier (see Part 1, Section 6), HPSR focuses on such systemic needs rather than on programme-specific needs.

   Therefore, health policy and systems researchers need to think carefully about the fuzzy boundary between HPSR and management (see Part 1, Section 6) and seek either to support managers to conduct their own operational research, or to identify the wider value of the particular research question.

Box 4: The HPSR questions of different health policy and systems actors

National policy-makers might ask:

- How can we prevent the HIV/AIDS programme from draining resources (time and staff) from other equally important programmes?
- How can HIV/AIDS resources be used in ways that strengthen other areas of the health system?
- Should antiretrovirals be prescribed only by doctors or is prescription by nurses more cost-effective?

District managers might ask:

- Why are there more patient complaints about facility X than others in my district?
- Why are patient waiting times at clinics still very long, although we have already tried to reorganize services to address the problem?
- How can we develop an integrated HIV/AIDS and tuberculosis service, in line with national policy?

Hospital managers might ask:

- How can we decrease the pharmacy waiting time?
- How can we reduce the average length of stay for chronically ill patients?
- Are ambulatory services available and adequate?
- Are patients coming late for treatment and why?

Patient groups might ask:

- Why do we have to wait so long to get care?
- Why do health workers treat us so rudely?

2. *Identifying research questions that are relevant to a range of policy actors and that add to the existing knowledge base.*

The challenge for the health policy and systems researcher is to identify policy-relevant and valuable research questions that not only directly address the concerns of the main group of policy actors with whom they seek to work and influence, but also have relevance to a wider range of actors and add to the existing HPSR knowledge base.

For example, how can work on reducing a particular hospital's pharmacy waiting time have relevance to other hospitals or to national managers concerned with supporting all hospitals to reduce waiting times? Similarly, how can research linked to a particular disease programme be undertaken in ways that offer policy and systems lessons that benefit other programmes as well? In both cases, it is important to see the specific focus of the research as an entry point for considering an issue of relevance to a broader range of actors and settings.

In terms of pharmacy waiting times, there could be value in seeing the work in one hospital as a case study of how to tackle such a problem. The case study could generate ideas on processes and strategies that can initially be tested in other hospitals. Then, drawing on several experiences, this can become the basis for compiling general insights into ways to address the common problem of waiting times. This is an example of the process of analytic generalization and it provides the basis for the sort of policy learning in implementation discussed in Part 1, Section 7.

Another approach would be to see how work in a particular programmatic area offers insights into a broader systems' question of relevance across programmes. For example, work on task shifting within an HIV/AIDS programme offers insights on the types of human resource development and management needs that must be addressed in any new policy initiative that involves an expansion of the scope of work of lower-level cadres; it also highlights the possible challenges to the political feasibility of such an initiative and ways of managing those challenges. Therefore, the health policy and systems researcher can see the particular programme issue as a case study of policy implementation.

All these approaches show how research around one programme can represent a tracer for understanding and/or influencing health policy and system dynamics, as discussed earlier.

Overall, compared with research focused on a particular disease programme, service area or clinical treatment, HPSR requires the researcher to consider the system within which the specific service or treatment is nested. This means thinking:

- broad – beyond the disease or treatment of focus;
- up – above the programme or service to the facility, district, province etc.; and
- about the cross-cutting functions that underlie service and programme delivery – the system building blocks and interactions among them (Schneider, 2011).

Identifying the purpose of the research

In developing research questions that will be policy relevant and valuable, it is also important to think about the overall purpose of the research, in particular:

- What is the research trying to achieve? or Why is it being done?
- To whom will it be useful?
- How will it be useful?
- How will it add to the existing knowledge base?

Thinking about such questions will also inform the design of the research study (see Step 2).

As research questions are developed, four dimensions can be considered:

1. Whole field or specific policy: Will the research seek to focus on the field as a whole, and so expand knowledge of the nature and functioning of the key elements of health policy and systems, or will it seek to focus on a particular policy and support its implementation?

2. Normative/evaluative or descriptive/explanatory research questions: Will the research address normative or evaluative questions (which may involve value judgements) or descriptive or explanatory questions?

Table 4 provides some examples of HPSR questions across dimensions 1 and 2.

3. Analysis 'for' or 'of' policy (Parsons, 1995) – where focused on a particular policy:

   ■ Will the research aim to support policy implementation in real time (*analysis for policy*)? (Whether considering the technical content of the policy or experience of the actors and processes engaged in its implementation.) If so, this may demand shorter time frames and is likely to be focused on narrower research questions; or

   ■ Will the research aim to generate, from that policy's experience, a broader understanding that

can add to our general knowledge of policy development and implementation (*analysis of policy*)? If so, this will generally demand longer time frames, with a focus on the broader research questions through which the complex and dynamic trajectories of policy experience, for example, are more amenable to investigation.

4. Primary research purpose: Will the research primarily seek to explore an issue or phenomena in order to describe it or to explain it? Or will it adopt a more critical stance in generating understanding, perhaps working with other people to bring about change rather than focusing only on generating knowledge? Although these research purposes often overlap in practice, Robson (2002) identifies their different aims, see Box 5.

Table 4 Examples of HPSR questions (Source: Adapted from Potter and Subrahmanian, 1998)

	Normative/evaluative questions	**Descriptive/explanatory questions**
Questions about the policy itself	*Cell 1* Should this policy be adopted? How does policy X impact on health seeking behaviour? Which actor management strategies are likely to be most useful in supporting implementation of policy x?	*Cell 3* Which agencies are stakeholders in this policy, what positions do they take on the policy and why? How did policy X come about? Is there capacity to implement policy X? How do front line providers understand policy X?
Questions about the field	*Cell 2* Which type of health system performs best? What are the different approaches to actor management that can be considered by those seeking to manage policy change?	*Cell 4* What are patterns of health seeking behaviour and what influences that behaviour? How is the health system organized at present? What if a new provider was available, how would health seeking behaviour change and how would it affect the performance of the system overall? What influences how front line providers understand policies, and how does their understanding influence their implementation of the policy?

Note: The questions in Cell 1 are asked by those responsible for policy implementation, and essentially demand judgements, at least some of which are likely to be informed by work addressing the questions proposed in Cell 4. The questions in Cell 2, meanwhile, address what people should do, and may be informed by the 'what if' questions included in Cell 4. Finally, questions in Cell 3 encompass the areas of interest in health policy analysis, as outlined earlier: the context, history, interests and organizations that shape a particular policy.

Box 5: The purpose of different types of research

Exploratory research seeks to:
- find out what is happening, especially in little-understood situations
- generate new insights and ask questions
- assess phenomena in new light
- generate ideas and hypotheses for future research

Descriptive research seeks to:
- give an accurate profile of people, events, situations

Explanatory research seeks to:
- explain a situation or problem, traditionally, but not necessarily, in the form of a causal relationship (evaluative research)
- explain patterns relating to the phenomenon being researched
- identify and explain relationships between aspects of phenomenon/phenomena

Emancipatory research seeks to:
- create opportunities and the will to engage in social action
  - *Critical research:* Focuses on the lives and experiences of those traditionally marginalized, analysing how and why inequities are reflected in power imbalances and examining how research into inequities leads to political and social action
  - *Action research:* seeks improvements in practices, understandings of practice and situations of practice, and is undertaken by and with those who will take action

Source: Robson, 2002

The purpose of the research should reflect the current state of knowledge about the topic. Exploratory work, for example, is important when little is known about a topic or when theory suggests a new way of examining and understanding it; but descriptive research requires extensive knowledge of the situation in order to identify what is useful to investigate. However, in empirical work researchers often pursue more than one purpose at the same time (see Figure 4).

The purpose of the research will also reflect the researcher's understanding of social and political reality (see Part 1, Section 7). Positivists and critical realists tend to focus on evaluating causal relationships, based on particular forms of descriptive work. For them, therefore, explanatory questions are the same, more or less, as the evaluative questions outlined in Table 4, Cell 1; perhaps also entailing forms of descriptive work and preceded by exploratory pilot studies, or accompanied by exploratory work to support explanation.

Relativists, however, are more likely to conduct forms of exploratory, descriptive and/or explanatory research that aim to deepen our understanding of the phenomena of focus and the complex relationships among aspects of those phenomena. Sheikh et al. (2011:5) have specifically suggested that more HPSR work needs to adopt this perspective and address the "fundamental, exploratory and explanatory questions" that shape policy and provide a platform for further research. For relativists, emancipatory research also represents an important form of research – analysis for policy.

Box 6 shows how the different purposes of research translate into different basic forms of research questions.

Finally, across these different research purposes, research might address one or more of the different levels of the system (from micro, meso or macro level) and work with different (conceptual) units of analysis such as individual behaviour, patient–provider relationships, the primary health care system, the district hospital, etc.

Figure 4   Multiple research purposes
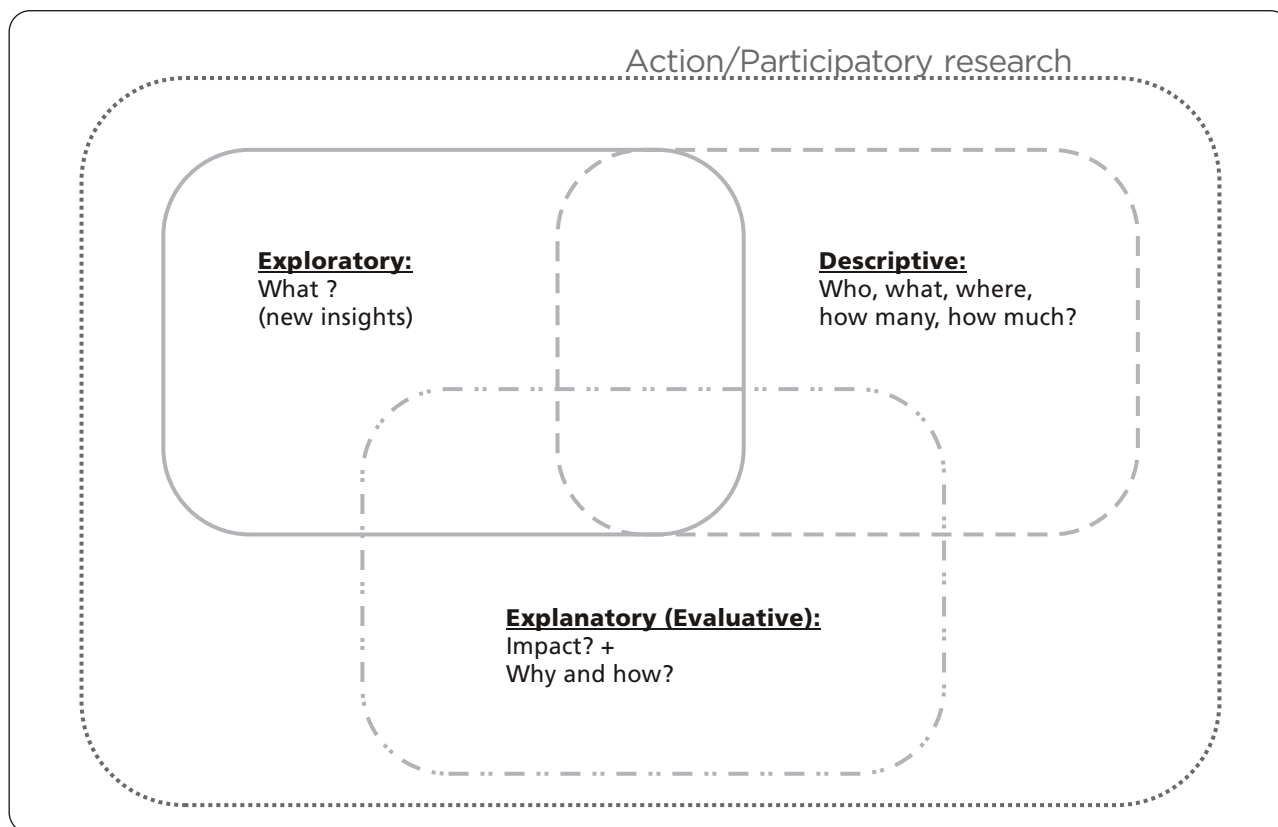
Box 6: Links between purpose and broad forms of research questions

Exploratory/descriptive questions
'What' or 'how many/much', or 'who' or 'where' questions

• What is the experience of patients with new programme x?

• What is the experience of health workers in training programme x?

• What is the understanding of patient groups or health workers about a problem or a new programme?

• To what extent are family members involved in the programme?

• Who is exposed to condition x or health risk y?

Explanatory questions
Evaluation questions

• Does programme x lead to reduced health problems from the condition addressed?

• Is programme x more effective than programme y in treating this condition?

• For which group of patients is programme x most effective?

How and why questions:

• How does programme x generate these impacts?

• Why is programme x more effective than programme y?

• Why do health workers act unexpectedly when implementing the programme?

• How do policy actors' values and beliefs influence their decision-making practices?

• Who supports and opposes new policy x, and why and how?

Taking account of multidisciplinarity

Within HPSR, different disciplinary perspectives generate different research questions on the same topic and so generate varied policy-relevant insights on the issue of focus. Therefore, on the one hand, it is important to consider the disciplinary perspective that you as a researcher bring to the topic and the type of research questions you are likely to consider. On the other hand, it may be useful to think about how to draw on other disciplinary perspectives that address the same topic.

Work on human resources, for example, may draw on economics and sociological perspectives to understand motivation; alternatively political science or organizational management perspectives may be applied to understand the decision-making of front line providers; or the work may draw on clinical insights to understand skills needs. All have policy relevance.

Therefore, Part 4 of this Reader includes papers that address particular health system functions, or building blocks, from different disciplinary perspectives (see Part 4: Table 8). Financing issues, for example, are examined using:

- policy analysis and sociological perspectives in order to understand what influences why and how particular financing policies are prioritised, developed and implemented;

- the health economics lens in order to understand what cost burdens households experience in accessing care and how they cope with these costs, and what is the impact on health of community-based health insurance.

The papers addressing leadership and governance issues draw, moreover, on:

- policy analysis to understand the influences over various experiences of policy change;

- anthropology to generate in-depth insights about decentralisation experience and explore global discourses around maternal health care provision;

- management sciences to understand the use of information in district decision-making;

- health economics to understand the impacts achieved by a particular form of community accountability; and

- an historical perspective to track the changing roles of international organizations within global health policy.

Finalizing research questions

Ultimately, good research questions (Robson, 2002), i.e. those that will drive valuable and sound research, are:

- clear – unambiguous and easily understood;

- specific – sufficiently specific to be clear about what constitutes an answer;

- answerable – clearly indicate what type of data are needed to answer the question and how the data will be collected;

- interconnected – a set of questions are related in a meaningful way and form a coherent whole;

- substantively relevant – worthwhile, non-trivial questions, worthy of the effort to be expanded in the research.

Step 2: Design the study

Once you have the research question/s, the next step is to develop the overarching design of the study: to turn the questions into a project. The overarching study design is not just a set of data collection methods. The design is comprised of the:

- purpose of the study (see Step 1)
- particular questions to be addressed (see Step 1)
- strategy for data collection and analysis
- sampling strategy
- theory to be used within the study (Robson, 2002).

The research purpose and question/s shape the research strategy. Table 5 provides examples of the different over-arching designs that are relevant for different purposes across the dominant paradigms of knowledge.

Table 5 **A summary of broad study designs** (Source: Adapted from Klopper, 2008; Potter and Subrahmanian, 1998; Yin, 2009.)

Paradigm of knowledge	Purpose	Research strategy	
		Collection of new data	*Analysis of existing data*
Positivist	Explanatory	Experimental and quasi-experimental design including, for example, before and after studies	Simple and multiple-variable modelling
	Descriptive	Survey designs: questionnaires, interviews and indirect observation; Repeated surveys to allow trend analysis over time	Secondary data analysis (census data, record data) Quantitative content analysis (newspaper reports, speeches, etc.)
	Exploratory	Survey designs (pilot studies)	
Relativist	Explanatory	Case study (theory building, longitudinal) Grounded theory (theory building)	Qualitative content analysis Discourse analysis Historical analysis
	Descriptive	Case study Ethnographic designs with the focus on unstructured direct and indirect observations, for example narrative inquiry, critical ethnography	
	Exploratory	Field designs or ethnographic designs with the emphasis on the use of informants, for example autho-ethnography, autobiography, life histories Case study (such as generating categorizations) Qualitative interviews and panels	

Research strategies can also be grouped into two main sets: fixed designs that are established before data collection and flexible designs that evolve during the study (Robson, 2002). Table 6 summarizes the key characteristics and forms of these two sets of strategies, and links them both to the standard forms of research questions for which they are appropriate and the knowledge paradigms to which they are mostly linked. It also highlights examples of common data collection methods, key principles of sampling and the primary characteristics of analysis. Note that within either strategy set, multiple methods may be used in which qualitative and quantitative data collection approaches are combined.

Table 6 Key features of fixed and flexible research strategies (Source: adapted from Robson, 2002)

	Fixed strategy	**Flexible strategy**
Characteristics	Calls for tight pre-specification before data collection Data generally numbers Often called quantitative Rarely collect qualitative data	Design evolves during data collection Data often non-numerical Often called qualitative Quantitative data may also be collected (multi-method study)
Dominant knowledge paradigm	Positivist	Critical realist Interpretivist/Social constructivist
Overarching study design types	<u>Primary data collection methods</u> Experimental Quasi-experimental Non-experimental (for example cross-sectional, before and after studies, trend analyses) <u>Secondary data analysis</u> Modelling	<u>Primary data collection methods</u> Case study Grounded Theory Ethnography Life histories Phenomenological research (qualitative interviewing) <u>Secondary data analysis</u> Historical analysis Archive analysis Discourse analysis
Forms of research question	What is impact of x? How and why? (where investigator has control over events, and existing knowledge about mechanisms involved) What (how many, how much, who, where?)	How and why? (where investigator has little control over events, or limited knowledge about mechanism involved) What (what is going on here)?
Examples of dominant data collection methods	Structured and semi-structured interviews (including open-ended questions) Routine record review	Qualitative individual interviews Focus group discussions Observation Document review
Key sampling principles	Representative of sample population	Purposive sampling guided by theory, to ensure maximum variability across relevant units
Characteristics of data analysis	Statistical analysis following predetermined rules	Iterative Interpretative

There is also a third category of research strategy: mixed-method studies, which deliberately combine elements of fixed and flexible design "to expand the scope of, and deepen the insights from, their studies" (Sandelowski, 2000). This strategy is not linked to a particular knowledge paradigm or set of methods, nor does it reflect a mix of paradigms. Instead it purposefully combines different methods of inquiry in order to capture different dimensions of the central phenomenon of focus. Mixed-method studies, thus, entail various combinations of sampling and/or data collection and/or data analysis techniques in order to:

- allow triangulation across data sets;
- enable the elaboration of results, through complementary data and analyses;
- guide the development of an inquiry by identifying additional sampling, data collection and analysis needs.

Within a study different methods may be used sequentially (at different times) or concurrently (at the same time). Examples of what a mixed-method study could entail in practice are given below.

- The research could entail an initial small-scale intensive study using qualitative methods to develop detailed understanding of a phenomenon. This would be followed by a larger-scale structured survey undertaken to generate more extensive understanding of the same phenomenon, and that uses a tool developed with the detailed understanding generated from the initial study.
- An initial structured survey, using a random sampling approach to gather knowledge around a phenomenon within one population of respondents, could provide the basis for purposeful sampling of respondents within the same population to allow more detailed inquiry and gain a deeper understanding of the results of the initial survey.
- The mixing of methods might only occur in data analysis, perhaps by interpreting different sets of study results or through converting one type of data into the other in order to allow statistical analysis of qualitative data.

However, whichever approach is used, mixed-method studies involve a focus on a particular phenomenon and a purposeful combination of methods to achieve justified goals in the context of the particular inquiry.

Using theory and conceptual frameworks to inform the study

Given the complexity of the phenomena addressed by HPSR, theory should play an important role within every study design and within both fixed and flexible research strategies. In evaluation work, for example, there is increasing acknowledgement of the importance of theory-driven inquiry in adequately addressing complex causality (de Savigny & Adam, 2009) – in both experimental or quasi experimental designs and the case study work linked to critical realist evaluation (see Part 4, 'Advances in impact evaluation'). However, currently, theory is too rarely used in HPSR and as a result policy analysis work, for example, is often quite descriptive. Opportunities for the theory-building and explanatory work that would better inform policy-making and implementation are ignored (Gilson & Raphaely, 2008; Walt et al., 2008).

In broad terms, theory provides a language for describing and explaining the social world being studied and represents a general explanation of what is going on in a situation. It offers the basis for generating hypotheses (predicted answers that can be statistically tested in fixed designs), as well as looser propositions of how different dimensions of a phenomena may be linked, which can be explored or considered in analysis (flexible designs). The 'middle range theory' represented by the latter can be captured in the form of a conceptual framework (a set of concepts and their inter-linkages) that may offer explanations or predictions of behaviour, or outcomes, but may also simply identify relevant elements and relationships.

A conceptual framework to guide study design can be developed from a review of relevant empirical and theoretical literature. The framework can help to identify relevant concepts and variables (fixed strategies) or issues (flexible strategies) for investigation, and to guide the selection of samples or cases (flexible strategies). In addition, a conceptual framework may be revised as the data collected are analysed. Alternatively, it may be generated as a result of the data analysis process.

In either case, the conceptual framework can be put back into the public domain to be questioned and perhaps used to support future research. Such theory building is a process of knowledge generation.

Therefore, HPSR is not solely concerned with generating empirical evidence to inform policy decisions. Rather, HPSR can combine theoretical and empirical work or be primarily theoretical and still maintain its policy relevance.

Combined theoretical and empirical work has, for example, aided understanding of the norms and customs influencing the decision-making of health system actors in particular contexts (such as Riewpaiboon et al., 2005; Sheikh and Porter, 2010). It has also traced the patterns and influences over time of policy change across sub-national, national and global levels (for example Walt, Lush & Ogden, 2004). Theory-driven evaluation, meanwhile, supports research that seeks to explain *how* new policies and interventions influence health system operations (Marchal, Dedzo & Kegels, 2010). Combined theoretical and empirical work can also generate ideas about how to influence policy agendas (for example Shiffman, 2007: advocacy in agenda setting) or manage policy change (for example Walker & Gilson, 2004: managing front line providers acting as street-level bureaucrats). Such ideas have relevance beyond the original settings in which the research was conducted.

Purely theoretical research can also lead to new ways to describe the nature and organization of health systems, or what influences their performance, and to understand what drives particular policy actors in their decision-making (for example Bloom, Standing & Lloyd, 2008 (plural health systems); de Savigny & Adam, 2009 (systems thinking); Gilson, 2003 (trust and health systems); Kutzin, 2001 (financing); Mackian, Bedri & Lovel, 2004 (health seeking behaviour)). Through such work HPSR informs policy by expanding our understanding of what strengthening a health system involves, and identifies research questions for empirical investigation.

Part 3 of the Reader presents references to some conceptual frameworks that are valuable in HPSR.

Step 3: Ensure research quality and rigour

The criteria used to make judgements of research quality and rigour differ between paradigms of knowledge. Whereas positivist research emphasizes validity and reliability – ensured through careful study design, tool development, data collection and appropriate statistical analysis – relativist research considers the trustworthiness of the analysis – whether it is widely recognized to have value beyond the particular examples considered. The different criteria and questions used in assessing the quality of research based on fixed and flexible designs are summarized in Table 7. Table 8 indicates how trustworthiness can be established by providing information on study design, data collection, and the processes of data analysis and interpretation.

Ultimately, good quality HPSR always requires a critical and questioning approach founded on four key processes (Gilson et al., 2011):

- *An active process of questioning and checking during the inquiry* (Thomas, 1998): ask how and why things happened – not only what happened; check answers to questions to identify additional issues that need to be followed up in order to deepen understanding of the experience.

- *A constant process of conceptualizing and reconceptualizing* (Thomas, 1998): Use ideas and theory to develop an initial understanding of the problem, or situation of focus, in order to guide data collection but use the data collected to challenge those ideas and assumptions and, when necessary, to revise your ideas in response to the evidence.

- *Crafting interpretive judgements* (Henning, 2004) based on enough evidence, particularly about context, to justify the conclusions drawn as well as deliberate consideration of contradictory evidence (negative case analysis) and review of initial interpretations by respondents (member checking).

- *Researcher reflexivity*: be explicit about how your own assumptions may influence your interpretation and test the assumptions in analysis (Green & Thorogood, 2009).

Table 7 Criteria and questions for assessing research quality (Source: adapted from Robson, 2002)

Fixed designs	Flexible designs
Reliability: Is your variable measure reliable? Construct validity: Are you measuring what you think you are measuring? Internal validity: Does the study plausibly demonstrate a causal relationship? External validity: Are the findings statistically generalizable?	Confirmability: Do the data confirm the general findings and lead to their implications? Dependability: Was the research process logical and well documented? Credibility: Is there a match between participants' views and the researcher's reconstruction of them? Transferability: Do the findings generate insights that are transferable to other settings?

Table 8 Processes for ensuring rigour in case study and qualitative data collection and analysis (Source: Gilson et al., 2011)

Principle	Example: A study of the influence of trust in workplace relationships over health worker motivation and performance, involving in-depth inquiry in four case studies (Gilson et al., 2004)
Prolonged engagement with the subject of inquiry Although ethnographers may spend years in the field, HPSR tends to draw on lengthy and perhaps repeated interviews with respondents, and/or days and weeks of engagement within a case study site	*Case study:* A period of three to four weeks spent in each case study facility *Respondents* Informal engagement & repeated formal interviews
Use of theory To guide sample selection, data collection and analysis, and to draw into interpretive analysis	Conceptual framework derived from previous work (Gilson et al., 2005) Case study selection based on assumptions drawn from framework (see below) Theory used in triangulation and negative case analysis (see below)
Case selection Purposive selection to allow prior theory and initial assumptions to be tested or to examine 'average' or unusual experience	Four primary health care facilities: two pairs of facility types, & in each pair one well and one poorly performing as judged by managers using data on utilization and tacit knowledge (to test assumptions that staff in 'well performing' facilities have higher levels of motivation and workplace trust)
Sampling Of people, places, times etc, initially, to include as many as possible of the factors that might influence the behaviour of those people central to the topic of focus (subsequently extend in the light of early findings) Gather views from wide range of perspectives and respondents rather than letting one viewpoint dominate	In small case study facilities, sampled all available staff; in larger facilities for interviews: sampled staff of all groupings and with a range of staff in each group (considering e.g. age, sex, length of time in facility); random sample of patients visiting each facility; all facility supervisors & area manager
Multiple methods (case studies) Use multiple methods for case studies	*For each case study site:* Two sets of formal interviews with all sampled staff Researcher observation & informal discussion Interviews with patients Interviews with facility supervisors and area managers

Table 8 **(Continued) Processes for ensuring rigour in case study and qualitative data collection and analysis** (Source: Gilson et al., 2011)

Principle	Example: A study of the influence of trust in workplace relationships over health worker motivation and performance, involving in-depth inquiry in four case studies (Gilson et al., 2004)
Triangulation Looking for patterns of convergence by comparing results across multiple sources of evidence (e.g. across interviewees, and between interview and other data), between researchers, across methodological approaches, with theory	*Within cases:* Initial case reports based on triangulation across all data sets for that case (and across analysts in terms of individual staff members' experience), generating overall judgments about facility-wide experience as well as noting variation in individual health worker experience *Cross-cases:* Initial case reports compared with each other to look for common and different experiences across cases, and also compared with theory to look for convergence or divergence
Negative case analysis Looking for evidence that contradicts your explanations and theory, and refining them in response to this evidence	*Within cases:* Triangulation across data identified experiences that contradicted initial assumptions (e.g. about the influence of community interactions over motivation, and about the association between low motivation and poor caring behaviour), and identified unexpected influences (e.g. a general sense of powerlessness among health workers) *Cross-cases:* Cross-site analysis identified facility-level experience that contradicted initial assumptions underpinning study (e.g. about link between high levels of workplace trust, strong health worker motivation and positive caring behaviour), and identified unexpected conclusions (e.g. about the critical importance of facility level management over trust and motivation) Report notes weak evidence to support links between levels of workplace trust and client perceptions, but also stronger evidence of links between levels of workplace trust and motivation
Peer debriefing and support Review of findings and reports by other researchers	Preliminary case study reports initially reviewed by other members of the research team
Respondent validation (Member checking) Review of findings and reports by respondents	Preliminary cross-case analysis fed back for review and comment to study respondents; feedback incorporated into final reports
Clear report of methods of data collection and analysis (Audit trail) Keeping a full record of activities that can be opened to others and presenting a full account of how methods evolved to the research audience	Report provides clear outline of methods and analysis steps as implemented in practice (although more could be fuller and reflexive)

Step 4: Apply ethical principles

As with all research, it is important to take account of ethical issues in conducting HPSR. Although the focus of the research differs from other health research, there are always issues of power at play between those doing the research and those being researched, and so there is real potential for disrespectful and unfair treatment. Robson (2002) suggests that all 'real world researchers' need to watch out for the following ten questionable ethical practices:

■ involving people without consent

■ coercing them to participate

■ withholding information about true nature of the research

■ otherwise deceiving participants

■ inducing participants to commit acts diminishing of their self-esteem

■ violating rights of self-determination

■ exposing participants to physical or mental stress

■ invading privacy

■ withholding benefits from some participants

■ not treating participants fairly or with respect.

These are similar to the concerns of all health research. The challenges may be particularly acute in cross-cultural research, such as when HPSR is undertaken in lower-income countries by researchers or others from higher-income settings (Molyneux et al., 2009). Thus, one of the eight ethical principles proposed by Emanuel et al. (2004) for clinical research is collaborative partnership between investigators and research sponsors in higher-income countries and researchers, policy-makers and communities in lower-income countries (see Box 7).

However, as HPSR differs in nature from medical research, there are some particular ethical debates in, and peculiar ethical challenges for, this area of work. From reflection on the experience of conducting household-level HPSR studies in different countries, for example, Molyneux et al. (2009) make the following four sets of proposals on how to implement the principles of Box 7 in this form of research.

Be concerned about safeguarding:

1. the scientific validity and trustworthiness of the data – through careful and deliberate training for all research staff, including fieldworkers, to equip them with the attitudes and communication skills necessary to conduct good quality interviews and get beyond their differences in race, class, nationality, gender or education with respondents; and treatment of field-workers as true partners in the research inquiry, recognizing their essential role in shaping the nature and quality of data.

2. social value and a favourable risk–benefit ratio of the study – by careful consideration of the individual and community-level risks and benefits of participation in the study, through engagement with a range of stakeholders at the start of the study and constant review and reflection during the study.

3. informed consent and respect for participants and communities – by ensuring that all team members are familiar with the study's key messages and can call for assistance when unexpected ethical issues arise; are able to, and do, demonstrate respect for participants in all their engagements with communities; and re-negotiate relationships as and when necessary rather than concentrate efforts only on formal consent procedures (which may be infeasible in an HPSR study or impact negatively on the relationships with study participants that are essential to gathering honest information).

4. independent review – by supporting ethics committees to pay particular attention to the proposed process of research and interactions among different actors within HPSR work, rather than primarily examining study design and tools.

Ultimately, however, "the social relationships established between researchers and field-teams and community members, are critical to fulfilling the moral (as opposed to legal) aspects of ethics guidelines" (Molyneux et al., 2009:324). Such relationships will always be important in HPSR, whether the interviewees are community members or policy elites.

Box 7: Eight ethical principles for clinical research in low- and middle-income countries

- Collaborative partnership
- Scientific validity
- Favourable risk-benefit ratio
- Informed consent

- Social value
- Fair selection of study population
- Independent review
- Respect for recruited participants and study communities

Source: Emanuel et al., 2004

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Part 3

Understanding Health Policy
and Systems

As indicated in Part 1 of this Reader, a defining characteristic of Health Policy and Systems Research (HPSR) is that it focuses on issues or problems related to health policy and health systems rather than, for example, exploring particular disciplinary questions or perspectives. In other words, it is the research question, or issue of focus, that guides the research.

This section of the reader presents key references to two sets of papers that support HPSR by providing conceptual frameworks that can inform our understanding of issues related to health policy and systems.

Health system frameworks

These references give insight and understanding about the nature of health systems.

Two key references

Bloom G, Standing H, Lloyd R (2008). Markets, information asymmetry and health care: Towards new social contracts. *Social Science & Medicine,* 66(10): 2076–2087

- which recognizes the plurality of health systems (i.e. the variety of providers that comprise health systems) and the importance of understanding their institutional dynamics.

de Savigny D et al. (2009). Systems thinking: What it is and what it means for health systems. In: de Savigny D, Adam T, eds. *Systems thinking for health systems strengthening.* Geneva, World Health Organization: 37–48. Available at: http://www.who.int/alliance-hpsr/resources/ 9789241563895/en/index.html

- which is the most recent and more nuanced version of the World Health Organization's building blocks approach to health systems (which focuses on the six functions of service delivery, health workforce, information, medical products, vaccines and technologies, financing, leadership/governance) - this work also seeks to understand health systems from the perspective of systems thinking.

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- *Rationale for selection:* Draws on system thinking perspectives.

Frenk J (2010). The Global Health System: strengthening national health systems as the next step for global progress. *PLoS Medicine,* 7(1):1–3. Available at: http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000089

- Rationale for selection: A succinct statement of current thinking by a world leader in the field.

World Health Organization (2007). *Everybody's business: Strengthening health systems to improve health outcomes: WHO's framework for action.* Geneva, World Health Organization:iv–vii, 1–30. Available at: http://www.who.int/entity/healthsystems/strategy/everybodys_business.pdf

- *Rationale for selection:* This is the most recent statement of the influential World Health Organization framework.

Conceptual frameworks for HPSR

These references provide a range of conceptual frameworks that can be used to guide careful and systematic investigation of health policy and health systems' issues, and so lead to a deeper understanding of their complexity.

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Bossert T (1998). Analyzing the decentralization of health systems in developing countries: decision space, innovation and performance. *Social Science & Medicine,* 47(10):1513–1527.
http://dx.doi.org/10.1016/S0277-9536(98)00234-2

■ *Rationale for selection:* conceptual framework for understanding and investigating health system from decision-making authority perspective

Brinkerhoff D (2004). Accountability and health systems: toward conceptual clarity and policy relevance. *Health Policy and Planning*, 19(6):371–379.
http://dx.doi.org/10.1093/heapol/czh052

■ *Rationale for selection:* conceptual framework for understanding & investigating accountability issues, central to governance

Franco LM, Bennett S, Kanfer R (2002). Health sector reform and public sector health worker motivation: a conceptual framework. *Social Science & Medicine,* 54(8):1255–1266.
http://dx.doi.org/10.1016/S0277-9536(01)00094-6

■ *Rationale for selection:* conceptual framework for understanding and investigating HR motivation and performance

Gilson L (2003). Trust and health care as a social institution. *Social Science & Medicine,* 56(67):1452 –1468.
http://dx.doi.org/10.1016/S0277-9536(02)00142-9

■ *Rationale for selection:* highlights the importance of relationships within health systems and the institutional influences over them, and specifically trust; provides concepts for understanding the nature and role of trust in health systems

Kutzin J (2001). A descriptive framework for country-level analysis of health care financing arrangements. *Health Policy,* 56(3):171–204.
http://dx.doi.org/10.1016/S0168-8510(00)00149-4

■ *Rationale for selection:* conceptual framework for understanding and investigating financing issues as part of wider system

Vian T (2007). Review of corruption in the health sector: theory, methods and interventions. *Health Policy and Planning,* 23(2):83–94.
http://dx.doi.org/10.1093/heapol/czm048

■ *Rationale for selection:* conceptual framework for understanding and investigating corruption, central to governance

Walt G, Gilson L (1994). Reforming the health sector in developing countries: the central role of policy analysis. *Health Policy and Planning,* 9(4):353–370.
http://dx.doi.org/10.1093/heapol/9.4.353

■ *Rationale for selection:* simple heuristic for understanding influences over policy decision-making, that is widely used to guide related research

Part 4

Empirical Papers

The papers presented in this part of the Reader are examples of good quality and innovative research in the field of health policy and systems.

Overview: research strategies and papers

Doing good quality Health Policy and Systems Research (HPSR) demands an understanding of what research strategy is appropriate to the questions of focus. The strategy is neither primarily a study design nor a method, but instead represents an overarching approach to conducting the research that considers the most appropriate methods of data collection and sampling strategy for the research purpose and questions.

The papers provided here are grouped by research strategy in order to encourage critical and creative thinking about the nature and approach of HPSR, and to stimulate new research that goes beyond the often quite descriptive cross-sectional analyses that form the bulk of currently published work in the field. The research strategies were chosen to demonstrate the breadth of HPSR work, covering both dominant and emerging approaches in the field. They are:

1. Cross-sectional perspectives
2. The case-study approach
3. The ethnographic lens
4. Advances in impact evaluation
5. Investigating policy and system change over time
6. Cross-national analysis
7. Action research

The introduction to each group of papers includes:

■ an overview of the research strategy or approach, its relevance to HPSR and brief clarification about how to ensure rigour when conducting such research;

■ a brief description or overview of the selected papers;

■ a summary of papers with reference details, focus of the study, the perspective it takes, and the rationale for its selection in the Reader.

A summary of the papers is given in Table 9.

Table 9 Overview of papers presented

Page no	Paper	System function(s) of focus	Policy/System level addressed	Disciplinary perspective (or key approach)	Key features	Country
	1. CROSS-SECTIONAL PERSPECTIVES					
75	Blauuw et al., 2010	Human resources (incentive packages)	Micro: Health workers	Health economics	• Use of discrete choice experiments and economic evaluation • Example of analysis for policy	Multi-country
83	Glassman et al., 1999	Governance and financing (policy change, health systems reform)	Macro: National	Policy analysis	• Application of 'policy-maker' in analysis • Example of analysis for policy	Dominican Republic
95	Morrow et al., 2009	Service delivery (malaria control)	Meso and micro: Primary level/community	Public health	• Mixed-method study • Considers both demand and supply issues	Viet Nam
105	Ramanadhan et al., 2010	Human resources (capacity development)	Micro: Health workers	(Social network analysis)	• Use of network analysis and exploration of social capital issues	Ethiopia
116	Ranson, Jayaswal & Mills, 2011	Financing (household expenditures)	Micro: Households	Health economics	• Sequential use of methods in mixed-method study	India
129	Riewpaiboon et al., 2005	Service delivery (provider – patient interactions, obstetric care)	Micro: Hospital and individual	Sociology/Anthropology	• Theory building • Examination of institutions of health system	Thailand
139	Rwashana, Williams & Neema, 2009	Vaccines and service delivery (immunization programme, nested in health system)	Macro: System	(Systems thinking)	• Rare example of use of systems thinking	Uganda
152	Sheikh & Porter, 2010	Governance and service delivery (HIV clinical guideline implementation)	Micro: Individual	Policy analysis	• Detailed and theory-driven examination of decision-making	India

Page no	Paper	System function(s) of focus	Policy/System level addressed	Disciplinary perspective (or key approach)	Key features	Country
2. THE CASE STUDY APPROACH						
166	Atkinson et al., 2000	Governance (decentralization)	Meso: Districts and facilities	Anthropology	• Districts as cases • Theory building • Examination of complex causality	Brazil
	Murray & Elston, 2005	Financing (private insurance)	Cross-level	Sociology	• Integrated analysis of policy change across system layers	Chile
184	Mutemwa, 2005	Health information and governance (decision-making at district level)	Meso: District	Management	• Exploratory case analysis	Zambia
197	Rolfe et al., 2008	Human resources (private sector)	Meso: District and facility	Sociology	• Strong example of analysis in case study work • Analysis for policy	United Republic of Tanzania
210	Russell & Gilson, 2006	Financing (household expenditure)	Micro: Households	Development economics	• Use of longitudinal household cases • Examination of complex causality	Sri Lanka
223	Shiffman, Stanton & Salazar, 2004	Governance (policy change, Safe Mother-hood Initiative)	Macro: National/global	Policy analysis	• Use of theory and generation of questions from analysis	Honduras
3. THE ETHNOGRAPHIC LENS						
	Aitken, 1994	Human resources (training programmes)	Micro: Health workers	Anthropology/Sociology	• Theory building	Nepal
239	Behague & Storeng, 2008	Governance and service delivery (debates about approaches to maternal health care provision, and evidence-based policy-making)	Macro: Global debates	Anthropology/Sociology	• Discourse analysis	N/A

Page no	Paper	System function(s) of focus	Policy/System level addressed	Disciplinary perspective (or key approach)	Key features	Country
3. THE ETHNOGRAPHIC LENS (CONTINUED)						
	George, 2009	Human resources and governance (management, accountability)	Micro: Health worker–supervisor interactions and influences	Anthropology/Sociology	• Rich analysis of key health system functions	India
245	Lewin & Green, 2009	Service delivery (primary care clinic)	Micro: Clinic, provider–patient interactions	Anthropology/Sociology	• Use of concepts • Programme and facility focus	South Africa
4. ADVANCES IN IMPACT EVALUATION						
257	Björkman & Svensson, 2009	Governance (community accountability mechanism)	Meso: Facility/community	Health economics	• Quasi experimental evaluation • Unusual focus for this evaluation approach	Uganda
292	Macinko et al., 2007	Service delivery (primary care model)	Macro: National	Epidemiology	• Ecological analysis using available panel data	Brazil
303	Marchal, Dedzo & Kegels, 2010	Human resources (management)	Meso: Facility	*(Policy evaluation/ Critical realism)*	• Rare example of critical realist evaluation	Ghana
	Wang et al., 2009	Financing (community-based health insurance)	Micro: Household	Health economics	• Unusual quasi-experimental evaluation, using propensity matching scores	China
5. INVESTIGATING POLICY AND SYSTEM CHANGE OVER TIME						
320	Brown, Cueto & Fee, 2006	Governance (global organizations and discourse)	Macro: Global	History	• Historical analysis • Global organization focus	N/A
331	Crichton, 2008	Governance and service delivery (policy change, family planning)	Macro: National	Policy analysis	• Use of theory	Kenya
343	Masanja et al., 2008	Service delivery (child mortality trends and explanations)	Macro: System	Epidemiology	• Rich trend analysis with explanation around system development	United Republic of Tanzania

Page no	Paper	System function(s) of focus	Policy/System level addressed	Disciplinary perspective (or key approach)	Key features	Country
5. INVESTIGATING POLICY AND SYSTEM CHANGE OVER TIME (CONTINUED)						
351	Van Ginneken, Lewin & Berridge, 2010	Human resources (community health workers)	Macro: National	History	• Historical analysis • Unusual use of witness seminars	South Africa
6. CROSS-NATIONAL ANALYSIS						
363	Bryce et al., 2005	Service delivery (Integrated Management of Childhood Illness approach)	Meso: Districts and facilities	Epidemiology	• Seminal paper • Careful system evaluation	Multi-country
369	Gilson et al., 2001	Governance and financing (implementing policy change, Bamako Initiative community financing schemes)	Cross-level	Policy analysis	• Conceptual framework used to guide study • Opportunistic country cases selected • Explanatory focus	Multi-country
400	Lee et al., 1998	Governance and service delivery (sustaining family planning policy implementation)	Macro: National	Policy analysis	• Deliberate country cases selected • Careful analysis • Explanatory focus	Multi-country
411	O'Donnell et al., 2007	Financing (public spending incidence)	Macro: National	Health economics	• Rigorous cross-country analysis, with explanation	Multi-country
7. ACTION RESEARCH						
445	Khresheh & Barclay, 2007	Health Information (hospital records system)	Meso: Hospital	Action research	• Rare application of research strategy	Jordan
461	Khresheh & Barclay, 2008	Health Information (hospital records system)	Meso: Hospital	Action research	• Account of action research	Jordan

1. Cross-sectional perspectives

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Cross-sectional studies may seek to explore, describe or explain a phenomenon at a particular moment in time (see Part 2: Step 2 of this Reader). This distinguishes them from longitudinal and other studies which describe or analyse change over time, and experimental studies which involve interventions. As cross-sectional studies generally require fewer resources than other research strategies, they are the most frequently performed and reported type of research in HPSR.

Cross-sectional studies encompass a wide universe of disciplinary perspectives and methods from both the fixed and flexible research traditions. They range from single to mixed (quantitative and qualitative) and multi-method forms of data collection (when the phasing of fixed and flexible research designs allows triangulation from one data collection approach to inform the other and epistemiological triangulation, as well as use of secondary data sources). While mixed-method cross-sectional studies may share features of the case study method they do not necessarily follow the same analytic procedures.

As also noted in Part 2: Step 2, HPSR mixed-method studies serve a number of purposes (Pope & Mays, 2009):

- In the process of tool design, qualitative interviews may precede the development of quantitative instruments, in instances where standardized tools may not exist or the context specificity of the phenomenon requires tailored approaches.
- A quantitative survey may be conducted to provide a sampling frame to select cases for qualitative study.

- To extend the analysis and interpretation, different studies may be triangulated to provide different perspectives on the same question or may answer different kinds of questions (for example 'what' versus 'why' questions).

Depending on the purpose, data collection in mixed-method studies can be either concurrent or sequential (Creswell & Plano-Clark, 2007).

The findings of such studies often involve what can be described as a 'bricolage', a "pieced together close-knit set of practices that provide solutions to a problem in a concrete situation" (Denzin & Lincoln, 1998:3). The study components provide different insights into a phenomenon and are combined as pieces in a puzzle to explain the phenomenon of focus.

Rigour in cross-sectional studies

As with other research strategies, research validity/ trustworthiness and reliability are important in cross sectional studies, whether from the fixed or flexible traditions. Such concerns are especially important in HPSR seeking to shed light on the complex dynamics and relationships between system actors and dimensions (see Part 2: Step 1).

The validity of cross-sectional studies may be undermined by (Robson, 2002:171):

- inadequate or insufficient description of a phenomenon;
- problematic interpretation through selective use of, or inappropriate meanings imposed on, data;
- explanations drawn without considering alternatives or 'counterfactuals';
- failure to draw on existing concepts and theory in the literature.

The validity of cross-sectional studies can be enhanced by (Pope & Mays, 2009):

- triangulation of data, observers, methodological approaches, and with theory;
- member checking (asking respondents to validate the findings and analysis);

- clear description of methods of data collection and analysis;

- reflexivity by the author (reflecting on how their own personal or intellectual biases may have influenced the study and analysis);

- attention to, and discussion of, negative cases (incidents or experiences that are unusual in terms of the dominant pattern of findings and the possible explanations of which are then specifically discussed in analysis to clarify their implications for the broader set of findings).

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Denzin NK, Lincoln YS (1998). Introduction: Entering the field of qualitative research. In: Denzin NK, Lincoln YS, eds. *Collecting and interpreting qualitative materials*. Thousand Oaks, California, Sage Publications:1–34.

Pope C, Mays N (2009). Critical reflections on the rise of qualitative research (research methods and reporting). *British Medical Journal,* 339(b3425):737–739.

Robson C (2002). Real world research: *A resource for social scientists and practitioner-researchers,* 2nd ed. Oxford, Blackwell Publishing.

Overview of selected papers

For this Reader we have specifically selected cross-sectional studies which demonstrate data collection or analytic techniques that go beyond the most commonly used approaches of key informant interviews or straight-forward content analysis. The selection includes examples of:

- discrete choice experiments (DCEs), derived from the economic theory of demand, examining nurses' preferences for policy interventions that would attract them to rural areas in three countries (Blaauw et al., 2010) – this innovative study also shows the context specificity of health policy and systems interventions and offers guidance for policy-makers;

- the use of PolicyMaker, a computer-assisted political analysis tool to study health policy reform in the Dominican Republic and draw out guidance for policy-makers (Glassman et al., 1999);

- a multi-method study that includes observations, use of routine data and multi-stakeholder interviews to construct a model of the demand and supply side dimensions of poor malaria control in Viet Nam (Morrow et al., 2009);

- the application of social network analysis, an unusual and interesting analytic approach for HPSR, to evaluate the impact of health management training in Ethiopia (Ramanadhan et al., 2010);

- a mixed-method study in which qualitative and quantitative methods are used sequentially to examine the coping strategies used by households to manage the costs of hospital inpatient care in India (Ranson, Jayaswal & Mills, 2011);

- building explanatory frameworks for the choice of public or private obstetric care provider among women of different socio-economic status in Thailand, informed by trust theory (Riewpaiboon et al., 2005) – this study also illustrates the approach and value of theory building in HPSR;

- the use of systems theory to explain uptake of immunization in Uganda, drawing on causal loop diagram methodology to model the relationships in a complex system (Rwashana, Williams & Neema, 2009);

- the use of detailed interpretive analysis in a study of how policy actors' understandings influence HIV policy implementation in India (Sheikh & Porter, 2010).

Some of the different purposes of mixed or multi-method approaches are highlighted in two of these papers. Ranson, Jayaswal & Mills (2011) report a study in which focus group discussions were conducted to develop a closed-ended survey tool. The survey, in turn, identified a group of poorer patients for further in-depth interview. The study reported by Morrow et al. (2009), meanwhile, involved 17 different forms of data collection, sequenced in a 'formative' stage that assisted in the design of a subsequent 'assessment' phase. The paper draws together data, like pieces of a puzzle, to present an explanatory model of the systems and social (non-biological) factors underlying pockets of poor malaria control.

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Policy interventions that attract nurses to rural areas: a multicountry discrete choice experiment

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Objective To evaluate the relative effectiveness of different policies in attracting nurses to rural areas in Kenya, South Africa and Thailand using data from a discrete choice experiment (DCE).

Methods A labelled DCE was designed to model the relative effectiveness of both financial and non-financial strategies designed to attract nurses to rural areas. Data were collected from over 300 graduating nursing students in each country. Mixed logit models were used for analysis and to predict the uptake of rural posts under different incentive combinations.

Findings Nurses' preferences for different human resource policy interventions varied significantly between the three countries. In Kenya and South Africa, better educational opportunities or rural allowances would be most effective in increasing the uptake of rural posts, while in Thailand better health insurance coverage would have the greatest impact.

Conclusion DCEs can be designed to help policy-makers choose more effective interventions to address staff shortages in rural areas. Intervention packages tailored to local conditions are more likely to be effective than standardized global approaches.

Une traduction en français de ce résumé figure à la fin de l'article.   Al final del artículo se facilita una traducción al español.   الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة.

Introduction

The shortage of health workers in the areas where they are most needed is an important problem for health systems. Patients who have the greatest need for health care tend to live in remote and rural areas, but attracting skilled health workers to such areas and retaining them there has proved difficult.[1] Such an uneven distribution of health workers contributes directly to the global burden of ill health and inequity in health outcomes. Thus, it will not be possible to improve health outcomes globally unless more health professionals are attracted to work in rural and remote areas.[2]

The factors that often motivate health workers to stay in remote areas have been extensively studied.[3–5] Several strategies have been proposed to address the problem, including changing student selection criteria; improving educational opportunities for workers; introducing financial incentives; creating more supportive working environments; and making it compulsory for health professionals to work in underserved areas.[6,7] However, the potential impact of these policy interventions, either singly or in combination, remains undetermined. Recent systematic reviews have invariably concluded that few rigorous studies evaluating the impact of rural recruitment and retention strategies have been conducted.[3,6–9] In the Cochrane review,[6] for example, not a single controlled study met the inclusion criteria.

What is needed is more evidence, not more reviews, yet just how such new evidence will be generated remains unclear, particularly for low- and middle-income countries. Evaluating the effectiveness of human resource interventions is not the same as testing a drug for efficacy. Many human resource strategies require national policy changes and few are amenable to controlled studies.[10] Governments and donors should be encouraged to introduce human resource interventions under more controlled conditions that allow proper evaluation, but previous calls to strengthen the monitoring and evaluation of health reforms in low- and middle-income countries have had little impact.[11]

In addition, statistically significant evidence of impact in well controlled trials may not be sufficient for informing practical policy decisions. The results of many human resource strategies are, in some measure, self-evident. Rural financial incentives are likely to improve rural recruitment and retention, but the critical questions are how much money is required to achieve a certain impact and how do financial strategies compare to other policy options, either individually or in combination. The answers to these questions will certainly vary between settings. What policy-makers actually need is information on the relative impact and cost-effectiveness of different packages of human resource interventions in a variety of contexts. Rigorous evaluation methods to answer such questions are not currently available.

In the meantime, more modelling studies could be carried out to determine the probable outcomes of different policy scenarios. Stated preference discrete choice experiments (DCEs) are a promising method for conducting human resource research in low- and middle-income countries.[12] They are a quantitative technique for evaluating the relative influence of different product attributes on consumer choices[13] and have come to be used widely in health services research, primarily to assess patients' preferences and willingness to pay for different models of health service delivery.[14–16] However, DCEs have been used in recent studies to assess the relative importance of different factors on health workers' job choices.[17–19]

The objective of this study was to use data from a DCE to model the relative effectiveness of different policy interventions on the recruitment of nurses to rural areas in three different countries.

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Methods

This study was conducted in Kenya, South Africa and Thailand, all three of which have documented shortages of professional health workers in rural areas. Kenya is typical of low-income countries with poor health outcomes, has limited financial and human resources for health, and is largely dependent on donors for new human resource policy interventions.[20] South Africa and Thailand are both middle-income countries with higher per capita health expenditure, sufficient numbers of skilled health workers, and demonstrated capacity to implement policies that make it attractive or compulsory for health professionals to work in rural areas,[21,22] but they differ in terms of health outcomes. A comparison of key indicators in the three countries is shown in Table 1 (available at: http://www.who.int/bulletin/volumes/88/5/09-072918).

This DCE was part of baseline data collection for a larger longitudinal cohort study we are conducting with recent nursing graduates in the three countries. In accordance with the usual practice in DCE studies,[13,17] we estimated that a minimum sample of 300 subjects was needed to allow for sub-group analysis. We used a multi-stage stratified cluster sampling strategy. Provinces were purposely selected from rural and urban strata, and nursing colleges were subsequently selected from each province until the required sample size was achieved. All students nearing the end of their training as professional nurses at the selected colleges were invited to participate in the cohort study. Data collection was completed during 2008.

For the DCE we used a labelled choice design with two choices in each choice set. In a labelled experiment the options presented have specific labels, in this case *rural job* and *urban job*, whereas in an unlabelled or generic design the options are simply labelled *job A* and *job B*. Unlabelled designs are used to determine the value of attributes that are assumed to be generic, while labelled designs produce alternative-specific valuations. Most of the DCE studies in the health economics literature have used generic designs. We had several reasons for using labelled choices. First, we suspected that particular job characteristics were not valued to the same degree in rural versus urban jobs (better housing, for instance, appears to be more highly valued when considering a rural posting rather than an urban one).

Second, labelled choices allowed us to design a model with different attribute levels for the two choices (for instance, the financial incentive applied only to rural jobs). Third, a labelled design allowed for more sophisticated modelling of the impact of policy interventions on nurses' choice of a rural posting.

In finalizing the DCE tool we followed the standard recommended steps for ensuring rigour.[24] We began by identifying the attributes and levels to be included in the study. Our explicit intention was to focus on job characteristics influencing rural choices that were amenable to policy intervention and to test their likely impact in different country contexts. To inform the selection of policy options to be included, we reviewed the international literature and conducted preparatory qualitative work in each country, as summarized in Table 2 (available at: http://www.who.int/bulletin/volumes/88/5/09-072918).

Next we completed several iterations of design development and consultation across the three countries to arrive at a similar design that allowed comparisons but also addressed local specificities. Pilot studies were then conducted in each country, and this resulted in further design refinements (Table 2). Table 3 summarizes the final design used in each country. The policy options we evaluated were:

- the introduction of a financial rural allowance, using relative salary increases to facilitate cross-country comparisons;
- the provision of better housing facilities;
- preferential opportunities for specialist training;
- faster rank promotion;
- the provision of a benefit package that differed in each country; and
- a change in workplace culture from hierarchical to relational management.

Facility type was also included in the design because it was identified as an important determinant of health workers' choices. The financial incentive had four levels to allow for the evaluation of nonlinear effects, while all the other attributes had two levels (Table 3). This specification resulted in a design with 8192 (i.e. $2^{11} \times 4^1$) possible combinations of attributes and levels. We used DCE macros for SAS (SAS, Cary, NC, United States of America) to select combinations for an orthogonal main effects design, and then to organize the selected profiles into

the most D-efficient choice design, given our design parameters.[25] The final design had 16 choice sets. The DCE tool was administered in English in Kenya and South Africa and in Thai in Thailand.

Baseline data collection was conducted with final year nursing students in a classroom setting. We explained the DCE questionnaire to the group, whose members then completed it on their own. Students also completed a second questionnaire with basic demographic information. In each college we also held a focus group discussion that included feedback on the DCE questionnaire (Table 2).

Data from the DCE were entered, cleaned and analysed using STATA v9.0 (Stata Corp., College Station, TX, USA) and Nlogit version 4.0 (Econometric Software, Inc., Plainview, NY, USA). The basic analysis was performed with a multinomial logit model. For the cross-country comparison we used both country-specific and pooled models. Analysis of pooled DCE data using a multinomial logit model is problematic because the model's coefficients are confounded with the scale parameter (λ), which is inversely proportional to the error variance of the model.[13,26] This complicates comparisons between data sets, since observed differences in coefficients may be scale (variance) effects rather than real differences. The problem is well known for analyses that combine revealed and stated preference data[27] and requires more complex statistical modelling.[28] Following Rose et al.[29] we used an error components mixed logit model for the analysis and the Chow test to formally test differences between coefficients.[30] Odds ratios (ORs) and their confidence intervals (CIs) were used to compare the relative importance of attributes, while the preferences of different subgroups were evaluated by including interaction terms in the regression models. Finally, the results of the mixed logit models were used to predict the effect of different attribute (policy) changes on the proportion of nurses choosing a rural job.

National and international ethical standards were maintained throughout the research project. The research protocol was reviewed by the ethics committees of the academic institutions of the researchers in Kenya, South Africa, Thailand and the United Kingdom of Great Britain and Northern Ireland. Permission to conduct the research was also obtained from the relevant governmental and educational authorities in each country.

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Results

Of the 1429 eligible nursing graduates in the selected colleges, 1064 (74.5%) agreed to participate in the study: 345 in Kenya, 377 in South Africa and 342 in Thailand. The response rates in the three countries were 65.2%, 87.9% and 74.7%, respectively. The demographic characteristics of the participants are shown in Table 4. The Thai nursing students were much younger and predominantly female, unmarried and childless, whereas the students from Kenya and South Africa were older, many were married and more than half had children. Kenya had the highest proportion of male students. Students of rural origin were in the majority in Kenya and Thailand but made up slightly less than half of the South African participants.

The results from the mixed logit model are represented diagrammatically in Fig. 1, which compares the impact of different policy interventions and individual characteristics on the odds of choosing a rural job in each country. For simplicity, the figure does not show the rural constant or urban attributes, but these were included in the model. The statistical model shown correctly predicted 60.0% of the responses from Kenya, 62.6% of the responses from South Africa and 75.2% of the responses from Thailand. All policy interventions shown in Fig. 1 yielded statistical significance as factors influencing the choice of a rural job (at the 0.05 level), except for better promo-

tion opportunities in Thailand and a change in management culture in South Africa. Of the individual characteristics, only rural origin showed statistical significance in all three countries.

Fig. 1 suggests that preferences for different human resource policy interventions vary between countries. Kenyan nurses were indifferent to the type of facility, whereas Thai respondents were 4.3 (95% CI: 3.3–5.6) times more likely to choose a job in a rural hospital than in a rural health centre, and the South Africans actually preferred rural clinics. In both Kenya and South Africa, the most effective policy interventions to attract nurses to a rural job were the introduction of a financial rural incentive and the provision of preferential access to specialist nursing training. For example, the availability of a 30% rural allowance made South African and Kenyan nurses 12.4 (95% CI: 9.6–15.9) and 7.7 (95% CI: 6.0–10.0) times more likely to choose the rural job, respectively. However, Thai nursing students were only 2.0 (95% CI: 1.5–2.7) times more likely to do so. In South Africa, allowing nurses in rural posts to specialize earlier increased the odds of rural uptake 6.7 times (95% CI: 5.5–8.1) and was a more effective measure than a 20% salary increase. For Thai respondents, improved housing and an expanded health benefit package were more important than a 30% salary increase. Overall, faster promotion and changes in management culture were the factors that least persuaded nurses to accept a rural posting.

In our models, age, gender, marital status and motherhood were not consistent predictors of the choice of a rural job. Thai graduates were too homogenous to allow us to test some of these factors. Whereas in South Africa students who were younger, single or had children were more likely to choose an urban posting, in Kenya these same groups preferred rural jobs. Female graduates were less likely to choose rural postings, but not significantly. However, in all three countries having been born in a rural area was significantly associated with the choice of a rural job, and the effect was comparable to that of a 10% salary increase. For example, graduates from rural areas in South Africa were more likely to choose a rural job than those from urban settings (OR: 2.7; 95% CI: 1.9–3.6).

The formal statistical testing for differences in model coefficients between countries is shown in Table 5. Most of the differences were highly significant. This confirms that nurses in the three countries valued the human resource policy interventions differently.

Table 6 presents the proportion of nurses who would choose a rural job when the mixed logit model was used to simulate the effect of different policy interventions alone or in combination. Thailand is clearly experiencing less difficulty recruiting nurses to work in rural areas than Kenya and South Africa. Even in the absence of any human resource policy intervention, 84.2% of recent Thai nursing graduates would choose a

Table 3. **Attributes included in discrete choice experiment for assessing the effectiveness of policies to attract nurses to rural areas in Kenya, South Africa and Thailand, 2006**

Attribute[a]	Kenya		South Africa		Thailand	
	Rural	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**
Facility	Dispensary Hospital	Dispensary Hospital	Clinic Hospital	Clinic Hospital	Health centre Hospital	Health centre Hospital
Salary	Local entry level +10% +20% +30%	Local entry level	Local entry level +10% +20% +30%	Local entry level	Local entry level +10% +20% +30%	Local entry level
Training	No study leave 1 years' study leave after 4 years	No study leave 1 years' study leave after 4 years	6 years before study leave 2 years before study leave	6 years before study leave 2 years before study leave	2 weeks study leave per year 4 weeks per year	2 weeks study leave per year 4 weeks per year
Housing	Basic Superior	None Basic	Basic Superior	None Basic	Basic Superior	None Basic
Promotion	4 years before promotion 2 years before promotion	4 years before promotion 2 years before promotion	2 years before promotion 1 year before promotion	2 years before promotion 1 year before promotion	2 years before promotion 1 year before promotion	2 years before promotion 1 year before promotion
Additional benefit	Permanent contract Short-term contract	Permanent contract	None Car allowance	None	Basic cover Expanded cover	Basic cover
Workplace culture	Hierarchical Relational	Hierarchical Relational	Hierarchical Relational	Hierarchical Relational	Hierarchical Relational	Hierarchical Relational

[a] The actual tools used contained more detailed descriptions of each attribute and level.

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Table 4. **Demographic characteristics of respondents in discrete choice experiment for assessing the effectiveness of policies to attract nurses to rural areas in Kenya, South Africa and Thailand, 2006**

Variable	Kenya	South Africa	Thailand
n	345	377	342
Sex			
Males (%)	31.9	14.3	4.7
Females (%)	68.1	85.7	95.3
Mean age (years)	31.0	31.5	22.6
Marital status			
Single (%)	54.8	65.9	100.0
Married (%)	41.7	30.4	0.0
Divorced/Widowed (%)	3.5	3.7	0.0
Any children (%)	51.3	61.0	0.0
Born in rural area (%)	66.1	46.7	83.0

rural job, compared with only 43.4% of the nurses in Kenya and 36.0% of those in South Africa. Therefore, even the most effective single policy intervention in Thailand (an expanded health benefit package) would only increase rural uptake by 8.4 percentage points.

However, in South Africa and Kenya the proportion of nurses prepared to work in rural areas could increase dramatically if various human resource strategies were introduced. For example, the model predicts that a 30% rural incentive would increase the proportion of nurses choosing a rural job to 75.0% in South Africa and to 79.8% in Kenya. Preferential access to specialist training would also be particularly effective in Kenya and South Africa but would have no impact in Thailand.

The DCE model can also be used to predict the impact of any combination of policies. Three examples are shown in Table 6. Combining all the non-financial interventions is an effective policy package and would persuade a total of 86.3% of nurses in South Africa, 82.5% of those in Kenya and 98.1% of those in Thailand to opt for a rural position. If all the human resource strategies we included in our design were introduced, more than 95% of nursing students would choose to work in a rural area in all three countries. However, for low- and middle-income countries it may be more practical to introduce a 10% rural allowance combined with preferential training opportunities for nurses in rural areas, a strategy that would increase the rural uptake by 46.0 percentage points in South Africa and 34.0 percentage points in Kenya. In South Africa such a strategy would be more effective than a 30% rural allowance, while in Kenya the impact of the two strategies would be similar. In Thailand, however, the combination of an allowance and training would be relatively ineffective, as it would only result in a 3.3 percentage points increase in the number of nurses choosing rural posts.

Discussion

We have used DCE data to quantify the degree to which nurses in Kenya, South Africa and Thailand are receptive to various incentives and to model the likely impact of different human resource strategies on rural recruitment in those countries. In the absence of data from rigorous evaluation studies, such analyses provide useful insights into the potential effectiveness of different human resource policy interventions. DCEs provide some of the only current evidence on the relative importance health workers attach to different incentives and human resource strategies.[12] Some have argued that packages of interventions are essential for improving the distribution of human resources,[3] and DCEs are one of the few methods available for comparing such packages. In forthcoming publications we will also show how DCE data can be used to model the cost-effectiveness of different human resource strategies.

Our findings confirm that financial incentives are very important in persuading health workers to choose a rural posting, especially in poorer countries, but only if they are fairly large. In our study, a 10% salary increase was relatively ineffective in all three countries (Fig. 1). Non-financial strategies are just as important. Improved housing and accelerated promotion were moderately effective, but preferential access to training and career development opportunities were very powerful non-financial strategies. Similar results have been obtained in other human resource DCE-based studies in low- and middle-income countries.[12] For example, a recent study in the United Republic of Tanzania showed that better educational opportunities and salary increases were the most influential policy levers to attract clinical officers to remote areas.[31] We showed that changes in management culture are relatively unimportant in South Africa, contrary to what previous studies have shown.[18] This is perhaps because young graduates have not developed clear preferences for different management styles. While many preferred more personal, supportive managers, others argued that formal, hierarchical management was needed to maintain discipline and manage resources properly.

Most non-financial strategies have budgetary implications. Thus, both financial and non-financial policy interventions will require a considerable amount of additional financial resources that are not currently available in most low- and middle-income countries.[32,33] Preferential training opportunities are attractive to health workers because they also provide future economic returns. This was confirmed in our focus group discussions with nursing graduates. Interestingly, however, the impact of certain benefit packages, such as car allowances for rural nurses in South Africa, which are normally reserved for more senior staff, had double the impact expected from their equivalent financial value. The explanation may lie in the prestige attached to such allowances.

Of all the individual characteristics reported here, only rural origin was associated with a significant increase in the likelihood of choosing a rural job. This suggests, however, that preferential selection of rural students by training institutions can be an effective strategy, and it also lends support to claims that student selection policies are a key component of human resource intervention packages.[7]

The limitations of DCEs have been clearly acknowledged elsewhere:[12] they can only include a restricted set of attributes, which limits their range and realism; and they rely on stated preferences, not actual decisions, but the analysis of revealed preference data is not always straightforward.[24] Finally, the complexity of DCE design and analysis restricts widespread application, and failure to keep up with methodological developments can compromise study rigour and validity.[34,35] Ours is the largest DCE-based study of human resources in low- and middle-income countries to date,[12] but producing nationally-representative data will require larger sample sizes, complex sampling strategies and more resources.

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Fig. 1. **Relative importance of different human resource policy interventions and individual characteristics in discrete choice experiment to study nurses' choice of rural postings in Kenya, South Africa and Thailand, 2006**
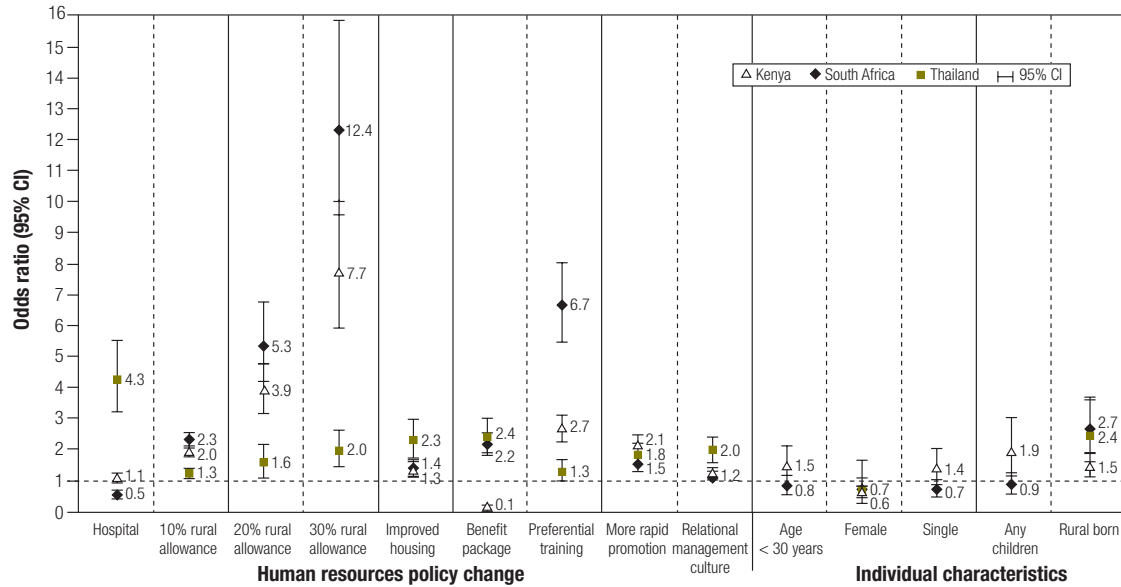
CI, confidence interval.

This study, which is one of the first labelled DCE studies and the first multicountry DCE that we could identify in the health literature, has demonstrated the more advanced modelling that is possible with labelled DCEs. Labelled designs are of particular relevance to human resource questions but should become more widely used in health research.[36] Only very few multicountry studies exist in the entire DCE literature,[29] probably because they present significant challenges in design and analysis. Nevertheless, they could be used to investigate contextual differences in health worker preferences and responses, an area of research that is underdeveloped to date.

Indeed, much of the discourse and data on health workforce retention in remote and rural areas does not pay sufficient attention to the diversity of individual preferences. It should not be the aim of human resource policy research to identify a proven set of standard strategies to be applied in any context. Our modelling study confirms that both financial and non-financial incentives are effective in motivating nurses to move to rural and remote areas, and that a package of interventions is more effective than a single strategy. However, it has also shown that different countries require completely different combinations of human resource policies. Furthermore, it is likely that nurses and doctors and other categories of health workers will respond differently to a particular set of incentives. In this study

we have demonstrated that different subgroups of nurses have different preferences, and in future studies we will compare the choices of different types of health workers. Packages of interventions are likely to be more effective than individual policies in attracting health workers to rural areas[3] not only because individual policies have an additive effect, but because different subgroups of health workers respond differently to different components. DCEs provide an important tool to investigate such individual heterogeneity.

Conclusion

This study confirms that DCEs can be designed to assist policy-makers in

Table 5. **Pairwise comparison of coefficients between countries in pooled results of discrete choice experiment for assessing the effectiveness of policies to attract nurses to rural areas in Kenya, South Africa and Thailand, 2006**

Rural variable	South Africa–Thailand		South Africa–Kenya		Thailand–Kenya	
	Difference in coefficients	P-value[a]	Difference in coefficients	P-value[a]	Difference in coefficients	P-value[a]
Hospital	−1.95	<0.001	−0.59	<0.001	1.36	<0.001
Increase in salary	0.26	0.002	0.08	0.201	−0.18	0.022
Improved housing	−0.49	<0.001	−0.23	<0.001	−0.23	<0.001
Benefit package	−0.11	0.396	2.60	<0.001	2.71	<0.001
Preferential training	1.73	<0.001	0.74	<0.001	−1.00	<0.001
More rapid promotion	−0.54	<0.001	−0.59	<0.001	−0.59	<0.001
Relational management	−0.40	<0.001	0.02	0.851	0.42	<0.001

[a] Chow test.

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Table 6. **Predicted impact of different policy interventions on nurses' uptake of rural postings in Kenya, South Africa and Thailand, 2006**

Intervention	Kenya		South Africa		Thailand	
	Change (% points)	Total uptake (%)	Change (% points)	Total uptake (%)	Change (% points)	Total uptake (%)
Single interventions						
Base uptake	–	43.4	–	36.0	–	84.2
10% rural allowance	+15.2	58.6	+16.9	52.9	+3.3	87.5
20% rural allowance	+27.8	71.2	+30.5	66.5	+4.8	89.0
30% rural allowance	+36.4	79.8	+39.0	75.0	+5.8	90.0
Better rural housing	+6.5	49.9	+8.1	44.1	+5.4	89.6
Benefit package	−28.0	15.4	+15.8	51.8	+8.4	92.6
Preferential training opportunities	+21.9	65.3	+35.5	71.5	+1.2	85.4
More rapid promotion	+17.0	60.4	+8.6	44.6	+6.7	90.9
Relational management culture	+5.0	48.4	+3.1	39.1	+7.5	91.7
Intervention packages						
Housing + benefit[a] + training + promotion + relational management	+39.1	82.5	+50.3	86.3	+13.9	98.1
30% allowance + housing + benefit[a] + training + promotion + relational management	+51.7	95.1	+59.2	95.2	+14.5	98.7
10% allowance + training	+34.0	77.4	+46.0	82.0	+3.3	87.5

[a] The benefit package was excluded in Kenya because it decreased rural uptake.

choosing more effective human resource policy interventions to address the shortage of health professionals in rural and remote areas. We have quantified the relative importance of different factors in nurses' career choices and shown that nurses' receptiveness to various human resource strategies differs substan-tially between countries. This suggests that intervention packages tailored to local conditions are more likely to be effective than standardized global approaches. These insights should inform the future human resource research agenda in low- and middle-income countries. ■

ملخص

التدخلات في السياسات لاجتذاب الممرضات إلى المناطق الريفية: تجربة حول اختيارات منعزلة متعدِّدة البلدان

الموجودات اختلفت جوانب التفضيل لدى الممرضات بين الموارد المختلفة للتداخلات في السياسات اختلافاً يعتد به إحصائياً بين البلدان الثلاثة. ففي كينيا وفي جنوب أفريقيا كانت الفرص الأفضل في التعليم أو للتعويضات عن الخدمة في الأرياف هي الأكثر فعالية في زيادة الاجتذاب للوظائف في الأرياف، أما في تايلند فقد كان التغطية الأفضل بالضمان الصحي هي ذات التأثير الأعظم.

النتيجة يمكن تصميم تجربة الاختيارات المنعزلة لمساعدة أصحاب القرار السياسي على اختيار التداخلات الفعالة في التصدِّي لنقص العاملين في المناطق الريفية. ويبدو أن مضمومات التداخلات المصمَّمة لمواءمة الظروف المحلية ذات فعالية أكثر احتمالاً من الأساليب العالمية القياسية.

الهدف تقييم الفعَّالية النسبية للسياسات المختلفة التي تستهدف اجتذاب الممرضات إلى المناطق الريفية في كينيا، وجنوب أفريقيا، وتايلاند وذلك باستخدام معطيات مستمدَّة من نموذج تجربة اختيارات منعزلة متعدِّدة البلدان.

الطريقة صمَّم الباحثون تجربة حول اختيارات منعزلة ذات لصاقات توسيم لإعداد نموذج حول الفعالية النسبية لكلٍ من الاستراتيجيات المالية وغير المالية المصمَّمة لاجتذاب الممرضات إلى المناطق الريفية. وجمع الباحثون المعطيات من أكثر من 300 من الممرضات المتخرجات في كل بلد، واستخدموا نماذج لوغاريتمية مختلطة لتحليل شغل الوظائف في الأرياف وتوقُّع شغلها تحت توليفات مختلفة من الحوافز.

Résumé

Comment attirer le personnel infirmier dans les zones rurales? Résultats d'une expérience à choix discrets réalisée dans plusieurs pays.

Objectif Comparer l'efficacité de différentes politiques visant à attirer le personnel infirmier dans les zones rurales au Kenya, en Afrique du Sud et en Thaïlande, en utilisant les données d'une expérience à choix discrets.
Méthodes Une expérience à choix discrets a été conçue pour modéliser l'efficacité d'incitations financières et non financières visant à attirer le personnel infirmier dans les zones rurales. Dans chaque pays, des données ont été collectées auprès de 300 élèves infirmiers en fin d'études, puis analysées

avec des modèles logit mixtes afin de prédire l'acceptation de postes en milieu rural en fonction de différentes combinaisons de mesures incitatives.
Résultats Les préférences du personnel infirmier pour diverses interventions de réaffectation des ressources différaient significativement entre les trois pays. Au Kenya et en Afrique du Sud, des possibilités plus intéressantes sur le plan éducatif ou des primes de ruralité seraient les incitations les plus efficaces pour améliorer le recrutement de personnel

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en milieu rural, tandis qu'en Thaïlande, c'est une meilleure couverture par l'assurance maladie qui aurait le plus d'impact.

Conclusion Des expériences à choix discrets peuvent être conçues pour aider les décideurs politiques à définir les interventions les plus efficaces

pour remédier aux pénuries de personnel dans les zones rurales. Des interventions adaptées aux conditions locales seront probablement plus efficaces que des approches standardisées, définies au niveau mondial.

Resumen

Intervenciones de política para atraer a las enfermeras a las zonas rurales: modelo de elección discreta multinacional

Objetivo Evaluar la eficacia relativa de diferentes políticas para atraer a las enfermeras a zonas rurales en Kenya, Sudáfrica y Tailandia utilizando los datos obtenidos mediante un modelo de elección discreta (MED).

Métodos Se diseñó un MED con etiquetas para modelizar la eficacia relativa de la aplicación de estrategias financieras y no financieras para atraer a las enfermeras a las zonas rurales. Se recogieron datos de más de 300 estudiantes de enfermería al término de la carrera en cada país, y se aplicaron modelos logit mixtos para analizar y predecir la ocupación de los puestos rurales en respuesta a distintas combinaciones de incentivos.

Resultados Las preferencias de las enfermeras ante diferentes intervenciones en materia de recursos humanos difirieron significativamente

entre los tres países. En Kenya y Sudáfrica, unas mejores oportunidades educativas o la instauración de subsidios rurales serían la fórmula más eficaz para aumentar la ocupación de los puestos rurales, mientras que en Tailandia se conseguiría el máximo impacto ampliando la cobertura del seguro de enfermedad.

Conclusión Es posible diseñar MED que ayuden a las autoridades a elegir las intervenciones más eficaces para hacer frente a la escasez de personal en las zonas rurales. Los paquetes de intervenciones adaptados a las condiciones locales tienen más probabilidades de ser eficaces que los enfoques mundiales normalizados.

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Table 1. **Key indicators used in discrete choice experiment for assessing the effectiveness of policies to attract nurses to rural areas in Kenya, South Africa and Thailand, 2006**

Indicator	Kenya	South Africa	Thailand
National population $\times 10^6$	36.5	48.3	63.4
Population in rural areas (%)	79	40	67
GNP per capita (PPP$)	1 470	8 900	7 440
Total expenditure on health (% of GDP)	4.6	8.6	3.5
Per capita expenditure on health (PPP$)	105	869	346
No. of nurses	37 113	184 459	172 477
No. of nurses per 10 000 population	12	41	28
No. of doctors	4 506	34 829	22 435
No. of doctors per 10 000 population	1	8	4
Life expectancy at birth (years)	53	51	72
IMR (per 1 000 live births)	79	56	7
MMR (per 100 000 live births)	560	400	110
HIV infection prevalence (%)	6.1	16.6	11.4

GDP, gross domestic product; GNP, gross national product; HIV, human immunodeficiency virus; IMR, infant mortality rate; MMR, maternal mortality ratio; PPP$, purchasing power parity dollar.
Data from the World Health Organization.[23]

Table 2. **Methods for selecting attributes included in discrete choice experiment for assessing the effectiveness of policies to attract nurses to rural areas in Kenya, South Africa and Thailand, 2006**

Method	Objective(s)	Details
International literature review	• Identify strategies that have been used to attract health workers to underserved areas in HICs and LMICs • Review evidence on the effectiveness of existing strategies	• Systematic search and review of relevant literature
Review of the HR DCE literature	• Identify attributes that have been used in previous HR DCEs • Review relative importance of selected attributes	• Systematic search and review of relevant literature12
Review of ministry of health HR policy documents	• Identify policy interventions that have been implemented or proposed in each country	• Systematic search and review of HR policy documents in each country
Key informant interviews with relevant policy-makers	• Identify policy interventions implemented or proposed in each country. • Identify planned policy strategies for the future • Assess feasibility of strategies tried in other countries	• Semi-structured interviews with 3–5 senior policy-makers responsible for HR in ministry of health in each country
Focus group discussions with nursing students	• Obtain student suggestions on important job characteristics and required policy interventions	• Focus group discussion in each country with 6–9 final year nursing students from nursing college not selected for final study • Semi-structured discussion on factors considered in job choices and attitudes towards working in rural areas
Pilot study	• Test understanding of DCE task and tool format • Confirm understanding and relevance of DCE attributes and levels	• 10–20 nursing students in each country from different colleges completed draft tool • Semi-structured discussion on responses to DCE tool and attributes • DCE results analysed for consistency

DCE, discrete choice experiment; HIC, high-income country; HR, human resource; LMIC, low- and middle-income country.

Political analysis of health reform in the Dominican Republic

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This article examines the major political challenges associated with the adoption of health reform proposals, through the experience of one country, the Dominican Republic. The article briefly presents the problems of the health sector in the Dominican Republic, and the health reform efforts that were initiated in 1995. The *PolicyMaker* method of applied political analysis is described, and the results of its application in the Dominican Republic are presented, including analysis of the policy content of the health reform, and assessment of five key groups of players (public sector, private sector, unions, political parties, and other non-governmental organizations). The *PolicyMaker* exercise was conducted in collaboration with the national Office of Technical Coordination (OCT) for health reform, and produced a set of 11 political strategies to promote the health reform effort in the Dominican Republic. These strategies were partially implemented by the OCT, but were insufficient to overcome political obstacles to the reform by late 1997. The conclusion presents six factors that affect the pace and political feasibility of health reform proposals, with examples from the case of the Dominican Republic.

Introduction

In the early 1990s, countries throughout Latin America initiated the process of reforming their health sector policies. These efforts received unprecedented levels of financial support from multilateral institutions, especially the World Bank and the Inter-American Development Bank (IDB). World Bank lending in health in Latin America quadrupled in a five-year period, to over US $900 million a year in 1995 (World Bank 1995). IDB activity added to this total, increasing total lending in the Latin American health sector to nearly US $2.2 billion in 1995, with the expectation that IDB lending in education and health would continue to grow.

Yet little attention has been paid to the major political challenges associated with the adoption and implementation of health reform proposals. Reform is a profoundly political process that affects the allocation of resources in society, and often imposes significant costs on well-organized, politically powerful groups. This article presents a method of political analysis for health sector politics, and identifies key patterns in the politics of health reform proposals. The article uses the experience of one country, the Dominican Republic, to illustrate the political challenges of health reform.

Health sector reform has been variously defined. In this paper, we define health sector reform as those activities undertaken cooperatively between the international development banks and a national government to alter in fundamental ways the nation's health financing and health provision policies.

This limited definition focuses on the processes around the design and adoption of new health policies, occurring through an interaction between international lending agencies and national government bodies. The proposed policies usually seek to build a self-sustaining national health care financing system as the primary goal. Secondary goals include greater coverage for basic health services at a lower cost per person, rationalized decision-making within public sector health agencies, institutional reform, and expanded access for disadvantaged populations.

Health sector reforms are politically problematic. In many countries considering reform, the most powerful health sector actors are often satisfied with the status quo – despite serious problems in the distribution of health services, quality of care, patterns of utilization, efficiency, and equity. Moreover, the proposed policy changes are often perceived as politically and economically painful decisions in the short term. One of the most important and complex problems in the process of health reforms is the management of these short-term, concentrated costs, and of the powerful groups affected.

Reform proposals create the perception that a major redistribution of the benefits and costs within the health system will occur, but *how* and *when* that redistribution will occur is unclear. In contrast to education reform, which usually entails increasing budgets, building new schools, and hiring teachers, health reform seeks to radically alter the social contract between citizens and the government, changing physician payment schemes, introducing patient payments, and limiting reimbursable services to affluent social groups. Politically, health reform proposals resemble structural adjustment policies, but without the national mandate for change accorded to adjustment.[1] In addition, health reform policies confront more complex obstacles in implementation, compared to

structural adjustment policies, because of the nature of the decisions and institutions involved.

Both multilateral institutions and national health reform teams have experienced some difficulty in understanding and navigating the political economy of health sector reform. This paper reports on an effort to try to improve the understanding and the navigation. The paper first reviews a method for applied political analysis. We then explore the background of the Dominican health sector, and apply the method to the reform proposals in the Dominican Republic. Finally, we draw some general conclusions about the political processes of health sector reform.

Applied political analysis

The method of applied political analysis known as *PolicyMaker* was used in this project to assist decision-makers in analyzing and managing the politics of health reform in the Dominican Republic. The method provides a systematic analysis of the probable consequences of policy reform efforts, the positions of support and opposition taken by key players, the political, financial, and other interests of key players. It then assists decision-makers in initiating the process to design strategies for managing the politics of policy reform (Reich 1996; Reich and Cooper 1996).

In the software format, *PolicyMaker* uses a series of matrices to guide the analyst through five steps of political strategizing. The framework prompts the analyst to: (1) define the content of the policy under consideration; (2) identify political players, their interests and relationships; (3) analyze opportunities and obstacles to the policy in the political environment; (4) design political strategies; and, (5) assess the potential and actual impacts of proposed strategies. The analyst can complete each matrix, or can be selective according to the objectives of the analysis.

The method assists policy analysts with the political dimensions of policy change in five ways. First, the method provides a systematic assessment of the political environment in which health sector reform policies are formulated and implemented. At a minimum, the method provides a tool to describe the political dimensions of a policy decision, and then to organize and prepare the data for analysis. Second, the method provides practical assistance in the design of political strategies. The software includes a tool box of 31 'expert-suggested' political strategies that can be modified by the user. Third, if conducted by a team analysis, the method helps to make explicit the team's assumptions about how a new policy will be adopted, and forces the team to explain and justify those assumptions. This reflective process helps to enhance the coherence and feasibility of the policy. Fourth, if conducted with interviews of key stakeholders, the method helps validate the reform group's perceptions about other stakeholders, and helps the reform team view the policy from the perspectives of other stakeholders. Fifth, the process of performing the analysis helps create a sense of common language and mission for some reform groups. The analysis encourages reform groups to make their strategies explicit, and rethink the strategies,

taking into account the interactions among policies, players, and positions. Finally, the process strengthens the reform group's capacity to advocate for reform policies.

Put another way, this method helps policy-makers and policy analysts do what they should do anyway: systematically analyze the support and opposition for a proposed policy; consult with the major stakeholders on their views; analyze opportunities and obstacles to change; design a set of creative and effective strategies for change; and assess and track the processes of implementing those strategies.

In the case of the Dominican Republic, three consultants (AG, KL, MRR) were financed by the IDB to work with the government's health reform group (headed by FR) to define the policy, interview key players, and propose strategies. The analysis was carried out by a team of 'insiders' and 'outsiders', in order to minimize analyst bias through group discussion and collective judgment. As with any social science methodology, however, the method cannot eliminate unpredictable elements in the policy-making process.

In this case, 35 guided interviews with key figures in the health sector were conducted in the Dominican Republic between July and November 1995. Both published and unpublished documents were collected and reviewed, and the national press was monitored closely for one year following the interviews. This paper presents some results of the analysis, and the conclusions reached.

The health sector in the Dominican Republic

The Dominican health sector

The Dominican health sector exhibits a number of systemic problems, typical of many countries in Latin America. These problems include inadequate financing, low coverage, inequitable distribution of services, an emphasis on curative care, fragmented vertical programming, redundant and underused facilities, inefficient institutions and personnel, corrupt bureaucracies, and unregulated private health services.

By the early 1990s, many Dominicans felt that the health sector was in crisis: preventive and curative services were low-quality, irregular, concentrated in the capital and in tertiary care facilities, and highly inefficient. The sector had experienced one of the largest and longest (8 months) strikes in the country's history, with the Dominican Medical Association (Asociación Médica Dominicana – AMD) showing its power to control the functioning of government health services. As in many other countries, doctors work in both the private and public sectors, usually squeezing their public sector obligations, where they are poorly paid, in order to attend to their private practices. Remuneration is not connected to performance. Physicians working in public hospitals regularly refer their patients to their private clinics for procedures, and some physicians use public sector facilities to conduct for-profit procedures.

The Secretariat of Health (SESPAS) and the Social Security Institute (IDSS), the largest institutional actors in the public

sector, have shown little capacity to respond to the major problems in the health sector. Both institutions have been used extensively for political patronage and have limited technical capacity. The average stay of a Health Secretary is less than eight months. Although almost 60% of the population falls below the poverty line, subsidized government services through the Ministry cover only 35% of the population (Santana and Rathe 1994). SESPAS is organized vertically by programme, and focuses mostly on curative, tertiary level care.[2] IDSS, with its own networks of hospitals and clinics, covers only 6% of the Dominican population. Many businesses now pay double for health care – an obligatory payment to the IDSS, plus payments to cooperatives of private providers for health insurance. Evasion of the IDSS scheme is widespread. As a result, the private sector has grown rapidly but with minimal regulation. The private sector now represents the primary source of health financing and service provision in the Dominican Republic. While health service infrastructure is plentiful in both the public and private sectors, access is highly inequitable since it depends on an individual's ability to pay. According to the 1991 Demographic and Health Survey, approximately 60% of persons who reported a serious illness in the past month did not seek medical care, principally for economic reasons.

Recent efforts at health reform

The Dominican Republic has experienced several waves of policy responses to problems in the health sector. In November 1992, SESPAS received funding from the United Nations Development Program (UNDP) to undertake a project of 'modernization' of the Dominican health system. For more than a year, a group of Dominican professionals elaborated policy proposals for reforms, in consultation with health sector players and with technical assistance from UNDP. Late in 1993, the results were disseminated to policymakers. The proposals included recommendations to rationalize human resources policies, including the introduction of new forms of physician payment, and a 'new model of care'. For political and financial reasons, including the absence of a forum in which to continue reform discussions, no follow-on activities resulted from this first wave of reform efforts.

The second wave occurred between October and May 1995, when the health commission of the national legislature introduced a 'National Health Law', written by deputies from the Partido de la Liberación Dominicana (PLD) with technical assistance from SESPAS and PAHO advisors. While recognizing many of the problems of the sector, the proposed law read like a long list of special-interest programmes. Each disease and programme priority was included, based largely on a 'traditional' public health paradigm, while little attention was paid to the methods for financing health services, the roles of existing health sector institutions, or the regulation of the private sector. The bill was intended to replace the Dominican Republic's 'Sanitary Code', which contains special provisions for regular salary raises for doctors working in the public sector. Although these provisions have never been implemented (since 1956), the new law was opposed by the AMD (OCT 1995b). Some perceived the bill

as part of pre-electoral political positioning by PLD, rather than a genuine reform effort. Debate around the bill lasted nearly a year, and then died.

At about the same time, in January 1995, an executive decree created the National Health Commission (CNS) with a mandate to promote 'modernization' of the health sector. The Office of Technical Coordination (OCT) was created to design a health reform plan under the auspices of the CNS. The OCT operated primarily with project funds from the IDB and the World Bank, with occasional assistance from the Pan-American Health Organization (PAHO), the US Agency for International Development (USAID), and other donors. Initially, the OCT operated under the CNS; however, in 1997, the OCT was shifted organizationally to the SESPAS, although the OCT maintained separate offices in Santo Domingo away from the ministry.

In this third wave of health reform, the OCT was asked to draft a reform 'white paper' with technical assistance from consultants in the first half of 1995. The 'white paper' was to serve as the basis for assessing the technical feasibility of various reform initiatives and as a first attempt to change the discourse on health sector transformation in the country. Reform studies were commissioned by the OCT from national and international consultants using non-reimbursable technical cooperation monies from the IDB and donated funds from the Government of Japan through the World Bank and the UNDP.

Reform studies addressed the following topics, in chronological order: (1) hospital autonomy; (2) SESPAS re-organization; (3) SESPAS financing systems; (4) IDSS reorganization; (5) prepaid health systems (*igualas*); (6) incorporating NGOs into health sector reform; (7) survey on use of and satisfaction with health services; (8) financing of public expenditure in health; (9) health expenditure module as part of the DHS; (10) personnel administration systems; (11) burden of disease and basic package definition; (12) pharmaceutical and supply stocks at SESPAS; (13) accreditation and re-equipping health services; (14) decentralization of SESPAS; (15) design of a new social security system; and, (16) a legal and regulatory framework for social security reform in the Dominican Republic (OCT 1995a). As the product of intensive collaboration between the OCT and the multilateral development banks, with a great deal of autonomous leadership from the OCT, the studies were intended to lay the groundwork for implementing reform activities in these 16 specific areas. The OCT has monitored the progress of and payment for the 16 studies.

In addition, the OCT expected to manage the process of reform. For example, the OCT was expected to secure high-level political support for reforms among government leaders, especially the Secretary of Health, the Director of Social Security, and the President of the Republic. More broadly, the OCT was intended to prepare government agencies, other interest groups, and society at large for accepting and implementing the reforms. The reform studies were intended to play a major role in this preparation, and usually involved staff members from the affected institutions.

The OCT 'white paper' recommended the following reforms: (1) the separation of financing from provision of services within SESPAS and IDSS; (2) the massive expansion of IDSS coverage; (3) the definition of a cost-effective basic package of services to be financed by the public sector; (4) hospital autonomy; and, (5) linkage of productivity and incentives in the health work force (e.g. through physician contracts). This set of recommendations, published as *Salud: Una Visión del Futuro*, was taken as the 'policy' for this applied political analysis (OCT 1995a).

In 1995, the OCT had seven staff members, primarily technical, with one public relations person part-time. The CNS included 33 health sector 'actors' and had no clearly defined decision-making structure, but had taken most decisions through voting. All votes (through November 1995) were unanimous, and voting was initiated by the chair of the CNS, the Secretary of Health.

Political climate

In June 1995, the Dominican Republic was one of the poorest countries in Latin America. In 1988, it had the third lowest Gross Domestic Product (GDP) per capita in the Americas, after Haiti and Bolivia. Despite respectable economic growth rates in the 1980s, the economic crisis (followed by structural adjustment policies) impoverished the country in the 1990s. The Dominican Republic was one of the last of the aging dictatorships in Latin America. When health sector reform design began, Joaquín Balaguer had been president of the country for more than 50 years, off and on. The political system can be categorized as 'clientelistic'. As one study of Dominican political culture put it, 'The Dominican political system is theoretically organized along formal democratic principles, however, it is essentially informal operationally' (AG translation, Cross-Beras 1985). It is a limited pluralist system without accountability, and without an explicit political ideology. Most decisions, national or otherwise, were taken by the President personally.

Although SESPAS is the major public provider of health services, in recent years the Secretariat of the Presidency has become a significant source of health financing, especially for the purchase of plant, equipment, and supplies for SESPAS facilities. In 1991, for instance, the Secretariat of the Presidency was the source of 38% of public expenditures on health (IDB 1997). An unpublished study on the health sector found that SESPAS decisions on even micro-level budgeting and personnel issues lay with the President of the Republic (Perez Uribe et al. 1974). In June 1996, the Dominican Republic held democratic elections which resulted in the election of Leonel Fernández, a young US-educated lawyer.

In contrast to the longevity of the Presidency, other political leaders have a short duration in office. Few political appointees are able to acquire effective capacity to manage the technical or organizational challenges of their policy domain. Between 1930 and 1974, 37 people served as Secretary of Health. A similar turnover has affected the directorship of the IDSS: 21 vice ministers in the past two years. This lack of continuing leadership has left the poorly paid but stable bureaucracy in charge of the health system. The bureaucracy, however, is also very conservative, not well trained, accustomed to certain privileges (to offset the low salary) and fearful for their jobs. In this sense, any change in the system that could increase the degree of formal control or the grade of institutionalized procedures implies a significant reduction in the discretionary power of the bureaucracy. The bureaucracy, therefore, has tended to oppose reform in principle and in practice.

Analysis of the 1995 OCT reform proposal

This section analyzes the political circumstances around health sector reform using the *PolicyMaker* method. The analysis uses the OCT 'white paper' of July 1995 as the reform proposal, and considers the OCT its primary client. Two major objectives are: (1) to assess the political feasibility of the reform proposal, as of mid-1995, and (2) to propose strategies that could enhance the political feasibility of the reform process. Before designing strategies, *PolicyMaker* analyzes policies along three dimensions: policy content, players, and environment (opportunities and obstacles). These three dimensions frequently intersect. A player's position may emerge out of a complex combination of its reactions to the policy content, the player's interests, relative power, and relationships with other policy actors, and the internal and external organizational environment.

For this case study, we first review the content of the reform policy under consideration. Second, we analyze the players, by exploring the interests, power, and position of the dominant policy players, with reference to relevant aspects of the reform proposal. Third, we review the external opportunities and obstacles that the OCT faced in the policy environment. Finally, we present the strategies that were designed in the Dominican Republic, using the *PolicyMaker* method, for OCT to consider in managing the reform process.

(1) Policy content

Policy proposals for health sector reforms supported by the multilateral development banks are similar across Latin America, responding to similar challenges within public health bureaucracies. At the time of the analysis, proposals followed the ideas presented in the *1993 World Development Report*, and built on the World Bank's seminal 1987 policy study, *Financing Health Services in Developing Countries* (Akin et al. 1987). The reforms have usually included three levels of policy goals and mechanisms.

First, the reforms define broad governing principles. In the Dominican Republic, the principles were universal access, equity, solidarity, quality, freedom of choice, efficiency, efficacy, and transparency.

Second, strategic guidelines are developed that set out more specific parameters for a restructured health system. In the Dominican Republic, these guidelines included: (1) the design of a single system, organized functionally (regulation, financing, policy, provision); (2) a shift towards preventive services; (3) a strengthened regulatory role of the state; (4)

increased financing for the health system; (5) guaranteed benefits for affiliates; (6) efficient systems; and, finally, (7) the facilitation of social participation in the health system (OCT 1995a). These strategic guidelines represent policy goals, but they do not specify how to achieve the goals, which may have contradictory objectives.

The third level provides more specific policy mechanisms. In the Dominican Republic, policy mechanisms were defined in four areas, according to the OCT in 1995. Similar proposals can be found in other Latin American countries undergoing health reform:

1. development of a new model of rationally determined, publicly financed health services that would ensure a basic basket of cost-effective interventions, namely preventive services, available to the entire population;
2. decentralization and restructuring of the ministry of health and the social security institute;
3. transformation of the state's role from direct service provider to financer and regulator; and,
4. creation of managed competition through government contracting with both public and private sector providers.

(2) Players

Assessment of political feasibility requires an analysis of the stakeholders – the political actors affected by or affecting a given policy. These actors are called the 'players' in *Policy-Maker*. The field of policy analysis has not produced a single or simple method for assessing the characteristics of players involved in policy change (Reich 1996). *PolicyMaker*, therefore, combines a number of analytical methods. The basic analysis requires an assessment of each player's position on the policy (support, opposition, or non-mobilized position), power (resources available to use in the policy debate), and intensity of position (high, medium, or low, depending on the willingness to use available resources in the policy debate). In this analysis, a player can be either an organization or an individual, though the analyst might consider weighting these groups differently, according to their power resources.

In our analysis of health reform in the Dominican Republic, the players were divided into five key groups: public sector, private sector, unions, political parties, and other non-governmental organizations.

Public sector: SESPAS and IDSS

The reform proposal has profound implications for the public sector, especially the Ministry of Health (SESPAS) and the Dominican Social Security Institute (IDSS). Political resistance in the public sector was anticipated particularly around the issues of hospital autonomy and institutional restructuring.

A 1985 evaluation of SESPAS described it as a government agency suffering from 'overall inoperativeness'. SESPAS and IDSS lack the internal structures, formal lines of command, functional definition, administrative machinery and policy-making capacity to effectively execute current mandates or to meet longer-term institutional objectives. Decision-making is usually concentrated in an individual, and accountability is diffuse. An attempt at regionalization of SESPAS failed and local officials lack authority. Services are poor in quality, and coverage is low. Human and material management is deficient. Nearly all appointments are made at the central level by the Minister (or the President) without the knowledge of division chiefs or facility managers. Mismatches result between human resource supply and service demand. For example, several SESPAS facilities have up to 50% more medical personnel than necessary to meet demand, while other facilities are closed due to lack of personnel (IDB 1997).

Considerable confusion exists concerning the role of SESPAS within the sector because the Secretariat of the Presidency administers nearly one-third of government health spending, and little coordination of any kind exists among public sector health institutions. Linkages between the public and private sector are absent. Each institution makes policies, sets plans and implements programmes more or less independently. This, in turn, contributes to stratified access to health care, concentration of resources in large cities, duplication of infrastructure and service provision, and overlapping financial arrangements. For example, household surveys show that 50% of IDSS enrollees do not use IDSS services, while 50% of users of IDSS services are not enrolled in IDSS. In some rural areas, NGOs and SESPAS provide similar services to the same population groups. A significant percentage of the poor bypass 'free' SESPAS facilities, seeking care at fee-for-service private clinics.

Hospital autonomy

After the public release of the 'white paper' in 1995, the Secretary of Health and the OCT were accused of 'privatizing' the health sector. While it is true that the management of publicly owned hospitals through contracts is not privatization, especially since the government would guarantee subsidies for preventive services and basic ambulatory care (F. Rojas 1995), elements of autonomization can have (and can be perceived as having) the same political and social effects as privatization has had on other state industries. That is, hospital autonomization does imply that current government employees become employees working under contract, without a lifetime guarantee, which allows for discretionary firing and a complete break in the traditional relationship between the state and physicians. Hospital autonomization also implies that public sector hospitals would compete with the private sector to provide the basic package of services; that the hospital director would have discretion over budgets, and that the central SESPAS would not; and that any services provided in excess of basic ambulatory care would not be subsidized by the government.

For all these reasons, the SESPAS bureaucracy, though not fully cognizant of the potential implications of the reform, was extremely wary of the proposal. And the AMD was highly opposed to hospital autonomization, due to the loss of job security that physicians would face under this system. Hospital directors, who stand to gain in status and control,

were pleased with the idea, but were not organized. Overall, there were serious concerns about the technical capacity of hospital staffs to manage the process of autonomization and re-orient the hospital to a competitive environment.

Institutional restructuring

The processes of institutional restructuring present serious challenges. For the Health Secretary, restructuring could mean political suicide if the AMD were to mobilize against the plan. Any benefits from the policy reform are likely to be long-term and difficult to perceive as tangible. For the bureaucracy, restructuring is feared, because it would disturb the status quo, create a threat to job security, and upset established ways of doing things. For physicians, institutional restructuring places the AMD's organizational autonomy and negotiating power at stake. For hospitals, it represents a change from the status quo, which is so negative at present, that any change is perceived positively.

IDSS faces many of the same issues. Restructuring for IDSS has similar implications as for SESPAS, but with the added nuance that IDSS would be forced to stop its direct service provision altogether. Under the reform, all financing of health services for formal and informal sector employees would be provided through the IDSS. Many observers outside of IDSS were surprised that IDSS could be considered a responsible controller for funds, given its history of political patronage. Most likely, the reform proposal would be revised to remove IDSS (not government) from the collection and disbursement of funds.[3] However, if this were to occur, then IDSS would have few tasks remaining in health services.

This is not the first attempt to restructure the IDSS. Created in 1948 during a wave of Bismarckian-style social security, the IDSS was primarily a response to pressures from the cane-cutters union. Its political patronage functions have persisted over time. In 1982, the President, three of the major trade unions, and the main employers' association, with assistance from the International Labor Organization, endorsed a legislative draft to expand IDSS health care coverage to all salaried workers in both the private and public sectors regardless of salary level (removing a cut-off that exempted most white and blue collar workers from obligatory payment). The reform presented a politically viable solution, given the power of the AMD. A last-minute revision of the bill, prepared by a group of civil servants who did not want to be required to pay into IDSS instead of their current private insurers, restricted care to IDSS-owned facilities, which were notoriously poor quality. This revision eliminated free choice to use private facilities, a central element of the bill. The strong opposition of the private sector then defeated the bill in Congress. High-salaried employees, who would have been incorporated into IDSS after the projected elimination of the salary ceiling, also opposed the amendment because they would have been required to pay contributions but did not want to use IDSS services. The bill's defeat strengthened the private sector and contributed to further erosion of the IDSS public image (Mesa-Lago 1978, 1989, 1992).

In 1994, a private think tank and the association of employers published a plan for health sector reform that proposed the elimination of IDSS. The new IDSS director accepted the proposal, but was fired shortly thereafter. The position of the subsequent directors was not known officially. At the time of analysis (1995–96), IDSS's technical office questioned the value of contracting and seemed to reject the idea of eliminating its role as a direct provider of health services.

Transformation of the state's role

Bank-financed health sector reform is meant to transform the state's role from direct service provider to financer and regulator, but the details of this transformation are unclear. There is some ambiguity on how the state becomes 'financer and regulator'. At the time of our interviews in the Dominican Republic in 1995, 'separation of financing and provision' was interpreted in the press as the 'privatization' of health services provision and created reluctance among political leadership to support health sector reform with enthusiasm: political leaders of SESPAS (SecSal) and IDSS (IDSSDir) were thus classified as high-power actors in low support of the white paper. In the pre-presidential election period (September 1995 to May 1996), this reluctance was expected. In the post-election period, the issues were still unresolved. A distinction was also made between political leadership and SESPAS and IDSS bureaucracies in the analysis, as these groups had contrasting interests in the process. The SESPAS bureaucracy (SESPBur) was considered high-power and low-support at the time of the white paper, while the IDSS bureaucracy (IDSSBur) was medium-power and low-opposition, with potential to move to high opposition in the near future.

Private sector: private clinics and igualas

The private sector is highly opposed to regulation, having operated profitably during the progressive decay of public sector services. Approximately 15% of Dominicans, primarily formal sector employees, belong to employer prepayment plans, known as *igualas médicas*, which cover a basic package of 'equal' services. The plans compete on price, service quality, and completeness. In principle, consumers of *iguala* health plans would welcome government financing of these services, but would resist any attempt to be incorporated into government-provided services. If formal sector employees were obliged to contribute to the public sector (in order to finance the rest of the health system), then formal sector employers who are not already evading payment would be expected to resist further. This practice (the so-called *doble cotización* or double payment) has been identified as an agenda item for small and large business organizations.

Employer discontent (and evasion), along with the private sector's resistance to regulation and the formal sector consumer's aversion to government-related (financed or provided) services, make the decision to move towards a managed competition model difficult for the government. While the private sector is expected to gain under managed competition, the *igualas* would probably be more profitable if

they can continue to restrict plan entry to the relatively healthy and wealthy, which would probably occur more easily without reform. Private health sector players (private clinic/*iguala* owners – PrivClin – and employers – EMPLOYER), while expressing basic agreement with the reform's principles, were lukewarm towards the white paper, and based on an analysis of player interests were classified as moderately opposed, high-power players.

Unions: the AMD

A key feature of the Dominican health sector is the near-omnipotence of the physicians' association (AMD).[4] In the past, every negotiation between the government and the AMD has ended with government concessions. As part of this process, the AMD strikes frequently and for long periods of time. In 1996, for example, the AMD held an eight-month strike for higher wages and increased job security. This strike came after an extremely generous settlement, in which the government promised to double all doctors' salaries in the public sector, waive import taxes on vehicles, and provide public housing. The strike was perhaps precipitated by the government's inability to finance its health services, much less provide housing to doctors. During this time, the government agreed to pay doctors their salary for the time missed, and still, the AMD remained on strike pending resolution of the 'situation' of IDSS doctors. This situation is particularly deplorable since physicians are supposed to work eight hours a day legally, but typically work only two hours a day and spend an average of two minutes per patient (Mesa-Lago 1992). In addition, they are frequently absent, delay hospital dismissals, violate rules, and reject any effort to introduce planning, set work schedules, or enforce the budget (Mesa-Lago 1992).

The AMD is led by an experienced union organizer, and the Secretary of Health, usually inexperienced in negotiation given his short tenure, is the AMD's primary target. If the Secretary is unable to meet the AMD's demands, the organization has often been able to pressure the President to remove the Secretary. The AMD is also able to mobilize quickly against journalists and policy-makers who attack their interests publicly. The AMD was considered a high-power actor, highly opposed to the white paper in principle and in practice.

Political parties: Fernández and the PLD

Leonel Fernández, who was elected President as a member of the Partido de Liberación Dominicana (PLD) in 1996, produced an elaborately detailed, Bill Clinton-style governing plan. The plan placed health reform at the bottom of a 24-item list of priorities and left it undefined (Partido de Liberación 1996). During an interview conducted in August 1995 with the current vice-president, Dr Jaime Fernández Mirabal (then a PLD senator), the reform group was advised to stop using 'economic terminology' in their proposals and to focus on 'decentralization issues', consistent with the democratization rhetoric favoured by the PLD. Leonel Fernández's position on the AMD strike, which occurred before he took office, was that the President of the Republic should negotiate directly with the head of the AMD, and should continue

to make concessions on most issues, rather than delegating this task to the Secretary of Health, thereby undermining the efforts of the Secretary of Health to be firm with the AMD. This position agrees with Dominican political culture, as described earlier, where power is concentrated in the President.

These expressions of position and power do not necessarily indicate that the President is fully opposed to the OCT 'white paper'. However, they do indicate that he is not supportive, and that he will not serve as an advocate. The Secretary of Health, who was replaced in January 1997, could be an important factor in the reform process. Thus far, however, the Secretary has been remarkably uninvolved in planning for reform. The passivity of Balaguer's last Secretary of Health could be linked to a protracted 'lame duck' period prior to the elections. In the case of the new government, the Secretary's tepid support is notable and could have significant consequences for feasibility. The President (PRES) at the time of analysis was classified as high-power with a non-mobilized position. The PLD, currently in office, was classified as a high-power, low-support player.

Non-governmental organizations (NGOs)

While NGOs were expected to be supportive of reform plans to expand coverage to the entire population and provide more preventive services, the interviews did not find much support for reform among NGOs. NGOs initially focused attention on the creation of a basic package of services using cost-effectiveness criteria. NGOs focusing on preventive care services felt that many elements of equity were not well served by an application of cost-effectiveness criteria, which were not connected to a concept of health as a right. NGO staff published press articles criticizing the OCT for using 'economic' criteria where they 'don't belong', that is, in the health sector (O. Rojas 1995a, 1995b). This criticism had the potential of associating reform with particular 'victims', such as children who would not receive emergency interventions that fall outside of the basic package. Other groups, which provided specialized forms of care and received government monies, such as the *Asociación Dominicana de Rehabilitación* or the *Liga Dominicana Contra el Cáncer*, feared that reform would decrease resources available to their work. While NGOs are generally not very influential on the national political scene in the Dominican Republic, they have sufficient resources to access the media, to shape public perceptions of health reform, and thereby to influence the reform process in the CNS. NGOs were classified as low-power, low-opposition players.

At the time of our analysis (July–November 1995), most political players were essentially non-mobilized with regard to the health reform proposal (the National Health Commission – CNS; beneficiaries – BENEFS; the press – PRESS; universities – UNIV; and the Church – CHURCH), although many players' interests clearly conflicted with the white paper. Even when players expressed nominal support (such as the Secretary of Health), the interviews suggested that most players preferred to wait for completion of the studies and proposals before taking a position. This lack of involvement forced the

High support	Medium support	Low support	Non-mobilized	Low opposition	Medium opposition	High opposition
OCT		PRES	UNIV	NGO	PrivClin	AMD
IntlBank		PLD	Church	IDSSBur	EMPLOYER	
		IDSSDir	Press			
		SecSal	Benefs			
		SESPBur	CNS			

Key to power gradient: white box = low power; grey box = medium power; black box = high power

Figure 1. Position map for major players in health reform in the Dominican Republic in 1995 (abbreviations in text)

OCT and the Banks to become the main advocates for health reform, a politically problematic situation. (See Figure 1 for a position map for the major players in the Dominican health reform.)

(3) Opportunities and obstacles

The *PolicyMaker* analysis also produces a systematic assessment of opportunities and obstacles to the policy change under consideration. As many of the obstacles were discussed above, this section focuses on the opportunities. An important opportunity lay with the OCT, which had ample financial resources from international agencies, relative independence from other health sector players, excellent technical staff, and a vision of how health reform could work. These strengths created a good negotiating position for the OCT within the health sector and civil society. The small staff, however, limited the OCT's ability to respond quickly to political challenges in the media and the health sector. The reform process was just beginning, which gave the OCT substantial flexibility in planning.

In the larger political environment, there was broad consensus that the Dominican public health system suffered from multiple problems and needed serious improvement. This realization was occurring at the same time as the Dominican Republic approached its historic transition to democracy and the country's first democratic elections. The pre-electoral environment in late 1995 and early 1996 limited the willingness of politicians and political appointees to take a leadership position on health reform, but created the hope that a new government might adopt proposals developed by the OCT. Another opportunity was that the AMD and SESPAS had recently completed a negotiation that resulted in a favourable outcome for the AMD, which might facilitate the changes required in health sector reform.

(4) Strategies

PolicyMaker provides a tool box of 31 basic political strategies for enhancing the feasibility of policy reform and a matrix for defining strategy actions and associated risks, problems, and benefits. Strategies are usually designed with the client's full collaboration, to assure that the proposed strategies are relevant and realistic under the time and resource constraints. Table 1 provides a summary of the strategy design exercise for health reform in the Dominican Republic.

Facing competing priorities and upcoming elections, the OCT executed a selection of the strategies in Table 1. The OCT created common ground and vision (strategies 1 and 2) through the official debate and publication of the white paper by the CNS. An indicator of this success was the subsequent publication of institution-specific (SESPAS and IDSS) reform proposals that differed minimally from the original white paper (strategy 8). The mobilization and preparation of key actors was limited by the pre-electoral environment (strategy 4); however, the passive role of the Secretary of Health during this period seemed to activate debate within the CNS. Contrary to expectations during the analysis about the ineffectiveness of external commissions, the CNS provided an excellent sector-wide forum for discussion (strategy 10, 11). But the decision-making processes in the CNS were never fully defined (strategy 3), and its existence depended on a presidential decree issued under Balaguer. Consequently, the CNS did not survive under the new Administration.

Table 1.   Summary of *PolicyMaker* strategies

Strategy name	Actions
Strategy #1 OCT: Create Common Ground	1. Seek common ground with other organizations. 2. Identify common interests. 3. Link different interests – invent new options. 4. Make decisions for opponents easier.
Strategy #2 OCT: Create a Common Vision	Keeping in mind that the principal obstacles to reform are not only technical: 1. Create an atmosphere of shared values, unified leadership. 2. Articulate a common vision of equity and the respective roles of the public and private sectors.
Strategy #3 Define the Decision-Making Process	At the time of the analysis, there was no formal procedure for decision-making in the CNS, so: 1. Formalize process for the approval of the 'white paper.' 2. Legal efforts to formalize this process may be fruitful.
Strategy #4 CNS: Mobilize and Prepare Key Actors	1. The Secretary of SESPAS should be positioned to take a strong position of leadership. 2. The Director of the IDSS should be prepared to take a clear position on the reform of the IDSS. 3. Key actors within SESPAS, IDSS, and the CNS should limit their discussion to the specific components under consideration.
Strategy #5 OCT: Initiate Pilot Studies	1. Select pilot study sites according to technical and political exigencies.
Strategy #6 OCT: Political Parties/ New Government	1. Meet with political candidates and their technical staffs. 2. Attempt to integrate health reform policies and the ideas of the 'white paper' into political debate and discourse.
Strategy #7 OCT: Initiate Strategic Communications	1. Initiate strategic contacts with the press, responding to critical attacks (except those of the AMD). 2. Place key decision-makers in the media.
Strategy #8 SESPAS and IDSS: Manage the Bureaucracy	1. Identify possible opposition and involve them in the technical design of the reform.
Strategy #9 OCT: Strengthen Alliances with International Organizations	1. Request technical-political assistance from the IDB and the WB in order to respond more effectively to common critiques of the WDR-style reforms. 2. Work together with PAHO in concrete areas. 3. Ask for donor support for the vision of reform articulated by the OCT and define their active participation in influencing key actors in the health sector.
Strategy #10 OCT: Involve 'Friends' in Planning	1. Hold informal consultations with 'friends' of the reform on the sequencing of actions and political strategy; draw on the experience of the education reforms. 2. Bring together public hospital directors to articulate an agenda.
Strategy #11 AMD and IDSS: Create Strategic Alliances	1. Create strategic alliances with key actors not usually involved in health sector policy debate (nurses' union, igualas, other unions, business associations, NGOs, churches, universities).

Pilot projects (strategy 5) in hospital autonomy were initiated during the pre-electoral period as planned, but the demonstration effects of the studies were limited due to the OCT's weakening relationships with the new Administration, especially with the new leadership in SESPAS. Subsequently, key technical staff in the OCT and in the Secretariat of the Presidency were replaced, reducing the feasibility of reform proposals as originally conceived. The limited political support of the new Administration for health reform showed the OCT's mixed success in working with political parties (strategy 6). A communications strategy (strategy 7) was launched with success; the debate in the press became more accurate over time, and the OCT was able to respond to editorials and attacks in a timely manner. Alliances with international agencies were strengthened during the design phase through the creation of working groups on specific themes such as human resources (strategy 9, 11).

Overall, the *PolicyMaker* exercise produced a set of strategies that achieved some success for the OCT, especially with regard to common ground, vision, and work with the SESPAS and IDSS bureaucracies. However, relationships with key political actors were particularly precarious in the post-election period, and presented an insurmountable challenge to

reformers. This exercise in systematic applied analysis helped move the health reform process forward in the Dominican Republic, but did not result in full adoption of the health reform package. In short, applied political analysis may be necessary to promote WDR-style health reform efforts, but analysis alone is not sufficient for success, for reasons discussed below. In late 1997, the OCT repeated the *PolicyMaker* analysis, updating the position maps and setting out modified strategies. Whether this additional analysis will provide sufficient guidance to produce political and social acceptance of health reform in the Dominican Republic in the near future is an open question.

Conclusions

This analysis of the political dimensions of health sector reform processes in the Dominican Republic suggests some generalizations that may be relevant to other nations. Six factors seemed to affect the pace and feasibility of the health sector reform proposal in the country in 1995.

Factor 1: The leadership of the reform

The leadership vacuum in the Dominican Repubic in 1995 made decision-making on health reform difficult and incremental at best. The Secretary, facing the progressive decay of institutions and the near certain loss of his party in the coming elections, was unwilling to tackle health system change. Comprehensive health sector reform usually requires the full commitment of the Secretary of Health. In the Dominican Republic and elsewhere, leadership capacity is deeply affected by the system of government (new democracy versus aging dictatorship), the credibility of the government, political timing (the approach of elections), and the political effects of the technical content of reforms.

If the political leadership is inactive on health sector reform, the technical reform group and the Banks themselves become the policy advocates. To play this role effectively, leadership and resources are required within the reform group. The reform group must receive technical, strategic, and political support, above and beyond the standard studies conducted under Bank pre-loan processes. In a personalized political system in which decision-making is highly centralized, the reform group must create a critical mass of reform supporters, who can promote reform despite a turnover of leaders. Reform groups may need to create incentives for the Minister to become a fully engaged advocate for reform. Politicians need to find ways to navigate the political costs and benefits of health reform, through a combination of short-term gains and a supportive environment. In situations of uncertain political leadership, as shown by the case of the Dominican Republic, the prospects of health reform are greatly handicapped.

Factor 2: The political strategies adopted by the reform group

Health sector reform confronts a collective action dilemma: the small and delayed benefits for many people who are highly dispersed (and politically weak) are perceived as less important than the high and immediate costs felt by small groups that are highly concentrated (and politically strong). Explicit political strategies are needed to manage this distribution of the political costs and benefits of reform, especially in relation to key interest groups (the medical association and health workers' union), the government bureaucracy, and international agencies. Reformers need short-term concrete gains that can satisfy key constituents, especially if the expected benefits of reform are perceived as long-term, uncertain, or intangible. In short, reform advocates require political strategies to manage the perceived interests of key stakeholders. If there is a political leadership vacuum, then reform groups need substantial human and financial resources to plan for these non-technical dimensions of the reform process. Applied political analysis can assist the process of generating strategies for promoting reform, but analysis must be supported with the skills and resources for on-going consultation and negotiation with major stakeholders.

Factor 3: The location of the reform group

A structural dilemma exists in the organizational location of the reform group, reflecting a general dilemma about the location of advisory or policy analysis groups. A location within the agency can restrain the group's autonomy and ability to question basic assumptions of the leadership, making the advice serve the preconceptions of the leadership. On the other hand, a location outside the agency can produce weak links to decision-makers with a tendency to marginalization and irrelevance, while allowing the reform group more autonomy and capacity for independent analysis. At the time of this analysis, the OCT was located outside SESPAS and was seen as an outsider by the Health Secretariat's bureaucracy. This allowed critics of health reform to link the OCT symbolically with the development banks, and helped weaken the OCT's political legitimacy. After the election, the OCT was brought into SESPAS, only to be separated again several months later.

Factor 4: The ownership of the reform

For health reform to be adopted, the reform package needs to have strong ownership, usually by the Minister and by the government. But a dilemma also exists with ownership. If a reform is closely associated with a government, and the government changes, then a common political response of the new regime is to reject or reverse the reforms. The new government needs its own reforms, with material and symbolic benefits, and also needs to distinguish itself from previous power-holders.

The dilemma is this: an effort to raise ownership above the current government-in-power (through a multi-partisan commission, for example) may successfully diffuse ownership, but this process could lower the probability of achieving successful acceptance and implementation. Minister-driven reform can tie the change closely to one person and thereby raise the chances of adoption now and reversal later; but if not tied closely, then the reform may not happen at all. The goal is to create a reform with sufficient ownership by the current power-holders that it is likely to be accepted, and without so

much ownership that the next government will reject the reform and seek its own. Achieving this goal requires the creation of strong constituencies, within the bureaucracy and among interest groups, to mobilize supporters who will have an interest in continuing the reform and who will persist beyond changes in government.

In the Dominican Republic in 1995, prior to elections, the potential political owner of health reform had little chance of continuing in office, and therefore no effort was made to mobilize high-level political support for the reform. The Dominican Republic's approach of technical studies plus wait-and-see was effective in preserving some elements of the OCT after the election. But this strategy also reduced the probability that the reform proposals emerging from the study period would be adopted and owned by the new administration.

Factor 5: The political language of reform

Reform efforts often require new ideas that can change the political landscape, provide new perspectives on old problems, and create alliances among diverging groups. The political language of reform can create legitimacy by connecting the reform to international sources and the experiences of other countries. The promotion of 'equity and efficiency in health systems' is hard to oppose. Poor choices of political language can undermine efforts at reform. As shown in the Dominican Republic, an association with the word 'privatization', regardless of its technical accuracy, can undermine support for a reform effort and can put reformers in a defensive mode that is difficult to overcome.

Factor 6: The political timing of reform

The feasibility of health sector reform is often affected by political timing; whether a government is recently elected or is approaching the end of its term will affect its political capital and its willingness to take political risks. The approach of elections can complicate strategies to create political circumstances that would support reform. If the current government is unlikely to stay in power, or if the current Minister is unlikely to stay in power, then the power-holders may have limited political resources and limited interest in attempting a reform that entails high political costs.

The process of health sector reform involves a continual tension between the technical and political dimensions. Often, the proposed technical solutions are only partially constructed, with large ambiguities remaining in the institutions required and the implementation methods. The reform group may be highly qualified in a technical sense and acutely aware of the political implications of different reform options, but may be unprepared for analyzing and managing the highly political dimensions of the reform process. Applied political analysis can be helpful in organizing political data in a systematic way, in analyzing the political risks of health sector reform, and in constructing and selecting political strategies to manage the multiple players involved.

The case of health sector reform in the Dominican Republic shows that the WDR-style reform package creates multiple political challenges that are of significant size. These challenges require political leadership that is committed to reform and prepared to expend political capital, and political strategies that can manage the political costs of powerful stakeholders associated with the reform. The experience in the Dominican Republic suggests that applied political analysis can help identify strategic options, which may enhance the prospects for health reform. But the experience also demonstrates that analysis must be accompanied by an adept use of political power; otherwise the reform package is likely to languish as technically desirable but politically infeasible.

Endnotes

[1] Governments usually started adjustment with the tacit consent of the population, having been put into office to 'reverse economic collapse' (Lindenberg and Ramirez 1989). Health sector reform has not enjoyed such a mandate in Latin America.

[2] More than 70% of public (SESPAS, IDSS, Secretariat of the Presidency) spending on health is directed to hospital care (IDB 1997).

[3] In the most recent OCT document, money management would be the responsibility of the Central Bank.

[4] While politically powerful, it is interesting to note that the 1996 eight-month AMD strike, which resulted in the total shut down of public services, evoked little interest from the public. Private sector services seem to have absorbed most clients willing to pay. In fact, health indicators (infant mortality) actually improved during this same time period.

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Acknowledgements

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Research article

Pathways to malaria persistence in remote central Vietnam: a mixed-method study of health care and the community

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Abstract

Background: There is increasing interest in underlying socio-cultural, economic, environmental and health-system influences on the persistence of malaria. Vietnam is a Mekong regional 'success story' after dramatic declines in malaria incidence following introduction of a national control program providing free bed-nets, diagnosis and treatment. Malaria has largely retreated to pockets near international borders in central Vietnam, where it remains a burden particularly among impoverished ethnic minorities. In these areas commune and village health workers are lynchpins of the program. This study in the central province of Quang Tri aimed to contribute to more effective malaria control in Vietnam by documenting the *non-biological* pathways to malaria persistence in two districts.

Methods: Multiple and mixed (qualitative and quantitative) methods were used. The formative stage comprised community meetings, observation of bed-net use, and focus group discussions and semi-structured interviews with health managers, providers and community. Formative results were used to guide development of tools for the assessment stage, which included a provider quiz, structured surveys with 160 community members and 16 village health workers, and quality check of microscopy facilities and health records at district and commune levels. Descriptive statistics and chi-square analysis were used for quantitative data.

Results: The study's key findings were the inadequacy of bed-nets (only 45% of households were fully covered) and sub-optimal diagnosis and treatment at local levels. Bed-net insufficiencies were exacerbated by customary sleeping patterns and population mobility. While care at district level seemed good, about a third of patients reportedly self-discharged early and many were lost to follow-up. Commune and village data suggested that approximately half of febrile patients were treated presumptively, and 10 village health workers did not carry artesunate to treat the potentially deadly and common *P. falciparum* malaria. Some staff lacked diagnostic skills, time for duties, and quality microscopy equipment. A few gaps were found in community knowledge and reported behaviours.

Conclusion: Malaria control cannot be achieved through community education alone in this region. Whilst appropriate awareness-raising is needed, it is most urgent to address weaknesses at systems level, including bed-net distribution, health provider staffing and skills, as well as equipment and supplies.

Background
Malaria remains a major global threat and its control is one of the Millennium Development Goals. Anti-malarial drug resistance, linked to both unnecessary and inadequate drug intake, creates risks for malaria resurgence, and is a major challenge for malaria control [1]. Insecticide-treated bed-nets and effective anti-malarial drug combinations are essential components of control programs [2,3]. However, effective control requires consistent action from both *health systems* and *community*, and an understanding of features that precipitate risk, such as development projects bringing labourers through forested areas [4]. The broad social (i.e. non-biological) aspects of control are thus critical to success [5].

Overextension or poor training of health staff can undermine diagnosis and treatment, while bed-net distribution requires reliable systems that are difficult for impoverished, isolated settings. Patients may not seek care if they lack knowledge or money for treatment or transportation, or may seek care from multiple sources [6-8,3], making implementation of treatment guidelines – and health information systems – problematic [9].

Vietnam is considered a Mekong region malaria 'success story' after the introduction of a National Malaria Control Program (NMCP) in 1991 to address a spike in cases and increasingly widespread drug resistance. The NMCP provided free anti-malarials (especially artemisinin to treat *P. falciparum*, Vietnam's most prevalent – and most deadly if untreated – strain, impregnated bed-nets, twice-yearly home insecticide spraying, and early diagnosis and treatment. Declines from 1.2 million clinical cases (without confirmed blood tests) and 4646 recorded deaths in 1991, to 185 529 clinical cases and 50 deaths in 2002, are attributed to the program [9-12]. Managed by the National Institute for Malariology, Parasitology and Entomology (NIMPE), the NMCP relies on vertical and horizontal collaborations from central to village level.

By 2000 malaria had largely retreated to 84 districts in 15 (out of 61) provinces, with an estimated population of 7.2 million (vs 83 million nationwide). Over 90% of severe cases and deaths occurred in mountainous, forested and largely ethnic minority areas of central Vietnam [9,12], often along international borders, where the common mosquito vectors that transmit malaria, *Anopheles dirus* and *An minimus*, are plentiful [13]. These ethnic minorities tend to be impoverished, poorly educated, culturally and linguistically distinct, and living in dispersed, less accessible settlements; such areas 'represent a real challenge for the [NMCP]' [9] (p.217). Therefore, it is both instructive and timely to investigate persistent malaria in such settings.

In 2002–03 the central province of Quang Tri was among Vietnam's highest malaria burden provinces with 4178 cases (confirmed and clinical). Over 9% of Quang Tri's approximately 573 000 inhabitants are ethnic minorities, overwhelmingly Van Kieu and Paco [14], who live astride the border with Lao PDR in districts with rugged, lush terrain, frequent rainfall, and large infrastructure projects within forests (including a bridge and road along the old Ho Chi Minh Trail). These contextual aspects, together with poverty, low education levels, cross-border mobility, and cultural diversity, made this an appropriate study site for malaria social science research.

This paper reports on a collaborative study aiming to contribute to malaria control in Vietnam by documenting the *non-biological* pathways to malaria persistence in two districts. The objectives were to identify the role and nature of health system and community factors *directly* linked to malaria persistence, and *underlying* influences that help explain the direct factors. The study was undertaken by Vietnamese and Australian researchers from March 2004 to April 2005.

Methods
In order to meet the study objectives we chose a flexible study design with multiple methods (both qualitative and quantitative). Mixed-method approaches permit explication of complex interrelationships between actors and systems, and have been used for malaria social research [15,16,5]. Data were collected in two stages. The formative stage used mainly qualitative tools to help define and expand thematic areas of enquiry; these data were rapidly reviewed to inform the (mainly quantitative) tools used for the assessment stage. An overview of methods and samples appears in Table 1. NIMPE investigators were trained by Australian colleagues and collected all data during 3 field visits.

Choice of Study Sites
Among Quang Tri's 8 districts, two (hereafter, A and B) were selected for their greater malaria caseload and proximity to the Lao border. At the 1999 census, district A's population was 54 547 and B's was 27 000; the vast majority were Van Kieu and Paco. For the formative stage we chose 3 border communes per district.

For the assessment phase we used 2 of these communes per district (i.e. total 4 communes) in order to ensure sufficient sample recruitment within the timeframe in view of the low population density and transportation difficulties. From each commune's approx 10 villages we selected 4 with varying ease of access as well as distance from the commune health station (i.e. total 16 villages).

Development and Use of Instruments, Sampling and Ethics
In the formative stage we held community meetings with district stakeholders to establish rapport and elicit local information and views. Semi-Structured Interviews (SSIs)

Table 1: Summary of methods and data sources (both stages)

Sample/source/focus	Location	Method (number)
FORMATIVE STAGE		
MC officials, local government, mass organisations, hospitals	2 district capitals	Community Meetings (approx 20 participants each)
Provincial MC officials	Provincial capital	SSIs (2)
District MC secretaries	2 district capitals	SSIs (2)
District Hospital managers	2 district capitals	Informal group discussion (2)
Anti-malarials sold at market	1 border commune	Observation (1)
Village environment	6 villages	Observation (6)
District Hospital staff	2 District Hospitals	SSIs (3)
Commune health staff	6 Commune Health Stations	FGDs (5) SSIs (4)
Village Health Workers	6 communes	FGD (1) SSIs (13 in 5 communes)
Community members	6 communes	FGD (1 with women) SSIs (14 men, 6 women)
ASSESSMENT STAGE		
District Hospital staff	2 District Hospitals	Tests (11 open questions) (14)
Malaria patient record cards	2 District Hospitals	Case numbers year-to-date (one DH); Review of previous month's cards DH-A (53) & DH-B (35)
Microscope points	2 District Hospitals & 4 Commune Health Stations	Observation (6)
Patient treatment logs	4 Commune Health Stations	Breakdown of year-to-date case numbers (one CHS); Review of previous 3 months (4 CHSs)
Village Health Workers	16 villages	KAP survey (16) (1/village)
Community members	16 villages	KAP survey (160) (10/village)
Bed-net use and quality	16 villages	Use observed in night-time home visits (55); quality observed in KAP survey home visits (160)

MC = malaria control; FGD = Focus Group Discussion; SSI = Semi-structured Interview; KAP = Knowledge, Attitudes and Practices

and Focus Group Discussions (FGDs) using flexible guides were held to explore beliefs, attitudes, awareness, care seeking/providing and circumstances relevant to malaria exposure and control with all provincial and district MC managers and Commune Health Stations (CHS) staff, a convenience sample of VHWs, and community members (village heads and adult men and women, recruited purposively).

For the assessment stage we developed and administered face-to-face structured knowledge, attitudes and practices (KAP) surveys in the 16 villages, one with every Village

Health Worker (VHW) (n = 16) and another with 10 community members per village (n = 160), respectively. The community sample size was determined on the basis of time, resources and feasibility, along with power to conduct tests of significance on some demographic variables. Sampling was undertaken randomly from village household lists, stratified for equal numbers of men and women aged 18–48. Van Kieu interpreters (one male and one female) were used for nearly all community surveys after training by NIMPE researchers. We also devised observation check-lists to assess visibility and currency of malaria treatment guidelines, quality of CHS microscopy, and bed-net quality during KAP survey home visits. Actual bed-net use was determined by unannounced night visits to 55 homes in 2 communes. To obtain an impression of provider knowledge and guidelines adherence, we quizzed (11 open questions) district hospital (DH) staff involved in malaria control and available on the day, and reviewed one month of patient records from both DHs and 3 months of treatment logs from all 4 CHSs; comprehensive malaria case record numbers for the first 9 months of the year were collated from one DH and one CHS.

Potential participants were assured that participation was voluntary and confidential and refusal would have no negative consequences. As is common in Vietnam, all agreed to participate; verbal informed consent was taken. Participants were given a t-shirt with a malaria control message in appreciation. The study was approved by NIMPE's Human Research Ethics Committee for Medical-Biological Research, and the University of Melbourne's Human Research Ethics Committee. Instruments were developed in English, translated into Vietnamese (and back-translated) and pre-tested with a convenience sample in the study area.

Data Management and Analysis
Notes were taken during SSIs and FGDs; transcripts were not prepared due to time constraints. Researchers reviewed the formative data to finalise the assessment stage tools. Check-list data, health record reviews and quiz results were collated. KAP survey data were analysed using *Stata* v8.0 (descriptive statistics and chi square tests), and community level differences calculated for location, sex and education. Interpretation of findings was iterative and involved all data sources and researchers; together we distilled a subset of triangulated findings that offered a coherent picture of the interplay between direct and underlying influences on persistent malaria.

Results
Provincial records showed a continued high malaria burden in Quang Tri in 2004, with a total of 3958 cases (both clinical and slide-confirmed), a slight decline from 2003

(4178). District A recorded 2131 cases (vs 2246 in 2003) and District B 608 cases (vs 571 in 2003). Below we present evidence of direct and underlying influences on malaria persistence in both districts at health system levels (district, commune, village) and community level, in turn.

District hospital level: satisfactory standards of malaria care but early discharge for some patients
Record review from the first 9 months of the year showed that DH-A treated 433 malaria cases. Review of a total of 88 patient cards from the two DHs showed close adherence to the most recent national malaria guidelines [17]. Just 3 patients were treated for malaria despite having a parasite-negative slide. Most DH malaria control staff were trained in the guidelines and generally knowledgeable. Of the 11 questions, the 8 staff at DH-A correctly answered all but 3, with 1–3 staff incorrect on each. Of the 6 DH-B respondents, all got 5 questions correct, with one wrong answer apiece for the remaining 6 questions. Microscopes were in good condition, microscopists had specialist training, and results were reportedly usually available within 30 minutes. There was one notable problem noted by DH staff during a community meeting: about one-third of inpatients discharged themselves prior to completion of treatment. Staff attributed this to inability to afford 'extra' charges for in-patient care, e.g. antibiotics and vitamins. Many were lost to follow-up, making it impossible to verify their adherence or recovery. However, most patients presented first to lower levels (though some were referred to DHs). At their last bout of malaria, 38% of community members reported they sought care from the VHW and 60% from the CHS; just 10% travelled to the DH (>one answer possible).

Commune Health Stations: deficiencies linked to resources
Each commune in Vietnam has a health station in a fixed facility serving the commune's villages. National policy states CHSs should have at least 4 staff, including a fully-qualified doctor, nurses and/or midwives, and should implement all basic preventive and curative care under DH direction. Just 2 of our 4 communes had the full staff complement, but also had larger populations than usual. The others had 3 staff, though some were not qualified to offer routine services.

Checks found deficiencies at most CHSs in malaria diagnosis, treatment and microscopy. During FGDs and individual interviews, staff at all 4 communes acknowledged that presumptive treatment frequently occurred. A detailed record review for the first 9 months of 2004 was undertaken in one CHS (popn 2618) in District A; staff treated 100 parasite-positive and 82 'clinical' cases (unconfirmed by microscopy and diagnosed by symptoms). Thus nearly half of all cases (i.e. 82/182) were

treated presumptively. Review of the past 3 months of logs in all 4 CHSs showed that in 2 communes, staff gave appropriate treatment per guidelines. In the other 2, staff sometimes gave CV8 for *P. vivax* cases (when chloroquine temporarily ran out) and primaquine + artesunate for clinical cases; moreover, workers at these CHSs did not recognise these treatments were contrary to guidelines. Laminated treatment guidelines intended for display to facilitate their use were locked out of sight in 3 of the 4 CHSs.

Although CHS staff discharged patients with instructions to report to their VHW during treatment, staff (at both levels) said patients often failed to do so, making it impossible to monitor adherence to treatment and course of illness, both of which are important for effective malaria control at the population level.

Several underlying influences apparently contributed to CHS-level weaknesses, including deficiencies in human resources, training, equipment and supply, all exacerbated by geographic isolation. In SSIs and FGDs most CHS staff said they found it difficult to accomplish their duties given current staffing levels. Understaffing placed particular pressures on microscopy services. Blood films would arrive haphazardly via VHWs or outpatient CHS services. Slides should be prepared and read immediately, which takes 30–45 minutes, but this rarely happened because of competing tasks, e.g. queues of infants awaiting immunisation, disease outbreaks, meetings with district health staff, or absence of the microscopist. For each slide the microscopist is paid an 'incentive' of just 300 dong (about USD two cents), which is low even by local standards. This situation may help explain why staff frequently prescribed anti-malarials according to symptoms, rather than after microscopic confirmation, as is preferred. For quality assurance, district staff periodically collected slides for review at the provincial capital; the percentage of incorrect readings was reported back to the district, and thence to each CHS, but without specifics on individual slides. One commune was told that 20% were incorrect after awaiting feedback for 4 months.

Although the MC program stipulates a properly trained microscopist for each CHS, most CHSs relied on one of their staff who was designated for this role but undertook the usual CHS workload, and typically had just a week of training. Few had in-service training. As well, quality was undermined by ageing microscopes, lack of stain solution in one commune, improper storage of materials in another, and inadequate pure water and filtering equipment in several.

The geographic features that make malaria viable in this region, coupled with low population density, present great challenges for its control. Poor roads, many water-

ways, steep ravines and a dearth of telephones hinder communications and transportation. Home visits, referrals and patient follow-up were particularly difficult, especially considering understaffing and (at the time of the study) lack of telephones in some CHSs, leading at times to local management of severe cases who would have been referred to the DH.

Poorly trained Village Health Workers and lack of appropriate drugs

Among the 16 VHWs surveyed, most (14) were men, 12 were Van Kieu, 3 were Kinh (ethnic Vietnamese), and one Kazo. Median age was 31 years (range: 21–45 years). All had regular occupations as farmers (14) or traders (2). The 2 female VHWs had the highest education (10–12 years), 10 of the men had 6–9 years, and the other 4 had the minimum required (5 years) for VHWs. Median length of service was 5 years (range: 7 months-15 years).

The VHW (one per village) is a volunteer working across all primary health care programs following very basic training. For MC alone, VHWs are expected to prepare blood films, make referrals for severe cases, treat with (free) anti-malarials, educate the community, manage cases discharged from higher levels, and assist with spraying and net impregnation. The study found that some VHWs lacked confidence in their clinical MC duties (see Table 2).

KAP analysis revealed that 11/16 VHWs prepared blood films, but only 6 delivered these the same day to the CHS, with 4 waiting >72 hours. Ten said they 'rarely or never' stayed to obtain results; only parasite positive results were reported back to them from the CHS, often after a few more days. Most (11/16) commenced treatment without microscopic-confirmed diagnosis, prescribing partly by symptoms, and partly by the type of drug currently on hand within their kits. In 10 villages VHWs did not carry artesunate, the recommended drug of choice for *P. falciparum* malaria at the time of the study (see Table 3).

Of the 6 who carried artesunate, all believed it was appropriate for 'serious' malaria cases. The main indication for chloroquine offered by the 14 who carried it was 'light' fever, not its usefulness for *P. vivax* malaria. Hence, use of anti-malarials for non-malarial fever may have occurred. Despite the fact that 12 VHWs reported confidence in case management, 8 admitted they never followed up.

Triangulation of data sets suggests that VHW weaknesses in malaria management were attributable to a number of underlying influences, including insufficient time to complete duties outside normal working hours, inadequacies in pre- and in-service training and some delays in rolling out the new guidelines for drugs in VHW kits.

Table 2: VHW self-reported confidence in aspects of malaria control role

	n (%)
Diagnose malaria through symptoms (n = 15*)	10 (66)
Take a blood sample from patients (n = 15*)	9 (60)
Make a blood film for microscopy (n = 15*)	9 (60)
Give correct anti-malarial medication (n = 15*)	9 (60)
Adequately manage malaria cases (n = 15*)	12 (80)
Undertake malaria information-education-communication activities (n = 16)	13 (81)

* missing data

In Vietnam, individuals often become VHWs out of civic duty or the appeal of further education and occasional – if small – incentives for particular health care tasks. Apart from their MC duties, VHWs must keep abreast of changing, relatively complex, treatment guidelines. This is daunting for volunteers with low education levels residing in remote locations. When asked to name the role's disadvantages, our sample mentioned low remuneration, lack of time, and difficulties with transportation and distance, all of which could undermine case identification and management. About one-third felt frustrated by the villagers' 'refusal to take advice'.

Although policy dictates that each VHW is trained pre-service for at least three months, just 4 (one-quarter) had such training; 3 had 12–45 days, 6 had 1–5 days, and 3 reported no training. Only 5 reported training during 2004, although provincial policy requires annual refresher training. Only 12 VHWs knew about the new guidelines and 10 carried the new treatment table. Most, however, knew correct dosage for the drugs they carried. At the time of the study NIMPE was disseminating new diagnosis and treatment guidelines, which include some devolution of decision-making on local treatment to provincial MC managers. Some confusion appeared to persist during this transition, because informants at various levels provided inconsistent information about policy for anti-malarials in VHW drug kits, and a range of explanations for what was actually in the kits.

The terrain and isolation that hinder optimal care by CHSs act as greater barriers for the VHW MC role, because VHWs typically have even less access to reliable transportation. It takes time, effort and – at the least – opportunity costs for these part-time volunteers to remain in close touch with higher health system levels, to follow up or to

Table 3: Number of VHWs carrying different types of anti-malarial drugs

	n = 16
Number who carry only chloroquine	8
Number who carry only artesunate	0
Number who carry chloroquine & artesunate	6
Number who do not carry any anti-malarial drugs	2

refer patients. These circumstances presented ongoing risks that some seriously ill patients would be treated in the village, possibly with a less effective anti-malarial.

Community level: sub-optimal prevention linked to insufficient bed-nets and socio-cultural context

Demographic information from the community KAP appears in Table 4. Most were Van Kieu, and education levels were low, with females more likely to be unschooled (χ^2 = 28.22, p = 0.01). Median household size was 6 persons (range 2–13 persons). Sixty percent had a 'Poor Card', which denotes low-income status and enables free medical care and basic drugs. Most (66%) survey respondents reported having had malaria, including about one-third at least once in 2004.

Our findings suggest the direct risks operating at community level were sub-optimal bed-net use and early self-discharge from care. The national MC program calculates net sufficiency on a ratio of one net per two people, with a target of consistent use by at least 80% of the population in endemic areas. Quang Tri health staff at all levels believed this target was not met in the study communes, a view based on irregular day-time spot checking by provincial and district survey teams. We undertook our estimates differently, i.e. by observation during unannounced night-time visits, coupled with survey questions on bed-net use. Night visits to 55 homes in two communes found no nets were used in 20% of households and some nets did not reach the floor or were used as blankets. The 160 survey respondents, however, reported very high usage: 145 (92%) claimed to have slept under a net on the previous night, and 136 (86%) said that all family members had done so, whether singly or (more frequently) sharing. Respondents cited adolescents and the elderly as less likely to use and/or share nets, with just 50% of teenagers consistently using, among whom 70% shared. Reportedly, 91% of elders 'always' used nets, but only 57% shared. Whilst 16% of respondents claimed to travel occasionally or often into Laos, and about half went into forests at varying frequency, just a handful carried bed-nets on overnight trips.

While 66 (41%) sometimes (n = 58) or always (n = 8) consulted traditional healers for 'health problems', the

Table 4: Description of the KAP community sample, by sex

	Males n (%)	Females n (%)	Total n (%)
Sex	80 (50)	80 (50)	160 (100)
Age (mean, range) in years	34, 18–48	30.6, 18–45	32.5, 18–48
Ethnicity:			
Van Kieu	69 (86)	71 (89)	140 (87.5)
Kinh (Vietnamese)	8 (10)	9 (11)	17 (10.6)
Other	3 (4)	0	3 (1.9)
Education level reached:			
No schooling	31 (39)	64 (80)	95 (59.3)
Some primary (1–5 years)	27 (34)	4 (5)	31 (19.3)
Some secondary (6–9 years)	22 (27)	12 (15)	34 (21.3)
Occupation			
Farmer	67 (84)	68 (85)	135 (84.3)
Other	11 (14)	9 (11)	20 (12.5)
missing	2 (2)	3 (4)	5 (3.1)
Poor Card			
Yes	44 (55)	52 (65)	96 (60)
No	35 (44)	27 (34)	62 (38.8)
missing	1 (1)	1 (1)	2 (1.3)

survey showed high awareness of recommended help-seeking for suspected malaria. Respondents claimed to act accordingly (Table 5), although this could not be verified. Some malaria patients with Poor Cards said they were charged for extras like vitamins at DHs (6/20) and CHSs (12/113), leading some to borrow money or discharge themselves early.

There was considerable evidence that insufficient bed-nets, cultural sleeping norms, low education and poverty acted as underlying influences on sub-optimal community behaviours. Provincial staff told us that Quang Tri had comprehensive bed-net coverage through the NMCP, and MC staff at all levels attributed persistent malaria in Quang Tri mainly to community 'refusal' to use bed-nets, arguing the need for more 'information, education and communication'. While enough nets may have been distributed, our survey respondents reportedly received theirs prior to 2003, and many were no longer intact. Some purchased additional nets, usually cheaper single bed size. Using MC guidelines on bed-net ratios (one net/2 people) and data on household size, we calculated that among the 160 households represented by survey respondents, just 72 (45%) had sufficient nets to cover their needs and 88 (55%) did not. In addition, checks of net quality when conducting the survey found 62% of households had at least one ripped or damaged net. Thus, even if all available nets were used, *less than half of all households were fully protected*.

Family configuration and cultural sleeping patterns also affected net adequacy. In FGDs we heard that some teenagers refuse to use nets, and that elders (with reportedly high net usage) strongly prefer to sleep alone, thus potentially leaving other family members short. As well, overnight socialising among male neighbours is so normal that Van Kieu houses contain a nominated 'guest' space in the living room, but just 19% of respondents had a spare net for guests.

Table 5: Community responses about care-seeking for suspected malaria

What to do first for fever or suspected malaria (n = 149*)	n (%)
Do nothing	1 (0.7)
Pray	3 (2.0)
Buy drug in market	4 (2.7)
Go to Village Health Worker	77 (52)
Go to Commune Health Station	63 (42)
Go to District Hospital	1 (0.7)

How long do you wait before seeking care? (n = 129*)	
Immediately	81 (63)
One day	41 (32)
Two days	6 (4.7)
More than two days	1 (0.8)

* Missing data

A lack of spare nets also contributes to exposure risk during periods of mobility – usually by foot – into Laos, forest or fields for overnight stays. This mobility is culturally and economically driven, as families seek reunions with relatives across the Lao border, and individuals collect forest products for consumption or sale due to lack of employment options.

As Table 6 illustrates, most respondents had basic understanding of malaria symptoms and causation, and knew malaria is curable. However, about one-quarter were unsure about causation and prevention. Among those who said malaria is not preventable, 28 (55%) had no schooling, versus just 5 (18%) with one or more years of schooling (χ^2 14.33, p = 0.001); this misperception was held by 17.5% of men and 50% of women(χ^2 6.60, p = 0.01). The lower education levels of women in particular may explain gaps in preventive behaviours.

Ethnic minorities in western Quang Tri have little involvement with mainstream society. Whilst VHWs tend to be the same ethnicity as villagers, this is less true for other providers. A third of respondents 'sometimes' had language problems with district or commune providers, and one ethnic Vietnamese commune health worker who spoke Van Kieu felt neither fully accepted nor fully trusted.

In theory, cost should not deter care-seeking because malaria diagnosis and treatment are free. However, these involve transportation, opportunity and (sometimes) medical 'extras' costs that this community could ill-afford, which may help explain why some discharged themselves from care and were lost to follow-up. Such charges are imposed increasingly as Vietnam's health system is decentralised.

Discussion

This mixed-method study in Quang Tri province in central Vietnam was designed by a multi-disciplinary team that included malaria experts and social scientists. It set out to

map the non-biological 'causal pathways' that led to the problem of persistent malaria in a remote ethnic minority population. As Hawe et al argue, exploring the underlying influences that precipitate, amplify or mitigate direct health risks provides evidence that can assist programmers to design and target comprehensive interventions to bring about and sustain necessary changes; the same approach used in program evaluation can pinpoint specific opportunities to address quality concerns [18].

Strengths and weaknesses of the study

Particular strengths of the study were the involvement of stakeholders from various health levels, including the community itself, and the triangulation of data through use of multiple methods (quantitative and qualitative), including self-report and the more objective tools of observation and record review. Malaria social scientists have noted the need for community-level malaria investigations to commence with qualitative methods that help explain behaviours, thus permitting grounded development of structured surveys [19]. This formative approach was one of our study's strengths. However, due to lack of resources and expertise, systematic preparation and analysis of complete transcripts were not conducted, preventing full utilisation of qualitative data to illuminate the study's quantitative findings.

Another limitation was a lack of definitive data from CHWs on case management and microscopy quality, which reflects the more rudimentary health reporting often found in remote settings. However, our objective was to map pathways in one study site and not to produce generalisable findings, which in any case would be inappropriate given the small number of communes explored and relatively small sample of providers and community members. This study also did not attempt to identify the role of biological factors such as vector prevalence or drug sensitivity; thus preventing us from arguing conclusively the relative importance of all potential factors.

Systems and the community: a dual focus for malaria control in remote settings

Figure 1 summarises relationships and pathways to malaria persistence drawn from this study and lays out the underlying influences that apparently explained weaknesses found at both health systems and community levels. This model excludes vectors, weather events and drug sensitivity. We present this as a conceptual framework for mapping our findings, and for possible adaption by researchers wishing to investigate such pathways in other complex settings.

Previous studies in Vietnam have found widespread misunderstanding about malaria treatment and prevention among populations in similar isolated endemic areas

Table 6: Community knowledge about malaria transmission, prevention and cure

	n (%)
Have heard of malaria (n = 158*)	143 (91)
Mosquitoes main 'cause' of malaria (n = 158*)	113 (72)
'Don't know' what causes malaria (n = 158*)	40 (25)
Fever is a symptom of malaria (n = 160)	124 (77)
Malaria can be cured (n = 156*)	134 (84)
Malaria can be prevented (n = 140*)	107 (76)
Bed-net is best way to prevent malaria (n = 160)	98 (61)
'Don't know' best way to prevent malaria (n = 160)	53 (33)

* missing data

[20,21]. Our study found around a quarter of the community shared these misunderstandings, and our model suggests this may have contributed to poor health behaviours. Health systems managers often assume (as here) that minority group customs, culture or knowledge 'barriers' account for poor behaviours (and outcomes), assumptions that typically lead solely to community education interventions. The national program's ratio for bed-net sufficiency also rests upon assumptions about net-sharing, and about where people actually sleep. Our major finding – that over half of households surveyed lacked sufficient bed-nets – illustrates the risks of untested assumptions, particularly in view of population sleeping patterns and mobility through forests and borders, which increases net requirements while enhancing exposure risk. A recent study in Vietnam found that regular forest work accounted for 53% of *P. falciparum* infections, with increased risk if people used nets at home but not in forests [22]. Another found that movement of infrastructure project workers within forests (which was occurring in our site) was a source of ongoing malaria [4]. While respondents – particularly women and the unschooled – require an appropriate educational program, it is clear that responsibility for non-use of bed-nets, and/or ongoing malaria, cannot fully be placed at the feet of this community.

A review by Williams and Jones [23] found that malaria studies typically focused on the role of mothers or care givers in malaria management, while few looked at health care quality. This is surprising given the pivotal role played by both providers and rational drug use. The World Health Organization [24] has noted that health worker shortages – an increasing global problem and one found in our site – are linked to higher mortality rates. A recent review [25] of the impact of health reforms on Vietnam's commune-level services found poorer quality CHSs in remote areas, especially where ethnic minorities live. We found that local providers often lacked diagnostic skills, time, equipment and/or appropriate drugs for populations in this remote region. Even temporary shortfalls in the supply of anti-malarial drugs, especially during outbreaks, could have serious impacts. Additionally, District Hospital staff estimated that one-third of malaria patients discharged themselves early for cost reasons (medical 'extras'), and were usually lost to follow-up. Thus, presumptive, under-treatment and unnecessary treatment probably occurred, which are known to endanger individual patients and may contribute to the emergence of drug resistance [1].

Conclusion

A recent multi-country analysis found increasing use of income-generating malaria services and reductions in free services, with low provider salaries associated with inappropriate care-giving [26]. Regional disparities in revenue-raising and human resources can result in uneven implementation of control programs [27]. In a poor province with limited revenues like Quang Tri, care must be taken to ensure that pressures to charge additional service fees do not discourage people from seeking and completing malaria treatment. Malaria control in this site cannot be achieved through community education alone. Focused training, strategies to attract staff to remote areas, appropriate transportation and communication systems, greater efforts to keep (often impoverished) patients under care, and robust supply chains for drugs and impregnated bed-nets – with regular monitoring of use, quality and sufficiency – are among the responses that can further strengthen Vietnam's efforts to address malaria persistence in this isolated region.

Abbreviations

CHS: Commune Health Station; DH: District Hospital; FGD: Focus Group Discussion; KAP: Knowledge, Attitudes and Practices; MC: Malaria Control; NMCP: National Malaria Control Program; NIMPE: National Institute for Malariology, Parasitology and Entomology; SSI: Semi-structuredInterview; VHW: Village Health Worker.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

MM conceptualised and designed the study, trained co-investigators, led the analysis process and was primarily responsible for drafting the manuscript. QAN coordinated the field work and conducted the majority of field research, entered and analysed quantitative data and contributed to the analysis process. SC made substantial contributions to training of co-investigators, data analysis and
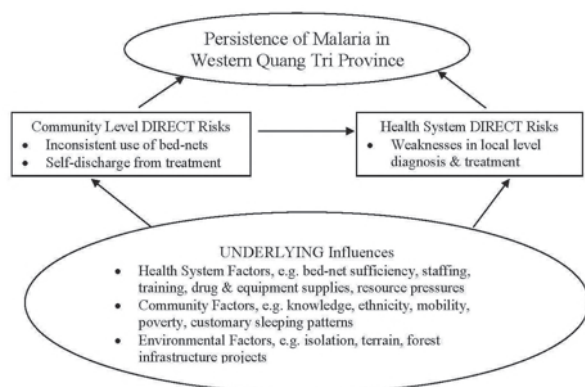
Figure 1
Model of non-biological pathways to malaria persistence in Quang Tri province.

revision of manuscript drafts. BAB contributed to the analysis process and revision of the manuscript. NHD and TTN contributed to analysis of data and revision of the manuscript. All authors read and approved the final manuscript.

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