

Overcoming health-systems constraints to achieve the Millennium Development Goals

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Effective interventions exist for many priority health problems in low income countries; prices are falling, and funds are increasing. However, progress towards agreed health goals remains slow. There is increasing consensus that stronger health systems are key to achieving improved health outcomes. There is much less agreement on quite how to strengthen them. Part of the challenge is to get existing and emerging knowledge about more (and less) effective strategies into practice. The evidence base also remains remarkably weak, partly because health-systems research has an image problem. The forthcoming Ministerial Summit on Health Research seeks to help define a learning agenda for health systems, so that by 2015, substantial progress will have been made to reducing the system constraints to achieving the MDGs.

In 2000, the UN Millennium Declaration was signed by 189 countries, and translated into eight Millennium Development Goals (MDGs) for development and poverty eradication.¹ Three of the eight MDGs are directly related to health (reducing child mortality; improving maternal health; and combating HIV/AIDS, malaria, and other diseases). The ambitious nature of these goals—which are supposed to be achieved by 2015—coupled with concern about the massive health challenges being faced by the world's poorest countries, has led to a growing momentum within the field of global health. This momentum in part takes the form of a series of high-profile global health initiatives, including the Global Fund to Fight AIDS, TB and Malaria, Stop TB, Roll Back Malaria, The Presidential Emergency Plan for AIDS Relief, and the Global Alliance for Vaccines and Immunization.

Recent evidence, however, suggests that based on current trends many low-income countries are unlikely to achieve the MDG health targets by 2015.^{2,3} Even more worrisome is that those countries furthest away from the targets—ie, those with the worst health statuses—are least likely to make substantial progress. This is despite the fact that for the health problems that must be tackled to reach the MDGs, there are a growing number of effective and affordable interventions, as well as increasing international assistance for specific diseases, characterised by the emergence of billion dollar funds. Rather, there is growing consensus that a primary bottleneck to achieving the MDGs in low-income countries is health systems that are too fragile and fragmented to deliver the volume and quality of services to those in need. For example, Chen⁴ describes the “double crisis” of devastating disease and overwhelmingly failing health systems in many low-income countries. The High Level Forum on achieving the Health Millennium Development Goals⁵ identified major shortfalls in the health workforce, lack of donor coordination, and weak information systems as critical challenges to achieving the Millennium Health Goals. The *Lancet* series on child survival⁶ noted the critical need for strengthened

health systems to achieve child health gains, and this year's World Health Report argued that “The 3 by 5 initiative [to provide 3 million people with access to antiretrovirals by 2005] cannot be implemented in isolation from a regeneration of health systems.”⁷

While stronger health systems appear to be a prerequisite to achieving the health MDGs, there is currently little direct focus on systems strengthening. The drive to produce results for the MDGs has led many stakeholders to focus on their disease priority first, with an implicit assumption that through the implementation of specific interventions the system will be strengthened more generally. Experience to date, however, suggests that if health systems are lacking capabilities in key areas such as the health workforce, drug supply, health financing, and information systems, they may not be able to respond adequately to such opportunities. Furthermore, there is concern that already weak systems may be further compromised by over-concentrating resources in specific programmes, leaving many other areas further under-resourced.

This article aims to assist the development of a greater and more widely shared understanding of approaches to health-system strengthening. It uses the MDGs as a starting point, and reviews the advantages and limitations of pursuing health systems strengthening through the lens of individual service or disease specific initiatives. It argues that part of the challenge is to get more existing knowledge into practice, but that a stronger body of knowledge about which system strengthening strategies are effective, and which are not, is also urgently needed. If these challenges do not receive serious and sustained attention, there is a risk that many current praiseworthy efforts will be not achieve their goals. This is the first of a number of *Lancet* papers before the Ministerial Summit on Health Research (to be held November 16–20, 2004, in Mexico City), which will focus particularly on developing health policy and systems research, on knowledge dissemination, and on promoting the use of findings by decision makers.

Previous efforts to improve delivery of priority services

Many of the current global initiatives to achieve the health MDGs have strong service-specific or disease-specific foci (table 1). Service delivery arrangements are sometimes described in terms of vertical or horizontal approaches. Vertical approaches use planning, staffing, management, and financing systems that are separate from other services, whereas horizontal approaches work through existing health-system structures. In reality, in many low-income countries, few interventions are delivered through totally stand-alone or totally integrated approaches, but generally operate through a complex patchwork of arrangements.²

Over the past 30 years there have been significant shifts in international development strategies and thinking about the best mix of vertical and horizontal approaches. The Alma Ata declaration promoted a comprehensive approach to improving health with a strong emphasis on building health systems “from the bottom up” through primary health care.⁸ However this vision was challenged by those who argued that to achieve a measurable effect it was necessary to focus on a limited number of cost-effective interventions through selective primary health care.⁹ The emphasis on delivering cost-effective interventions resulted in an increasing array of selective programmes, often being promoted simultaneously in countries with limited capacity to deliver. The growing recognition of some of the problems resulting from multiple single-condition programmes led to more integrated approaches such as Making Pregnancy Safer and Integrated Management of Childhood Illness, which aspire to maintain focus on specific outcomes while working within existing service structures. Most recently, the number of global alliances for priority diseases has increased.

Constraints currently faced by health systems

Table 2, which uses a framework developed by Hanson and colleagues,¹⁰ illustrates some of the major constraints to improving service delivery identified in reviews by major global health initiatives. A wide range of frameworks and instruments were used for these reviews; from short, structured checklists to detailed questionnaires and quantitative approaches to assessing barriers.^{10–20} The reviews largely focus on constraints within the government system, although there is increasing recognition of the need to also examine private sector issues, in view of the scale of “out-of-pocket” spending and private provision in many parts of the world. Diagnoses of the main health-systems barriers from different intervention or programme-specific perspectives tend to be fairly consistent, albeit articulated in rather general terms. Table 2 shows that some major barriers are shared by every programme: human resources, financing, drugs and supply systems, and the generation and use of information. Reviews of

	Examples of interventions	Examples of global initiatives
Maternal health	Skilled birth attendance; access to emergency obstetric care	Making Pregnancy Safer
Newborn and child health	Oral rehydration therapy; micronutrients; immunisation; antibiotics for lower respiratory tract infections	Integrated Management of Childhood Illness; Global Alliance for Vaccines and Immunizations; Global Alliance for Improved Nutrition
HIV/AIDS	Voluntary counselling and testing; condoms; prevention of mother to child transmission; combination antiretroviral therapy	3 by 5; GFATM; Presidential Emergency Plan for AIDS Relief
Tuberculosis	DOTS strategy for tuberculosis control; DOTS plus (for treatment of multidrug resistance)	Stop TB; GFATM
Malaria	Insecticide-treated nets; effective case management; indoor residual spraying	Roll Back Malaria; GFATM

GFATM=Global Fund to Fight AIDS, TB, and Malaria.

Table 1: Interventions and global initiatives linked to health MDGs

other emerging priorities not specifically targeted by the MDGs, such as non-communicable diseases and injuries, have encountered similar system constraints.²¹

One key group of constraints not listed in table 2 are environmental constraints¹⁰ (ie, those external to the health system), which include factors such as the overall policy environment, political instability, and the quality of governance. Some findings suggest that in certain countries these broad policy and institutional constraints pose greater barriers than resource constraints.^{22–24} Although health systems alone cannot remove these environmental constraints, some health-system structures (such as development of stronger mechanisms to hold health-care providers accountable to communities) may moderate the consequences of such obstacles.

One limitation of many of these analyses is that they identify what the barrier is (ie, the immediate operational constraints), rather than getting at its root causes. Constraints beyond the control of individual programmes—eg, public sector employment rules, which can have a major effect on the way health services operate—may not be even identified, let alone addressed, when a disease or service specific lens is used. Moreover, it is unusual for a constraint to have a single root cause: more commonly, there are several underlying factors, which are often interdependent. Efforts to overcome a particular constraint are less likely to be successful if these relations are not taken into account.

Drawing on table 2, two distinct ways to address these systems challenges can be identified. One is that the constraints are tackled independently and in parallel for every disease or MDG goal. A second approach is that each system challenge is worked on across the diseases or MDGs. As Mogedal and Stenson¹⁹ observe in relation to disease eradication programmes, but which holds true more generally, strong convictions in either direction are held by many actors and observers. In the following two

	Maternal health	Child health	TB	Malaria	HIV/AIDS
Community and household level					
Demand-side barriers—individual: socioeconomic, gender effects on behaviour, access, and use of care	✓	✓	✓	✓	✓
Demand-side barriers—community: absence of social pressures to improve access	✓		✓		✓
Stigma*	✓		✓		✓
Health-service delivery					
Inequitable availability of services	✓	✓	✓	✓	✓
Multiple providers, public and private	✓	✓	✓	✓	✓
Provider behaviour to clients	✓	✓	✓	✓	✓
Case management: poor adherence, increasing drug resistance, adverse events	✓	✓	✓	✓	✓
Physical infrastructure, equipment	✓	✓	✓	✓	✓
Human resources availability and management, including payment mechanisms, quality of care, supervision	✓	✓	✓	✓	✓
Drug supplies, supply systems	✓	✓	✓	✓	✓
Service management capacity	✓	✓	✓	✓	✓
Referral and other communication failures	✓	✓	✓		
Health-sector policy, strategic management					
High level political commitment to the specific problem or programme	✓	✓	✓		✓
Financial constraints, resource allocation	✓	✓	✓	✓	✓
Insufficient coordination between donors, non-governmental organisations, government bodies	✓	✓	✓	✓	✓
Regulation or legislation to affect both public and private actors	✓	✓	✓	✓	✓
Weak links between programmes leading to inefficiencies and competition for limited resources	✓	✓	✓	✓	
Sector-wide approaches, health-sector reforms	✓		✓		
Monitoring systems, use of information—public and private sector	✓	✓	✓	✓	✓
Public policies cutting across sectors					
Macroeconomic policies, poverty reduction strategies, civil service rules and reforms	✓	✓	✓		

TB=tuberculosis. ✓ Indicates challenge or barrier faced by that health priority. *Although stigma is not always perceived as a health-system issue, it is included here because health systems can reduce or increase stigma, depending on the way people are treated by providers and perhaps the availability of effective treatment.

Table 2: Some major barriers and challenges to improving service delivery for priority health problems, identified in reviews of major initiatives and programmes

sections, we consider what is known about the advantages and disadvantages associated with each of these approaches.

Addressing the constraints

Parallel approaches

As discussed above, programmes specific to a service or disease can work in more or less vertical ways to achieve their goals. For example, several global initiatives are concerned with making good quality pharmaceuticals available to health facilities in a timely and reliable manner. This goal might be achieved through development of new and parallel pharmaceutical procurement and distribution systems, or by strengthening the existing pharmaceutical management system to meet the needs of all the specific initiatives. In

practice, global initiatives and national programmes are using both integrated and more vertical or parallel approaches to move their agendas forward.

The primary advantage of taking an intervention-specific approach to strengthening of health systems is that it can help maintain focus by targeting a ‘manageable chunk’ of the system rather than taking on the whole. Targeting particular health-system constraints to the achievement of health goals may also deliver quicker returns than longer-term, broader, system-based interventions. However, although the formal evidence base is limited,¹⁹ there are many reports from experience that problems may arise when several vertical, parallel subsystems are created within the broader health-care system. Parallel approaches are likely to result in:

- **Duplications:** running parallel systems for delivering drugs to health facilities will increase transport costs, and increase the number of forms that health workers need to complete to secure their drug supply.
- **Distortions:** creating a separate cadre of better paid health workers for the specific tasks of a programme may deplete staff from other key functions and/or demotivate staff who do not benefit from higher pay or better conditions.
- **Disruptions:** programmes often train health workers by taking them away from their jobs for several days or weeks, leaving their posts vacant. This training tends to be uncoordinated across programmes, and may result in the same worker receiving several training courses in a year, with a substantial loss of services being delivered.
- **Distractions:** similarly, the specific and uncoordinated reporting requirements of donors can lead to several forms being filled by a sole health worker for the same problem, distracting them from more productive uses of their time.

These problems suggest that even though global initiatives or national programmes are bound to maintain a primary focus upon their own particular disease or intervention, there are few circumstances when this focus should be pursued exclusively through the establishment of separate parallel systems. More rigorous assessments of the extent to which vertical versus more integrated approaches contribute to sustained overall system strengthening—and in what circumstances—are certainly needed.

Taking a system-wide perspective

As we have discussed, the system barriers identified by specific initiatives and programmes are rarely unique to their own focal disease, and the discourse of some global initiatives (such as Stop TB and 3 by 5)¹⁶ emphasises their need to take heed of the broader health-system context, and to contribute to overall system strengthening. For example, service-specific or disease-specific programmes

may work with human resource planners at the ministry of health to increase the supply of nurses able to work with tuberculosis, or they might work within the sphere of a sector-wide approach to improve donor coordination for their particular intervention. However, in view of programmes' specific mandates, their responses may be circumscribed and fail to consider possible broader system-wide responses and effects. The question is, does this matter? We argue that it does.

First, such limitations can unnecessarily restrict the policy options considered. Table 3 is designed to illustrate that there are different possible responses to typical health-system constraints (not to recommend one particular approach: as is discussed later, much is still unknown about appropriate health-system strengthening strategies). The first set of responses are those that a disease-focused perspective might pursue. These tend to focus on more 'microlevel' solutions, such as outreach for focal diseases, or financial incentives for priority services. The second set are responses that a health-systems approach might generate instead, such as reviewing long-term plans for locating facilities, or creating proper performance review systems. Even when dedicated initiatives do take a more systemic approach, they tend to focus on specific subsystems such as surveillance or drug supply systems, rather than on "macro" issues such as overall financing mechanisms, the role for the private sector, or ministerial restructuring. The point here is that, although we do not yet know for certain whether (and when) broader architectural responses are necessarily better than disease-specific ones, the imposition of a disease-specific lens means that broader health system-wide responses are not even part of the solution set considered.

Second, some of the disease-specific strategies identified in table 3 may crowd out ongoing activities within the health sector. A study of polio eradication indicated that the majority of district level staff reported that regular work was disrupted or dropped in the lead up to national immunisation days.¹⁹ Although polio vaccination by its nature only has transient effects, this example illustrates the potential hazards. Disease or service-specific strategies are also likely to become less effective and less sustainable as more global initiatives adopt them. One or two workshops a year training health workers in HIV/AIDS counselling techniques may be manageable, but when this is combined with additional workshops on tuberculosis, malaria, and immunisations, then health workers spend too long away from their posts.

Third, a disease-specific focus might help meet short-term goals, but can crowd out the development of strategies that will sustain those gains. In view of the many interactions within a health system, there are commonly several factors contributing to a particular problem. The broader approaches to health system strengthening typically aim to tackle these root causes of failure. They therefore also usually take longer, and are

	Disease-specific response	Health-system response
Constraint		
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 intersectoral 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

Table 3: Typical system constraints and possible disease-specific and health-system responses

more difficult to advance; but without them the easier, shorter term solutions (for example, increased funds, managers' training) are likely to lead to only limited gains.²⁵ In practice there is often a tension between short and longer term goals, and the time horizon that decision makers adopt might be one of the critical factors in determining whether service-specific approaches to health-system strengthening or broader architectural responses are indicated.

In summary, the advantages claimed of a system-wide approach are that such a strategy increases the range of options and tackles root causes, and the benefits accrue to several, not single, priorities—ie, efficiencies are possible. The disadvantages are that benefits take longer to accrue and the effort may become unfocused and unmanageable. However, we argue that taking a systemic or "health-systems" approach does not mean abandoning priorities, losing a focus on outcomes, or trying to do everything at once. It simply means recognising that health systems have a complex anatomy and physiology, and that one or more root causes may need to be tackled to get significant long term improvements in coverage and quality of care.

Accelerating achievement of MDGs through improved knowledge on how to strengthen health systems

Disease or service-specific strategies to strengthen health systems on their own are unlikely to bring about

Panel: Some reasons for neglect in health-policy and systems research

- Health systems have an image problem: visible or emotive topics such as child deaths or polio campaigns engage stakeholders in ways that interventions for strengthening planning or accountability mechanisms do not
- Health-systems research also has an image problem: other forms of research such as basic science and drug discovery are prestigious while health systems research is seen as fluffy, pedestrian, and applied. This attitude is caused by divergent views on the types of systems issues that can be researched, and to methodological challenges
- Divergent views on the types of questions amenable to scientific enquiry: some believe that health-system problems are primarily political, and therefore best solved using common sense rather than evidence
- Answers from such research can be slow to arrive and uncertain, because of the long-term nature of health-systems change, and the complex and indirect links to final outcomes
- Generalisation can be difficult, because the effects of interventions crucially depend on the environment in which they are implemented
- Health-systems research may not have a disease-specific or intervention-specific focus, so there are fewer opportunities for research funding
- Disinterest and difficulty in assessment: because the interventions are part of large, messy reforms with strong political imperatives, systematic evaluations difficult to design and may be difficult to defend
- Restricted research capacity, and a research workforce that is multidisciplinary and therefore does not have an obvious institutional home with clear career structures
- The right questions are not being asked: improved understanding is needed about the types of research that really change the way decision-makers think

the improvements in health systems needed to achieve the MDGs. Similarly, use of an intervention-specific or disease-specific lens to define the research agenda for health policy and systems serves to generate much useful knowledge,²⁶ but on its own is incomplete. Such an approach must be complemented by a substantial additional body of knowledge and action that takes the functioning of the health system as its core concern.

What would such a programme of work look like? While health policies and systems have been a relatively neglected area of work in low and middle income countries, the efforts of the past 40 years have made clear contributions, and in certain areas there is a growing body of knowledge about effective strategies to strengthen health systems. This information has helped to provide a more balanced debate about the pros and cons of strategies that have sometimes been promoted more on the basis of ideology rather than evidence. For example, several studies during the 1990s improved our understanding of the circumstances in which strategies such as contracting with and franchising private sector providers (a process common to many global initiatives), might—or might not—achieve their intended results.^{27,28} Although user fees for health services were strongly advocated by various agencies during the 1980s as a means to overcome financial constraints, a sound body of knowledge now shows that user fees are likely to have negative effects upon access

to care, especially for the poor, unless certain preconditions are met.²⁸

Knowledge has also expanded through approaches that some might not put under the rubric of formal research, but which have nevertheless helped decision-makers to better understand and address the problems faced by their health systems. Examples include the increase in relatively informal local “action-research”, the development of national health accounts to get a complete picture of the sources and uses of funds, and tools such as stakeholder analysis that are designed to help people navigate the complex political arena within which policies are implemented.

Despite these achievements, there is still an extraordinarily weak evidence base to support (or challenge) the majority of the health-system strengthening strategies now being proposed and implemented. Almost 10 years ago, WHO’s Ad Hoc Committee on Health Research highlighted health policy and systems research as an especially neglected area.²⁹ The situation is only slightly better today. The Commission on Macroeconomics and Health³⁰ found that existing evidence on constraints to improving service delivery, and on strategies for overcoming them, was still thin. In many cases, knowledge is deficient about ways to organise, pay for, and oversee health services to get sustained, nationwide improvement in resource-constrained settings. Almost as important is that there are still few answers about how to manage and sequence the necessary changes in health systems. These and other barriers identified in table 2 are unlikely to be overcome without a much more concerted and substantial investment in the knowledge foundations of health systems. We believe there is danger of wasting investments in intervention-specific research if we do not increase knowledge on ways to strengthen health systems in parallel. As a recent *Lancet* leader argued, we need nothing short of a “revolution” in health-systems research.³¹

Lastly, it is important to note that whilst the focus of this paper is on the knowledge agenda, the challenge of getting more knowledge into practice also needs continued attention—and, indeed, is a crucial part of the agenda of the upcoming Ministerial Summit on Health Research.

Advancing the learning agenda

If the case for greater learning about health systems is so strong, then why does health policy and systems analysis fail to get more support? Two examples illustrate the extent of the problem. An analysis by the Alliance for Health Policy and Systems Research reported that health-system research may attract only 0·007% of total health expenditure in low income countries.³² And only 48 of WHO’s 1100 collaborating centres report a health systems research and development focus (Panisset U, WHO/RPC, personal communication). There may be no

universally agreed answers to this question, but many plausible reasons can be advanced (panel).

Several of the issues we have identified are amenable to change. Research priorities could be linked more closely to questions that policy makers (and research funders) want to see addressed. The unit of analysis from which conclusions are drawn needs to fit the questions that are being asked, otherwise opinions about the limited relevance and applicability of health systems research are simply reinforced. For example, small pilot studies cannot fully inform policy makers about whether and how to scale-up nationwide, because they do not take account of factors such as the different institutional arrangements needed. Methodological challenges need to be tackled, and this cannot be done by any one discipline alone, because a range of study designs and mix of qualitative and quantitative approaches may be needed, depending on the question being asked. Of all the methodological challenges in health-systems research, one of the most contentious issues is cross-country comparative analysis, since health systems operate in such different contexts. As Janovsky and Cassels point out, health-policy and systems research has to develop its own yardstick of what constitutes valid and reliable research.³³ More effort to address these methodological challenges is indeed one of the reasons that greater investment is needed—and warranted.

Knowledge could also be substantially improved with existing methods. But to make a convincing case for increased funding for health-systems research, the dimensions of the research agenda must also be fleshed out more concretely, with their value and usefulness to decision-makers clearly articulated. For example, rigorous assessments of innovative systems strategies in terms of their effects on specific interventions might help to register this research as a good buy amongst the disease and intervention-specific programmes. More ambitious multicountry studies might permit the parsing out of the relative importance of context and facilitate more robust generalisations on systems strengthening of interest to policy makers. The scope of this research agenda will be more thoroughly explored in a subsequent article in *The Lancet*.³⁴

The combination of greater investment in health-systems research and a carefully thought through strategy for the use of this money could help accelerate the development of the evidence base on health systems and help to remove the systems barriers to the achievement of MDGs.

The identification of common barriers to the implementation of a range of priority interventions, present in many countries, suggests the need for international cooperation on health-systems research to tackle shared priorities. Evidence also suggests that policy makers are more likely to take greater heed of research findings when these address the problems they face, and when there are several studies that lead to

similar conclusion—including studies from other countries. The need for international cooperation in no way diminishes the need for local and national priority setting for research, in view of the critical need for any health-policy and systems research agenda to be grounded in and responsive to pressing health-system problems.

Of course, health-policy and systems research cannot address all the barriers to improving service delivery. But it can help, and we believe far more, and better quality research needs to be done. As Freedman and colleagues argue, “MDGs formulated in disease specific terms must not become the excuse for failing to prioritise systemic solutions ... [the] perpetual problem is to leap from one solution to another, never grappling the long-term problems”.¹⁴ More concerted action, with a longer term vision, explicit attention to policy relevance, greater innovation in methods, strengthened commitment to building developing country research capacity, and greater investment are needed. An international task force is being convened by WHO to identify healthsystems research priorities, propose strategies to raise funding to address these priorities, and generate consensus about how to move forward. The task force will consult widely on suggested topics for research, which will be outlined in a subsequent paper in *The Lancet*.³⁴ The task force will present its recommendations to the Ministerial Summit on Health Research later this year, with the intention that a 10-year commitment to this learning agenda will ensue, so that by 2015, substantial progress will have been made in removing health-system constraints to achieve the MDGs.

Conflict of interest statement

A A Hyder is a consultant to WHO. A Mills is paid part-time Chair of the Board of Alliance for Health Policy and Systems Research, which is an advocacy body for health-systems research. The other authors declare no conflict of interest.

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