Informed choices for attaining the Millennium Development Goals: towards an international cooperative agenda for health-systems research

*Task Force on Health Systems Research**

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*Members listed at end of report.

Correspondence to:
Prof Andy Haines, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK
Andy.Haines@lshtm.ac.uk

Comments on the research agenda should be sent to Ulysses Panisset (panissetu@who.int; see panel 2)

Health systems constraints are impeding the implementation of major global initiatives for health and the attainment of the Millennium Development Goals (MDGs). Research could contribute to overcoming these barriers. An independent task force has been convened by WHO to suggest areas where international collaborative research could help to generate the knowledge necessary to improve health systems. Suggested topics encompass financial and human resources, organisation and delivery of health services, governance, stewardship, knowledge management, and global influences. These topics should be viewed as tentative suggestions that form a basis for further discussion. This article is part of a wide-ranging consultation and comment is invited. The potential agenda will be presented at the Ministerial Summit on Health Research in November, 2004, and revised in the light of responses. Subsequently, we hope that resources will be committed to generate the evidence needed to build the equitable, effective, and efficient health systems needed to achieve the MDGs

The UN Millennium Development Goals (MDGs; panel 1) represent a compact between rich and poor nations to improve human development. The MDGs related to child health, maternal mortality, and diseases such as HIV/AIDS are far from being achieved by the deadline of 2015, particularly in sub-Saharan Africa.[1] A previous article[2] in *The Lancet* has indicated how health-systems constraints are impeding the implementation of major global initiatives for health and the attainment of the MDGs and how research could contribute to overcoming these barriers to progress. Improving health systems has the potential to assist progress towards the MDGs in the near term by promoting more equitable access to effective interventions.

Researchers need to address the key challenges faced by decision makers—for example in undertaking health-system reforms and taking effective interventions to scale—recognising that there is not always one optimal decision, but that research evidence should play a greater role in influencing policy. In view of the limited attention and funding devoted to this area, substantial methodological challenges and low perceived generalisability of findings from single sites, greater international collaboration is needed. Hence, WHO convened a task force to suggest topics where international collaborative research could help to generate the knowledge necessary to improve health systems and, thus, the prospects for attaining the MDGs. Although the focus is on the MDGs, many of the topics have wider relevance.

***Panel 1*: The Millennium Development Goals in summary**

Goal 1: Eradicate extreme poverty and hunger
Goal 2: Achieve universal primary education
Goal 3: Promote gender equality and empower women
Goal 4: Reduce child mortality
Goal 5: Improve maternal health
Goal 6: Combat HIV/AIDS, malaria, and other diseases
Goal 7: Ensure environmental sustainability
Goal 8: Develop a global partnership for development

For a full list of MDGs, their targets and indicators, see http://unstats.un.org/unsd/mi/mi_goals.asp

A wide range of decisions must be made globally, nationally, and locally regarding how to address the problems that need to be overcome in order to achieve the MDGs. Needs, values, priorities, and availability of resources vary from country to country. Each country must make its own choices in relation to its specific circumstances. At the same time, most countries are faced with similar questions, such as:

- How best to address shortages of human resources for health and poor health-worker performance?
- How best to increase the use of effective forms of health care and decrease the use of ineffective forms of care?
- How to control the use of pharmaceuticals to ensure that limited resources are well spent?
- How best to integrate programmes targeted at priority problems such as HIV/AIDS into existing health-care systems?

All these choices require information about the specific conditions in a particular country and judgments that take into account the values of the country. Information from relevant and reliable evaluations and experience from other countries is also needed to inform judgments about the probable effects of alternative policies. This information contributes to global knowledge.

The Ad Hoc Committee on Health Research developed a five-step process for research priority setting[3] and there have been a number of subsequent approaches focusing particularly on specific diseases or risk factors involving, for example, epidemiological data on burden of disease.[4] However, health systems underpin the effective pre-

vention and care of a range of health problems, and therefore the development of a research agenda poses particular challenges. It has been suggested that in these circumstances, interpretive approaches based on the consensus views of informed participants may be attractive because of "their ability to juggle multiple assumptions and objectives".[5] There are, of course, different ways in which topics for health-systems research can be identified, and a number of stakeholders that have legitimate perspectives on what is important, including policymakers, health personnel, and civil society. The topics outlined here represent to a large extent the thinking of the Task Force on Health Systems Research, which strove for parsimony in its approach. Analysis of the health systems constraints to achieving the MDGs,[1,6] previous work aimed at identifying needs for health systems research and setting priorities,[1,7,8] inputs from WHO staff in Geneva, and other expert contributors (see Acknowledgments), together with preliminary regional consultations by WHO, have all contributed to our thinking. We acknowledge, however, that further work is needed to develop more formal priority-setting processes for health-systems research.

The topics we present should be viewed as tentative suggestions that form a basis for further discussion. Researchers, policymakers, health personnel, research funding organisations, non-governmental organisations, and the wider public are all invited to comment on these topics as part of a wide-ranging consultation, of which this article is part. It is hoped that by the time of the Ministerial Summit on Health Research in Mexico in November, 2004,[9] it will be possible to agree on the agenda and subsequently achieve a commitment of resources to generate the evidence needed to build the equitable, effective, and efficient health systems required to achieve the MDGs.

Research topics

There is a need for health-systems research to inform decisions at local, national, and international levels. We have highlighted topics relevant to decisions at each of these levels (table 1). We have also indicated which MDGs might be affected by research on each of the topics. Attainment of the MDGs will be influenced by a wide range of factors within and outside health systems, so the table should be seen as illustrative rather than comprehensive. For each proposed topic we suggest that the following questions should be addressed:

- What is the problem and why is it important?
- What is known and what is not known?
- What research is needed and how would it help?

We are preparing brief templates that address these questions for each proposed topic (see panel 2). In the remainder of this article we provide an overview of a proposed international agenda for health systems research focusing on topics that are likely to be of common interest across many countries.

Financial and human resources

Community-based financing and national health insurance

Low and middle income countries in general provide very patchy financial risk protection to their populations, with resulting problems including households driven into poverty by catastrophic health expenses, and low levels of access to care.[10,11] Research is needed to assess the financial implications of universal coverage in different settings, to assess the extent to which people will contribute to its costs from their own income, and which costs will need to be covered from general tax revenues or employer contributions. The appropriate benefit package, its costs, and feasibility of implemen-

	MDG*					
	1	4	5	6	7	8
Financial and human resources						
Community-based financing and national health insurance	✓	✓	✓	✓		✓
Human resources for health at the district level and below	✓	✓	✓	✓		
Human resource requirements at higher management levels	✓	✓	✓	✓		
Organisation and delivery of health services						
Community involvement	✓	✓	✓	✓	✓	
Equitable, effective and efficient health care	✓	✓	✓	✓		
Approaches to the organisation of health services	✓	✓	✓	✓		
Drug and diagnostic policies	✓	✓	✓	✓		✓
Governance, stewardship, knowledge management						
Governance and accountability	✓	✓	✓	✓	✓	
Health information systems	✓	✓	✓	✓	✓	
Priority setting and evidence-informed policy making	✓	✓	✓	✓	✓	
Effective approaches for intersectoral engagement in health	✓	✓	✓	✓	✓	✓
Global influences						
Effects of global initiatives and policies (including trade, donors, international agencies) on health systems	✓	✓	✓	✓	✓	✓

*See panel 1 for summary of MDGs. ✓=Improved knowledge from health-systems research could contribute to attainment of one or more of the targets for the MDG. The relationships are complex and the list is not exhaustive, because attainment of MDGs will be affected by a range of factors interacting both directly and indirectly with health. For example, improved health could contribute to reduction of poverty (MDG 1) through several mechanisms, including reducing loss of income from ill-health and catastrophic expenditures due to illness and improvements in the health of women and girls could reduce gender disparities in education (MDG 3).

Table 1: **Suggested topics for health-systems research and their potential to affect attainment of the targets for the MDGs**

Panel 2: Comments on the topics outlined in this article should be sent to Ulysses Panisset (panissetu@who.int)

Readers are invited to indicate gaps in the research agenda and to suggest important research questions within the topic areas. We also welcome information about other relevant research agenda setting activities.

tation in different settings require study to identify the most efficient and equitable design features of a universal scheme.

Shortage of resources for health services, including severe limits on government funding and the known disadvantages of user fees, has encouraged many countries to look to community financing, especially voluntary, community-based health insurance,[12] as a source of additional funding. It is difficult to draw firm general conclusions from existing evidence because studies lack common definitions of community-based health insurance, evaluate different objectives, and have been criticised for methodological weaknesses.[13] Research is needed to examine the potential role of such insurance schemes in overall health-care financing arrangements, the affordability of premiums to different groups and the types of support external to the schemes that may be needed for successful functioning.

Human resources at the district level and below

Health systems cannot function without adequate and appropriate human resources, yet human-resource development receives insufficient attention and support within health research and planning.[14] Migration of health personnel causes severe difficulties for some countries, but effective policies to reduce the adverse effects are lacking.[15] Moreover, migrant remittances are an important financial source in some developing countries. The overall availability and balance of different types of personnel and skills at district and sub-district level are often inadequate and inappropriate. Mid-level health workers such as clinical assistants have played an important role in health-care delivery in countries and in situations when other cadres were not available, but these workers are poorly rewarded. Lack of availability of health professionals has resulted in renewed interest in community health workers who can potentially play an important role in achieving the MDGs, but there is a paucity of evidence about their effectiveness in low and middle income countries.[16] Evaluation is needed of approaches such as regular visiting of households, targeting high-risk groups, prescribing of potentially life-saving medications (such as antibiotics) by community health workers and community health-education programmes. We also need to know how to achieve the right balance and strength of clinical and public-health competencies at district and sub-district levels and what balance of financial and non-financial incentives would improve motivation, performance, and distribution of health workers.[17]

Human resource requirements at higher management levels

Multiple donor-driven initiatives are placing severe strains on Ministries of Health in some countries,[18] and high level coordination and analytical skills are needed to deal with demands. The increasing volume of research evidence and efforts to improve health information mean that policy makers are functioning in a complex environment that requires integration of changing knowledge, data, and political priorities. Frequent rotation of staff may reduce their ability to perform in such an environment. These factors suggest that those in leadership and strategic management positions need support, resources, and training to enable them to function effectively. Research is needed on how best to provide such support and how the existing higher education institutions, such as medical and public-health schools, can help to provide the relevant training.

Organisation and delivery of health services

Community involvement

Although there is general support for the concept of community involvement, there is a need for more rigorous research in this area. Greater clarity is needed about potential ways in which communities can contribute to improving their health status, including: strengthening accountability of service providers; participation in the governance of community-based health insurance; involvement in planning and implementation that incorporates communities' perceived health priorities and preferred strategies for dealing with them.[19]

Equitable, effective, and efficient health care

Inequities in access to health care have been documented within many low and middle income countries,[20] but little is known about how best to reduce them with much of the evidence in the form of case studies. Effective interventions are available for diseases that account for most of the burden of disease in low-income countries, including common causes of child and maternal mortality, and communicable diseases including HIV/AIDS, malaria, and tuberculosis.[21–23] These interventions are being implemented at disappointingly low rates and inequitably, at the cost of preventable suffering and millions of lives. At the same time, scarce resources are frequently being wasted on ineffective interventions. Narrowing this quality gap requires identification of strategies that scale up the use of effective practices, decrease the use of ineffective practices, and help ensure equitable access to health care. Situations such as urban slums may pose particular challenges for the delivery of care because of

population mobility, violence, and crime, and research is needed to tailor solutions to these challenges.

In many countries the majority of deaths occur at home—eg, around 70% of child deaths in Tanzania.[24] In some cases, there is failure to recognise serious illness; in others, despite recognition, available interventions are either not used or not used effectively. Delays in women seeking and accessing skilled care for childbirth lead to high maternal mortality.[25,26] Thus, evaluation is needed of approaches to improving the recognition of serious illness (particularly in women and children), appropriate care-seeking behaviour, and the implementation of effective interventions.

Many strategies for improving quality—such as audit and feedback, decision support, and educational outreach—have been tested in high-income settings, but few have been adequately assessed in low and middle income countries.[27] The rise of non-communicable diseases and HIV/AIDS in many parts of the world has led to greater emphasis on the need for better systems to manage chronic disease, which will require understanding how health systems in low and middle income countries can facilitate continuity of care, support self management where possible, and provide decision support for health workers that is consistent with scientific evidence and patient preferences.[28]

Approaches to the organisation of health services

Reforms in the organisation of health services have been presented as a key solution to inefficient and inequitable delivery of health care in developing countries. Proposed reforms included separating the functions of purchasers and providers; creating internal or quasi markets within the public sector; creating executive agencies to manage the health sector; decentralisation of health service management to local health administration levels or to local government; giving increased autonomy to hospitals and contracting out services to the private sector.[29] Mixed experiences with reforms, encompassing both failed and slow implementation, and relatively few success stories, have lead to questioning of their value, especially when applied with little adaptation to local circumstances.[30] However, published work is scattered and incomplete in coverage and often methodologically weak, making it very difficult to draw any general conclusions.

It is important to find an appropriate balance between vertical and horizontal approaches and, in particular, to identify how best to coordinate and integrate disease specific programmes into health systems. In many low and middle income countries, non-governmental organisations are key providers of care to marginal groups. However, the relation between these organisations and the public sector is often one of mistrust, affecting the delivery of care, and research is needed to understand appropriate forms of collaboration between different types of provider.

Learning from rigorous evaluation of organisational innovations is mandatory for improving the performance of health systems. A strengthened evidence base on organisational patterns and reforms would enable better advice to be given to policy makers.

Drug and diagnostic policies

People in low income countries often pay for drugs out of their own pocket and costs may amount to 60–90% of total household expenditure on health.[31] Ability to pay is also a concern for governments: increasing expenditures on drugs puts pressure on policy makers to control drug costs and ensure that funds are well spent. At the same time, low and middle income countries face additional challenges, including counterfeit drugs, major problems with the supply, distribution, and financing of essential medicines, and regulation of prescribing.[32,33] Lack of access to effective drugs leads to preventable deaths, and providing access to affordable essential drugs is one of the targets for Goal 8 (panel 1). Inappropriate use of antibiotics and antimalarial drugs can lead to drug resistance, adverse reactions, and wasted resources. In the case of diagnostic technologies, advances in molecular diagnostics and imaging have the potential to bring improved diagnosis to poor communities,[34] but also for misuse. Improved use of drugs and diagnostic technologies can improve health outcomes and, in some circumstances, can result in substantial savings without adverse health consequences. On the other hand, cost-containment strategies can have unintended effects on health and costs.

Governance, stewardship, and knowledge management

Governance and accountability

Good governance has been shown to be key to the effectiveness of general development assistance.[35] Ensuring strong systems of governance and appropriate accountability mechanisms within the health sector underpins health-sector performance. For example, health providers who are not held accountable for their performance are likely to be unresponsive to community and patient preferences; this may in turn reduce the demand for care. Corruption not only wastes money but also distorts incentives and is likely to reduce efficiency within the sector. For example, if contracts for services are awarded on the basis of personal contacts and bribes, then this is likely to affect adversely the quality of the service provided by the contractor.

Multiple aspects of corruption could be investigated, but in view of growing development assistance expenditures on drugs, particularly antiretrovirals, there is an urgent imperative to study the nature and quantity of leakages of prescription pharmaceuticals from the public sector, and the interests that allow this to continue.

A focused and targeted effort is needed to investigate governance structures for a variety of key health-sector

actors (providers, insurers, regulators) and different types of accountability (financial, performance, and democratic). In the near term, such studies may be focused particularly on decentralisation and public-private partnerships that are increasingly being used to extend service coverage.

Health information systems

The development of health-management information systems in poor countries has usually been heavily and often adversely influenced by the information needs of donor agencies and international vertical (single health-problem) programmes.[16] The result is that health-management information systems in low and middle income countries are severely underdeveloped, often with a haphazard collection of patchy information that is scattered throughout various programmes with limited, if any, feedback to those who collect the information. These information systems are riddled with inaccurate and inconsistent data, expensive to operate, and time consuming and demotivating for large numbers of health staff. Health-management information systems often fail to record data on inequalities in a rigorous manner, so that monitoring trends in inequalities is impossible. Research on the development and implementation of sustainable low-cost national health-management information systems and district-level minimum essential indicator sets, which are appropriate to the needs of poor countries,[17] are high priorities.

Priority setting and evidence-informed policy making

In cross-country comparisons, the impact of public spending on health has been found to be quite small, with a coefficient that is typically numerically small and statistically insignificant.[18] The poor often spend substantial sums of money on private services because public-sector resources are concentrated on services for richer population groups.[19] Without explicit consideration of priority setting, this situation is likely to remain unchanged: resource allocation is too often dictated by historical patterns, and maintains vested interests. Development and multicountry evaluation of a process to incorporate, explicitly and transparently, important equity concerns, non-health effects of health interventions, and other ethical issues into priority setting is needed. This assessment can highlight existing inequities, and at the same time show what tradeoffs exist between efficiency and equity and other societal concerns.

Decision-makers must have access to reliable and relevant research evidence to make well-informed decisions about health care. Generating, synthesising, making available, and improving the use of reliable and relevant health systems research for low-income countries presents major challenges and requires the development and use of appropriate methods.[40]

Effective approaches to intersectoral engagement in health

There are a range of policies and interventions in a number of sectors that could have far reaching effects on health. These include agriculture, education, transport, housing, social welfare and telecommunications policies. National transport policies may, for example, affect health through traffic injuries, air pollution, and transportation to health-care facilities.[41] Socioeconomic development activities for the poor such as micro-credit[42] or conditional cash transfers[43] may help prevent ill health and provide financial access to treatment. However, empirical work in low and middle income countries testing the impact of these and other development activities is limited. Access to adequate amounts of clean water and sanitation has major health benefits,[44] but evaluations of policies and actions for achieving this goal at low cost are lacking. It is uncertain how best to engage policy makers from other sectors in considering health outcomes. A better understanding of the incentives and disincentives that motivate their attitudes and decisions is needed.

Global influences

Global factors are increasingly impinging on national health policies and systems, for example through the General Agreement on Trade in Services (GATS) agreement that regulates trade in services, potentially including health services.[45,46] The policies of global institutions such as the World Bank, the International Monetary Fund, World Trade Organization, WHO, and the Global Fund for AIDS, TB and Malaria, affect the development and performance of health systems in many countries. Conditionalities laid down by large donors, such as the US Government's Millennium Challenge Account and UK Chancellor of the Exchequer's proposed International Finance Facility, could also affect health. This influence is exerted both as a result of the flows of financial resources and also because, in some cases, global institutions have a pivotal role in determining both disease priorities and policies for health systems. Additionally, certain policies, for example concerning trade, affect the determinants of health, which in turn affect the burdens on health systems. As such, the impact of global influences needs to be studied to provide the evidence to shape macroeconomic policies and trade relations. Donor priorities may compete and in some cases conflict with each other; therefore, evaluation is needed for mechanisms such as basket funds, sector wide approaches, and other approaches to coordinating donor activities. The absorptive capacity of countries to use donor resources effectively and to coordinate the inputs of multiple donor agencies may be a key limiting factor in developing functioning health systems.

Valid and transferable research

Rigorous health-systems research requires contributions from many disciplines including epidemiology, biostatistics, health economics, sociology, anthropology, and policy analysis. Both qualitative and quantitative research methods have important parts to play. In some circumstances, interventions can be assessed with randomised trials—particularly cluster trials, in which the unit of randomisation may be communities or health facilities—but such opportunities are often missed. However, many research questions cannot be addressed by randomised designs—for example, because they may be system-wide in their scope. Other approaches, such as interrupted time-series analyses, need to be considered, as well as process evaluations to understand better how and why interventions work or do not work as intended. Participatory action research has potential to elucidate both constraints to success of interventions, as well as improve performance of health staff.[47] Contextual factors are generally thought to be important effect modifiers, but are often poorly described by researchers, making it difficult to determine why a particular intervention or policy has been effective or ineffective. Better description of relevant contextual factors and greater reliance on multicentre or multicountry research, where a given research question can be addressed across a range of settings, is needed.[48] Recommendations for improved design of non-randomised studies have recently been published.[49] Collaborative research networks could, in addition to undertaking large-scale multisite health-systems research, play an important part in building research capacity and promoting use of research findings.

The role of systematic reviews in summarising the strength and relevance of the evidence and helping to set a research agenda is well established for evaluating clinical interventions but less so in health-systems research, in part because of the methodological challenges of synthesising evidence from different contexts using a range of methodological approaches. Although many of the systematic reviews undertaken by the Cochrane Effective Practice and Organisation of Care group address relevant questions about the effects of organisational and financial interventions and include studies using a variety of relevant designs, few are from low income countries.[17] Systematic reviews across all the areas outlined in table 1 are needed to inform decisions about actions and future research.

The research community and policymakers must interact more effectively if the findings of health-systems research are to have an effect. The challenge of improving the use of research will be covered in a subsequent article in *The Lancet*.[50]

Conclusions

We invite comments from *Lancet* readers on the research agenda outlined in this article (see panel 2). A revised document taking into account responses to the consultation and including the templates outlining research questions in each topic area will be submitted to WHO following the Mexico Summit on Health Research. It is hoped that the report will stimulate subsequent commitments of resources and international collaboration to address agreed priorities.

Only a decade exists before the target date for the MDGs in 2015. It is now a matter of urgency to ensure that health systems become the focus of national and international efforts to improve capacity to deliver effective interventions in an equitable fashion to those who can benefit. Health-systems research is essential to reduce our collective uncertainty about how to achieve the MDGs and to provide a basis for well-informed decisions and actions through which the findings of such research can be implemented.

Task Force members

Francisco Becerra-Posada, Coordination General of the National Institutes of Health, Ministry of Health, Mexico, Mexico City, Mexico; Donald Berwick, Institute for Healthcare Improvement, Boston, USA; Zulfiqar Bhutta, Department of Paediatrics, Aga Khan University, Karachi, Pakistan; Mushtaque Chowdhury, BRAC, Dhaka, Bangladesh; Don de Savigny, Swiss Tropical Institute, Basel, Switzerland; Andy Haines, Dean's Office, London School of Hygiene and Tropical Medicine, London, UK; Adnan Hyder, Department of International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, USA; John Lavis, Health Sciences Centre, McMaster University, Hamilton, ON, Canada; Pisake Lumbiganon, Department of Obstetrics and Gynecology, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand; Anne Mills, Department of Public Health and Policy, School of Hygiene and Tropical Medicine, London, UK; Hassan Mshinda, Ifakara Health Research and Development Centre, Ifakara, Tanzania; Ravi Narayan, People's Health Movement Secretariat (global), CHC-Bangalore, Bangalore, India; Andrew Oxman, Informed Choice Research Department, Norwegian Health Services Research Centre, Oslo, Norway; David Sanders, School of Public Health, University of the Western Cape, Bellville, Cape, South Africa; Nelson Sewankambo, Makerere University, Faculty of Medicine, Kampala, Uganda; Goran Tomson, IHCAR Division of International Health, Department of Public Health Sciences, Karolinska Institutet, Stockholm, Sweden; Cesar Victora, Universidade Federal de Pelotas, Pelotas, RS, Brazil.

Conflict of interest statement

A Hyder is a consultant for WHO. A Mills is Chair of the Board of the Alliance for Health Policy and Systems Research, and is paid part time for this. The other authors declare no conflict of interest.

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