



Alma-Ata: Rebirth and Revision 2

Supporting the delivery of cost-effective interventions in primary health-care systems in low-income and middle-income countries: an overview of systematic reviews

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This is the second in a [Series](#) of eight papers about Alma-Ata: rebirth and revision

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Strengthening health systems is a key challenge to improving the delivery of cost-effective interventions in primary health care and achieving the vision of the Alma-Ata Declaration. Effective governance, financial and delivery arrangements within health systems, and effective implementation strategies are needed urgently in low-income and middle-income countries. This overview summarises the evidence from systematic reviews of health systems arrangements and implementation strategies, with a particular focus on evidence relevant to primary health care in such settings. Although evidence is sparse, there are several promising health systems arrangements and implementation strategies for strengthening primary health care. However, their introduction must be accompanied by rigorous evaluations. The evidence base needs urgently to be strengthened, synthesised, and taken into account in policy and practice, particularly for the benefit of those who have been excluded from the health care advances of recent decades.

Introduction

In 1978, representatives from 134 countries gathered in Alma-Ata in the former USSR and declared that primary health care, “based on practical, scientifically sound and socially acceptable methods and technology made universally accessible through people’s full participation”,¹ was key to delivering health for all by the year 2000. Recent years have seen a renewed interest in primary health care, particularly in low-income and middle-income countries. Reasons for this renewed interest include profound inequities in health; inadequate progress towards the Millennium Development Goals, especially in sub-Saharan Africa;^{2–4} major shortfalls in the human

resources needed to improve delivery of cost-effective interventions;^{5,6} and the fragmented and weakened state of health systems in many countries.⁷

More generally, there have been calls to redress the balance between the now dominant vertical, disease-focused programmes and the horizontal, systems-focused perspective that underpins most approaches for primary health care.⁸ The GAVI Alliance, for example, has committed US\$800 million over a 5-year period to help countries overcome health system weaknesses that impede sustainable increases in immunisation coverage,⁹ and the Global Fund to Fight AIDS, Tuberculosis and Malaria is also calling for integrated responses.¹⁰

Strengthening health systems to improve the delivery of cost-effective interventions is complicated by differing ideas of what constitutes primary health care. This is affected, in part, by financial and human resources and the underlying political and ideological perspective of different countries. The broader approach for primary health care is seen as encompassing equitable distribution, community participation, an emphasis on prevention, the use of appropriate technology, and the involvement of a diverse range of health and other departments.¹¹ By contrast, narrower views of primary health care, often from high-income settings, emphasise the first contact of the patient with the health care system and focus specifically on the roles of health professionals.^{12,13}

There are also differing ideas of what constitutes health systems. WHO’s building blocks of health systems include leadership and governance, financing, service delivery, health workforce, medical products and technologies, and information and evidence.¹⁴ A taxonomy of health system arrangements provides additional categorisation, distinguishing between governance

Key messages

- Financial incentives can be used to influence provider and patient behaviours, but can also have undesirable effects
- User fees reduce the use of both essential and non-essential health services. However, removal of user fees needs to be implemented with care since it can have undesirable consequences. Alternative health financing strategies have not been adequately assessed
- Task shifting, for example from doctors to nurses and from health professionals to lay providers, offers opportunities for expanding coverage and addressing human resource shortfalls
- Although multiple vertical programmes can lead to service duplication, fragmentation, and inefficiency, the effects of strategies to integrate primary health-care services have not been assessed adequately
- Quality improvement strategies, including those tailored to address identified barriers, can have important, although modest, effects on primary health-care quality

arrangements (political, economic, and administrative authority in the management of health systems),¹⁵ financial arrangements (funding and incentive systems, as well as financing), delivery arrangements (human resources for health, as well as service delivery), and interventions (programmes, services, and technologies).¹⁶ Most descriptions of health system elements omit the implementation strategies to support the use of cost-effective interventions.^{17,18}

In this overview we summarise the evidence from systematic reviews on the effects of governance, financial and delivery arrangements, and implementation strategies that have the potential to improve the delivery of cost-effective interventions in primary health care in low-income and middle-income countries. We do not address specific clinical or public health interventions but rather the health system arrangements and implementation strategies that support their delivery in primary health care. We discuss how the available evidence relates to both the aspirations of the Alma-Ata Declaration and a taxonomy of health system arrangements (panel 1). We have also reviewed indicators of the relevance of reviews to primary health care in low-income and middle-income countries, graded the strength of evidence, and identified applicability and equity considerations.

Methods

We searched two electronic databases of systematic reviews: the Cochrane Effective Practice and Organisation of Care (EPOC) register of systematic reviews and the Program in Policy Decision-Making/Canadian Cochrane Network and Centre (PPD/CCNC) database of systematic reviews of the effects of governance, financial, and delivery arrangements. The EPOC register of systematic reviews included 1020 records as of Feb 12, 2008. These were identified through electronic searches of Medline (up to August, 2007) and the Cochrane Database of Systematic Reviews, the Database of Abstracts of Reviews of Effectiveness (DARE), and Embase (all up to October, 2006). The PPD/CCNC database was derived from the searches used to create the EPOC register and hand searching of Cochrane Database of Systematic Reviews (Issue 3, 2007). All reviews contained in the PPD/CCNC database have been coded according to a taxonomy (panel 1). The EPOC register Medline search was updated in March, 2008, and screened for additional relevant reviews. The full Medline search strategy is shown in the webappendix. Search strategies for the other databases are available on request.

For this study, we included reviews that had a methods section with explicit selection criteria, that were potentially relevant to primary health care in low-income and middle-income countries, and that assessed the effects of governance, financial or delivery arrangements, or implementation strategies. We assessed reviews ranging from research focused on primary medical care

Panel 1: Taxonomy of governance, financial, and delivery arrangements within health systems for primary health care (adapted from Lavis and colleagues¹⁶)

Governance arrangements

What are the effects of changes in or interventions to improve

- Policy authority—eg, who makes policy decisions about what primary health care encompasses (such as whether such decisions are centralised or decentralised)
- Organisational authority—eg, who owns and manages primary health-care clinics (such as whether private for-profit clinics exist)
- Commercial authority—eg, who can sell and dispense antibiotics in primary health care and how they are regulated
- Professional authority—eg, who is licenced to deliver primary health-care services; how is their scope of practice determined; and how they are accredited
- Consumer and stakeholder involvement—who from outside government is invited to participate in primary health-care policy-making processes and how are their views taken into consideration

Financial arrangements

What are the effects of changes in or interventions to improve

- Financing—eg, how revenue is raised for core primary health-care programmes and services (such as through community-based insurance schemes)
- Funding—eg, how primary health-care clinics are paid for the programmes and services they provide (such as through global budgets)
- Remuneration—eg, how primary health-care providers are remunerated (such as via capitation)
- Financial incentives—eg, whether primary health-care patients are paid to adhere to care plans
- Resource allocation—eg, whether drug formularies are used to decide which medications primary health-care patients receive for free

Delivery arrangements

What are the effects of changes in or interventions to improve

- To whom care is provided and the efforts are made to reach them (such as interventions to ensure culturally appropriate primary health care)
- By whom care is provided (such as primary health-care providers working autonomously vs as part of multidisciplinary teams)
- Where care is provided—eg, whether primary health care is delivered in the home or community health facilities
- With what information and communication technology is care provided—eg, whether primary health care record systems are conducive to providing continuity of care
- How the quality and safety of care is monitored—eg, whether primary health-care focused quality-monitoring systems are in place

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See Online for webappendix

Panel 2: Assessing the applicability to low-income and middle-income countries of the findings of included reviews

The following criteria were used to assess the applicability of the findings of included reviews to low-income and middle-income countries:

- Are there important differences in the structural elements of health systems (ie, governance, financial, and delivery arrangements) between where the research was done and where it could be applied in low-income and middle-income countries that might mean an intervention could not work in the same way?
- Are there important differences in on-the-ground realities and constraints (ie, governance, financial, and delivery arrangements) between where the research was done and where it could be applied in low-income and middle-income countries that might substantially alter the potential benefits of the intervention? And can these challenges be addressed in the short-term to medium-term?
- Are there likely to be important differences in the baseline conditions between where the research was done and where it could be applied in low-income and middle-income countries? If so, this would mean that an intervention would have different absolute effects, even if the relative effectiveness was the same
- Are there important differences in the perspectives and influences of health system stakeholders (ie, political challenges) between where the research was done and where it could be applied in low-income and middle-income countries that might mean an intervention will not be accepted or taken up in the same way? And can these challenges be addressed in the short-term to medium-term?

to research focused on primary health care as envisaged in the Alma-Ata Declaration. The searches did not use a language restriction.

Two authors independently screened the abstracts included in the PPD/CCNC database to identify reviews that seemed relevant to primary health care and low-income and middle-income countries. Relevance was assessed by searching for links to low-income and middle-income countries and primary health care through the focus of the review (country/region or primary health care mentioned in the abstract or title; review question or studies included in the review focused explicitly on low-income and middle-income countries or primary health care). A second pair of authors screened the EPOC register for reviews of implementation strategies to support the delivery of cost-effective interventions (or more generally to improve the quality of care), building on a recently published overview of systematic reviews of this topic.¹⁹ A third pair then examined independently the full text reports of both sets

of reviews and selected those of highest priority for primary health care in low-income and middle-income countries. The final selection of high priority reviews for inclusion was based on a consensus of the authors.

We summarised each included review using an approach developed by the SUPPORT Collaboration.²⁰ Using standardised forms, we extracted data on the background of the review, the interventions, participants, settings, and outcomes, the key findings, and considerations of applicability (panel 2), equity, cost-effectiveness, and monitoring and evaluation. The quality of the evidence for the main comparisons was assessed using the GRADE approach²¹ (webpanel). Each completed summary was peer-reviewed, and formed part of a larger project to summarise and make widely available the findings of reviews relevant to health systems in low-income and middle-income countries.²²

Finally, we developed a matrix relating questions about governance, financial and delivery arrangements, and implementation strategies (panel 1) to the aspirations of the Alma-Ata Declaration. We used this matrix to summarise the available evidence from the included systematic reviews, important uncertainties, and important questions for which we could not identify a systematic review.

Role of the funding source

The funding source had no role in the overview design, data extraction, data interpretation, or writing of the report. The corresponding author had final responsibility for the decision to submit for publication.

Results

Over 20 000 references were screened to develop the EPOC and PPD/CCNC databases. By screening the abstracts, 195 of over 1000 reviews were deemed potentially relevant, and 20 systematic reviews were selected on the basis of their relevance and the feasibility of reviewing them within resource and time constraints (figure). These reviews included a total of 812 randomised controlled trials, interrupted time-series studies, and controlled before-and-after assessments, although some studies were included in more than one review.²⁰

Table 1 and webtable 2 show the reviews grouped according to whether the interventions mainly assessed the effects of governance, financial or delivery arrangements for primary health-care systems, or the effects of implementation strategies, although some reviews cut across more than one category.^{23–41} Most reviews (n=13) addressed delivery and financial arrangements. However, some reviews assessed similar interventions, such as educational meetings, for different health issues. We have tried to highlight where this is the case and to note any differences in findings between these reviews.

Around 16% (126) of the 812 included studies were undertaken in low-income and middle-income countries only, whereas six reviews included studies from

See Online for SUPPORT summaries

See Online for webpanel

high-income countries only. 417 studies (51%) were done in primary care or involved a mix of primary and other health care settings. However, most of these studies were of primary medical care rather than primary health care as envisaged in the Alma-Ata Declaration. Reviews including studies from non-primary care settings focused mainly on quality improvement studies across primary and other health care settings. The reviews included in this overview also focused on outcomes associated with a range of health care providers (primary care physicians or general medical practitioners, nurses, pharmacists, and lay health workers), patients, or consumers. We interpreted the findings of the reviews taking into consideration the selection criteria they used and the contexts of the included studies (webtables 2 and 3). For most reviews there was uncertainty about the applicability of the findings (and the directness of the evidence) because of the low proportion of studies from low-income and middle-income countries.

Table 1 shows the extent to which the interventions seen in the reviews address the goals and aspirations of the Alma-Ata Declaration. Most address the provision of quality care and ways to improve coverage and access. We classified several of the interventions as attempting directly or indirectly to reduce inequalities in access to care,^{23–26} but most reviews provided little data regarding equity or cost-effectiveness. We did not identify any systematic reviews of interventions to explicitly improve intersectoral action or community participation in primary health care in low-income and middle-income countries. Only one review focused on interventions to improve the referral system in primary health care.²⁷ Table 2 lists topics for which reviews were not identified.

Governance arrangements

One review addressed governance strategies for working with the private for-profit sector—including franchising, regulation, and accreditation—to improve the use of quality health services by people in low-income settings.²⁸ There was some evidence that regulation could improve the quality of pharmacy services. The review also showed that the accreditation of pharmacy outlets might have weak positive effects on the use of unregistered drugs, compared with non-accredited facilities. Franchising interventions had mixed effects on quality of care, health care behaviours, and client satisfaction. Although few studies included detailed socioeconomic data for participants, the authors of the review concluded that many of these interventions were likely to be effective in poor communities.

We did not find any systematic reviews that addressed other questions about governance arrangements for primary health care, including decentralisation of decision making, the regulation of training, or the control of corruption.

Financial arrangements

Six reviews addressed financial arrangements for health systems, focusing mainly on the financing of health

services^{23,28–30} and paying for performance,³¹ and two of these reviews addressed the effects of cap and co-payment policies on drug use, health service use, health outcomes, and costs,³⁰ and found that these policies can reduce drug use and expenditures. However, reductions in drug use were found for both life-sustaining drugs and drugs that are important in treating chronic conditions. Although insufficient data for health outcomes were available, large decreases in the use of essential drugs are likely to have negative effects and could lead to increased use of healthcare services and, therefore, of overall spending. Policies in which people pay directly for their drugs are less likely to cause harm if only non-essential drugs are included in these policies or if there are exemptions to ensure that people receive essential health care.

Another systematic review examined the effects on access to health services in low-income and middle-income countries of introducing, removing, or changing user fees.²³ The findings of 17 studies, mostly in primary care, indicated that increasing or introducing user fees substantially reduced health service use and that removing user fees increased service use immediately. However, the

See Online for webtables 1, 2, and 3

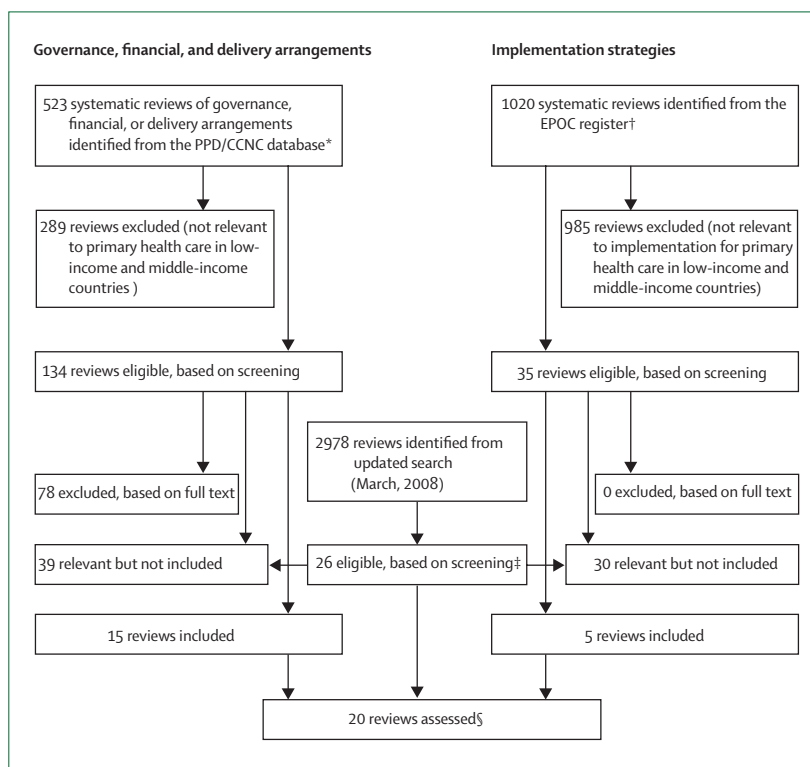


Figure: Flow diagram of review selection

*Reviews from the EPOC register and the Cochrane Database of Systematic Reviews were screened. The PPD/CCNC database (<http://www.researchtopolicy.ca>) included a total of 684 systematic reviews; however, not all of the reviews were reviews of effects. †Over 20 000 references were screened, of which 1020 reviews were included in the EPOC register. ‡26 reviews from the updated search (15 reviews of health system arrangements and 11 reviews of implementation strategies) were relevant but not included since they were not considered high priority. Two health system reviews that had already been included were also identified by the updated search. §We included reviews that we considered to be the most relevant to primary health care in low-income and middle-income countries. Relevant but not included reviews are listed in webtable 1.

	Intersectoral action	Equity/reduce inequalities	Participation in health by consumers	Quality care	Effective care	Coverage/access	Appropriate health care, including referral systems
Governance arrangements	Working with for-profit providers ²⁸
Financial arrangements	..	Community-based insurance ²³	..	User fees; ²³ pay-for-performance; ³¹ working with for-profit providers ²⁸	Contracting out of health services ^{6,37} ; working with for-profit providers ²⁸	User payments for drugs; ³⁰ community-based insurance; ²³ contracting out of health services; ³⁷ conditional cash transfers to households ²⁹	..
Delivery arrangements	..	Distribution of health workers; ²⁴ specialist outreach clinics; ³⁴ lay health workers; ²⁵ training of traditional birth attendants ²⁶	Lay health workers; ²⁵ training of traditional birth attendants ²⁶	..	Contracting out of health services; ³⁷ integrating primary health care services; ³³ reminders and recall for immunisation; ³⁵ working with for-profit providers ²⁸	Contracting out of health services; ³⁷ integrating primary health care services; ³³ distribution of health workers; ²⁴ specialist outreach clinics; ³⁴ substitution of doctors by nurses; ³⁶ lay health workers; ²⁵ training of traditional birth attendants ²⁶	Outpatient referrals ²⁷
Implementation	Guideline dissemination; ³⁸ audit and feedback; ³⁹ educational meetings for providers; ⁴¹ educational outreach visits to providers; ⁴⁰ working with for-profit providers ²⁸	Guideline dissemination; ³⁸ audit and feedback; ³⁹ educational meetings for providers; ⁴¹ educational outreach visits to providers; ⁴⁰ delivery of preventive services in primary health care; ³² working with for-profit providers ²⁸

Row headings indicate the focus of the health systems interventions listed. Column headings indicate the goals and aspirations of the Alma-Ata Declaration. *This review could be classified under either delivery or financial arrangements, but we have placed it under delivery in this overview.

Table 1: How the included reviews address the goals and aspirations of Alma-Ata

removal of user fees could result in increased demands for unnecessary services, create demands that cannot be met, and further demoralise public sector providers, who might rely on these fees to supplement meager salaries or to provide additional funds for local health facilities.

A review of conditional cash transfers made directly to households, particularly to women, in low-income and middle-income countries found that these interventions were effective in increasing the use of preventive services but had mixed effects on objectively measured health outcomes.²⁹ Well-designed schemes tended to have positive effects but some studies showed that incentives could sometimes have adverse consequences, such as when mothers seemed to keep one of their children malnourished so they would not lose entitlement for the conditional cash transfer.⁴² Overall, the evidence on conditional cash transfers was of low-to-moderate quality and was largely restricted to Latin American countries with fairly well-functioning health and social security systems.

A review of the effects of explicit financial incentives to improve health care quality found 17 studies.³¹ Five of six studies found partial or positive effects of incentives directed at individual physicians. Seven of nine studies of incentives directed at provider groups reported partial or positive effects of incentives on quality measures. Most of the effect sizes were small. Two studies that assessed financial incentives at the payment system level had mixed results. Unintended effects of paying

for performance included adverse selection of patients and other ways of manipulating the system to maximise payments. None of these studies were done in low-income or middle-income countries, but most were in primary care.

A review of prospective payments for health care, or risk protection mechanisms, identified only one study from low-income and middle-income countries. This review²³ indicated that community-based health insurance, compared with no insurance, can increase the uptake of primary and secondary health care for prenatal consultations and vaccination, but could reduce curative consultations per head of population. However, because the quality of the evidence was low, we cannot draw firm conclusions from these findings. Many studies of community-based health insurance are of small schemes and provide little evidence about scaling-up. No assessments of the effects of social health insurance schemes were identified by the review²³ that we summarise in this overview.

One review reported that vouchers, compared with usual practice, can be effective in increasing the uptake of goods and services, such as insecticide-treated bednets, particularly among the poorest populations.²⁸

Delivery arrangements

Ten reviews addressed approaches to improving delivery arrangements for health systems.^{24–28,33–37} Task shifting, “a process whereby specific tasks are moved, where

appropriate, to health workers with shorter training and fewer qualifications^{25, 43} was the underlying concern for three reviews.^{25, 26, 36} Traditional birth attendants are one approach to extending first-level care for pregnant women and neonates. A review of four studies from low-income and middle-income countries, which compared traditional birth attendants who received training with those who did not, found moderate-to-low quality evidence that training could reduce perinatal and neonatal deaths and stillbirths.²⁶ The effect on maternal mortality was unclear and there was mixed evidence on the effects on maternal morbidity, the advice given about infant feeding, and appropriate referral of complications.

Another systematic review in the area of task shifting examined 48 randomised controlled trials (RCTs) that assessed the effects of community or lay health worker interventions—programmes that use health workers who are trained in the context of the intervention but have no formal professional, certificated or degreed tertiary education—in primary health care.²⁵ Lay health workers show promising benefits, compared with usual care, in increasing the uptake of childhood immunisation, promoting breastfeeding, reducing childhood mortality, reducing morbidity from common childhood

illnesses, and improving outcomes of tuberculosis treatment. Since around a third of the included studies were done in low-income and middle-income countries, and the findings were consistent across studies, the measured effects might be transferable across settings.

A review of 34 studies that examined the substitution of doctors working in primary care by nurse practitioners found evidence, of low-to-moderate quality, that patient outcomes and care processes were similar for nurses and doctors and that patients were more satisfied with care from nurses than from doctors.³⁶ Nurse practitioners also provided longer consultations, did more investigations, and were more likely to admit patients to hospital than doctors. No significant differences in costs were found, possibly due to nurses' increased use of resources or their lower productivity. There was also little evidence on whether shifting tasks from doctors to nurses reduced doctors' workload, although this seems unlikely in many low-income and middle-income settings, where demand for doctors' time greatly exceeds supply. None of the included studies were done in such countries, and differences in the training of nurses and doctors, as well as differences in working conditions, patient populations, and the organisation of primary care, could limit the

	Systematic reviews needed*	Primary research needed†
Governance arrangements	<ul style="list-style-type: none"> • Interventions to prevent or reduce corruption • Drug sales and dispensing policies • Public versus private not-for-profit versus private for-profit ownership and management of primary health-care facilities • Public versus private not-for-profit versus private for-profit ownership and management of health insurance plans • Decentralization of primary health-care planning 	Although only one included review addressed governance, in part, there seems to be a need for developing and evaluating a wide range of interventions to improve governance arrangements
Financial arrangements	<ul style="list-style-type: none"> • Revenue generation mechanisms to pay for primary health care • Policies that determine who provides health insurance and who receives it • Policies that determine what primary health-care services are covered by public programmes or by insurance • Results-based financing targeted at recipients of health care, healthcare providers, and governments • Remuneration of primary health-care workers in low-income and middle-income countries • Financial and other incentives for patients 	<ul style="list-style-type: none"> • Rigorous evaluations are needed for most of the financial arrangements addressed by the included reviews, including the reduction or elimination of user fees, risk protection mechanisms, and contracting out of health services. • Conditional cash transfers have been rigorously evaluated in Latin America, but rigorous evaluations are needed in low-income settings such as sub-Saharan Africa before expanding its use in those settings
Delivery arrangements	<ul style="list-style-type: none"> • Interventions to promote intersectoral collaboration at district, regional and central levels to improve primary health-care delivery and outcomes • Approaches to the organisation of referral systems • Substitution of health workers in low-income and middle-income countries, including as part of task shifting • Primary care health systems in low-income and middle-income countries • Primary care safety and quality monitoring systems 	Development and rigorous evaluation of strategies to: <ul style="list-style-type: none"> • Improve the quality of primary health care through consumer-mediated approaches • Promote effective referral and communication across the primary–secondary care interface • Integrate primary health-care service delivery • Increase the proportion of health professionals practising in underserved communities • Implement task-shifting or substitution of health workers
Implementation strategies		<ul style="list-style-type: none"> • Development and evaluation of appropriate interventions to promote effective practice among primary health-care workers in low-income and middle-income countries • Development and evaluation of systems for quality improvement that are integrated into primary health-care delivery systems

*Based on key areas in the taxonomy of health systems arrangements (panel 1) for which we did not find a systematic review of the effects of alternative arrangements or policies. †We have included here only priorities for research on the effects of health system arrangements or implementation strategies that were considered in the included reviews, although there are other priorities for research outside of the areas covered by the included reviews and for addressing other types of questions.

Table 2: Priorities for systematic reviews and primary research on supporting the delivery of effective primary health-care interventions in low-income and middle-income countries

Panel 3: Key messages from systematic reviews of implementation strategies

The use of various implementation strategies (either individually or in combination) most often achieves small-to-moderate (but important) improvements in the performance of health care providers. For example, median absolute improvements in performance for implementing clinical practice guidelines were:³⁸

- 21% (range 10 to 25%) for patient-mediated interventions
- 14% (range -1 to 34%) for reminders
- 8% (range 4 to 17%) for dissemination of educational materials
- 7% (range 1 to 16%) for audit and feedback
- 6% (range -4 to 17%) for multifaceted interventions involving educational outreach visits

The effects of some interventions, such as audit and feedback, are more likely to be larger when baseline compliance to recommended practice is low and when the intervention is provided more intensively.³⁹

Other factors could increase the effects of interventions. For example, for educational meetings, which are likely the most widely used implementation strategy in low-income and middle-income countries, more interactive meetings and higher attendance rates may increase their effectiveness.⁴¹

The effects of interventions may also depend on the targeted behaviour. For example, the effects of educational outreach visits were relatively consistent for prescribing, but varied widely for other behaviours.⁴⁰

Tailoring interventions to address specific barriers to change in a particular setting is probably important²⁷ but further work on identifying, selecting, and addressing barriers to change is needed.⁴⁸

For more on the WHO Integrated Management of Childhood Illness see <http://www.who.int/imci-mce>

applicability of the findings to such settings. Another systematic overview of the published studies drew similar conclusions.⁴⁴

Two reviews focused on the primary–secondary care interface—a key component of the primary health-care system. The first review included 17 studies of the effects of a range of interventions to change outpatient referral rates or appropriateness.²⁷ The passive dissemination of guidelines and organisational interventions seemed unlikely to improve referral practices, but several other approaches were promising, including the use of in-house second opinion and the involvement of secondary care providers in guideline dissemination. However, the evidence was mostly of low or very low quality and only one study was undertaken in a low-income or middle-income country. The second review explored the effectiveness of specialist outreach clinics,³⁴ and reported that such clinics had promising effects on access to care, quality of care, health outcomes, patient satisfaction, and the use of hospital services, although the quality of the evidence was poor. Although none of the assessments were done in low-income or middle-income countries, the review identified several descriptive studies from such settings, indicating that specialist outreach can be implemented where resources are available to provide these services. Taken together, the two reviews suggested several potential strategies for better integrating appropriate care provision across the primary–secondary interface.

One review examined strategies to improve immunisation delivery.³⁵ Based on 43 studies of the effectiveness of patient or parent reminder and recall systems, such as letter and telephone calls, the review found moderate quality evidence that such strategies can increase immunisations. These interventions were assessed in high-income countries and could only be applied in other countries if they were able to establish immunisation tracking systems. Another review looking at delivery arrangements found that the use of lay health workers seemed to be a promising strategy for promoting immunisation.²⁵ The use of text messaging reminders might also have promise, since the use of mobile phones is increasing.

Service integration is often seen as a key element of primary health care. One review examined the effects of strategies to integrate primary health-care services in low-income and middle-income countries.³³ The review found limited evidence from four studies of the effects of strategies for integrating primary health-care services at the point of delivery, from comparisons between integrated and vertical approaches to delivering services. The WHO Integrated Management of Childhood Illness programme seems to have promising effects on care delivery, but cointerventions, including the provision of drugs, might have confounded these results.

A review that focused on strategies for working with the private for-profit sector assessed the use of social marketing and drug prepackaging. The included studies showed substantial increases in the use of programme commodities and services, although effect sizes varied. Two of the studies combined social marketing with prepackaged drugs.²⁸

A review of studies looking at contracting out primary and secondary health care services in low-income and middle-income countries found evidence that the use of non-governmental organisations to deliver care can increase access to and use of health services, improve patient outcomes, and reduce household health expenditures.³⁷ These findings are compatible with those from a review by Patouillard and colleagues,²⁸ which showed mixed effects on the quality of hospital and primary care services for specific conditions, drawing on a different set of studies. However, for both reviews the low quality of the evidence makes the attribution of these effects to the interventions difficult, since they were confounded, for example, by increased expenditure on health care in the group that was contracted out.

Another review explored the effects of interventions to increase the proportion of health professionals practicing in underserved communities.²⁴ It found no rigorous evidence to support strategies to improve health professional distribution. Some evidence, albeit of very low quality, suggested that professionals from a rural background were more likely to practice in rural areas and that clinical rotations in such settings might affect medical students' decisions to work in underserved

areas. Incentive and support programmes might also increase physician retention rates.

Implementation strategies

Five included reviews exclusively assessed strategies to change professional behaviours or performance to improve the implementation of care. These strategies included guideline dissemination, audit and feedback, educational outreach visits, and educational meetings.^{32,38–41} Drawing largely on studies from high-income settings, the reviews suggested that these interventions could result in small to moderate improvements in professional performance and health outcomes, compared with no intervention. A substantial number of these studies were done in primary care settings and the findings could be generalisable to such settings in low-income and middle-income countries.^{45–47} Key findings from the five reviews are summarised in panel 3. A sixth review that addressed strategies for working with the private for-profit sector found that several training interventions improved the quality of treatment for various different conditions.²⁸

Discussion

Most of the included reviews were of high quality, with only minor deficiencies, although the primary research that was reviewed was often of low-to-moderate quality. This overview has several limitations which result partly from the relative dearth of evidence from low-income and middle-income countries and partly from the need to focus on the most relevant reviews. We assessed only systematic reviews and might therefore have excluded non-systematic reviews with useful information, as well as studies not included in a systematic review. We also excluded disease-specific reviews, although many of the studies in them are included in the reviews summarised here. This is particularly true for reviews of implementation strategies.

Our judgment of each review's relevance to primary health care in low-income and middle-income countries, and hence whether it was included, was based on consensus among the authors, which was sometimes difficult. We did, however, seek comments on these judgments from people working in various low-income and middle-income countries. Both the relevance of the reviews and the applicability of the findings can vary across settings. Similarly, several systematic reviews not included in this overview might be considered relevant to primary health care in at least some settings (webtable 1). Other systematic reviews are discussed elsewhere.^{49,50}

Our assessments of applicability and equity considerations are based on the data presented in the reviews, the judgment and experience of the overview team, and comments from colleagues about the summaries on which this overview is based. Few of the included reviews provided any data for the differential effects of the interventions for disadvantaged populations (webtable 3), probably because the studies included in

these reviews did not report this. Assessments of applicability were particularly difficult for reviews that included few studies from low-income and middle-income settings.^{19,44} Others may have made different assessments based on the same data. Nonetheless, there is a great deal of variation within and across low-income and middle-income countries and judgments must be made about the applicability of the overview findings, or any research, in the specific settings in which decisions are taken. Similarly, context is important in interpreting the evidence. For example, the background and training of lay health workers and the tasks undertaken by them varies substantially across contexts.

Thus, although this overview is valuable for providing a broad summary of relevant information for decision makers, it cannot provide a sufficient basis by itself for making informed decisions about primary health-care systems in a specific setting.

We did not identify systematic reviews that included studies in low-income and middle-income countries for two key aspirations of the Alma-Ata Declaration: intersectoral action and participation in health care. Although several reviews of participation have been undertaken, they either included studies from high-income countries only^{51–53} or were not systematic reviews.^{54,55} Two included reviews address this issue indirectly.^{25,26}

We also identified few reviews relevant to the aspiration of appropriate health care, including referral systems, or focusing on health systems governance arrangements. The last issue relates closely to the Alma-Ata aspiration of participation in health care in its focus on the involvement of different actors—including citizens, health care consumers, and health care providers—in decision making for health care delivery, and is receiving increasing attention internationally.^{56–58} The lack of systematic reviews on these topics does not mean that they are not important or that there is no evidence, but it does suggest there is a need to systematically review what evidence there is to inform decisions and future research.

Data for costs and cost-effectiveness was often not available in the included reviews for the health system arrangements and implementation strategies considered here. For example, although strong evidence is available on the effectiveness of lay health worker programmes for certain health issues in low-income and middle-income countries, most of the studies included in that review did not report data for costs or cost-effectiveness,²⁵ particularly when compared with similar interventions delivered by health professionals. Such data might have to be obtained from other types of studies.⁵⁹

The relatively small proportion of effectiveness studies undertaken in low-income and middle-income countries could suggest that much research funding has been dissipated on poor quality research that does not meet the quality criteria for entry into systematic reviews or that little research in this area has been funded. Funders, including the GAVI Alliance, the Global Fund to Fight

AIDS, Tuberculosis and Malaria, and the World Bank, need to ensure that new programmes are evaluated rigorously so that the knowledge base on the effects of health systems arrangements for primary health care can be strengthened.⁶⁰ Funders also need to explore mechanisms for better coordination of their research and implementation activities.⁶¹

This overview has several important findings: firstly, there is evidence that user fees reduce the use of necessary (as well as non-essential) health services and drugs, thereby further disadvantaging poor populations. However, removal of user fees needs to be accompanied by policies to remunerate health workers adequately, as well as alternative means of financing health care. Other financial mechanisms to improve access to health care need to be assessed, including community-based health insurance and social health insurance schemes. Evidence of the effects of community-based health insurance, particularly on poor populations, remains weak. Although there are a few case reports of promising attempts to scale-up community-based health insurance, such as in Rwanda,⁶² subsidies will still be needed to achieve coverage for the poorest people.⁶³ In general, the removal of financial barriers to essential medicines and services should be considered. Some form of risk sharing is needed, although how best to do this will differ across contexts. A systematic approach is needed for the design, monitoring, and evaluation of alternative models, and should include a description of how revenue is collected (eg, through general taxes, health insurance, donor funding), the type of organisation that collects revenues (eg, public, private not for-profit, private for-profit), who and what is covered, how funds are allocated, from whom services are purchased, and how service providers are paid.⁶⁴

Secondly, there is some evidence of effective strategies for improving quality of care in the private for-profit sector. In view of the importance of this sector in many low-income and middle-income countries, these approaches could be worth pursuing. However, other reviews have shown that care provided in for-profit hospitals or for-profit dialysis clinics generally results in worse outcomes and, in the case of care provided in for-profit hospitals, is generally more expensive.^{65–67} Although this evidence is largely from hospitals in the USA, the findings were consistent across several decades, and the same underlying mechanisms could apply in low-income and middle-income countries. Furthermore, evidence of the effects of strategies for working with both the not-for-profit and the for-profit private sector remains limited,^{28,37,68} and there are important questions regarding the weight to be given to investing in strengthening the private sector versus strengthening the public sector. Whatever choices are made, governments need to develop capacity to ensure effective, efficient, and equitable health care delivery, since this stewardship role cannot be left to the market alone.

Thirdly, there is promising, although limited, evidence on the effects of strategies to increase integration of primary health-care services.^{33,46} Delivering packages of interventions, for example to improve child health, might also contribute to service integration, but evidence here too seems to be limited.⁶⁹ Although integration could improve service delivery and outcomes, the effect of strategies to achieve integration need to be assessed. Integration is intended to reduce differences in access and use of health services between geographical and socioeconomic groups, but this can only be expected to the extent that it is targeted at disadvantaged populations and is effective. It could have unintended and unwanted outcomes if it results in overloaded or deskilled health workers or reduces ability and capacity to deliver specific technical services compared with vertical programmes.³³ Vertical programmes, although contrary to the primary health-care vision of Alma-Ata, might therefore have an important role where health systems are weak.⁷⁰ However, only a small number of these can be sustained and they can drain resources from the wider health system and lead to service duplication, inefficiency, and fragmentation. So-called diagonal approaches—which attempt to improve disease-specific outcomes through health systems strengthening—have been proposed as a mechanism for addressing health systems weaknesses.⁷¹ A framework to guide the design and implementation of changes between vertical and integrated services might be useful.

Fourth, the review identified encouraging evidence for the effectiveness, for a wide range of services, of task shifting from doctors to nurse practitioners and from health professionals to a wide range of lay providers who have had only short periods of formal training. Another review of the effects of community-based interventions, including traditional birth attendants, on perinatal, neonatal and maternal outcomes also had positive findings, suggesting that these interventions may reduce neonatal and perinatal mortality but showing a non-significant reduction in stillbirths. Community-based interventions also had a substantial effect on maternal morbidity, but not on maternal mortality.⁵⁰ These findings regarding task shifting are particularly important given the lack of robust evidence on interventions to improve the distribution and retention of health professionals, and also follow the principle that care should be delivered at the lowest effective level of care. The scaling-up of lay health worker programmes should therefore receive greater attention. Effective and supportive supervision of primary health care is also key to improving service delivery. Although we did not include any reviews on this topic, a recently published review, drawing on limited evidence, suggests that it might be a promising approach.⁷²

Fifth, the review indicates that implementation strategies can have important, albeit modest, effects. For some such interventions, such as audit and feedback,

both relative and absolute effects are likely to be larger where baseline compliance to recommended practice is low. Although few studies of quality improvement interventions were undertaken in low-income and middle-income countries, many of the evaluated strategies are feasible in such settings and similar effects could be expected.¹⁸ However, nearly all of the assessments were one-off studies initiated by researchers and there is a paucity of evaluations of quality improvement systems. For example, the effects of outreach visits on prescribing are well documented and this strategy has also been tested in low-income and middle-income countries. However, although some national authorities are now investing in systems for publicly funded outreach visits, evaluations of the cost-effectiveness of such systems have not been reported. Systems for quality improvement as an integral part of primary health care therefore need to be developed and evaluated. The effects of specific interventions also need to be examined. Overall, a range and mix of implementation strategies, selected based on a diagnosis of the underlying problems, will probably be needed to ensure the quality of primary health care.

We have focused here on systematic reviews of the effects of strategies for strengthening primary health-care systems. Other systematic reviews, single studies, and other types of information are necessary to inform decisions about how best to achieve the aspirations of the Alma-Ata Declaration and the Millennium Development Goals. In addition to information on effects, policy makers need information about costs, values, local needs, and the availability of resources. Process evaluations and evidence of mechanisms are needed to understand why strategies succeed or fail and how their effects vary under different conditions.⁷³ Nonetheless, systematic reviews of effects are an important and neglected input to policy-making processes.²² The evidence summarised here can help policy makers make better use of scarce resources and avoid unintentionally impairing the efficient and equitable delivery of effective primary health care.

A range of proactive efforts are needed to support policy makers' use of the evidence from reviews.⁷⁴ Promoting databases of optimally packaged reviews is an example of a strategy to address one of the factors—timeliness—that emerged from a systematic review of the factors that increased the prospects for research use in policy making.⁷⁵ Convening national policy dialogues is an example of a strategy that can address a second factor, namely interactions between research and policy makers. Integrated national initiatives, such as the WHO-sponsored Evidence-Informed Policy Networks, also hold promise.^{74,76}

Progress in achieving universal access to primary health care since Alma-Ata has faltered in many countries. Action needs to be taken urgently to improve primary health-care systems in order to achieve the Millennium Development Goals and the aspirations of the Alma-Ata Declaration. There are numerous promising health systems strategies

to improve the delivery and performance of primary health care in low-income and middle income settings. These need to be tailored to local circumstances and health systems, and accompanied by rigorous evaluation until the evidence base is stronger. The alternative is to remain as uncertain 30 years from now as we are currently about the effects of governance, financial, delivery, and implementation strategies on primary health care.

Contributors

AH, AO, JL and SL conceived and wrote the paper. AH, AO, JL, NS and SL screened studies for inclusion in the review. AL, GB, MC, AC, SF, SGM, TP, GR, ST, CSW and SL assessed and summarised the included reviews. All authors commented on drafts of the paper. SL will act as the guarantor.

Conflict of interest statement

AH, AO, and SL were co-authors of some of the included systematic reviews. AO and SL are editors of Cochrane review groups which published some of the included reviews. We declare that we have no other known conflict of interest.

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References

- 1 International Conference on Primary Health Care A-A, USSR, 6–12 September. Declaration of Alma-Ata; 1978.
- 2 Haines A, Cassels A. Can the millennium development goals be attained? *BMJ* 2004; **329**: 394–97.
- 3 Sanders DM, Todd C, Chopra M. Confronting Africa's health crisis: more of the same will not be enough. *BMJ* 2005; **331**: 755–58.
- 4 World Bank. The Millennium Development Goals for health: rising to the challenges. Washington: World Bank; 2004.
- 5 Narasimhan V, Brown H, Pablos-Mendez A, et al. Responding to the global human resources crisis. *Lancet* 2004; **363**: 1469–72.
- 6 WHO. World Health Report 2006: Working Together for Health. Geneva: World Health Organization, 2006.
- 7 Travis P, Bennett S, Haines A, et al. Overcoming health-systems constraints to achieve the Millennium Development Goals. *Lancet* 2004; **364**: 900.
- 8 Task Force on Health Systems Research. Informed choices for attaining the Millennium Development Goals: towards an international cooperative agenda for health-systems research. *Lancet* 2004; **364**: 997–1003.
- 9 GAVI Alliance. Health system strengthening. <http://www.gavialliance.org/vision/policies/hss/index.php> (accessed Aug 20, 2008).
- 10 Global Fund to Fight AIDS, Tuberculosis and Malaria. Fact Sheet: The Global Fund's approach to health systems strengthening. http://www.theglobalfund.org/documents/rounds/8/R8HSS_Factsheet_en.pdf (accessed Aug 20, 2008).
- 11 Walt G, Vaughan P. An introduction to the primary health care approach in developing countries. A review with selected annotated references. London: London School of Hygiene and Tropical Medicine, 1981.
- 12 De Maeseneer J, Willems S, De Sutter A, Van de Guechte I, Billings M. Primary health care as a strategy for achieving equitable care: a literature review commissioned by the Health Systems Knowledge Network. Ghent: University of Ghent, 2007.
- 13 Lawn J, Rohde J, Rifkin S, Were M, Paul VK, Chopra M. Alma-Ata 30 years on: revolutionary, relevant, and time to revitalise. *Lancet* 2008; **372**: 917–27.
- 14 Bennett S. What is health policy and systems research and why does it matter? Geneva: Alliance for Health Policy and Systems Research, 2007.

- 15 WHO Europe. Ninth Futures Forum on health systems governance and public participation. Denmark: WHO Regional Office for Europe, 2006.
- 16 Lavis JN, Ross SE, Hurley JE, et al. Examining the role of health services research in public policymaking. *Milbank Q* 2002; **80**: 125–54.
- 17 Grol R, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. *Lancet* 2003; **362**: 1225–30.
- 18 Haines A, Kuruwilla S, Borchert M. Bridging the implementation gap between knowledge and action for health. *Bull World Health Organ* 2004; **82**: 724–31.
- 19 Althabe F, Bergel E, Cafferata ML, et al. Strategies for improving the quality of health care in maternal and child health in low- and middle-income countries: an overview of systematic reviews. *Paediatr Perinat Epidemiol* 2008; **22** (suppl 1): 42–60.
- 20 The SUPPORT Collaboration. Supporting policy relevant reviews and trials. <http://www.support-collaboration.org/index.htm> (accessed Aug 20, 2008).
- 21 Guyatt GH, Oxman AD, Vist GE, et al. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ* 2008; **336**: 924–26.
- 22 Lavis JN, Posada FB, Haines A, Osei E. Use of research to inform public policymaking. *Lancet* 2004; **364**: 1615–21.
- 23 Lagarde M, Palmer N. Evidence from systematic reviews to inform decision making regarding financing mechanisms that improve access to health services for poor people. A policy brief prepared for the International Dialogue on Evidence-Informed Action to Achieve Health Goals in Developing Countries (IDEAHealth). Geneva: Alliance for Health Policy and Systems Research. <http://www.who.int/rpc/meetings/HealthFinancingBrief.pdf> (accessed July 15, 2008).
- 24 Grobler LA, Marindi PN, Mabunda SA, Reuter H, Volmink J. Interventions for increasing the proportion of health professionals practising in under-served communities (protocol). *Cochrane Database Syst Rev* 2005; **1**: CD005314.
- 25 Lewin S, Babigumira S, Bosch-Capblanch X, et al. Lay health workers in primary and community health care: A systematic review of trials. Oslo: Norwegian Knowledge Centre for the Health Services for the International Dialogue on Evidence-informed Action to Achieve Health goals in developing countries (IDEAHealth), 2006.
- 26 Sibley LM, Sipe TA, Brown CM, Diallo MM, McNatt K, Habarta N. Traditional birth attendant training for improving health behaviours and pregnancy outcomes. *Cochrane Database Syst Rev* 2007; **3**: CD005460.
- 27 Akbari A, Mayhew A, Al-Alawi M, et al. Interventions to improve outpatient referrals from primary care to secondary care. *Cochrane Database Syst Rev* 2005; **3**: CD005471.
- 28 Patouillard E, Goodman CA, Hanson KG, Mills AJ. Can working with the private for-profit sector improve utilization of quality health services by the poor? A systematic review of the literature. *Int J Equity Health* 2007; **6**: 17.
- 29 Lagarde M, Haines A, Palmer N. Conditional cash transfers for improving uptake of health interventions in low- and middle-income countries: a systematic review. *JAMA* 2007; **298**: 1900–10.
- 30 Austvoll-Dahlgren A, Aaserud M, Vist G, et al. Pharmaceutical policies: effects of cap and co-payment on rational drug use. *Cochrane Database Syst Rev* 2008; **1**: CD007017.
- 31 Petersen LA, Woodard LD, Urech T, Daw C, Sookanan S. Does pay-for-performance improve the quality of health care? *Ann Intern Med* 2006; **145**: 265–72.
- 32 Hulscher ME, Wensing M, van Der Weijden T, Grol R. Interventions to implement prevention in primary care. *Cochrane Database Syst Rev* 2001; **1**: CD000362.
- 33 Briggs CJ, Garner P. Strategies for integrating primary health services in middle- and low-income countries at the point of delivery. *Cochrane Database Syst Rev* 2006; **2**: CD003318.
- 34 Gruen RL, Weeramanthri TS, Knight SE, Bailie RS. Specialist outreach clinics in primary care and rural hospital settings. *Cochrane Database Syst Rev* 2004; **1**: CD003798.
- 35 Jacobson Vann J, Szilagyi P. Patient reminder and patient recall systems to improve immunization rates. *Cochrane Database Syst Rev* 2005; **3**: CD003941.
- 36 Horrocks S, Anderson E, Salisbury C. Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors. *BMJ* 2002; **324**: 819–23.
- 37 Lagarde M, Palmer N. Evidence from systematic reviews to inform decision making regarding financing mechanisms that improve access to health services for poor people. A policy brief prepared for the International Dialogue on Evidence-Informed Action to Achieve Health Goals in Developing Countries (IDEAHealth). <http://www.who.int/rpc/meetings/HealthFinancingBrief.pdf> (accessed July 15, 2008).
- 38 Grimshaw J, Thomas R, MacLennan G, et al. Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technol Assess* 2004; **8**: 1–72.
- 39 Jamtvedt G, Young JM, Kristoffersen DT, O'Brien MA, Oxman AD. Audit and feedback: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2006; **2**: CD000259.
- 40 O'Brien MA, Rogers S, Jamtvedt G, et al. Educational outreach visits: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2007; **4**: CD000409.
- 41 Forsetlund L, Bjørndal A, Rashidian A, et al. Continuing education meetings and workshops. *Cochrane Database Syst Rev* (in press).
- 42 Morris SS, Olinto P, Flores R, Nilson EA, Figueiro AC. Conditional cash transfers are associated with a small reduction in the rate of weight gain of preschool children in northeast Brazil. *J Nutr* 2004; **134**: 2336–41.
- 43 WHO. Task shifting: rational redistribution of tasks among health workforce teams. Geneva: World Health Organization, 2007.
- 44 Chopra M, Munro S, Lavis JN, Vist G, Bennett S. Effects of policy options for human resources for health: an analysis of systematic reviews. *Lancet* 2008; **371**: 668–74.
- 45 Althabe F, Buekens P, Bergel E, et al. A behavioral intervention to improve obstetrical care. *N Engl J Med* 2008; **358**: 1929–40.
- 46 Fairall LR, Zwarenstein M, Bateman ED, et al. Effect of educational outreach to nurses on tuberculosis case detection and primary care of respiratory illness: pragmatic cluster randomised controlled trial. *BMJ* 2005; **331**: 750–54.
- 47 Zwarenstein M, Bheekie A, Lombard C, et al. Educational outreach to general practitioners reduces children's asthma symptoms: a cluster randomised controlled trial. *Implement Sci* 2007; **2**: 30.
- 48 Shaw B, Cheater F, Baker R, et al. Tailored interventions to overcome identified barriers to change: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2005; **3**: CD005470.
- 49 Beaglehole R, Epping-Jordan J, Patel V, et al. Improving the prevention and management of chronic disease in low-income and middle-income countries: a priority for primary health care. *Lancet* 2008; **372**: 940–49.
- 50 Bhutta ZA, Ali S, Cousens S, et al. Interventions to address maternal, newborn, and child survival: what difference can integrated primary health-care strategies make? *Lancet* 2008; **372**: 972–89.
- 51 Nilsen ES, Myrhaug HT, Johansen M, Oliver S, Oxman AD. Methods of consumer involvement in developing healthcare policy and research, clinical practice guidelines and patient information material. *Cochrane Database Syst Rev* 2006; **3**: CD004563.
- 52 Crawford MJ, Rutter D, Manley C, et al. Systematic review of involving patients in the planning and development of health care. *BMJ* 2002; **325**: 1263.
- 53 NICE. Community engagement to improve health. London: National Institute for Health and Clinical Excellence, 2008.
- 54 Morgan LM. Community participation in health: perpetual allure, persistent challenge. *Health Policy Plan* 2001; **16**: 221–30.
- 55 Zakus J, Lysack C. Review article. Revisiting community participation. *Health Policy Plan* 1998; **13**: 1–12.
- 56 Kaufmann D, Kraay A, Zoido-Lobaton P. Governance Matters. Policy Research Working Paper 2196. Washington DC: The World Bank, 1999.
- 57 Travis P, Egger D, Davies P, Mechbal A. Towards better stewardship: concepts and critical issues. Geneva: WHO, 2002.
- 58 WHO. World Health Report 2000. Health systems: improving performance. Geneva: World Health Organization, 2000.

- 59 Walker D, Jan S. How do we determine whether community health workers are cost-effective? Some core methodological issues. *J Community Health* 2005; **30**: 221–29.
- 60 WHO. World Report On Knowledge For Better Health. Geneva, Switzerland: World Health Organization, 2004.
- 61 Savedoff W, Levine R, Birdsall N, Evaluation Gap Working Group. When we will ever learn? improving lives through impact evaluation. Washington, DC: Center for Global Development, 2006.
- 62 Diop J, Butera F. Community based health insurance in Rwanda. Development Outreach. <http://www1.worldbank.org/devoutreach/may05/article.asp?id=299> (accessed Aug 31, 2008).
- 63 Schmidt J-O, Mayindo J, Kalk A. Thresholds for health insurance in Rwanda: who should pay how much? *Trop Med Int Health* 2006; **11**: 1327–33.
- 64 McIntyre D. Learning from experience: health care financing in low- and middle-income countries. Geneva: Global Forum for Health Research, 2007.
- 65 Devereaux P, Choi P, Lacchetti C, et al. A systematic review and meta-analysis of studies comparing mortality rates of private for-profit and private not-for-profit hospitals. *Can Med Assoc J* 2002; **166**: 1399–406.
- 66 Devereaux P, Hells-Ansdell D, Lacchetti C, et al. Payments for care at private for-profit and private not-for-profit hospitals: a systematic review and meta-analysis *Can Med Assoc J* 2004; **170**: 1817–24.
- 67 Devereaux PJ, Schunemann HJ, Ravindran N, et al. Comparison of mortality between private for-profit and private not-for-profit hemodialysis centers: a systematic review and meta-analysis. *JAMA* 2002; **288**: 2449–57.
- 68 Waters H, Hatt L, Peters D. Working with the private sector for child health. *Health Policy Plan* 2003; **18**: 127–37.
- 69 Haws R, Thomas A, Bhutta Z, Darmstadt G. Impact of packaged interventions on neonatal health: a review of the evidence. *Health Policy Plan* 2007; **22**: 193–215.
- 70 Atun R, Bennett S, Duran A. Policy brief: when do vertical (stand-alone) programmes have a place in health systems? Denmark: World Health Organization 2008 and World Health Organization, on behalf of the European Observatory on Health Systems and Policies, 2008.
- 71 Ooms G, Van Damme W, Baker B, Zeitz P, Schrecker T. The 'diagonal' approach to Global Fund financing: a cure for the broader malaise of health systems? *Global Health* 2008; **4**: 6.
- 72 Bosch-Capblanch X, Garner P. Primary health care supervision in developing countries. *Trop Med Int Health* 2008; **13**: 369–83.
- 73 Calnan M, Ferlie E. Analysing process in healthcare: the methodological and theoretical challenges. *Policy Politics* 2003; **31**: 185–93.
- 74 Lavis JN, Lomas J, Hamid M, Sewankambo NK. Assessing country-level efforts to link research to action. *Bull World Health Organ* 2006; **84**: 620–28.
- 75 Lavis J, Davies H, Oxman A, Denis JL, Golden-Biddle K, Ferlie E. Towards systematic reviews that inform health care management and policy-making. *J Health Serv Res Policy* 2005; **10** (suppl 1): 35–48.
- 76 Hamid M, Bustamante-Manaog T, Truong VD, et al. EVIPNet: translating the spirit of Mexico. *Lancet* 2005; **366**: 1758–60.