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Approaches to Overcoming Health Systems Constraints at the Peripheral Level: A Review of the Evidence

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Abstract

This paper was commissioned by Working Group 5 - Improving Health Outcomes of the Poor - of the Commission on Macroeconomics and Health in order to review the current evidence base regarding efforts to overcome health systems constraints at the peripheral level. A systematic literature review was chosen as the approach to gather and analyse the existing knowledge about these constraints in low and middle-income countries. Constraints are understood as factors that limit the achievement of desired outcomes, in this case health outcomes or intermediate outputs that are closely related to health outcomes. The review focuses on 3 levels of constraints: community and household, health services delivery and health sector policy and strategic management. In total, 101 studies were reviewed, summarised and their main findings are presented in this paper. The limited available cost information is also presented. The results should be interpreted with caution due to various limitations in the existing evidence base. In addition, important gaps in the literature are identified for future investigation. Finally, macro level changes, although more difficult to alter and requiring longer time frames, must also be considered in any analysis of ways to achieve significant and sustainable improvements in health outcomes.

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1. Introduction

This work is part of a series of working papers commissioned by the Commission on Macroeconomics and Health (CMH) created by the World Health Organisation. The commission is composed of 6 Working Groups. This review is part of the analytical work undertaken by Working Group 5 (WG 5), which focuses on measures to improve the health outcomes of the poor in developing countries. This work complements two other undertakings under section B[1] of the terms of reference for WG 5, concerned with the constraints to scaling up interventions, namely:

- Constraints to scaling up health interventions: A conceptual framework and empirical analysis (1);
- 3 Country case studies: Chad (2), Tanzania (3), and India (4).

The health systems of low and middle-income countries often face substantial problems resulting from the inefficient and inequitable use of resources (5-6). They continue to be plagued by poor service quality and low coverage rates, especially for poor populations. There have been strong pressures to increase health spending in such countries. Additional resources would allow national governments to invest in urgently needed improvements in the areas of drugs and general supplies, staff training, expansion of infrastructure, and other compelling priorities. However, additional money needs to be spent effectively and efficiently, if it is to result in a significant contribution toward the goal of improving the health status of the population, in particular of the poor.

[1] *Section A: identifying the set of interventions that will significantly improve the health of the poor in a relatively short time period;*
Section B: considering the factors which will hamper the widespread implementation of these interventions amongst the poor, and the options that are available to deal with these; and
Section C: estimating the total costs of scaling up and sustaining interventions in differing, but generalizable, scenarios.

The purpose of the present review is to gather and analyse existing evidence and experiences, from country reports in the literature, of overcoming constraints at the health system level. Constraints are understood as factors that limit the achievement of desired outcomes, in this case health outcomes or intermediate outputs that are closely related to health outcomes.

Of particular interest are efforts to improve government performance (in terms of efficiency gains and quality improvements) in delivering health services at the peripheral level, i.e. preventive services, primary health care and first level (district) referral care. The analysis of factors that raise the efficiency of resource use and improve performance will allow a better understanding of how to improve health outcomes. This analysis will contribute to recommendations concerning the scaling up of health interventions to ensure high coverage of the poor.

The focus of the review was to survey and analyse the evidence tracing the impact of interventions on health system performance, where this is measured in terms of both intermediate and final outcomes. The following section describes the categorisation of constraints used as the framework for analysis of the literature findings. The search methodology is presented in the third section. The fourth section provides a summary of the findings of the literature review. The main points brought out in the findings section are discussed in the fifth section. The last section provides some concluding remarks.

2. Categorisation of Constraints

The constraints to scaling up health interventions reviewed in the literature are analysed here in terms of the categorisation of constraints developed by Hanson et al (1). The categorisation distinguishes the different levels of operation of the constraints as shown in table 1. This categorisation highlights the level of control held by Ministries of Health in relation to necessary changes.

Due to the focus of this review on efforts to overcome constraints in delivering health services at the peripheral level, the findings are concentrated on the first 3 levels of constraints. While we fully acknowledge the importance of levels 4 and 5, we also recognise that these levels lie beyond the scope of the present review due to limitations in time and resources.

Table 1: Categorisation of constraints

Levels		Constraints
I.	**Community and household level**	- Lack of demand for effective interventions; - Barriers to use of effective interventions: physical, financial, gender, cultural, social.
II.	**Health services delivery level**	- Shortage and poor distribution of appropriately qualified staff; - Weak technical guidance, programme management and supervision; - Inadequate supplies of drugs and medical supplies; - Lack of equipment and infrastructure (including labs and communications) and poor accessibility of health services.
III.	**Health sector policy and strategic management level**	- Weak systems for planning and management; - Weak drug policies and drug supply systems; - Inadequate regulation of pharmaceutical and private sectors; - Lack of intersectoral action and partnership for health between government and civil society.
IV.	**Public policies cutting across sectors**	- Government administration (civil service rules and remuneration; centralised management system; civil service reform measures); - Poor availability of communication and transport infrastructure.
V.	**Environmental characteristics**	*A. Governance and overall policy framework* - Corruption, weak government effectiveness, weak rule of law and enforceability of contracts; - Political instability and insecurity; - Low priority attached to social sectors and to meeting the needs of the poor for basic services; - Weak structures for public accountability and opportunities for public opinions to be voiced; - Lack of free press; *B. Physical environment* - Climatic and geographic predisposition to predominance of tropical disease in disease burden; - Physical environment unfavourable to service delivery.

Source: Hanson et al (1)

3. Methods

The methodology applied in this review is a systematic search of published literature. Efforts were also placed on locating grey literature. However, due to difficulties in searching and locating grey literature, a less systematic approach was taken for this type of literature[2].

The topic stated for the search was defined as: evidence on the success of efforts to overcome constraints related to the performance of government peripheral health services especially in areas relevant to diseases/health problems of highest priority (malaria, TB, HIV/AIDS, diarrhoeal diseases, ALRI, nutritional disorders, immunisation preventable diseases, helminth infections, tobacco-related diseases).

In order to further detail the components embedded in the topic, a breakdown of the research question was done as follows:

- Outcomes of interest: health services utilisation, client perception of health service quality, coverage increase, efficient use of inputs, reduction in morbidity or mortality;
- Interventions: management system strengthening, community involvement, improvements in training and supervision, introduction of quality assurance systems;
- Population: poor in low and middle income countries;
- Type of studies: descriptive, analytical, comparative and evaluation studies.

A combination of the use of the thesaurus tool and free text terms was used in the electronic database searches aiming at retrieving the largest amount of results possible.

Table 2 shows in the first column a list of key of words or terms used in the searches. They were used either as guidance to find the appropriate word through the thesaurus tool for the electronic databases (those that have one) or as free text. The second column refers to the

focusing of the search in terms of the classification of countries or geographical region of interest for the present review. Finally, the third column presents a list of the major diseases or health problems that were considered as relevant in the process of selection of articles for review. It is important to note that while the focus of the study is the strengthening of the health system, specific diseases or conditions were used here in order to narrow down the search to issues of relevance to the overall research of Working Group 5.

Table 2: Key words

Key words	Countries distribution	Diseases or health conditions
Access / coverage of poor / Equity Capacity development Efficiency of reforms Governance Government Efficiency / effectiveness Government performance Health care reform Health services performance Improve access Improvement of government performance Management capacity / strengthening Management reform Organisational efficiency Overcome / relax constraints Performance improvement Preventive care / services Primary health care Quality assurance Quality improvement Quality management Quality of care / of health services	- Developing countries - Low and middle income countries - Less or least developed countries - Africa, Asia, Latin America	- Malaria - Tuberculosis - ALRI - Diarrhoeal diseases - Helminth infections - HIV/AIDS - Immunisation preventable diseases - Nutritional disorder - Tobacco-related diseases

Specific criteria for inclusion or exclusion of abstracts and articles in the review were defined and applied:

- Sources: journals, books, reviews, and conferences proceedings and abstracts.
- Geographic coverage: Africa, Asia and Latin America
- Countries' income level: low and middle
- Target population: poor
- Publication year: after 1990

[2] Emphasis was given to documents accessible via the World Wide Web, which were peer reviewed.

The electronic databases selected for review were:

- Cabhealth, Medline, Healthstar, HMIC and Popline[3].

Once the electronic search was done, the title, abstracts and thesaurus (Medical Subheading – MeSH) fields were browsed for relevant terms to refine the search. The electronic searches were performed in two phases. The first used the more general set of key words presented in table 2, shown above. The second phase was carried out after completion of the summary and analysis of the data collected from the selected studies in the first phase of searches. A new set of key words was developed based on more specific key words in terms of the types of interventions and outcomes. Both set of key words are presented in detail in Annex III to this paper.

The search strategies were saved as electronic files and documented for future updates.

Appropriate review papers were located and relevant references were followed up. In addition, complementary hand searches were performed due to poor indexation of some journals in electronic databases. These journals were: Health Policy and Planning and the International Journal of Health Planning and Management.

The search of grey literature focused on independent (external review) evaluation reports to the extent possible, documents that were peer reviewed[4] and available on the World Wide Web. The sites of institutions used for unpublished literature searches were: World Bank, World Health Organisation, Department for International Cooperation, Partnerships for Health Reform Project, Quality Assurance Project, Health Systems Resources Centre, Population Services International, and Management Sciences for Health.

[3] For literature on social marketing.

In addition to the sources of studies mentioned above, we also received recommendations from experts in the field.

The relevance of selected and located studies was reviewed against the defined criteria and focus of the literature review mentioned above. In addition, the overall quality of the research results of the studies was assessed, in particular regarding the existence of bias, the methods used, and the potential generalisability. Due to difficulties in finding a large sample of studies applying a rigorous study design, the main criterion for inclusion was that the paper report on an evaluation study or describe an intervention, thus leaving out the opinion and critique papers.

In order to provide an assessment of the strength or power of the existing evidence an attempt was performed to rank the studies, in terms of their methodological designs and quality using the following criteria:

1. Descriptive, analytical, comparative or evaluation studies reporting on a type of intervention addressing health systems constraints of relevance to the present review;
2. Peer-reviewed study;
3. Study uses control groups;
4. Study evaluates changes over time[5];
5. Study reports statistical significance of results.

The score for each study was calculated by allocating equal weight for each of the above criteria.

[4] We considered internal peer review as an acceptable as long as the paper could fulfil at least one of the other eligibility criteria.
[5] Understood here as studies that used a baseline measure and at least a second measure or observed the effects of an intervention over a certain period of time as opposed to cross-sectional (one time) measures.

Relevant data from the located studies was collected in accordance with the necessary information for the literature review. Main data collected in terms of key information for the review includes:

- Methods, population, problems or constraints before intervention, intervention, results or conclusion and costs.

Finally, the collected data were summarised and analysed. The results are being disseminated as appropriate.

4. Findings and Analysis

This section provides an overall summary of the findings based on the categorisation of constraints presented in section 2.

In order to facilitate the presentation of the results, under each constraints level, further sub-sections will be used to reflect the main type of interventions [6] reported by the reviewed studies. Under these sub-sections, tables are presented which summarise some of the links between constraints, interventions and improvements, based on information from the different papers reviewed. The tables also contain, to the extent possible, information extracted from the papers on enabling factors or conditions that facilitated the achievement of the results described. Outcomes reported in italics refer to failures, and the ones reported in regular font refer to success.

The last part of this section presents cost data on the interventions and a summary table of the strength of evidence and type of outcomes per intervention and constraints level.

[6] Types of interventions reported here refer to the ones documented in the reviewed studies that could be located in this systematic review. We recognise, as it will be pointed out later, that this may not reflect the universe of possible or existing interventions to deal with the various constraints at the different levels specified in the framework.

In total, 101 studies were identified in the present review. These studies cover 42 different low and middle-income countries[7]: 49% in Africa, 32% in Asia, 17% in Latin America and 2% elsewhere.

Only a limited number of studies followed rigorous scientific methods. However, due to the dearth of information in this area and the relevance of the subject under review, we opted to present all identified studies that fulfil at the minimum two of the eligibility criteria outlined in section 3.

4.1. Community and Household Level

Under community and household level constraints a total of 33 studies were identified. This section is further subdivided as follows:

- Community participation;
- Bamako Initiative;
- Community health workers;
- Appropriate patient use of drugs; and
- Social marketing.

4.1.1. Community Participation

Community participation is considered one of the pillars of primary health care (7). It allows the involvement of a wider representation of society, and promotes sense of responsibility among the community but also requires capacity and skills that are scarce in the public sector (8-9). It is often not very well defined, as in the case of the Bamako Initiative (10-12).

[7] Annex II to this paper shows the distribution of studies per country.

Community participation has many different interpretations and understandings, some of which are identified by Kahssay and Oakley (13). It can be interpreted as collaboration, as specific targeting, as empowerment and as involvement. As elsewhere, the studies reviewed here also differ in their use of the term and no attempt was made to select studies that applied similar meanings to the concept.

A total of 10 studies documented interventions related to community participation. Out of the 10 studies, there were 3 descriptive and analytical studies, 1 comparative study and 6 evaluation studies. From the evaluation studies, 2 followed a rigorous methodological study design. Although most studies reported positive outcomes, including intermediate outcomes (such as improved community's organisational skills, improved staff contact with community) and to a lesser extent ultimate ones (reduced morbidity), caution should be exercised in interpreting these results due to the lack of a strong evidence base.

Additionally, a review article by Hadley and Maher (14), examined various studies of community involvement to increase access to tuberculosis care in developing countries. In their review, the main types of activities found to have positively contributed to tuberculosis control were:

- 'Delivery of messages to promote knowledge of TB symptoms and need for treatment completion;
- Community health workers surveillance;
- Community health workers as providers of TB drugs;
- Disseminating information through home care volunteers or through communication and discussion groups;
- Integrating community-based TB control programmes with non-stigmatised health care programmes or primary health care;

- Disseminating information and encouraging compliance;
- Family support, peer groups, and community volunteers to support patients throughout treatment;
- Community health workers, family members or other community member to observe patients taking medication;
- Community health workers to organise and refer patients with adverse drug reactions; community volunteers to keep in contact with patients over the entire treatment period; and
- Formation of village health workers associations, use of manuals and the contribution of school children or family members to read instruction.'

According to the authors a comprehensive planning process, with the participation of all actors (community, health workers and patients) is key to the success of TB control programmes.

In the intervention presented below, Moser and Sollis (15) discuss community factors that lead to the success or failure of projects, with the example of a primary health care project in Ecuador. The authors point out the need to go beyond the simple emphasis on community participation, to examine in depth what it really involves, how it should be designed and implemented, and who should take what role. The project was an initiative of the national government and an international donor agency and the chosen site was an urban poverty settlement with low coverage by the formal health system. The strategy chosen was a primary health care programme based on community participation and referral to higher levels in the system. Although the programme was based on the participation of the community, they were in fact not involved in the design of the project and thus the project did not take into account the community's perception of their priority health needs. Lack of clarity of responsibilities

and autonomy of the community role in the project led to discontinuation of the donor agency's support and the closure of the project by the government. From this perspective the project was seen as a failure. However, from the community's perspective, despite the discontinuation of the primary health care activities, it assisted in building up its organisational capacity and empowering its leaders.

According to Perry et al (16) the provision of health services using an outreach strategy can be a major component of primary health care services that reach members of the community that would not use facility-based services. The outreach strategy improves service coverage by dealing with constraints such as lack of knowledge about health services, limited health seeking behaviour, and opportunity costs, among others. The authors also raise an equity argument for the use of the outreach strategy, due to its contribution to improving the health of the community as a whole as opposed to only those people who live closer to a health facility or have more health education. They add that the outreach strategy is key in establishing a constant link with the community and building trust.

Table 3: Community participation

Country, (reference), Study design[8]	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Bolivia (16) Design: Descriptive / analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	- Lack of primary health care - Lack of faith of the community in modern health services as well as lack of involvement with the services.	Census-based and Impact Oriented (CBIO) approach to primary health care based on community participation: - Focus on a geographically defined community; - Applies two stages to programme implementation, i.e. pilot and definitive; - Programme planning is based on a community diagnosis resulting from locally collected data; - Incorporation of the community's health priorities; - Promotion of community ownership; - Identification of members of the community exposed to greatest risk of disease; - Provision of preventive and curative care targeting individuals at higher risks (using an outreach strategy).	- Allows easy assessment of coverage; - Strong community partnership in planning, implementation and evaluation; - Community empowerment possibly leading to long-term sustainability of the program; - Staff satisfaction with CBIO approach; - Practical approach that allows local staff and members of the community to carry out CBIO activities without major external inputs (experts and IT equipment).	
Bolivia (17) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. no 5. no Strength: 3	- Limited health education; - Difficulties to access health care; - Lack of participation of local communities.	Census-based and impact-oriented community primary health care approach for defining and addressing local needs: - Identification of programme target population by means of 6-monthly visits to all households; - Targeting of selected high impact health package to high risk groups; - Monitoring and information system.	- Reduced mortality levels among children under 5 in the programme area as compared to a control area by 1/3 to ½; - EPI coverage was 78% and nutritional monitoring coverage 80% in programme areas while in control areas the coverage of similar services was 21%; - Mutual strengthening of curative primary health care services and child survival services by means of integrating both services; - Improved staff contact with community through the outreach services; - Simplified assessment of coverage through use of health centres records for routine monitoring.	

[8] A simple categorisation of the study designs was adopted, identifying them as descriptive / analytical for the ones that describe and analyse interventions, comparative studies for the ones that compare two or more interventions or strategies and evaluation studies for the ones that follow a more rigorous scientific method and include quantitative and / or qualitative methodologies.

Country, (reference), Study design[8]	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Ecuador (15) Design: Descriptive / analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Poorly developed health services in urban squatter settlements.	Implementation of a primary health care programme based on community participation and referral to higher levels in the system.	- Capacity building and empowerment of community organisational structure (consolidation of existing community organisations, increased organisational capacity in dealing with government and international organisations, improved technical and accounting skills within the community, enhanced leaders' capacity in negotiation and collaboration); - Community retention of awareness of health issues and continued use of community's health promoters; - *Discontinuation of donor agency support and programme closure by the government.*	
Nigeria (18) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Lack of community mobilisation.	Community-based primary health care programme: - Training of nurses in family assessment and community mobilisation strategies; - Placement of nurses close to their home communities where they carried out home visits, health education and community mobilisation activities.	- Improved personal hygiene, home sanitation, drainage, refuse disposal; - Improved responses to physiological problems (fever, diarrhoea, leg pains, infections and anaemia); - *Intervention did not contribute to improve psychological and social problems, and health behaviours and beliefs (self-medication, superstition).*	
Bangladesh (19) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Lack of health education and knowledge poor hygiene practices; Lack of sanitation.	Community-based intervention: - Participation of village leaders; - Training and supervision of local village workers and volunteer mothers; - Meetings with the community; - Weekly lectures.	- Increased cleanliness scores; - Reduced diarrhoeal morbidity, - Improved growth status. Above changes were substantial with differences increasing over time.	
Nepal (20) Design: Comparative study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	- Lack of responsiveness to community needs; - Lack of community empowerment; - Low coverage.	Comparison between a state run health post and community run and financed health post in terms of the scope and extent of community participation.	- Both provided effective curative care; - Both had regular drug supplies; - *Community participation in the community run and financed health centre was very limited;* - *Less than 1/3 of symptoms among the population were treated in the health centres.*	

Country, (reference), Study design[8]	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Burkina Faso (21) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength: 4	- Low utilisation of health centres; - Difficult physical access; - Shortage of affordable drugs; - Poor performance of health staff.	Community based programme for prompt and adequate treatment of presumptive episodes of malaria among children: - Training of mothers; - Provision of drug kits (packed in age-specific bags) to community health workers; - Cost-recovery scheme for the sale of drugs; - Health workers were supervised on a monthly basis by a nurse from the dispensary and the nurses were monitored by a team from the national centre for malaria control (4 times in 6 months).	- Increased knowledge and awareness of malaria; - Decreased proportion of recorded severe malaria cases in comparison to the average of the last 4 years (from 4.9% to 3.7%); - Reduced proportion of severe cases in health centres with programme coverage of 50% in their catchment areas in comparison with the others (4.2% compared to 6.1%).	
Guatemala (22) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Poor performance of community health workers.	Community-based malaria surveillance and treatment programme: - Improved methods for selecting, supervising and evaluating volunteer collaborators; - Improved procedures for collecting blood smears and reporting results; - Use of community volunteer medicators for administering presumptive antimalarial drug treatment without taking a blood smear.	- Almost twice as high a percentage of patients with suspected malaria identified by volunteer collaborators (33% versus 17%); - Reduced delays in testing blood smear from 21 days to 7 days; - Slightly higher percentage of patients identified and treated by volunteer collaborators as compared to volunteer medicators (36% versus 33%); - Lower cost of maintaining a network of volunteer medicators ($0.61 per patient treated) as compared to the traditional volunteer collaborator network ($2.45) or the improved volunteer collaborator network ($1.85).	

Country, (reference), Study design[8]	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Kenya (23) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Low levels of bed net ownership.	Community education programme: - Training of community educators; - Large scale public meetings; - Small group teaching; - House-to-house education; - Teaching activities in primary schools.	- Over 90% of mothers able to understand the role of bed nets in protecting the user against malaria; - 40% of houses in the intervention area with children were reached; Increased knowledge of educational messages among participant children (from 59% to 92%); - 30% transfer of specific messages to the home.	Ongoing communication between planners and target population (for capitalising on the effectiveness of messages and methods used).
Cambodia (24) Design: Descriptive / analytical study	1. ✔ 2. ✔ 3. no 4. no[9] 5. no Strength: 2	- Lack of consumer knowledge on health service availability and quality; - Poor consumer health education; - Self-medication - Lack of access to sanitation and safe water.	- Provision of model of quality care (team performance basis for salaries, full-time staff only, encouragement of team spirit and communication); - Consumer health education (staff support to teachers to carry out health education in schools and IEC activities organised by community educators); - Assistance to local leaders in sanitation development and community empowerment; - Introduction of social marketing principles (charge of fees for consultations, cost recovery for drugs and condoms and exemption scheme).	- Integration of the community; - Provision of a model of high quality health service; - Improved sanitation; - Slight increase in health service utilisation.	

[9] Surveys did not measure the reported outcomes; they investigated where the population seek health care and expenditure patterns.

4.1.2. Bamako Initiative

The Bamako Initiative, announced by the African health ministers in 1987, under the auspices of WHO and UNICEF, aims at securing community funding of recurrent costs, enhancing the essential drug supply system and strengthening community participation and control (10, 25).

Studies reporting the assessment of interventions based on the Bamako Initiative are only documented here in terms of their community participation component. No systematic review of the Initiative will be performed here, as community financing as well as user fees programmes, as a strategy *per se* for improving health systems resource availability, will be dealt with by another working group of the CMH, i.e., Working Group 4 – Domestic Resources Mobilisation.

In an assessment of the Bamako Initiative in Burundi, Guinea, Kenya, Nigeria, Uganda the following results were reported (10-11):

- May lead to polypharmacy worsened by incentive systems that fosters drug sales;
- Difficulties in managing the scaling up of the programmes;
- Poor definition of community participation;
- Community enthusiasm and support but hampered by lack of training, supervision, materials and supplies;
- Gender imbalance due to lack of mechanisms for encouraging women's participation in the committees.

According to Vandemoortele et al (26) there is strong evidence of the success of the Bamako Initiative in Guinea and Benin in terms of improved effectiveness of primary care, significant increase in coverage of immunization, antenatal care and curative care over a 6-year period.

They also point out that this success was not uniform and utilisation rates even decreased in some health centres. Quality improvements were also mentioned as a pending challenge.

The Bamako Initiative is credited with the following achievements in Benin and Guinea over a 6-year period (27-28):

- Regular availability of preventive and curative heath care;
- Regular drug supplies;
- Increased regular contact between health centre staff and community members;
- Community ownership
- Increased average immunisation coverage from 19% to 58% in Benin and from less than 5% to 63% in Guinea;
- Increased average antennal coverage from 5% to 43% in Benin and from 3% to 51% in Guinea;
- Increased utilisation of curative care from less than 0.05 visits per capita per year to 0.34 in Guinea and from 0.09 visit per capita per year to 0.24 in Benin;
- Increases in coverage over time benefited from the problem solving strategy used in micro planning and monitoring;
- Improved immunisation and antenatal coverage benefited from outreach activities in Guinea.

The authors report that accessibility to some health centres persists due to geographical constraints not overcome.

McPake et al (11) questioned whether community financing would function as a system for encouraging community participation in decision-making. In Nepal, it was shown that it did not contribute to enhanced participation (20).

4.1.3. Community Health Workers

Community health workers or village health workers have increasingly being seen as a promising alternative to the delivery of primary health care, in particular due to growing constraints faced by governments, such as lack of skilled staff and infrastructure for delivering adequate health care to the population. These workers can play an important role in promoting appropriate health practices, disseminating information and supporting the government in their tasks of delivering health care at the community level. However these workers are not substitutes for government health services and need adequate support, as shown in the studies reviewed below. In the same way that the staff of a health center need supervision, regular supplies and monitoring of their activities, so do community health workers. However, this necessary support is often not available due to lack of organisational and managerial capacity of governments, thus imposing risks for this strategy.

A total of 13 studies documented interventions related to community health workers. Out of the 13 studies, one comparative study followed a rigorous methodological design, and 12 were evaluation studies (5 out of 12 abided by more strict scientific criteria). The majority of the studies reported relatively positive outcomes, but clearly pointed out the need for a support system for community health workers.

An interesting evaluation was documented by Robinson and Larsen (1990) in Colombia. In an assessment of performance of community health workers in terms of rewards and feedback associated with community versus the ones associated with the health system, the authors found that the community was exerting a greater influence.

Table 4: Community health workers

Country, (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Indonesia (30) Design: Evaluation study	1. ✔ 2. ✔ [10] 3. ✔ 4. ✔ 5. ✔ Strength: 5	- Poor distribution of village midwives; - Poor skills of village midwives.	Village health worker - midwife programme: - Training (duration one year); - Placement complementary to health centres and outreach activities.	- Increased number of midwives per population between 1986 to 1996 from 0.2 to 2.6 per 10,000 population; - Significant increase of body mass index among reproductive age women; - No increase in the control group; - Increased birth weight.	
Jamaica (31) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. no Strength: 3	- Geographically isolated community; - Poor access to potable water; - Poor litter collection and processing; - Limited links between health facility and community; Poor nutritional status of children.	Community health volunteers programme: - Selection of volunteers by a committee; - Training (one week); - Supplies of registration forms, growth charts, weight records and balance scale; - Supervision by a public health nurse and nutritionist (monthly); - Monthly incentive (not salary) of US$150.	- Coverage of children of 95.6% with community health volunteers; *- However, adequate coverage was only 50% due probably to late identification or failure to notice malnourished children by community health volunteers;* - Adequate weight gained by 81% (of the 50% adequately covered); - High participation rate, 78.5%; - Decreased malnutrition levels by 34.5%.	
Brazil (32) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. no 5. ✔ Strength: 3	- Limited coverage of health services; - Bias towards curative care in detriment to preventive care; - Lack of community-based health programmes.	Primary health care implemented by community health workers: - Training; - Refresher courses; - Supervision difficulties.	- Increased coverage of health service delivery; - Increased level of health-related knowledge, attitudes and practices (KAP) among primary health care workers and among their clients; *- Considerable differences between rural and urban districts were identified (coverage and knowledge in the rural areas were better than in the urban ones);* *- Problems in maintaining good quality records of community health workers in both areas.*	- Better training and supervision system in rural areas contributed to the considerable differences between urban and rural areas; - Socially homogenous community; - Restricted catchment area (40-60 households).
Ethiopia (33) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	- Low coverage of health services, in particular in rural areas; - Bias towards curative and hospital-based care.	Refresher course and monthly supervision of activities of community health workers.	- Significantly higher composite functional status score and 10 out of 13 activity scores among intervention group as compared to control group at 3 and 6 months after the start of the intervention; - Enhanced community support.	

[10] This study has not been published in a peer-reviewed journal but according to Vincent-Roa (personal communication, 2001) all their studies undergo extensive internal review.

Country, (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Bolivia (34) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength: 3	Limited access to health care, in particular in rural areas.	Competency-based training (one-day refresher course) for community health workers for case detection and management of acute respiratory infections among children.	Community health workers were able to acquire the necessary skills.	
Pakistan (35) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. no Strength: 3	- Limited access to health care, in particular in rural areas; - Under utilisation of health services; - Lack of qualified staff - Lack of community participation.	Community health workers programme with training and supervision for case detection and management of pneumonia in children under 5.	81% of agreement by medical officers with classification and treatment done by community health workers.	
India (36) Design: Comparative study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Lack of qualified medical staff (physicians) in rural areas.	Comparison of different types of community-based health care provision of case management in acute respiratory infections (ARI): - Paramedical workers; - Village health workers; and - Traditional birth attendants (TBAs). (Programmes included training (6 sessions of 1.5 hours each), educative supervision, and mass health education, monthly meetings)	- Lower case fatality rate for childhood pneumonia (0.9% intervention site and 13.5% in control site) for all 3 types of workers; - TBAs presented the following advantages: availability, outreach, access to neonates and cost[11]; - Rates of satisfaction among the clients were: 85% with village health workers, 69% with TBAs, and 18% with paramedical workers; - Reduced mortality rate attributable to pneumonia among neonates by 44% and by 20% for total neonatal mortality (this reduction is considered to be related to the involvement of TBAs in the treatment of acute respiratory infections).	Support from the health system.

[11] Further information on costs under item 4.4

Country, (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Peru (37) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. no 5. ✔ [12] Strength: 3	Poor access to oral rehydration therapy.	Community volunteer programme to provide oral rehydration therapy: - Training; - Provision of supplies and educational material.	*- Deficient knowledge of case management (diagnosis of hydration status, dietary management and preventive measures) among community volunteers;* *- Deficient knowledge also among professionals in the supervising health centre;* *- Close geographical proximity of health centres and community volunteer's catchment area, failing to increase coverage;* *- Poor supervision of volunteers;* *- Poor maintenance of records by the community volunteers.*	Close relationship between the community and health centres.
Colombia (29) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. no 5. ✔ Strength: 3	- High turnover of community health workers; - Limited quality of work; - Low morale; - Limited organisational and managerial capacity of government health systems.	Primary health care implemented by community health workers. Assessment of community health worker performance (defined as level of perceived goal attainment regarding work tasks) in terms of rewards and feedback associated with community versus the ones associated with the health system.	Higher influence of feedback and rewards from the community as compared to the ones from the health system: - Stronger association of work performance with factors such as perceived value community places on community health workers' activities, direct observations of health improvement, than with the supervisory feedback; - Stronger association of work performance with perceived reward of having influence in the community as compared to health system rewards, such as working with other community health workers, written commendation and salary.	
Nepal (38) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. no Strength:3	- Poor health knowledge and skills; - Limited utilisation of health services.	Community health volunteers in an urban setting.	*- Inadequate management support from the government health facilities;* - Substantial increase in coverage.	Adequate management support.

[12] Although, the authors reported having used statistical software for data analysis, almost no quantitative information is provided in the presentation of the results.

Country, (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Nepal (39) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. no 5. ✔ Strength: 4	- Limited impact of the Community Health Volunteers (CHVs) on the population; - Lack of refresher training activities; - Inadequate drug supplies; - Irregular and scarce supervision; - Difficult geographical conditions and isolation of CHVs.	- More periodic refresher training; - Continuous supervision; - Increase and improved regularity of drug supply to the CHVs;	- Improved ability to detect and treat common diseases such as diarrhoea, malnutrition, night blindness, and acute respiratory infections; - Increased community utilisation of CHVs followed by decreased use of traditional healers and private consultations at local pharmacies and constant levels of utilisation of health posts and referrals; - Increased CHV motivation; - Increased coverage of activities carried out by the CHVs.	
Bangladesh (40) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	- Lack of staff in government facilities; - Lack of supplies and supervision; - Under utilisation of health services	Community health workers programme.	Decreased overall mortality among neonates by 17%, among infants (1-5 months) by 9%, among children (aged 6-35 months) by 30% and among women by 19% for those in the intervention area compared to the control area.	
Peru (41) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. no 5. ✔ Strength: 4	- Lack of sewage and sanitation; - Poor hygiene practices.	Community health workers programme (training and supervision).	- After 3 years training and supervision for the community health workers programme had finished, *2/5 were functional;* *Increased emphasis was put on curative care;* - Some evidence of impact on vaccination coverage and increased utilisation of health services; *- No significant changes regarding treatment of diarrhoea or enhancement of the quality of drinking water.*	

4.1.4. Appropriate Patient Use of Drugs

Inappropriate drug use at community level is an often neglected problem and a small number of interventions deal with measures to promote more rational drug use at the individual level (42).

Under appropriated patient use of drugs, we were able to identify 2 review studies.

Foster (43) in a review paper on drug supply and use in Sub-Saharan Africa documented on the following successful interventions in terms of improving patient adherence: Provision of information on dosage and mode of administration to patients and building of trust between patients and prescribers. The constraints these interventions were designed to deal with included low adherence by patients and high levels of self-medication.

Homedes and Ugalde (44) reviewed 45 studies of interventions to improve patient drug use in developing countries. Table 5, below, shows a summary of successful interventions categorised by type of diseases. The authors conclude that “as currently used, the large expenditures in medicines may have little therapeutic efficacy, result in a waste of resources, or even may have very serious negative health effects.”

Table 5 - Disease specific interventions with positive effects

Tuberculosis	*Increased supervision/follow-up of the patient irrespective of who does it (including DOT). To enhance compliance supervisors need to be trained adequately;* *The follow-up can take place at any location but best if closest to the patient's residence;* *Reducing financial barriers to accessing the medication.*
Diarrhea	*Provision of written education materials;* *Social marketing and mass media education on appropriate prevention and treatment of cases* *Interactive methods seem to be more effective than pamphlets;* *More cost-effective to use group-teaching than individual teaching.*
High blood pressure	*Community-based hypertension control programs (nurse stations to screen, control, educate and refer hypertensive patients to the appropriate level of care);* *Nurses more effective than physicians at improving patients' compliance with appointments but no effect on blood pressure control.*
Malaria	*Improving packaging and providing written instructions;* *Coating chloroquine pills;* *Targeting the health education message to communities' beliefs;* *Making pills accessible to patients through CHW.*
Schiizophrenia	*Education and counseling of patient's family members;* *Simplify treatment and have pharmacists and psychiatrists reinforcing the need to comply with the treatment regimen.*
Acute respiratory infections	*Use community health workers to educate caretakers to treat and manage acute respiratory infections.*
STDs	*Use physicians to educate patients on how to follow the treatment and prevent other cases.*
Antibiotics	*Educating the patient using visual aids improves compliance.*
Epilepsy	*CHW can be instrumental at identifying patients and following-up on treatment.*
Rational use of drugs	*Educating community health workers through simple mass media decreases the prevalence of self-medication and increases the use of non-pharmacological therapies.*

Source: Homedes and Ugalde (44)

4.1.5. **Social Marketing**

Social marketing is a technique adapted from the private sector geared towards social goals (45). According to Brugha et al (46) there is increasing evidence of the effectiveness of social marketing as a tool to increase coverage of public health commodities. However its main drawback is the inability of this tool to reach the very poor. Products that have been part of the social marketing strategy include condoms, insecticide-treated mosquito nets (ITNs), vitamin A and oral rehydration salts.

In total 10 studies were reviewed under social marketing interventions. The quality of the evidence ranged from a medium to high level of scientific rigour. Almost all studies report only intermediate outcomes. The exception is a recent study of social marketing of insecticide treated bed nets in Tanzania (47).

Janowitz et al (48) recognise that the ideal measure of the impact of social marketing programs for contraceptives should be the absolute changes in contraceptive prevalence. However, as the authors point out, other measures such as sales levels are used due to lack of data.

Snow et al (49) report on a sharp decline of retreated bed net coverage following the introduction of social marketing. However, the authors point out that the sentinel system was free and that previously (from 1993 to 1995) there had been a randomised control trial in the study area that distributed and treated nets free-of-charge. Therefore, factors other than the social marketing approach may explain the decline in coverage.

In order to address the equity issue in the social marketing programme in the districts of Kilombero and Ulanga in the Morogoro region in Tanzania, a voucher system for pregnant women and infants was implemented (50). The voucher system offers nets at a discounted

price and distributes vouchers through antenatal clinics. An untargeted subsidy scheme is also part of the PSI project in the areas of Dodoma, Morogoro, Mtwara and Dar es Salaam in Tanzania (51).

Table 6: Social marketing

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Tanzania (47) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength: 4	Lack of access to public health products (bed nets and insecticide).	Social marketing of insecticide treated nets: - Formative and market research; - Distribution through public and private sales outlets and a door to door community system; - Training of agents (shop owners, village leaders, health workers); - Promotion of product using various channels; - Use of vouchers for vulnerable groups.	Results refer to a sample of children aged under 2 years: - Increased ownership of bed nets (from 58% to 83% for treated or not treated nets and from 10% to 61% for treated nets); - Increased haemoglobin level in the study children (from 80 g/l to 89 g/l); - Decreased prevalence of anaemia (from 49% to 26%), parasitaemia (from 63% to 38%) and splenomegaly (from 86% to 49%).	
Tanzania (51) Design: Evaluation study	1. ✔ 2. no 3. no 4. ✔ 5. ✔ Strength: 3	Poor availability, demand for and use of insecticide treated-bed nets and regular retreatment.	Social Marketing of insecticide treated mosquito bed nets.	- Substantial increase of the proportion of households in possession of at least 1 net in all areas of project operation (in Mtwara from 7% to 46%, in Dodoma from 18% to 35%); - Significant increase of retreated nets (~30% of nets were treated at least once in 3 areas, with re-treatment rates ranging from 12% to 15%.); - No evidence of leakage of subsidised nets; - *Mixed impact of project on the private commercial sector*.	
Kenya (49) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. no Strength: 3	Poor coverage of insecticide-treated bed nets.	- Sentinel delivery stations with 12 dipping sites in 1996; - Social marketing in 1997 covering the same area as previously covered by the sentinel delivery stations; - Both strategies were implementing re-treatment services.	- Sentinel delivery stations achieved a coverage of 61-67% of nets used by children; - *Social marketing programme achieved a much lower coverage of nets as compared to the sentinel delivery stations, only 7%*.	
Honduras (48) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. no Strength: 3	Resource constraints and inefficiencies among family planning organisations.	Social marketing programme of an oral contraceptive.	- Small increase of use of oral contraceptive (from 12.7% to 13.4%); - Increased market share of the social marketing oral contraceptive (from 7% to 15%); - Increased social marketing programme's share of pharmacy sales (from 20% to 40%); - *Smaller increase in use by rural women as compared with urban women*.	

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
South Africa (52) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength: 4	Lack of access and use of condoms.	- Social marketing campaign targeted at miners and commercial sex workers; and - AIDS awareness programmes carried out by the mining industry.	- Proportion of individuals perceiving themselves at risk of contracting HIV from 33% to 35% ($p<0.01$); - Decreased percentage of miners reporting having had 4 or more partners in the past year from 25% to 13% ($p<0.01$); - Increased percentage of miners reporting last sexual partner being their spouse from 18% to 26% ($p<0.05$); *- No significant increase in condom use with other partners but remained at a high level (67%).*	
South Africa (53) Design: Evaluation study	1. ✔ 2. ✔ [13] 3. ✔ 4. ✔ 5. ✔ Strength: 5	Poor knowledge of STDs and AIDS and poor access and use of condoms and other contraceptives among adolescents.	Adolescent reproductive health program including social marketing activities.	Data analysis is restricted to females only. - High exposure to information regarding STD/HIV and pregnancy prevention; - Intervention more effective in changing beliefs related to pregnancy prevention than STD/HIV prevention; *- No evidence of significant changes in sexual behaviour;* - Significant increase in the percentage of women who ever used condoms.	
Guinea (54) Design: Evaluation study	1. ✔ 2. ✔ [14] 3. ✔ 4. ✔ 5. ✔ Strength: 5	Poor knowledge of STDs and AIDS and poor access and use of condoms and other contraceptives among adolescents.	Adolescent reproductive health program including social marketing activities.	*Low participation in the program (27.8% in intervention site);* 24% of respondents self-reported changes in behaviour (13% use of condoms, 11% faithfulness and 10% abstinence); 94.5% responded to be familiar with the social marketed condom brand (information available only for one of the project sites); *No evidence of decrease in risky sexual behaviour among the sexually active adolescents;* Some evidence of an impact of the intervention on preventive behaviour.	

[13] This study has not been published in a peer-reviewed journal but according to Dominique Meekers (personal communication, 2001) their studies are peer-reviewed informally.
[14] Same as footnote 11.

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Cameroon (55) Design: Evaluation study	1. ✔ 2. ✔ [15] 3. ✔ 4. ✔ 5. ✔ Strength: 5	- Lack of reproductive health services for adolescents; - Lack of awareness and use of reproductive health products and services.	Social marketing programme for adolescents.	- High personal contact with the programme demonstrated by approximately 2 out of 3 adolescents; - 72% responded to be familiar with the social marketed condom; - More than 50% of respondents self-reported changes in behaviour (mainly discussion of sexual issues with parents, teachers and friends but 25% started using condoms or other contraceptives); - Significant programme effect on awareness of sexual risks, knowledge of family planning methods, and discussion of sexuality and contraceptives (though with gender discrepancies); - Increased proportion of women reporting the use of oral contraceptives and condoms; - *No significant change in the proportion of those who used condoms during the last sexual intercourse.*	
Tanzania (56) Design: Evaluation study	1. ✔ 2. ✔ [16] 3. no 4. no 5. no Strength: 2	Poor knowledge of STDs and AIDS and poor access to and use of condoms.	Social marketing	Increased use of condoms from 15% in 1993 to 42% in 1996.	
Zimbabwe (57) Design: Evaluation study	1. ✔ 2. ✔ [17] 3. no 4. ✔ 5. ✔ Strength: 4	Lack of access and use of condoms.	Social marketing	- 48.8% of all sexual acts were protected by a condom (34.6% by social marketed brand, 4.6% by a commercial brand and 9.6% by free condoms); - 77.1% of sexual acts with regular partners were protected with a condom (90.8% with a casual partner and 11% with spouse); - 55.6% of sexual acts with casual partners were reported to be protected by the social marketed brand (9.7% by commercial brand and 25.5% by free condoms).	

[15] Same as footnote 11.
[16] Same as footnote 11.
[17] Same as footnote 11.

4.2. Health Services Delivery Level

Under the health services delivery level, a total of 39 studies were identified. This section is further subdivided as follows:

- Staff issues: skills, performance and incentives systems;
- Service delivery and organisation: delivery by private providers and service organisation;
- Drug supplies: user fees, prescribing practices, drug retailer training.

4.2.1. **Staff Issues**

Staff issues are often a major constraint to the delivery of health services in low and middle-income countries. Problems such as: a) the lack of skilled staff, b) inadequate distribution of health professionals across regions, with higher concentration in urban and more affluent areas, c) low salaries, and d) low motivation and productivity are examples of a long list of complaints. According to Bennett and Franco (58), the various determinants of health worker motivation need to be further understood. The authors propose a framework that includes influencing factors beyond specific incentives, such as organisational culture and channels of accountability. Bach (59) also argues that attention should be focused on non-pay rewards such as work reorganisation and performance management.

4.2.1.1. Skills

The lack of managerial skills is a critical problem throughout the health systems of low and middle-income countries, in particular at the peripheral level. Gilson (60) documents that in Tanzania the quantity of staff in dispensaries is considered to be adequate, however staff working practices were not satisfactory (lack of physical examinations of patients when diagnosing, poor interpersonal skills). Major reforms at national level are undermined due to a lack of skills in policy formulation, implementation, monitoring and evaluation. Conn et al

(61) comment on the lack of skilled managers at the national level in The Gambia to carry forward changes aiming at reforming and decentralising the management system.

We identified 13 studies reporting on interventions to improve staff skills. They were all evaluation studies and there was a strong focus on training as the main type of intervention followed by supervision or follow-up. The majority of the studies were methodologically sound. The evidence is mixed, though overall, more positive than negative outcomes are reported.

Table 7: Staff training and supervision

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Nigeria (62) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	- Lack of skilled nurses; - Low return rate of patients for follow up; - Low levels of contraceptive use.	Training of nurses in communication and counselling skills.	- Improved interpersonal and counselling skills; - Increased client satisfaction; - Increased return rate for follow up (said to be correlated with continuation rate).	
Turkey (63) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. no Strength: 3	- Poor counselling skills; - Outdated information on family planning among staff; - Low staff motivation.	- Training of follow up team; - Follow up visits to family planning sites as a means of carrying out on-the-job training.	- Improved counselling skills; - Establishment of separate counselling rooms in the facilities; - Improved skills in inserting intrauterine devices; - Improved infection prevention practices.	
Indonesia (64) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. no 5. ✔ Strength: 4	- Community preference for home deliveries; - Poor coverage of maternal health services at village level.	Training, peer review and continuing education scheme.	Significantly improved knowledge, confidence and skills of midwives (p 0.03); Significantly improved competence (as defined by a score of at least 70%) of midwives (p 0.03).	
Ghana (65) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. no 5. ✔ Strength: 3	Poor access to maternal health services.	Training programme of traditional birth attendants (TBA).	*- No significant evidence of an impact of TBAs on outcomes;* *- Out of 8 outcome measures, only 3 were significantly associated with TBA training;* *- Measures negatively associated were: intrapartum and postpartum referrals, foul discharge, and intrapartum and postpartum excessive bleedings;* - Measures positively associated were: postpartum fever, retained placenta, and positive association with labours lasting more than 18 hours).	
Zambia (66) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Poor quality of care and patient dissatisfaction (poor interpersonal and counselling skills, lack of health education, inappropriate prescribing, shortage of drugs).	Training programme in STD management with particular emphasis on communication and counselling (with a duration of 7 afternoons).	- Significantly increased proportion of patients being examined, given health education, and informed about partner notification; *- No reductions in the proportion of patients who complained about the health care provided;* *- Main complaints related to long waiting time and short contact time for discussing the disease*.	

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Indonesia (67) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Poor immunisation coverage.	On-the-job peer training programme for nurses (with a duration of 1-2 weeks).	- Increased immunisation coverage (about 39% increase of DPT, polio and measles vaccinations in all participating centres); - Improved immunisation management practices (by approximately 30%).	
Malawi (68) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength: 4	- Fragmented TB control programme; - Poor training and supervision; - Low recording of patients' addresses; - Non-adherence to national TB control programme protocols.	- On-the-job training (6 weeks); - Establishment of a system for accurate recording of patient's address; - All levels of the programme received improved supervision; - Creation of a TB committee for the establishment of formal and informal with all parties; - Weekly meetings of TB assistant and municipal health department that resulted in more efficient follow up of defaulters.	Increased TB cure rate from 24% to 68% and from 29% to 92% among survivors to end of treatment.	- Coordination and intersectoral collaboration at the local level replacing a previously rigid structure; - Commitment and enthusiasm by team members.
Egypt (69) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. no Strength: 3	Poor training of primary health care staff; Low utilisation rates.	- Nutrition training programme; - Establishment of mothers' groups; - Wide dissemination of programme objectives; - Regular staff supervision; - Use of field staff as trainers; - Use of constructive feedback.	- Improved teamwork; - Increased levels of nutrition activities within the maternal and child clinic; - *No evidence of improved education in food hygiene;* - Increased service utilisation; - Improved infant feeding practices; - Increased staff motivation and morale; - Project's integration into the local health management structure allowed it to be disseminated and incorporated into planning.	- Multi-disciplinary team; - Community involvement; - Clear definition of tasks and regular supervision and feedback; - Senior staff involvement.

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Kenya (70) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. no Strength: 3	Poor health worker performance in integrated management of childhood illness - (IMCI)	Clinical skills training (health workers were trained in IMCI including monthly or bimonthly clinical supervision).	High performance levels of health workers in management of ill children with mild and moderate disease classifications.	
Indonesia (71) Design: Evaluation design	1. ✔ 2. ✔ [18] 3. ✔ 4. ✔ 5. ✔ Strength: 5	Need for reinforcement of continued use of new skills.	Quality assurance methods: - Self-assessment (series of 8 forms covering different skills areas); - Peer review (weekly 30 to 60 minutes sessions for discussions regarding self-assessment). (Measures were taken at baseline, post-training and 16 week follow-up)	- Substantial performance decline in the control group between post-training and 16 week follow up; - *Significant reduction of performance in the group participating in the self-assessment strategy only;* - Maintained counselling performance in the group participating in the complete package of intervention, in particular supportive communication.	

[18] Same as footnote 08.

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Niger (72) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength: 5	Poor compliance (assessment, treatment and counselling) of health workers with the IMCI algorithm.	Use of quality assurance methods in 3 districts: - Structured feedback of health worker performance data; - Team-based quality improvement - Formal IMCI training	- *Declined compliance* however interventions of performance assessment feedback and quality improvement teams showed positive effect; - Improved compliance in the area of assessment (from 34 to 85% ($p<.05$)) due to performance feedback; - Maximum effect of performance feedback in areas in which health workers performed weakly and eventual declines in areas in which compliance was high; Increased assessment compliance (from 14 to 19% ($p=.06$) due to formal training; - Increased compliance by 27% ($p=0.05$) due to short-term (6 months) training and feedback; Increased compliance by 9% ($p=.05$) due to short-term feedback alone (following training); - Significant association of work on IMCI-related problems using quality improvement methods and higher performance in overall compliance ($p=.008$); - Above-average performance on related compliance indicator (twice as likely: OR=2, $p=.05$) of observed facilities with active quality improvement teams working on an IMCI related problem than facilities not working on this issue.	

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Nigeria (73) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength: 4	- Poorly trained staff; - Poor staff morale; - Wide variation in practices of data collection; - Collection of duplicate information; - No use of collected data, just transfer to higher levels in the system.	- Training of primary health care supervisors in quality assurance methods (use of group decision-making methods, flow and cause-and-effect diagrams); - Use of a simulated case to assess diarrhoea case management to measure the impact of supervision; - Introduction of checklists during supervisory visits to monitor health workers management of diarrhoea cases; - Assessment of data collection by a health information system audit.	- Performance improvement in history-taking, physical examination, disease classification, treatment and counselling; - Standardisation of reporting of health information system; - Significant improvement of health facilities using a daily disease registry.	
Philippines (74) Design: Evaluation design	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	- Inconsistent and unstructured supervisory visits; - Lack of follow up of findings of supervisory visits.	Design and introduction of a supervisory system for midwives using objective performance indicators and checklists.	- Improved 42% performance as measured by 20 indicators used in the supervision check lists; - Correlation between frequency of supervision and improvements in scores; - Improved relationship between supervisors and midwives.	

4.2.1.2. Performance and Incentives Systems

There is insufficient evidence regarding the effects of incentives on motivation and performance of health workers (75). We were able to identify only 2 studies related to this topic.

Chomitz et al (76), used revealed and stated preference data in Indonesia, to show that the present system of incentives (offers of civil service appointments to doctors willing to accept posts in remote areas with opportunities of specialist training) is sufficient to attract doctors from Java (urban centre) to remote areas. The authors point out 2 caveats with respect to this approach. First, the doctors undertaking specialist training will not meet the needs of health centres in remote areas. Secondly, it is very expensive to provide specialist training. The survey suggested that doctors from Outer Islands would be willing to serve in very remote areas if given incentive payments (of Rp 1 to 1.5 million/month). Considering that doctors have a compulsory service time of 3 years, this option would be less expensive for the government as compared to the costs of the specialist training for 90% of these doctors.

In a second study from Indonesia, a performance system was introduced that rewards knowledge, performance and professional development. In positive terms, the system increases transparency and may improve motivation as well as contribute to the achievement of the government health policy objectives (77). However, important flaws are pointed out by the authors such as the lack of financial rewards to persuade physicians from engaging in private practice, and the approach disregards time inputs needed per unit of reward, thus placing higher value on quantity as opposed to quality. The system implies a sophisticated administration and accounting system and makes budgeting difficult. This example illustrates the difficulties of designing an appropriate and efficient incentive system.

According to Sandiford et al (78), managers in Tanzania have few incentives to perform better and are rarely punished for poor performance. Also in Tanzania, Gilson (60) mentions the weak disciplinary measures over staff regarding, for example, illicit drug selling and the lack of provision of night services.

There is growing interest in performance management applied to human resources as a process to measure, monitor and enhance staff performance which ultimately should lead to improved quality and health outcomes (79). However, as a wide-ranging policy, no evidence of the effectiveness of this approach was identified during this review, although specific quality assurance methods associated with performance management have been used in the context of developing countries, such as competence-based training (64).

Table 8: Performance and incentives

Country (reference) Study design	Ranking of strengthen of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Indonesia (76) Design: Evaluation study[19]	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength: 4	Uneven distribution of doctors between urban and rural/remote areas.	Incentive scheme for doctors offering civil service appointments with possibility of specialist training.	- Incentive scheme sufficient to attract doctors from Java (urban centre) to serve in remote areas; *- However, doctors from Outer Islands are more willing to serve in very remote areas than the ones from Java, if given modest cash incentives (which would cost the government less than the scheme offering specialist training).** *Results partly based on survey data on hypothetical assignments.	
Indonesia (77) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	- Low salaries; - Limited opportunities for career advancement for non-managerial staff; - High number of physicians practising in the private sector (potentially using the public practice to screen patients for the private practice).	Introduction of a payment for performance system where points are allocated to activities, leading to promotion and financial rewards.	Survey data and analysis by the authors suggest that the system: - May improve morale; - May contribute to the achievement of government policy objectives by assigning higher rewards to placements in remote locations and preventive activities, for instance; *- Promotes management positions because it promotes multiplicity of activities as opposed to specialisation;* *- Disregards time inputs needed per unit of reward;* *- Does not provide for monitoring of quality of performance;* *- Does not provide adequate financial reward to persuade physicians to abandon private practice.*	

[19] Revealed preference analysis and stated preference analysis.

4.2.2. Service Delivery and Organisation

4.2.2.1. Delivery by private providers

In this review private providers are understood as the private-for-profit sector as well as the non-profit sector, which includes non-governmental organisations.

Non-governmental organisations (NGOs) are commonly believed to be more effective, efficient, innovative and able to reach the poor than government institutions. However, the evidence supporting this claim is weak (80-82). The NGO sector encompasses a wide variety of organisations, and their weaknesses and strengths have to be examined for individual institutions and types of institutions, not the whole sector, and also in comparison to the other private and governmental sectors.

A study in Tanzania analysed government and NGO dispensaries in terms of efficiency and the results indicate that the non-governmental (church) units presented considerable variation, with some performing at lower levels than governmental dispensaries (60).

Another study from Tanzania, in the city of Dar-es-Salaam, comparing government and non-profit organisations, demonstrated that the latter provided better quality of health care (83). There was, however, a high level of inadequate care at both types of providers.

Using a small sample of district hospitals, Mills et al (84) present evidence from two studies in South Africa and Zimbabwe. They show that hospitals run by private providers on contract to the government in South Africa operated at lower unit costs as compared to government run hospitals, and the same finding was reported for mission hospitals in Zimbabwe. Quality differences were not substantial in South Africa, and in Zimbabwe were thought to favour the mission hospitals.

In Senegal, a comparative study between private and public facilities showed that despite a high degree of heterogeneity, the private sector provided better quality services (82). In addition, catholic health posts were significantly more efficient than other private providers and public ones in the provision of preventive and curative outpatient services at high levels of output. The author concludes by reinforcing the need for policy-makers to take into account the variations of the different types of private providers and the evidence regarding quality among them.

In table 9, the experience of Zimbabwe is described with accounts of rather negative outcomes.

Table 9: Private providers

Country (reference) Study design	**Ranking of strength of evidence**	**Constraints**	**Interventions**	**Outcomes**	**Enabling factors or conditions**
Zimbabwe (85) Design: Descriptive / analytical study	1. ✔ 2. ✔ [20] 3. no 4. no 5. no Strength: 2	- Poor quality of health services in the public sector; - Limited coverage.	Incentive setting for participation of for-profit-private providers: - Monetary (tax credits, tax exemptions, contracting out); - Non monetary (fee structures, co-use of government facilities, continuing medical education, training subsidies).	- *Limited government policy-making, managerial and financial capacity to coordinate the private sector;* - Growth of the private sector (more than 50% of doctors run a private practice); - *Concentration of private providers in urban areas, in particular larger cities.*	

[20] This study has not been published in a peer-reviewed journal but according to Pia Schneider (personal communication, 2001) PHR studies undergo an internal peer-reviewed process.

4.2.2.2. Service Organisation

A total of 8 studies reporting on a service organisation type of intervention were identified.

The 5 studies regarding patient waiting times all reported positive outcomes and used quality assurance methods as the main type of intervention. The quality of the evidence in methodological terms is mixed, but rather weak.

In one report, the largest reduction in patient waiting time was achieved for the period between arrival at the health centre and the first contact point by implementation of a block appointment system (86). A similar experience was described by Hermida et al (87) in Ecuador where patient clinical records were incomplete and out of order. When a patient's records were not found, they were simply given new ones, which undermined the quality of care since physicians lacked full access to patients' medical histories. Organisation of the clinical records index by the clerk with help from the nurses significantly contributed to the overall reduction of patient's waiting time.

Service reorganisation or rearrangement as the main type of intervention was used in 3 studies. One study is a descriptive / analytical account of the introduction of quality assurance methods in Chad with positive intermediate outcomes. The other 2 studies introduced more comprehensive service reorganisation changes and followed a more rigorous methodological design. They documented positive ultimate outcomes, in terms of reduced mortality.

Table 10: Service Organisation

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Enabling factors or conditions
South Africa (86) Design: Evaluation Study	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength: 4	- Long waiting times→ patient dissatisfaction; - Bypassing of health centres; - Inadequate staffing.	Quality assurance → implementation of a block appointment system.	- Reduced waiting times for patients with acute and chronic illnesses with appointments as compared to similar patients without appointments; - Positive attitude of staff after introduction of system; - Patient enthusiasm with the system; *- No benefits for patients not seeing doctors or collecting drugs.*	Staff involvement at all stages to avoid resistance.
Kenya (88) Design: Descriptive/ analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Waiting times → patient dissatisfaction.	Quality assurance techniques → patient flow analysis.	Reduced waiting times.	Participation of all staff.

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Enabling factors or conditions
Jordan (89) Design: Descriptive/ analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	- Waiting times → patient dissatisfaction; - Poor service organisation;	- Quality assurance method: client flow analysis; - Changes in the internal procedures for handling patients; - Simple appointment system.	- Improved clinic's efficiency. <u>Marka Health Centre</u>: - Reduced maximum time spent in general medicine clinic by patients from 4 hours to 53 minutes; - Reduced waiting time from 55 minutes to 8 minutes; - Increased average contact time from 15 to 28 minutes in the clinic's child centre. <u>Jabal Hussein Health Centre</u>: - Reduced average waiting time for patients in the diabetes clinic from 2 hours and 10 minutes to 1 hour and 14 minutes.	
Peru (90) Design: Evaluation study	1. ✔ 2. ✔ [21] 3. no 4. ✔ 5. no Strength: 3	Low utilisation of health services in the Urrunaga catchment area.	Quality assurance methods: using rapid and systematic team problem solving including: capacity building in quality improvement methods, brainstorming to identify a priority problem area, skills development in problem solving and analysis, development and analysis of client flow chart, analysis of root causes with fishbone diagram, identification of key factors that influence client satisfaction, development of indicators and standards, analysis of client satisfaction data, development, selection and implementation of solutions.	- Improved waiting times in 42% (from 56% to 80% for clients who waited half an hour or less); - Improved complaints about too long waiting times in 37.5% (from 72% to 99% of clients reporting that their waiting time was regular or short).	
Ecuador (87) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. no Strength: 3	- Long waiting time→ patient dissatisfaction; - Short patient-physician contact time→ low technical quality of care; - Inefficient use of physician's time.	Quality assurance methods: - Measurement and analysis of reasons for long waiting time - Identification (use of a flow chart to identify bottlenecks) and problem solving by staff - Implementation and monitoring of measures to reduce waiting time.	- Decreased patient waiting time (average of 115 minutes per visit to 66 minutes); - Increased patient contact time with staff (from 11 to 16 minutes); - Improved use of physicians' time; - Increased team work among staff; - Improved attitude of staff towards work.	Participation of staff.

[21] Same as footnote 09.

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Enabling factors or conditions
South Africa (91) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength: 4	Errors (misdiagnosis) or omissions in health service delivery.	Service reorganisation (structural and functional rearrangement of the service, writing and implementing protocols of care and regular in-service education).	Improvement in service quality (reduction in 40% of perinatal mortality rate over a period of 3 years and decrease of 61% in avoidable deaths over a period of 1 ½ years).	
China (92) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Poor organisation of maternal and child health services.	Maternal and child health services reorganisation: Combination of additional training of medical workers, traditional birth attendants, improved health education of families and communities, provision of easier access to emergency care services, establishment of obstetric rescue teams.	- Improved maternal and child health services (increased availability of staff and equipment) and strengthened management capacity for high-risk pregnancies resulting in lower maternal mortality (reduction of more than 75% of the overall maternal mortality ratio per 100,000 births throughout a period of 3 years).	
Chad (93) Design: Descriptive / analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Poor quality of health care services in an urban centre (poor knowledge about other staff members activities, lack of standardised instructions).	Quality assurance methods: - Reorganisation of patients flow through a process of frequent discussions and communication aiming at strengthening teamwork.	- Rapid implementation by team of necessary changes to improve the efficiency; - Maintenance of outreach activities for antenatal care; Integration of family planning with antenatal and under-five clinics by carrying out joint outreach clinics; - Delegation to the social worker the screening of under-five children on a regular base; - Negotiation of a waiting area for mothers and children to be financed by the health committee; - Introduction of a nutritional programme for children at-risk or need.	

4.2.3. Drug Supplies

The literature provides differing views with respect to the impact of drug availability on health outcomes. In general terms, availability does contribute to quality; however availability *per se* is not sufficient to guarantee quality outcomes but rather is linked to other important factors such as prescribing practice.

The perception of patients is that the availability of drugs in a facility is an indicator of quality and this influences the utilisation or not of health facilities (94). Litvack and Bodart (95) use availability of drugs as the quality component measured in their study in Cameron. However, Haddad and Fournier's (96) study in Zaire showed that the quality improvements as measured by improved drugs and equipment supply and technical qualification of staff, were not sufficient to increase utilisation in view of the financial barriers introduced by the user fees scheme in a rural community in Zaire. They also point out the importance of taking into account an often-neglected aspect of quality in developing countries, i.e., interpersonal skills of staff.

4.2.3.1. User Fees for Increasing Drug Supplies

As mentioned earlier, user fees will not be assessed under this review. Here we are focusing on the strategy with a view to the possibilities it creates for improving drug supplies availability. Equity concerns regarding this strategy were raised in a number of sources (25, 97-102).

Four studies were identified under the present type of intervention. Of the total, there were 3 evaluation studies and 1 study compared two different fee schemes. The methodological quality of the studies is fairly good (out of 4 studies, one is ranked 5 and the others 4) and the outcomes are somewhat positive.

In Nepal, the comparison of two districts showed that the one benefiting from a project that supplied drugs as requested by health staff was not performing better than a control district without such support. Performance was observed in terms of the appropriateness of prescriptions to diagnosis and the quantity of items prescribed (103). Dong et al (104)[22] describes the reform of Chinese drug policy that has improved the overall supply of drugs in the country through the introduction of market-oriented delivery mechanisms. These changes have led to an increase in patient access to drugs, but also to higher risks of overuse and misuse as well as of distribution of fake or low quality drugs.

[22] Study described in detail under section 4.3.4.

Table 11: User fees for increasing drug supplies

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Nepal (103) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. no Strength: 4	Inadequate supply of drugs.	- Improvements in the drug supply system; - Introduction of cost sharing; - Comparison of prescribing patterns between the intervention and a control district.	*Improved availability led to excessive prescribing practice.*	Need for an integrated drug policy.
Nepal (105) Design: Comparative study	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength: 4	Inadequate supply of drugs low utilisation of health facilities.	Fee per item prescribed scheme (FPI); and Fee-per-script (per prescription) scheme (FPS) run by an NGO; and local drug shops.	- Increased average daily attendance from 9 to 32 patients a day (240%); - Significantly smaller number of drugs prescribed in the FPI scheme (per patient average of 1.8 from 2.4 previously); - Reduced average cost to patients of drugs by 12% in the FPI scheme; - The combination of the above resulted in a reduction of 50% of the average cost to the patient of a prescription as under the FPI scheme as compared to the FPS; - Reduction in 24% of per patient costs for the operation of the FPI scheme as compared to the FPS; *Increased subsidy needed to run the FPS due to the large rise in utilisation;* No differences between the schemes regarding the proportion of one-off stocktakes of ten essential drugs in low or absent supply (24%).	
Zaire (96) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength: 4	Inadequate supply of drugs poor quality low utilisation of health facilities.	User fees scheme based on community management of the drug funds and health centres.	*Reduced utilisation of health services by 40% over 5 years (18-32% of this reduction is due to cost);* Improved drug supplies and technical quality of the services (qualification of staff, renovation of infrastructure and allocation of equipment).	
Cameroon (95) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Inadequate supply of drugs poor quality low utilisation of health facilities.	Bamako Initiative: User fees component (quality component was measured by the availability of drugs in the health centres).	- Significant increase in the probability of health centre utilisation; - Improved quality as measured by availability of drug supplies; - Decreased price for seeking care as compared to other alternatives in terms of travel and time costs; - Increased probability of poorest quintile to seek health care at a proportionately higher rate than other quintiles.	

4.2.3.2. Prescribing Practices

A total of 8 studies were identified under the present section. There were 6 evaluations and 2 comparative studies. All studies presented good to very good methodological designs. Outcomes are generally positive.

In a review study focusing on Sub-Saharan Africa, Foster (43) identified training and involvement of prescribers as successful measures resulting in appropriate prescribing practice. She reports on the large scope for efficiency gains from adequate prescribing practice. A study in Ghana compared prescriptions from various health centres with the guidelines from health authorities, showing that 70% of the drug costs could have been saved (43)[23]. She notes that involving prescribers in the selection and quantification of drugs may contribute to the improvement of prescribing practice.

The authors of a review of interventions to improve prescribing practices in developing countries presented the following findings (106):

- Effective interventions: standard treatment guidelines, essential drug lists, drug and therapeutic committees, problem-based basic professional training in pharmacotherapy, and targeted in-service training of health workers.
- Ineffective interventions: dissemination of prescribing information or clinical guidelines in written form only.
- Interventions that need further research: training of drug sellers, education based on group processes and public education.
- Strategies that need a long-term strategic approach: prescribing in the private sector and monitoring the impacts of health sector reform.

To maximise the effectiveness of the successful interventions and building upon the findings and gaps in the literature and future challenges the authors (106) recommended:

- 'Establish procedures for developing, disseminating, utilizing and revising national (or hospital-specific) standard treatment guidelines[24];
- Establish procedures for developing and revising an essential drug list (or hospital formulary) based on treatments of choice;
- Require hospitals to establish representative Pharmacy and Therapeutics Committees with defined responsibilities for monitoring and promoting quality use of medicines;
- Implement problem-based training in pharmacotherapy in undergraduate medical and paramedical basic education based on national STGs;
- Encourage targeted, problem-based in-service educational programmes by professional societies, universities and the Ministry of Health, and require regular continuing education for licensure of health professionals;
- Stimulate an interactive group process among health providers or consumers to review and apply information about appropriate use of medicines;
- Train pharmacists and drug sellers to be active members of the health care team and to offer useful advice to consumers about health and drugs;
- Encourage active involvement by consumer organisations in public education about drugs, and devote government resources to support these efforts;
- Develop a strategic approach to improve prescribing in the private sector through appropriate regulation and long-term collaborations with professional associations;
- Establish systems to monitor key pharmaceutical indicators routinely in order to track the impact of health sector reform and regulatory changes.'

[23] Citing Barnett A et al, 1980.
[24] Standard treatment guidelines (STGs).

The results of the present review corroborate the findings of previous reviews (106, 42) with respect to the bias towards intervention studies of public sector programmes as opposed to the private sector or private prescribers where irrational drug use is also widespread.

An often-neglected aspect of interventions seeking to improve irrational drug use is the socio-cultural context of drug use (patient demand and attitudes towards injections, prescribers' self-interests) and the need to take it into account and understand it better is pointed out by various authors (44, 107-108).

Chalker (109) documented an innovative approach: the intervention involved an incentive scheme based on a conditional donation of drugs and equipment subject to improved prescribing behaviour ascertained through the supervision process and an external evaluation system. It was a combined strategy of carrots and sticks (incentives and enforcements): workshops, community participation, IEC, training, supervision, and conditional donations. Thus creating a synergistic opportunity for improvements.

Table 12: Prescribing practices

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Viet Nam (109) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Poor antibiotics prescribing practices (use and dosage).	- Workshops for clinical staff, for Commune People's Committee, and district supervision team; - IEC campaign; - Training for health workers (1 week); - Monthly supervision; - Equipment and drug donation conditional on: provision of adequate supervision, evidence of improved antibiotic prescription, and improved bookkeeping.	- Decreased percentage of episodes of antibiotic prescription from 65% to 45%; - Increased percentage of adequate prescription dose from 30% to 98%; - Changes continued over the 17-month period of intervention.	- Active collaboration of staff; - Community participation.
Sri Lanka (110) Design: Comparative study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	- Poor prescribing practices; - Over-prescription of antibiotics.	Educational interventions: - Newsletters; and - Newsletters followed by a group seminar.	- Trend towards decreased proportion of patients prescribed antibiotics in the two intervention groups but not at a significant level ($p>0.05$); - *No changes in antibiotics prescribing practices.*	
Indonesia (111) Design: Comparative study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Poor prescribing practices.	Educational interventions: - Small group face-to-face intervention; - Formal seminar for prescribers.	- Equal effectiveness of both interventions in improving levels of knowledge about rational management of acute diarrhoea; - Both interventions were partially effective in improving the appropriate use of drugs (by reducing the use of non-rehydration drugs); - Significant decrease in antimicrobial use after both interventions. The small group intervention resulted in significantly higher reduction than the formal seminar; - Significant decrease in the use of antidiarrhoeals after both interventions, with a significantly greater impact of formal seminars; - Trend towards a reduction of the use of oral rehydration solution after both interventions (without reaching statistically significant level).	
Indonesia (112) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	- Poor prescribing practices; - Over use of injections.	- Behavioural intervention: - Interactional group (of 6 prescribers and 6 patients) discussions (in a 4-week period) lasting from 90 to 120 minutes each session.	- Significant decrease in injection use from 69.5% to 42.3%; - Significant decrease in average number of drugs per prescription (demonstrating that other drugs were not substituting the use of injections).	

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Mexico (113) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Poor prescribing practice for rhinopharyngitis.	- Interactive educational workshops; and - Managerial peer review committee	Improved prescribing practices among 40% of physicians just after intervention and 27.5% after 18 months of intervention; *No improved prescribing practices among 42.5% physicians;* No changes in prescribing practices of 17.5% who already showed rational practices at baseline and throughout the intervention.	
Zambia (114) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	- Poor quality of patient management; - Irrational drug prescribing.	Continuing training seminars (within a 4-month period, three 2-day seminars).	- Decreased average number of drugs per patient from 2.3 to 1.9 (p=0.005); - Increased proportion of patients managed with non-pharmacological treatment from 1 to 13.2%; - Improved recorded history taking, examination and diagnosis of patients; - Improved correct selection of drugs (p=0.03); - Decreased proportion of patients prescribed antibiotics; Increased proportion of patients of patients adequately managed.	
Ghana (107) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. no Strength: 4	- Over and under-dosage of malaria drug treatment; - Preference for injections.	On-the-job training programme for medical assistants.	*- Within one year, the gains in knowledge following the training were eroded;* *- Differences between knowledge and practice of malaria treatment (represented by under-dosing of chloroquine in children and over-dosing in adults);* *- Large preference for injections (85% of all cases);* *- High trend towards polypharmacy (an average of 5 drugs per visit).*	
Tanzania (115) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength:4	Prescribing being done by untrained staff and lack of supplies of essential drugs.	Training (a one year teaching programme directed at rural primary health care workers).	- Significant increase in patients prescribed 1 drug or less; - Increase in percentage of patients being appropriately diagnosed.	

4.2.3.3. Drug Retailer Training

A total of 4 studies were identified under drug retailer and training, of which 3 are evaluations and 1 descriptive / analytical. All studies report quite positive results for intermediate outcomes.

Developing countries with low population density or rugged geography have difficulties in providing their rural populations with adequate supplies of drugs. A study from Nepal documents that the ratio of retail drug outlets compared to health posts is 4:1 and in some communities drug sellers are the only providers of medicine (116).

According to the authors of the Nepali study, patients prefer private drug sellers because of expediency, convenience, efficacy of the drugs, stability of supplies and reasonable costs. A study from Ghana provided similar reasons (94)[25].

Kafle et al. (116) point out that no systematic evaluation of the programme for training drug retailers in Nepal has taken place. This highlights a common limitation of such policies, whereby policy makers design and implement training activities, but devote little attention to the need for monitoring and evaluation of these programmes. It is important to identify the effectiveness of such programmes in order to verify the usefulness and impact of the resources being spent.

[25] Citing Asenso-Okyere and Dzator 1997.

Table 13: Drug retailer training

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Kenya (117) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. ✔ Strength: 4	- Self medication with shop-bought drugs; - Lack of over-the-counter drug information by community members; - Ineffective treatment of fevers; - Enlarged risks of toxicity; - Rapid drug resistance.	Training programme for shopkeepers on community drug use (3 workshops of 3 days each, 1-2 hours individual training sessions for direct observation and 2-day refresher training workshops after 6 months).	- Increased percentage of drug sales for children with fever that included antimalarial drug from 34.3% to 79.3%; Increased percentage of sales of antimalarial drug purchased in an adequate amount from 31.8% to a 82.9%; - Increased percentage of childhood fevers where an adequate dose of chloroquine was provided to the child from 3.7% to 65.2%, representing an increase in the appropriate use of over-the-counter chloroquine by 62%.	Strong support of community and shopkeepers.
Nigeria (118) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	- Shortages of government drug stocks; - Poor ethics and competence of patent medicine vendors.	Training for patent medicine vendors (8 weekly 2hr sessions).	Significant higher knowledge scores in post-test (from 43.2% to 71.6%); Significant gains over a control group.	Trainees' enthusiasm and value on knowledge.
Nepal (116) Design: Descriptive / analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	- Low utilisation rates of health facilities; - Shortage of drug supplies in health facilities; - Lack of trained pharmacists; - Self-medication - non-therapeutic retailer practice; - Weak regulation of drug selling.	Training course for drug retailers and certification.	- More even geographical coverage of training courses enabling an equitable distribution of trained drug retailers; - Popular among retailers; - Acceptance from physicians and pharmacists.	Political commitment.
Kenya and Indonesia (119) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Poor communication and product sales for cases of diarrhoea in children.	Face-to-face outreach training programme to for pharmacists or counter attendants.	Increased sales of oral rehydration salts (ORS) in intervention pharmacies by an average of 30% in Kenya (roughly double) and 21% in Indonesia ($p<0.05$); Significant increase in knowledge about diarrhoea and its treatment in Kenya ($p<0.05$); Decreased sales of anti-diarrhoeals by an average of 15% in Kenya and 20% in Indonesia ($p<0.05$); Significant increases in discussion of dehydration during pharmacy visits ($p<0.05$).	

4.3. Health Sector Policy and Strategic Management Level

Under the health sector policy and strategic management level constraints a total of 29 studies were identified. This section is further subdivided as follows:

- Management strengthening;
- Monitoring and health information systems;
- Contracting;
- Drug policies and supply systems; and
- Coordination and regulation of the private and pharmaceutical sectors.

4.3.1. Management Strengthening

Management capacity, particularly in remote areas, is a major constraint facing health systems of low and middle-income countries. Management skills and approaches are essential for the elaboration of health expenditure data, financial plans and management information systems (120).

A total of 10 studies were identified under this section, of which 9 use a descriptive and analytical methodology, and only 1 is an evaluation study. The great majority of the studies documented very positive intermediate outcomes but the methodological quality of the evidence is weak.

The studies presented below from Ghana and Guinea Bissau are part of a process[26] for strengthening management capacity at district and provincial or state levels developed by WHO (121). The model was developed and field-tested over a period of 2 years in Ghana where the health system was afflicted by problems such as vertical organisational structures and centralised management systems (121-122). Other countries that have used the model

are Guinea, Lao People's Democratic Republic, Nepal, Sierra Leone, Vietnam and Zambia. [27] The authors argue that the approaches used in these countries can be successfully adapted to different socio-cultural contexts and organisational structures.

One of the reasons for improved financial management and identification of additional funding sources in Ghana was the integration of staff from the local government accounts office into the DHMTs (district health management teams) (122). They contributed by sharing knowledge on rules and procedures and also, by working as part of the DHMTs, they were able to develop a better understanding of community health needs and objectives. A similar strategy of integrating financial staff into management teams was documented by Conn et al (61) in The Gambia. This highlights that better communication among staff, within institutions and between them, is crucial. 'Communication between the compilers of the treatment guidelines and essential drug list and the drug producers and suppliers is needed' (103).

An evaluation of community projects in the area of family planning delivered by non-governmental organisations in Bangladesh showed that performance improvements could be achieved through better management, even when inputs were kept fixed (123). The study assessed the factors that distinguished better performing projects from others. The processes or activities associated with higher performance were:

- More complete field work,
- Better coverage and frequency of visits to clients,
- Messages adapted to the needs and interests of the clients,
- Appropriate and proactive supervision,
- Supervision of field workers by visiting client homes together,

[26] The process is based on a structure for dealing with problems and working in teams to find solutions that are in accordance with local resource constraints and overall context.
[27] Evaluation of the implementation in these other countries was not located in the published literature.

- Supervisors made responsible for field workers' performance,
- Project management and policy-making,
- Clear roles and responsibilities for policy-makers and managers,
- Separated responsibilities of policy formulation and program implementation,
- Formal personnel policies,
- Sharing of financial management between executive committees and managers,
- Policy makers not involved in supervision of field work,
- Personnel at all levels with higher technical skills,
- More committed leadership.

The better performing projects achieved better outcomes as reflected in higher contraceptive prevalence rates, higher number of clients reached, and higher client satisfaction.

The management strengthening experience in Tanzania described by Barnett and Ndeki (124) resulted in positive outcomes while restricted to the local level, but when it was scaled up the same success could not be achieved due to lack of follow up work from the regional team (124).

Table 14: Management strengthening

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Ghana (122) Design: Descriptive/ analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Traditional primary health care management training courses → inadequately prepared managers.	District-level management development initiative (workshops for identification and prioritisation of managerial problems, analysis of causes and design of action plans followed by workshops to review and redesign action actions).	- Improved financial management →increased funds available; - Improved transport strategy; - Increased managers' confidence; - Improved staff morale; - Community involvement.	Ownership by district.
Guinea Bissau (125) Design: Descriptive/ analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Lack of management training for doctors in charge of regional Health Directorates.	Management strengthening programme: - 3 modules with specific workshops and implementation of action plans (lasting in total about 16 months); - Creation of teams; - Analysis of day-to-day problems; - Planning of how to tackle problems using available resources; - Critical review of results.	- Improved staff's management skills and performance, mainly regarding methods of work and communication; - Better adaptation of the regional health management teams to primary care strategies; - Increased self-confidence and motivation among team members; - More rational use of resources; - Sharing of means of transport by team members based on defined priorities; - Regular sharing of lessons learned from health systems development at regional level with central level decision-makers; - Improved effectiveness of collaboration with bilateral and non-governmental organisations; - Increased immunisation coverage from 1989 to 1992, in particular for BCG and DPT3 (diphtheria, pertussis and tetanus) vaccinations.	- Political commitment to decentralisation and strengthening of the regional health system; - Management of the programme by the Ministry of Health with the establishment of a national network of facilitators, in charge of the planning and implementation of the programme; - Team work, - Ownership, - Progressive apprenticeship, - Support in between the workshops.

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
India and Zambia (126) Design: Descriptive / analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Lack of managerial capacity to meet primary health care demands.	Management Strengthening: - Activity-based learning; - Systematic management development. <u>Bombay, India:</u> Series of 3 monthly workshops. <u>Zambia:</u> 3 year programme with 6 monthly workshops for central and provincial teams and quarterly workshops for the district teams (after first year of implementation) and regular meetings at health centres for village workers (after the third year); Establishment of a routine communication system.	<u>India:</u> Strengthened teamwork; Improved understanding of the need of a broad-based, community-led primary health care approach. <u>Zambia:</u> - Health centre level - *weak progress at health centre level* but with some positive results, including improved data collection and strengthened supervision; - District level – improved managerial skills of delegation, problem solving, transport allocation, enhanced selection and training of drivers, and improved reporting of immunisation; - Provincial level – greater involvement of management teams in planning, budgeting and expenditure surveys, improved transport management, supervisory visits, delegation and conflict handling, more positive attitudes of management teams and acceptance of responsibility for supporting district management teams.	- Commitment and leadership from top managers; - Understanding of organisation structures and their scope to be used for learning; - Focus on team-building; - Management style that stimulates open communication, constructive criticism and willingness to change.
Tanzania (124) Design: Descriptive/ analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Poor management of primary health care at district level.	Management strengthening by action-based learning strategy (problem analysis, action research, problem solving and review).	- Developed team spirit; Improved ability to handle various problems. *However, when implementation of the programme was scaled up, it suffered the negative effects of failed follow up work from the regional team (insufficient time given to preparing facilitators, and lack of effective monitoring).*	- Participants need motivation throughout the process; - Development of a core group of facilitators to ensure the effective continuation of the process; - Establishment of clear roles for all parties involved.

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Tanzania (127) Design: Descriptive/ analytical study of operational research	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Lack of organisational strategies to improve the quality of service delivery.	Service quality improvement measures (management systems strengthening, clinical skills training, orientation of health staff to service quality, introduction of quality assurance systems, improvement to supervision systems, community involvement in monitoring health service delivery).	- Increase in utilisation of reproductive health services; - Improved client perception of service quality; - Improved health infrastructure; - Increased community participation in health service management.	Local commitment and leadership.
The Gambia (61) Design: Descriptive and analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	- Lack of skilled management staff at district level; - Lack of donor support to health system management strengthening; - Low staff morale and rapid turnover; - Poor coordination and communication.	Management strengthening programme using 'on the job training' as a strategy and introduction of a planning cycle of 6 months.	- Increased motivation; - Increased team work skills; - Better planning (resulting in better coordination of activities, including of vertical programmes); - Local use of collected data instead of just sending to national level; - Better co-ordination and integration of activities; - Better communication.	- Intersectoral collaboration and community involvement; - National level reforms, mainly decentralisation; - Donor programmes that use bottom up approaches; - Leadership.
Tanzania (78) Design: Descriptive and analytical study of an operational research	1. ✔ 2. ✔ 3. no 4. ✔ 5. no Strength: 3	- Lack of autonomy; - Inadequate resource allocation system; - Poor human resource management; - Vertical nature of donor funded programmes; - Inadequate allocation of drug supplies; - Poor distribution of trained staff.	Considering that decision-making has been decentralised, a combination of the following interventions was proposed: - Training of health managers; - Procedures for regular planning and evaluation; - Improved information systems.	*Intervention was considered to produce only marginal gains.* Therefore the authors argue that more comprehensive changes are needed and propose: - Grant health unit managers full autonomy; - Reform the civil service (including a performance incentive system and wage increase); - Reform the resource allocation system.	- Decentralised system where managers have autonomy over resources and a system of performance incentives.

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Egypt (128) Design: Descriptive and analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	- Low quality in the process of acquiring; - Distributing, delivering and monitoring impact of micronutrients to target population.	Quality assurance methods (forming teams to develop and deliver health promotional approaches related to iron deficiency).	- Strengthened local capacity and patient compliance with the educational messages; - Demonstration of patient's satisfactory knowledge of the nutritional message; - Decrease in children diagnosed with iron deficiency and reduction of iron deficiency prevalence among pregnant women.	- Community participation / ownership.
Ghana, Kenya, Nigeria and Uganda (129) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. ✔ 5. no Strength: 3	- Need for staff training in family planning issues; - Long waiting times for clients; - Incompleteness of records.	Quality assurance method (self-assessment technique, "cope"– client oriented, provider efficient).	- Improved overall quality of care provided (reduced patient waiting time, new channels for obtaining family planning supplies); - Increased staff involvement in solving clinic problems; - Increased staff cooperation and improved morale.	- Open and interested administration and staff.
Uganda (130) Design: Descriptive and analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Managerial and logistical weaknesses (poor information system, inconsistent drug procurement procedures, problems with diagnostic accuracy).	Quality assurance methods at the national level (quality management methods to identify and solve problems, development and dissemination of guidelines, strengthening of communication between health care providers and users, use of data to identify gaps in quality, observation of patient-flow).	- Strengthening of interaction of disease-control programmes; - Sharing responsibilities between district health teams, local administrators and political leaders; - Improved integration of curative and preventive activities; - Improved referral system; - Improved morale; - Increased patient satisfaction; - Increased utilisation of outpatient services.	-Decentralisation; - Commitment from health workers, patients and community; - Political stability .

4.3.2. Monitoring and Health Information Systems

A total of 13 studies were identified under monitoring and health information systems. There were 2 evaluation, 2 comparative and 9 descriptive / analytical studies, thus not providing a very strong evidence base, despite a relatively large number of studies. The results are mostly positive except for the Lot Quality Assurance Sampling (LQAS) type of interventions where there is some mixed evidence. The majority of outcomes reported are related to output and processes.

Lot Quality Assurance Sampling is a survey methodology originally developed by industry to determine the quality of lots of shipments by assessing samples of a few elements of each lot (132). It is considered a useful monitoring tool for managers and as opposed to the EPI survey methodology it can identify small population units with poor performance (133).

A review study reports on 34 surveys using the LQAS technique in various countries[28] in the published literature or reports available at WHO (131). The main constraint described by the authors is the lack of up-to-date information for local health programme managers. The results reported are:

- LQAS is considered to be inexpensive
- LQAS is considered to provide data faster than other conventional survey techniques (9 surveys indicated that 150 person-days of field work are needed per survey);
- Higher precision than the 30- cluster EPI methodology (reported by 2 studies).
- LQAS methodology allows the interpretation of data as soon as it is collected from a lot as opposed to waiting collection of data from all lots;
- In programmes with high performance it allows the identification of pockets of poor performance.

Singh et al (134) recommend that LQAS surveys be performed by local staff as a form of reducing costs. Rosero-Bixby et al (132) agree with the feasibility of local staff carrying out LQAS surveys, but point out the complexity of the design of this type of survey and advise that central staff be involved at this stage. Results of several lots can be aggregated to show estimates of coverage for use by regional and national decision-makers (132), countering the argument of Singh et al (134) that it is not useful for large administrative areas.

According to Sandiford (135) LQAS performs very well in detecting poor performance, with sensitivity of almost 99%, but the specificity of this technique is unsatisfactory. The author points out the danger of misinterpretation of the results with regard to poorly performing lots and calls attention to the possible waste of resources in directing corrective actions towards these 'poorly performing' programmes. If the costs of these corrective actions are high, then other tools for decision-making should be taken into account.

The collection, analysis and use of local data allowed managers in The Gambia to strengthen their role, advocating for more coordinated activities to be carried out in their regions by NGOs and vertical programmes (61). The availability of sound data empowered managers to lobby for more resources (principally staff).

Speed in providing the results of household surveys was seen as a major improvement in Kenya in that it allowed full use to be made of the interest generated by the conduct of the survey and thus provided opportunities for the mobilisation of resources to programme activities (136). Swiftness was gained by applying monitoring procedures in the field, compiling information during the survey, and avoiding sophisticated statistical methods. The surveys were conducted in 6 districts and preliminary results were available 2 days after

[28] Out of the 34 studies reported 2 were carried out in a developed country, Belgium, the remaining ones were

completion of the fieldwork. A planning seminar was organised in order to discuss implications and recommendations on the basis of the results.

In the study carried out in Korea, described below in table 16, the authors point out the lack of representativeness of the study (which examined only one centre with 12 staff members) as well as the need for an economic evaluation to better analyse the impact of the system (137).

An evaluation of World Bank projects in the areas of health, nutrition and population, showed successful approaches regarding monitoring and evaluation, as indicated in table 15, below (138).

Table 15: World Bank projects success in monitoring and evaluation

***Brazil**'s Amazon Basin Malaria Control project helped to train malaria fieldworkers and strengthen disease surveillance systems, which, together with a shift in strategy from eradication to control, early treatment, and case management, -contributed to a decline in malaria incidence and fatality rates.*
***Tamil Nadu**'s Integrated Nutrition project in India established a community-based system for regularly monitoring the growth and weight of children found to be malnourished. The project significantly reduced severe malnutrition in the target group. The monitoring system both contributed to and documented the impact.*
***Mali**'s Health and Rural Water Supply project (1991-98) eventually helped establish a nationwide health information system, although data were not available until the final years of the project. This illustrated the importance of balancing long-term efforts to strengthen borrower monitoring capacity with provisions for periodic external qualitative or quantitative assessments, including rapid assessments.*
*In the current sectorwide health reform programs in **Bangladesh and Ghana**, government and donors (including the Bank) agreed, after lengthy negotiations, on a limited number of national indicators that will serve as benchmarks for joint annual reviews of sector performance. Remaining challenges include better linkage of system performance indicators to HNP outcomes, and ensuring that national indicators create incentives for performance at lower levels of the system.*

Source: 139

performed in developing countries in Sub-Saharan Africa, Asia, Latin America and Eastern Europe.

Table 16: Information and monitoring systems

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating Factors or conditions
Nigeria (139) Design: Descriptive and analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Peripheral health service staff lacking data collection and interpretation skills → inability to monitor disease trends, detect outbreaks on time and implement control measures.	Practical training course aiming at improving health centre data focusing on the need for accurate and adequate data.	- Staff development; - Improved health centre management (use of routine data as management tools and health service quality improvements).	
India (140) Design: Descriptive and analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	- Target driven planning and monitoring systems that do not take into account socio-economic, geographical and service coverage variations and fail to involve local staff, and therefore do not meet the needs of the population; - Demotivated staff and managers due to pressures to achieve top down targets.	Formulation of micro level planning using rapid assessment and participatory techniques: - Estimation of levels of need, actual use of health services, and reasons for non-use; - Development of intervention plans to increase coverage and improve service quality.	- Allows planner to distinguish demand and supply reasons for unmet need; - Elaboration of plans using locally collected data, discussed with the participation of local staff; - Higher staff commitment to the plans.	
Kenya (136) Design: Descriptive and analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Missed opportunities for mobilisation of resources for programmes as a result of interest generated by the survey, due to long time lag in getting results.	- Monitoring field procedures; - Compiling of information during the survey on a daily basis; - Use of a simple computer programme for data analysis.	Greater speed in presenting survey results (preliminary results available after 2 days of completion of survey) allowing managers to organise a seminar using the results in their planning.	

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating Factors or conditions
Tanzania (141) Design: Descriptive and analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Insufficient systematic assessment of the processes of community participation as a tool for local managers.	- Qualitative study using a framework developed to systematically assess the nature and extent of community participation; - Framework is composed of the following factors: needs assessments, management, organisation, leadership and resource mobilisation.	The method is useful in: - Helping staff to have a more clear picture of the nature of community participation and obstacles involved in the process; - Helping project management study team to understand the meaning and scope of community participation; - Helping community members to interact and support programme beneficiaries and the project management. *Limitations of the method:* *- Difficulties in understanding factors to be ranked;* *- Difficulties in handling the large amount of information collected;* *- Possible biases due to the involvement of team members in the community and in the project and possible unwillingness to reveal project weaknesses to an external researcher.*	
Peru (142) Design: Evaluation study	1. ✔ 2. ✔ [29] 3. no 4. no 5. no Strength: 2	Lack of an optimal method of collecting and using client data.	Testing of the following 6 different methods for collecting data on client satisfaction: - Exit interviews - Follow up visits - Focus groups - Interviews with discontinued clients - Suggestion boxes - Community meetings	- Exit interviews: relatively low-cost, best source of quantitative data, require open-ended questions and regular updating of the form; - Follow up visits: valuable for quality improvement if used to highlight comments of current, dissatisfied clients; *- Focus groups: useful but presented difficulties of feasibility;* *- Interviews with discontinued clients: not a cost-effective option since former clients may be satisfied, healthy or may have relocated;* - Suggestion boxes: require user-friendly forms and convenient locations; - Community meetings: provide contextual information, but *not specifically related to client satisfaction.*	

[29] Same as footnote 09.

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating Factors or conditions
India (133) Design: Comparative study	1. ✔ 2. ✔ 3. no 4. no 5. ✔ Strength: 3	Difficulties in using the 30-cluster sampling EPI survey methodology to identify small health units with poor performance.	Use of LQAS and standard 30 cluster sampling of the EPI survey methodology in order to evaluate immunisation coverage in a primary health centre in Naugaon (population of 156,029) in the of district Alwar in the state of Rajasthan.	- LQAS is operationally feasible (requires minimal training, availability of accurate sampling frames and lists of households); *- LQAS costs 40% more than the EPI survey (cost information provided in section 4.4);* *- LQAS requires 2.5 times more time than the EPI survey;* *- EPI surveys are more appropriate for large administrative areas;* - LQAS is recommended for routine monitoring in small administrative areas.	
India (134) Design: Comparative study	1. ✔ 2. ✔ 3. no 4. no 5. ✔ Strength: 3	Same as above.	Same intervention as above in a primary health centre (population of 168,000) in Malakhera in the district of Alwar in the state of Rajasthan.	*- LQAS costs 60% more than the EPI survey (cost information provided in section 4.4);* *- LQAS requires 3 times more time than the EPI survey;* *- LQAS is considered to be unfeasible if it uses external personnel;* - LQAS is recommended for routine monitoring using local staff in small administrative areas. - EPI methodology is more appropriate for independent evaluations of immunisation coverage in large administrative areas.	
India (143) Design: Descriptive and analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Same as above.	Use of LQAS in 9 to evaluate immunisation coverage in 9 sub centres (population of approximately 5,000 per centre) in the district of Saharanpur.	- LQAS proved to be feasible; *- LQAS not considered to be an appropriate substitute for the EPI methodology in large administrative areas;* - LQAS is recommended for routine monitoring and evaluation of health programs in small administrative areas.	

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating Factors or conditions
Costa Rica (132) Design: Descriptive and analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	- Lack of timely and accurate information for monitoring performance of delivery points of primary health care; - High costs of other sampling survey techniques.	Use of LQAS to evaluate the performance of 758 delivery points of primary health care.	- Health coverage was argued to be related to the level of support from the community as well as the length of time that health workers had been responsible for the lots; - LQAS can be used by local decision-makers and results of several lots can be aggregated to show estimates of coverage for use by regional and national decision-makers; - LQAS is an action-oriented technique and resulted in administrative steps taken to fill vacant positions of health workers, and discussions with health workers regarding more efficient schedules of household visits.	
Peru (144) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. no 5. ✔ Strength: 3	Lack of health information at the local level on small population units.	LQAS used to evaluate immunisation coverage resulting from 3 campaigns in 12 health areas in a mountainous region (population of approximately 80,000).	- LQAS was feasibly performed by staff from the Ministry of Health; - Discussion regarding reasons for low coverage resulted in corrective actions and improvement in the coverage from 78% to 88% in the period of 3 months - LQAS is recommended to be used for routine monitoring and coverage improvements of primary health care.	
India (145) Design: Descriptive and analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Lack of appropriate monitoring systems for the control of infectious diseases.	Disease surveillance at district level covering government and private facilities (investigations, immunisations, antimicrobial treatment, health education, and physical rehabilitation of children with paralysis).	- Reduction of all vaccine preventable diseases; - Increase of malaria and HIV infections (intervention did not result in increased morbidity, it most likely evidenced underreporting).	- Simple reporting procedure; - Low costs; - Participation of the private sector; - Personal rapport with network members; - Regular feedback of information.
Pakistan (146) Design: Descriptive and analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Lack of data for planning, managing and evaluating primary health care programmes.	Development of a Management Information System (MIS) linked to a series of community-based urban primary health care programmes. The MIS generates 32 indicators (of process,	- Improved equity by focusing community health worker activities according to individual and household needs; - Improved decision making by making use of information to provide stronger support to weaker performing areas; *- Infrequent and irregular follow up of collected information by supervisors in one field site out of 5;* - Decreased infant mortality rate of 49% (average of all 5 field	

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating Factors or conditions
			outcome and impact) on a routine basis.	sites) and decreased under 5 mortality rate of 54% (also average for all 5 sites); - *Problematic maintenance of a reliable register of deaths and births;* *- Limited capacity to assist communities in identifying their needs;* *- Community health workers considered the burden of data collection and processing excessive leading to poor quality of some of the data.*	
Korea (137) Design: Evaluation study	1. ✔ 2. ✔ 3. ✔ 4. ✔ 5. ✔ Strength: 5	Low quality health data produced at district level, district managers lack data for planning, implementing and evaluating programmes, low staff morale and productivity and heavy staff administrative workloads.	Introduction of a health management information system.	- Improved staff productivity; - Increased knowledge about the system among staff and persuasion and decision to use the system increased over time; - Higher patient satisfaction (reduced waiting time – increased contact time, higher credibility and convenience - simplified administrative processes).	

4.3.3. Contracting

Contracting out health services in developing countries is suggested as a form of increasing efficiency (147 - 149).

As yet, there is still very limited evidence of the contribution of contracts as a means of improving health systems efficiency and performance in low and middle-income countries (147 - 149).

Some of the pitfalls of this strategy are: lack of government capacity in many countries to design and monitor contracts, lack of providers technical and administrative capacity (148, 150) lack of competition (147, 148), and high transaction costs (46).

Under contracting, 3 studies were identified, of which 2 are descriptive / analytical and one comparative. As mentioned above, capacity issues arise as important concerns in the reviewed studies.

Table 17: Contracting

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Brazil (151, 152) Design: Descriptive / analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	- Low coverage of HIV/Aids programmes.	Contracting out to NGOs.	- Majority of contracts met their objectives and reached the specified target populations; - NGO contracting expanded access and types of services provided, in particular to vulnerable populations; *- No incentives for NGOs to be cost-efficient (cost-minimisation);* *- Lack of quality assessment;* *- No significant improvement of NGOs' financial sustainability.*	- Existence of a liaison unit within the government; - Frequent and effective communication between the government and NGOs; - Consistent flow of funds; - Existing NGO capacity to implement contract terms; - Government support to strengthening NGO capacity when needed.

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcomes	Facilitating factors or conditions
Zimbabwe (147) Design: Comparative study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Lack of efficient service provision in the public sector.	Contracting out of clinical services of a district hospital.	Contracted hospital seems to provide services of good quality with prices that correspond to lower unit costs (including capital costs) as compared with a neighbouring government hospital; *Contracted hospital has not been able to contain its total costs;* *Contract with the private hospital is responsible for roughly 70% of provincial non-salary running expenditure;* Results should be interpreted with caution as the authors point out some important contextual factors (contract negotiated in the 1950s, lack of information available about the negotiation, contract did not result from a competitive tendering procedure).	
Cambodia (153) Design: Descriptive / analytical study	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	Weak performance of government health facilities (inefficient use of resources, poor staff motivation); Questionable quality of private health services (over prescription, misuse of injectables, and supplier-induced-demand).	Contracting in[30] of district health management (contract stipulates the delivery of improvements such as increased utilisation of health services and allows for managerial autonomy, including authority over public sector staff in the district).	Increased health services utilisation by a threefold (in spite of user fees which account for 25-50% of running costs); No substantial negative equity consequences; Considerable increase of output indicators.	Innovative and decisive management.

[30] '…in Cambodia the term is use to describe a contract between and a private sector operator, whereby civil service regulations still have to be obeyed.' (153)

4.3.4. Drug Policies and Supply Systems

A total of 3 studies were identified under the present section, being 2 descriptive / analytical and 1 evaluation study. The quality of the evidence is weak. The large majority of results are positive. All studies reported on intermediate outcomes only.

In addition, a comprehensive review study of issues from Sub-Saharan Africa was identified. In health systems plagued by various constraints - shortage of drug supplies, high costs, high use of brand-name drugs, over consumption of non-essential drugs, waste and loss of drugs in central warehouses, expiration of drugs before use, pilferage and theft of drugs - Foster (43) identified the following interventions or strategies associated with substantial savings and improved drug supplies from better procurement and prescribing:

- Selection and precise quantification of drugs (essential drug lists, well-estimated cost estimates of drug needs);
- Improved procurement (generic names, competitive bidding, use of international procurement agencies); and
- Improved storage and distribution (storage under adequate conditions, inventory controls, security systems, better management control measures to reduce pilferage, theft, use of pre-packed drug kits[31]).

Regional cooperation can contribute to large savings in pharmaceutical procurement. The Eastern Caribbean Drug Services formed by a group of 6 countries in the region, experienced price reductions of an average of 44% for the top 25 drugs in the region (43)[32].

[31] A strategy to avoid losses at lower levels of the system. Losses in Kenya were estimated at 25% and fell to 5% after the kit system was introduced (43, citing Ministry of Health, Kenya, Danida, Sida and WHO, 1984). However the kit system is criticised (60, 78, 156) because it is not amenable to changes or not flexible enough for local managers to adapt the supply of drugs in accordance with their needs, leading to inefficiencies.
[32] Citing Management Sciences for Health, 1988.

Savings in the range of 40-60% resulted from the use of competitive procurement (6).

Transparency and fairness in the procurement process should be actively promoted by governments aiming at reducing corruption (154). The author proposes support mechanisms to the above endeavour such as a system of independent audits, security management initiatives aiming at the implementation of adequate information disclosure policies, review of the incentives for individuals involved in the management of drug supply and distribution.

According to Foster (43) almost all African countries have capacity for drug formulation (the last production stage) and some for drug production. These are however, 'uneconomic factories in need of rehabilitation or closure'. She reviews a series of issues related to production in Africa:

- Significant increase in the international trade of generics and lower prices;
- Considerable costs of raw materials (large pharmaceutical companies can purchase bulk quantities and benefit from price reductions);
- Shortage of foreign exchange may delay payments for raw materials and thus increase cost/prices;
- Need to import packing materials as well as machinery and possibly fuel (for electricity production and water purification);
- Need for expatriate management staff and trainers for local personnel;
- Purchase of technology.

There is indication of positive achievements in the production of generic HAART for AIDS treatment in Brazil (155). Due to the high costs of these types of drugs, the government decided to use laboratories affiliated with public universities to produce generic versions of the drugs. This was feasible since the country approved its international patent law only in

1996. Due to this initiative, some pharmaceutical companies have reduced their prices in order to compete with the local production of public laboratories. More in depth analysis of this topic is provided through background papers 1[33], 2[34] and 3[35] of Working Group 4 - Health and the International Economy – of the Commission on Macroeconomics and Health[36].

[33] "Post-trips options for access to patented medicines in developing countries".
[34] "Differentiated pricing of patented products".
[35] "Consumption and trade in off-patented medicines".
[36] These documents are available on the website of the CMH (www.cmhealth.org).

Table 18: Drug policy

Country (reference) Study design	Ranking of strength of evidence	Constraints	Interventions	Outcome	Facilitating factors or conditions
Cameroon (156) Design: Descriptive / analytical	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	- Concentration of pharmacies in urban areas; - Fake and low quality drugs; - Drug smuggling, irregular supply of drugs in public facilities; - Pilferage of drugs.	Comprehensive drug policy: - Supply of drugs through a cost-recovery system; - Purchases make use of international competitive bidding; - Management control systems (4 financial reports per year, yearly audit); - Promotion of community participation; - Patient education in rational use of drugs and compliance; - Development of remuneration criteria (adequate incomes and reward for workload and quality).	- Regular supply; - Self-sufficient cost recovery (self-financing); - Decrease of 45%-50% in purchase prices; - Internal revenues resulting from the cost recovery at an average of 15%; - Surpluses used for improvements in health facilities (supervision, lab supplies) and exemption system for the poor; - Increased patient utilisation rate of health facilities; - Decreased over-prescription; - Less than 3% loss due to diversion, fraud or mismanagement.	- Cameroon has a freely convertible currency; - Import licensing to the project fund allowing direct payments for drug purchases; - Democratic involvement of actors.
China (104) Design: Descriptive / analytical	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	- High levels of expenditure on drugs; - Lack of availability.	Comprehensive drug policy reform (registration, production, distribution, utilisation and administration).	- Regular supplies; - Price competition; - Patients have easy access to drugs; - *Overuse and misuse;* - *Fake and low quality drugs.*	
Burkina Faso (157) Design: Evaluation study	1. ✔ 2. ✔ 3. no 4. no 5. ✔ Strength: 3	- Irregular drug supplies; - Poor affordability for patients.	National essential drug programme: - Creation of village pharmacies based on the Bamako Initiative model; - Creation of village committees - Elaboration of an essential drug list; - Training of drug vendors and nurses; - Purchase of essential drugs by a national distributor; - Distribution of drugs to district depots; - Workshops on rational use of essential drugs for nurses and vendors.	- 82% of drugs prescribed in health centres were sold at village pharmacies; - 5.9% of drugs not available at village pharmacy during study period; - 2.1% of cases had an incorrect drug sold; - *41.3% of drugs sold in village pharmacies without a prescription;* - Patients recall of correct dosage for 68.3% of drugs; - Drug compliance of 63.1% (based on remaining pills in households); - *11% of drugs were taken incorrectly.*	

4.3.5. Coordination and Regulation of the Private Pharmaceutical Sectors

A basic legal regulatory framework for regulating the private sector is present in most developing countries, albeit ineffectively enforced (158; 159). In addition, the authors argue, more evidence is still needed with respect to the use of incentive structures in promoting suitable practices in the private sector. A report on the regulation of the pharmaceutical market in the Lao People's Democratic Republic corroborates the above authors. The country has a basic regulatory framework centred on entry into the market and drug quality (160).

Better coordination is needed between governmental and non-governmental institutions in the provision of district level services. This requires that the roles of NGOs as well as the regulatory and supervisory functions of government be clarified at the national level (60). The AIDS programme in Brazil having recognised the important role played by NGOs in dealing with HIV/AIDS issues in the country, has created a specific liaison unit to coordinate the participation of NGOs in committees and other representative bodies as well as to organise annual competitive tenders with NGOs (161). Muraleedharan (162) analysing private-public partnerships in the health sector in India, points out the need for government to improve communication between members of regulatory bodies in order to improve regulatory performance.

Brugha et al. (46) emphasise the importance of regulation as an instrument to protect consumers but warns that certain laws and regulatory norms can impose unnecessary barriers to the functioning of the private sector (such as import duties on reproductive health commodities). A strategy proposed by the authors to increase coverage is to reduce regulatory and fiscal barriers on private providers and NGOs. On the other hand, in order to increase the quality of services (by safeguarding safety, preventing dangerous and unethical practices)

provided by the private sector, appropriate regulation needs to be designed and implemented (46).

Various countries regulate to limit or ban the use of unsafe drugs has taken place in various countries (42). The author point out that regulatory measures may be more successful if accompanied by demand side measures.

The use of consumer protection legislation and awareness raising is identified as a means of dealing with issues such as malpractice and negligence (46). Constraints related to this strategy are high cost, opposition of medical professionals, ineffective judicial system (lack of capacity and flawed system), lack of consumer awareness, empowerment and resources to pursue compensation.

Table 19 shows the only study identified with respect to consumer protection legislation.

Table 19: Consumer protection

Country (reference) Study design	**Ranking of strength of evidence**	**Constraints**	**Interventions**	**Outcomes:**	**Facilitating factors or conditions**
India (163 - 165) Design: Descriptive / analytical studies	1. ✔ 2. ✔ 3. no 4. no 5. no Strength: 2	- Unregulated private sector; - Poorly protected consumer rights.	Enactment of *Consumer Protection Act* 1986 and creation of quasi-judicial councils at national, state and district levels.	- Improved information flow; between patients and physicians; - Increased awareness among patients and physicians; - Increased concern for quality; *- Low success rate for consumers' legal claims (29%);* *- High cost of accessing the judicial system;* *- Lack of capacity of the judicial system;* *- Risks of increased practice of defensive medicine;* *- Increased costs of medical care (fees, diagnostic tests and drugs).*	

4.4. Costs

The literature contains little information about the costs of implementing the types of intervention described above. The available cost information is summarised here: there is most for level 2, some for level 1 and none for level 3.

Table 20: Costs of interventions

Country and reference	Intervention	Cost in US$ (If not otherwise stated)	Description
I. Community and household level			
India (36)	Community health workers	$70 $3 $0.12[37]	Monthly salary/ honorarium for paramedical workers; Monthly salary/ honorarium for village health workers; Monthly salary/honorarium for traditional birth attendants.
Jamaica (31)	Community health worker's programme	$14.5 $6.2	Annual cost per child; Annual cost per child only for the growth-monitoring component.
Peru (41)	Community health worker's programme	$400,000	Total cost of the programme (training and supervision).
Burkina Faso (21)	Community-based malaria treatment programme	$0.06 $12,066 $2,125 $5,996 $1,194 $449 $2,302 $8,224	Cost per child living in the area; Total cost; Training cost; Cost of the first stock of drugs; Cost of bags, labels and packing of drugs; Cost of incentives for community health workers; Cost of supervision and drug distribution; Cost of research activities (KAP survey and chemosensitivity).
Guatemala (22)	Community-based malaria treatment	$0.61 $2.45 $1.85	Cost per patient treated in the network of volunteer medicators; Cost per patient treated in the traditional volunteer collaborator network; Cost per patient treated in the improved volunteer collaborator network.
II. Service delivery level			
Indonesia (64).	Training and continuing education system for midwives	$570,000 $50 $29	Additional programme cost; Incremental cost per percentage increase in mean skill scores; Incremental cost per number of 'competent' midwife.
Indonesia (67)	On-the-job peer training of nurses	$53 $0.05 $0.50	Out-of-pocket cost per trainee; Cost per additional vaccine; Marginal cost per additional fully immunised child.
Indonesia (71)	Quality assurance methods – self-assessment and peer review	$90 $16 $32	Total costs per provider for interpersonal communication and counselling training; Cost per provider for the 16-week self-assessment; Cost per provider for the 16-week self-assessment and peer review.

[37] Traditional birth attendants (TBAs) were paid on the basis of reported births, US$0.1 for each one.

Country and reference	Intervention	Cost in US$ (If not otherwise stated)	Description
Tanzania (128)	Service quality project	$9	Cost per capita for the population served, over a 5-year period.
Vietnam (109)	Workshops; IEC campaign; Training; Monthly supervision; Conditional equipment and drug donation.	$325,000 $1,500 $1,100	Total cost for 217 Commune Health Station[38] (CHS) in 12 districts with a population of 1.6 million; Cost per CHS; Cost of equipment and drugs per CHS.
Indonesia (112)	Small group face-to-face intervention Formal seminars for prescribers	$0.77 $3.30	Unit cost per participant for a small face-to-face intervention; Unit cost per participant for a formal seminar intervention.
Nepal (117)	Training programme for drug retailers	$18 $63,000 $1	Operating costs per trainee approximately; UNICEF's contribution to the programme (it is the main provider of financial assistance); Fee examinations paid by the trainees.
Philippines (74)	Training and supervision of staff	$19.92 $1.85	Costs per health facility for training supervisors and printing the necessary materials; Annual recurrent costs of an integrated supervisory checklist per health facility.
India (134)	Lot Quality Assurance Sampling (LQAS) survey to evaluate immunisation coverage	15,900 Rupees	Total cost
India (135)	District, with a population of 168,000Lot Quality Assurance Sampling (LQAS) survey to evaluate immunisation coverage 30-cluster survey	18,850 Rupees 12,050 Rupees	Total cost for the LQAS Total cost for the 30-cluster survey
Mozambique (132)	In a review of 34 LQAS surveys in Maputo	$5,400 from $2,600 to $3,000	Cost of per lot for a LQAS Cost of a 30-cluster EPI survey
India (146)	A disease surveillance system of in the district of North Arcot in the State of Tamil Nadu	less than one US cent per capita	Yearly running expenses
Niger (72)		$108 $430	Cost of per health worker for a structured feedback intervention; Per health worker for a formal training on IMCI algorithm. (Costs include local and or recurrent expenses).
Various (122)	Strengthening health management programme for a province with 10 districts	from $35,000 to $40,000	Local programme cost (at 1990 prices).
Tanzania (51)		from £6.87 to £6.14.	Total cost (including user contribution) per bed net.
Tanzania (47, 50).		$5 $0.42	Retail price of a treated bed net in the districts of Kilombero and Ulanga when the project started in 1997 (47) The insecticide treatment service costs (50)

[38] Provides primary health care with an average of 6 health workers.

Country and reference	Intervention	Cost in US$ (If not otherwise stated)	Description
Honduras (48)	Oral contraceptive social marketing programme	39.8 63.4	Total costs of contraceptive social marketing programme per couple-year protection; Total cost of contraceptive community based distribution system; (In 1988) Lempiras
Nepal (105)	User charges schemes for drugs	FPI 7.7 2.6 FPS 11.7 5.0 in Nepalese Rupees	Total cost of drugs Patient fee Total cost of drugs Patient fee
Bolivia (17)	Census-based and impact-oriented primary health care approach	$8.57	Annual recurrent cost per person (includes all age groups)

4.5. Summary of Evidence per Intervention and Constraints Levels

Table 21: Summary of strength of evidence and type of outcomes per intervention and constraints levels

Constraints level	Type of intervention	Summary of evidence*	Summary of outcomes
Community and household	Community participation	a) # of studies - 10 b) Strength of evidence – satisfactory / good	Mostly positive outcomes Intermediate and to a lesser extent ultimate ones (reduced morbidity).
	Community health workers	a) # of studies - 13 b) Strength of evidence – good	Majority rather positive outcomes Intermediate and some ultimate outcomes (reduced morbidity and mortality)
	Social marketing	a) # of studies 10 studies b) Strength of evidence – good	Mixed, though overall more positive than negative Almost all studies report only intermediate outcomes
Health Services Delivery	Staff training and supervision	a) # of studies - 13 b) Strength of evidence – good	Mixed, though overall more positive than negative Intermediate
	Performance and incentives	a) # of studies – 2 b) Strength of evidence – satisfactory	Mixed Intermediate
	Service organisation	a) # of studies - 8 studies b) Strength of evidence – satisfactory	Positive Intermediate and ultimate outcomes (reduced mortality)
	User fees for increasing drug supplies	a) # of studies – 4 b) Strength of evidence – good	Somewhat positive All intermediate
	Prescribing practice	a) # of studies – 8 b) Strength of evidence – very good	Overall trend is of positive outcomes Only intermediate
	Drug retailer training	a) # of studies – 4 b) Strength of evidence – good	All studies report positive results Intermediate outcomes only
Health sector policy and strategic management	Management strengthening	a) # of studies – 10 b) Strength of evidence – weak	Mostly very positive and intermediate
	Information and monitoring systems	a) # of studies - 13 b) Strength of evidence – weak	Mostly positive except for the LQAS type of interventions where it is mixed Mostly intermediate
	Contracting	a) # of studies – 3 b) Strength of evidence – weak	Mixed, though overall more positive than negative Intermediate
	Drug policies and systems	a) # of studies - 3 b) Strength of the evidence – weak	Mostly positive and intermediate

* The strength of the evidence given here in this summary table results from a simple average of the strength of each study as presented in the main tables and is based on the following score system: weak for studies with 2 points (mainly the descriptive / analytical type of studies), satisfactory for studies with 3 points, good for studies with 4 points and very good for studies with 5 points.

5. Discussion

5.1. Limitations of the Review

- The overall quality of the studies leaves much to be desired, both in terms of design and implementation, which means that the generalisability of the results and recommendations is limited. There are rarely any measures undertaken in the interventions to compare results with appropriate control groups, and sample sizes are often inadequate. Use of randomisation is also scarce. Additionally, interviewers are not always blinded and the statistical significance of results is often not reported. While some studies have documented factors that facilitated the implementation and success of the assessed interventions, confounding factors that affected the outcome of the interventions are rarely acknowledged, much less presented and discussed. However, the role of confounding factors is of high importance and should be taken into account in interpreting the results.

- As a whole, most studies report on successful experiences. This could be due to publication bias, i.e. editors tend to prefer positive findings, and researchers themselves tend to self-censor and submit only these studies. The result is that we miss the opportunity to learn important lessons from interventions that do not work out successfully.

- We recognise that this review was not able to capture the whole spectrum of published and unpublished literature in this field and is most lacking in regard to the latter. There is also a bias towards literature published in the English language, as access to non-English language databases is rather limited. There is a vast literature of country level reports of evaluations of donor-funded projects carried out by consultants that could have provided further evidence for this review. However it is difficult to access this type of literature,

because it is often treated as confidential documents by many sponsoring organisations. It is also rarely subject to critical review. Despite this limitation, we believe that the studies reviewed here do offer an overview of various attempts to overcome constraints of health systems at the peripheral level. Further complementary work in this field will make valuable contributions to the debate and possibly help inform policy makers.

- This review encompasses a wide range of issues with various subtopics. We took into account multiple outcomes. The evidence retrieved describes specific issues within different subtopics but the number of papers on each subtopic is limited. This makes it difficult to generalise the results presented in terms of policy recommendations. An additional problem related to generalisability is the short length of follow up on the interventions, with data frequently collected only once after the introduction of the intervention. Short lengths of follow up mean there is little information on the longer-term impact and sustainability of the interventions.

- The task of providing analytical input to thinking through how best to scale up interventions to the national level and improve the health of the poor is constrained by the very limited evidence on large-scale projects. The great majority of the interventions cover only a district or sub-national region. Only very rarely are national level experiences documented. An exception is the case of the Orissa Health and Family Welfare Projects where strengthening of training and education took place on a large scale and successfully (9).

5.2. What seems to work

- The evidence suggests that community participation through active involvement of leaders and members seems to be an effective tool for improving performance. Community participation helps in building up capacity, in empowering its members, in

strengthening the links with the health system at the peripheral level and in creating ownership. All these are important factors in contributing to the sustainability of the interventions undertaken. Effective community participation arises from the combination of “push” by the community, and “pull” from the existence of a space or opportunity for them to participate, opened by IEC or other mechanisms. So collaboration, between the involved parties, community and health workers and authorities is essential for the success of the approach, as it was shown to be effective in Vietnam (109).

- There is some evidence, though not very strong, that quality assurance methods contribute to performance improvements. Quality assurance is defined as ‘a planned and systematic approach to monitoring, assessing and improving the quality of health services on a continuous basis within the existing resources’ (166). According to Zeitz et al (73), quality assurance management relies on the concept that *processes* are responsible for the achievement of productive work. In addition, ownership by staff in the identification, analysis and solution of problems is an important characteristic of quality assurance techniques (87)[39]. Bottom up and participatory approaches seem to be one of the major features of quality assurance techniques.

  Quality assurance methods are considered to have several advantages: for instance, the technique called COPE (client-oriented, provider-efficient) is designed to be simple, effective, of low cost, and easily transferable to different settings or countries (130). Systematic problem solving ('learning by doing approach') is another technique practised under the quality assurance umbrella and was able to facilitate change when applied in a management strengthening programme in The Gambia (61).

[39] Paraphrasing Brown et al, 1992.

- The evidence that supports the success of interventions based on management strengthening is methodologically weak, mostly based on descriptive studies. Yet, it provides some suggestions, as for instance, that more autonomy for health managers at district level is needed. There is also some indication that approaches using participatory methods and promoting ownership are more likely to succeed.

  Concerning autonomy, Sandiford et al (78) argued that the isolated implementation of management strengthening strategies, such as training of health managers, procedures for regular planning and evaluation, improved information systems and decentralisation, can only provide marginal gains in terms of performance improvements. According to the authors, broader changes are required and managers and health professionals need more autonomy and performance incentives to be able to improve outcomes.

  Another strategy was the formulation of clearer definitions of problems, which then facilitates the identification of solutions and shows managers that the lack of resources is partially amenable to change at the local level (61). In the case of The Gambia, the authors report that before problem analysis skills were improved, some managers mentioned that they would not know what to do if more resources were made available.

  > Taking the case of infrequent and poor quality supervision, the project provided a framework for teams to plan for supervision, discuss supervisory approaches in the more action-oriented monthly meetings and give it a priority status. Teams could then put the better coordinated transport and fuel (resulting from improved management of resources) to good use in implementing supervision workplans (61).

- A large number of interventions undertaken to deal with management systems, staff issues, community participation, drug supplies and irrational drug use have concentrated on training and supervision, yielding important improvements in performance and quality of health services.

Some intervention programmes include training activities complemented by supervision. Some programmes also carry out training activities alongside other intervention packages such as community mobilisation and management strengthening, which may or not include supervision. Nevertheless, some training programmes are carried out as a single strategy.

It is important to note that training is a means and not an end. Training should be incorporated as part of a regular and integral process. Intermittent training activities may deal with a specific problem but may not create the capacity to deal with new issues. Faxelid et al (66) assessing a training programme in Zambia confirms that quality improvements need a more process-oriented and continuous approach and that training is not the only solution. Governments and their partners have to be able to provide training and education opportunities that respond to the changes over time of disease patterns and the evolution of the health system. In addition, training programmes need to be integrated into broader staff policies, such as systematic supervision, and performance appraisals. The abuse of training activities, as a means of topping up low salaries is a well recognised problem. This again reinforces the view that training should be part of an integral and overarching human resource policy where issues concerning salaries and incentives are also being addressed.

- Comprehensive human resource policies that deal with the use of health staff in a flexible and transparent way, according to needs, and the use of incentives and performance evaluation are rare in low and middle-income countries. However, resources and skills to undertake a comprehensive reform of human resources policy are also sparse. A strategic approach to human resources planning and management should take into account the production of adequate numbers and types and response to their development needs (9).

In the context of health sector reforms across the developing world, a useful framework to analyse human resources issues is proposed by Martinez and Martineau (167): improved cost-efficiency, enhanced staff performance, equitable distribution, and development and planning of capacity for policy and planning.

- Integrated drug policy: It has been argued that better results can be achieved where an integrated approach was developed and implemented, which includes an essential drugs policy, well managed selection, procurement, distribution and dispensing policies, improved prescribing practice and community/patient education. In addition, drug supply should be viewed as part of the health care system. The overall effectiveness of a well-managed drug supply policy will only be achieved if other complementary elements of the system are also well managed, such as staff training, supervision and incentives.

In terms of fostering a more comprehensive approach to countries pharmaceutical expenditures, Falkenberg and Tomson (168) point out the unused as yet potential of the World Bank through its lending priorities. The authors argue that considering that the Bank is now the major source of international funds in the health sector for low and middle income countries, it could play a much more proactive role in promoting rational use of affordable and available drugs of good quality. They show that of the budgets of Bank's loans committed to pharmaceutical expenditures, 95% is used for procurement of drugs and medical equipment. Leaving a huge potential to work on other areas of a more comprehensive drug policy. Homedes and Ugalde (44), in a review of 45 studies of interventions to improve appropriate patients' drug use, also argue for a comprehensive approach in improving the use of drugs as focusing on only one side of the problem will not bring about the necessary changes. The World Health Organisation (169) and the

World Bank (121) are further advocates of an integrated drug policy. Table 22 below, shows WHO's policy framework for its medicines strategy.

Table 22: WHO Medicines Strategy 2000–2003

Objectives	*Components*
Policy: *Ensure commitment of all stakeholders to national drug policies, to coordinated implementation, and to monitoring policy impact*	*1. Implementation and monitoring of national drug policies* *Help countries to formulate and implement their national drug policy, and to monitor key components of national drug policy implementation* *2. Health system development supported by essential drugs policies and programmes* *Work with countries to integrate their work in essential drugs and medicines policy into their national health system, in support of health system development*
Access: *Ensure equitable availability and affordability of essential drugs, with an emphasis on diseases of poverty*	*3. Access strategy and monitoring for essential drugs* *Help countries to ensure and monitor access to essential drugs, focusing on diseases of poverty, such as malaria, HIV/AIDS, tuberculosis and childhood illnesses* *4. Financing mechanisms and affordability of essential drugs* *Ensure the implementation of national strategies to finance the supply and increase the affordability of essential drugs, in both the public and the private sectors* *5. National and local public sector drug supply systems and supply capacity* *Support countries to run efficient public sector drug supply systems, ensuring the availability of essential drugs at all levels of the distribution chain.*
Quality and Safety: *Ensure the quality, safety and efficacy of all medicines by strengthening and putting into practice regulatory and quality assurance standards*	*6. Norms, standards and guidance for pharmaceuticals* *Strengthen global norms, standards and guidelines for the quality, safety and efficacy of drugs, including traditional medicine, and provide guidance for global harmonization efforts* *7. Drug regulation and quality assurance systems* *Support countries to establish and maintain effective drug regulation and quality assurance systems* *8. Information support for pharmaceutical regulation* *Improve the access of national regulatory and pharmaceutical control authorities to reliable information management systems, and to mechanisms for exchange of independent information on drug quality, safety and efficacy* *9. Guidance for control and use of psychotropics and narcotics* *Provide advice and guidance on psychotropic and narcotic substances in accordance with WHO's mandate under international treaties.*
Rational use: *Ensure therapeutically sound and cost-effective use of drugs by health professionals and consumers*	*10. Rational drug use strategy and monitoring* *Support countries in implementing and monitoring a national strategy to promote rational use of drugs by health professionals and consumers* *11. Rational drug use by health professionals* *Develop national standard treatment guidelines, essential drugs lists, educational programmes and other effective mechanisms to promote rational drug use by all health professionals* *12. Rational drug use by consumers* *Establish effective systems to provide independent and unbiased drug information — including on traditional medicine — to the general public and to improve drug use by consumers.*

Source: Adapted from WHO Policy Perspectives on Medicines, WHO Medicines Strategy 2000-2003.

5.3. What Facilitates

Various facilitating factors are mentioned in the reviewed literature. However difficulties are encountered when trying to assess the impact and mode of causality of these factors. They have been reported here as explanatory, additional factors to the success or failure of the interventions. Table 23, below, presents a list of the main type of facilitating factors according to the different levels used to categorise constraints (1).

Table 23: Categorisation of facilitating factors

Levels		Facilitating factors
I.	**Community and household level**	- Community participation
II.	**Health services delivery level**	- Staff motivation - Team work - Frequent communication - Supervision and feedback mechanisms
III.	**Health sector policy and strategic management level**	- Liaison units or group of facilitators for driving and maintaining change processes - Frequent communication - Effective technical and managerial support to strengthen the capacity of community health workers, staff, and NGOs - Participative, bottom up approaches involving community, managers and staff
IV.	**Public policies cutting across sectors**	- Decentralisation and autonomy at regional and local levels - Intersectoral collaboration, partnerships (with clear definition of roles of each partner and democratic involvement)
V.	**Environmental characteristics**	- Political and macroeconomic stability - Commitment, leadership and ownership of all partners (government, staff, community)

An assessment by the World Bank, of its portfolio in the areas of health, nutrition and population, revealed that the projects able to achieve a high level of institutional development had the following features in common: continuous commitment, thorough analysis of constraints, flexible implementation, and a positive governance and macroeconomic environment (139).

5.4. Who does what

- The evidence seems to point to a clear role for communities. Their participation and ownership in interventions delivering health services seem to contribute to increased utilisation rates, improved patient satisfaction and knowledge, and strengthened community capacities. Governments and donors should consider the community's viewpoints and participation as an integral part of efforts to improve peripheral health services.

- The evidence suggests that staff involvement in interventions plays an important role in their success. This is particularly the case for interventions related to improving staff morale and skill levels. But they are also key players in facilitating changes with respect to other interventions such as reorganisation of health services (to reduce patient waiting time) or reaching out to the community.

- The private sector can play an important role in extending the coverage of health services, in rural areas as well as in urban ones. The private sector is understood as encompassing private for-profit providers and non-profit non-governmental organisations (NGOs). In order to gain the most from the private sector it is important that governments have a clear policy towards the sector, are able to communicate effectively with the actors involved and can design and implement regulatory controls. Government policy should take into account the weaknesses and strengths of NGOs in the provision of health services (60). However, these requirements are rarely available in practice. The lack of skills and capacity within governments to develop public-private partnerships in terms of regulation and legislation, purchasing and contracting, consumer information and protection, and monitoring and evaluation is widely recognised (165). Moreover it is also important to note that public private partnerships may not meet the needs of the poor and will probably not meet those of the very poor (165).

- Donors are criticised as being one of the main non-financial constraints to improving the performance of government delivered health services. The vertical and parallel structures of donor programmes are seen as a major hindrance to the development and strengthening of capacity within government institutions (61, 170). Donor programmes are known for attracting scarce skilled staff by offering higher salaries and incentives, thus worsening the staffing situation in the public sector (171). It may also be the case that, due to the nature of their project, they demand services or resources from already overstretched health facilities (61).

  A possible solution is the use of tools or approaches to aid coordination. Walt et al (172) discuss different mechanisms and some examples include: special government units to coordinate external funds, geographical zoning, earmarked budget support, sector-wide approaches (SWAps), and pooling and basket arrangements. However, there are few studies assessing the effectiveness of such coordination mechanisms. An example is the introduction of SWAps in Zambia, where it has shown not to meet the expected objectives (173). Walt et al (174) conclude that management of external resources is unstable, influenced by institutional and systemic issues, and context-specific.

  For further discussion of this topic the reader is referred to Working Group 6 – Development Assistance and Health.

- Governments have perhaps the major role in this undertaking. They are the bodies ultimately responsible for driving the necessary changes and sustaining them. However, the evidence suggests that government capacity to carry out the necessary reforms and deliver peripheral level health services is limited.

Under enabling factors to implement quality improvement measures, decentralisation was a recurring one and falls under the responsibility of governments. Managers working in a decentralised system, where they can have *de facto* autonomy, can use their resources flexibly, and design the programmes and activities for their area of responsibility in ways that meet the needs of the local population, in a more efficient way (78). However, decentralisation does not by itself lead to better performance. A series of mechanisms and appropriate skills are needed (different ones at the national and local levels), as well as strong political commitment. In Nigeria the creation of more administrative levels as part of the decentralisation process exacerbated the lack of health care professionals with managerial skills (73).

5.5. Research Agenda

The review of the existing literature regarding the successes or failures of efforts to overcome constraints in health systems at the peripheral level has evidenced various gaps that need to be investigated as to provide further contributions to our understanding on this issue and better inform policy makers. In this section, an account of the main gaps is provided.

It is of paramount importance that more empirical evidence, based on methodological sound research, is produced in order to help guide decision-making and planning. As discussed in section 5.2, review's limitation, the conclusions of the present undertaking is constrained by the lack of good quality data and analysis and this is a priority to be overcome.

There is need of more technical collaboration and assistance in order to foster evaluative research in developing countries where limited financial resources and analytical capacity persist an obstacle to a broader research base that could provide local decision-makers more context specific evidence.

Cost data is also in need and of great help would be to have more cost-effectiveness studies available. There is scope for resource optimisation in building into assessments of interventions in terms of efficiency and effectiveness more economic analyses.

Further studies will be needed in order to elucidate the extent to which facilitating factors work and affect the performance of health systems at the peripheral level and under which circumstances. The explanation of the mechanisms of operation and sustainability of these factors will provide important answers to our efforts in trying to find the ways of overcoming constraints. Some factors such as decentralisation has already been the focus of investigation (175 - 180) but empirical analysis of its impact with respect to reduced morbidity or mortality is still pending. Other factors should be the subject of pressing research priorities, as it is the case of the role of leadership in the context of low and middle-income countries. Existing literature on this subject is concentrated on the business sector and developed countries (181-182) with very limited exceptions of investigation in low and middle-income (142, 183).

The evidence is insufficient and vague with respect to the evaluation of interventions focused on the poor or disadvantaged. It is crucial that more studies in this area are undertaken in order to deepen our understanding of how to effectively reach this population.

Below is a summary of the main research gaps following the 3 levels of constraints applied in this review.

I. Community and household level constraints

The evidence under this constraints level did not prove to be highly compelling and abundant therefore further investigation should be pursued in the fields of:

- Social marketing;
- Community financing strategies such as the Bamako Initiative;

- Community health workers programmes;
- Community participation;
- Patients' education for appropriate drug use.

Evaluation of interventions related to the following constraints were not identified and are therefore considered important research priorities:

- Physical, financial, gender, cultural and social barriers to use of effective interventions.

II. Health services delivery level constraints

Overall comparing all three levels of constraints, the quality and quantity of the evidence under health services delivery scored the highest, in particular for interventions aiming at solving the problem of drug supplies and the ones focusing on improving staff skills.
Yet some other areas still need more evidence, mainly: performance and incentives, private sector delivery, and service organisation.

In addition the following are considered important research priorities:

- Inadequate medical supplies, lack of equipment and infrastructure (including labs and communications), limited referral system capacity, poor accessibility of health services;
- Shortage and poor distribution of appropriately qualified staff.

III. Health sector policy and strategic management level constraints

All interventions reported under this constraints level proved to be rather weak and insufficient. So further investigation should be pursued in the fields of:

- Management strengthening;
- Information and monitoring systems;
- Drug policies and systems;
- Contracting; and

- Regulation of pharmaceutical and private sectors.

The following relate to intervention areas where we were not able to identify evaluation studies and are therefore considered important research gaps:

- Surveillance and epidemic response systems;
- Staff deployment and development policies; and
- Intersectoral action and partnership for health between government and civil society.

6. Concluding Remarks

Some of the successful interventions presented in this review may seem remarkable for their simplicity such as the patient flow analysis while others, quite innovative, as for instance, the interactive group discussions involving patients and prescribers, which resulted in reduced use of unnecessary injections (113). Part of the achievements are due not to the technique itself but to the process through which the changes were made possible, by applying participative approaches, gaining staff's commitment and involving the community. This serves to highlight that while various strategies to improve health are necessary, quality improvements and efficiency gains can be achieved through low cost and simple methods. Account should be taken of the context, process and facilitating factors which need to be better understood as regards their triggering and nurturing mechanisms.

Attempting to weigh the relative importance of the different constraints and the impact of interventions - i.e. those which are simply helpful and 'enabling' versus those, which are more essential and 'necessary' - highlights the interconnected and complementary nature of the components of health systems. To be able to say something meaningful about the relative contribution of these components to health outcomes requires systematic and, optimally, numerical data from studies of the functioning of such systems. A 'soft' element, like staff

organisation, cannot be considered, a priori, as being of lesser importance and impact than a 'hard' element like drug availability.

Finally, it can be argued that changes, of the type presented in this review, in the micro level structure and functioning of the health system (such as improvements in management, information systems, and planning and evaluation), are inherently limited in the degree of impact they can have within a given institutional framework at the macro level. Accordingly, macro level constraints (such as reforms in financing, personnel policies and administrative decentralisation), although more difficult to alter and requiring longer time frames, must also be included in any analysis of ways to achieve significant and sustainable improvements in health outcomes.

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Annexes

I. Bibliography used in the design of the methodology:

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II. Distribution of studies per region

Africa	Asia	Latin America	Elsewhere
Tanzania (9)	India (8)	Peru (5)	Jordan (1)
Kenya (8)	Indonesia (8)	Bolivia (3)	Turkey (1)
Nigeria (6)	Nepal (6)	Brazil (2)	
Ghana (4)	Bangladesh (2)	Ecuador (2)	
South Africa (4)	China (2)	Colombia (1)	
Cameroon (3)	Cambodia (2)	Costa Rica (1)	
Zimbabwe (3)	Pakistan (2)	Guatemala (1)	
Burkina Faso (2)	Korea (1)	Honduras (1)	
Egypt (2)	Philippines (1)	Jamaica (1)	
Uganda (2)	Sri Lanka (1)	Mexico (1)	
Zambia (2)	Viet Nam (1)		
Chad (1)			
Ethiopia (1)			
Guinea (1)			
Guinea Bissau (1)			
Malawi (1)			
Niger (1)			
The Gambia (1)			
Zaire (1)			

() Number of studies per country.

III. Key words

Key words searched per database

HMIC	HealthStar and Medline	Bids (Cabhealth)
Government effectiveness or government ineffectiveness	E: Government-programmes	Government effectiveness or government ineffectiveness
Efficiency of reform	E: Efficiency-organizational	Organi?ational efficiency
Quality of care	E: Health-care-reform	Health care reform
Quality of health service*	E: Total-quality-management	Total quality management
Quality assurance	E: Quality- assurance-health-care	Quality assurance
Primary care or preventive care or preventive service*	E: Preventive-health-services	Preventive health service* or primary health care
Government efficiency or government inefficiency	E:Primary-health-care	Government efficiency or government inefficiency
Governance	Government efficiency or government inefficiency	Governance
Quality improvement	Governance	Quality improvement
Quality management	Quality improvement	Quality management
Government performance	Quality management	Government performance
Health service* performance	Government performance	Health service* performance
Peripheral service*	Health service* performance	Peripheral service*
Management reform	Peripheral service*	Management reform
Management capacity	Management reform	Management capacity
Management strengthening	Management capacity	Management strengthening
Performance improvement	Management strengthening	Performance improvement
Improvement of government performance	Performance improvement	Government performance improvement
Improvement of public performance	Government performance improvement	Public performance improvement
Health system strengthening	Public performance improvement	Health system strengthening
Capacity development		Capacity development
		(Coverage or access) + poor
		Drug suppl*
		(Overcome or relax) + constraints
SECOND PHASE OF SEARCHES Same key words as for Medline and HealthStar	SECOND PHASE OF SEARCHES	SECOND PHASE OF SEARCHES Same key words as for Medline and HealthStar
	Demand side or effective demand or informed demand	
	Community partnership or community participation or community empowerment or community education or community involvement or community ownership	
	Social mobili?ation	
	Community health promoter or community health worker or community health voluntee* or community infrastructure	
	(Community or client or patient or consumer) and (health education or health knowledge or health information or health awareness)	
	(Client or consumer or patient) and (satisfaction)	
	Community based distribution or outreach	
	Bamako initiative	
	(User fees or user charges) and (barrier* or obstacle*)	
	Social Marketing	
	Rational drug use	
	Medical suppl* or medical equipment	
	Health infrastructure	
	Referral system or referral capacity	
	Technical guidance or technical guide*	
	Accreditation	
	Contract* out or contract*	
	(Performance system* or performance scheme*) or (incentive system* or incentive scheme*)	

HMIC	HealthStar and Medline	Bids (Cabhealth)
	Staff development or staff deployment or staff distribution or staff placement or staff allocation or personnel development or personnel deployment or personnel distribution or personnel placement or personnel allocation	
	(Team spirit or team work or teamwork) and (enhanc* or improv* or strengthening)	
	(attitude or motivation or morale or skill* or concentration or development or performance or productivity) and (enhanc* or improv* or strengthening) and ((staff or personnel) in mesh)	
	Logistic system* or distribution system* or delivery system*	
	(Waiting time or contact time or flow analysis) and ((client or patient) in mesh)	
	Drug* in mesh: Drug* retailer or door-to-door distribution system* or private outlet or drug suppl*	
	Drug* in mesh: (Drug suppl*) and (regular or regularity)	
	Drug* in mesh: Shopkeeper or shop keeper	
	Drug* in mesh: Prescribing pattern* or prescribing practice*	
	Drug* in mesh: Drug selection or drug quantification	
	Drug* in mesh: Local production or national production	
	Drug* in mesh: Storage or distribution system*	
	Drug* in mesh: Inventory control	
	Drug* in mesh: Bidding or competitive bidding	
	Drug* in mesh: Essential drug* list* or generic drug*	
	Drug* in mesh: Comprehensive polic or integrated polic*	
	(Regulation or coordination) and private sector	
	(Regulation or coordination) and pharmaceutical sector	
	Information system* or monitoring system* or surveillance system* or endemic control system* or epidemic response system* or management control system*	
	Intersectoral collaboration or intersectoral partnership	
	Absorption capacity	
	Communication mechanism*	
	Management development initiative or management development	
	Problem solving in mesh	
	Participatory method* or participatory technique*	
Africa	E: Africa	
Asia	E: Asia	# + (Africa, Latin America, South America, Asia)
Latin/south America	E: Latin/south America	# + (Africa, Latin America, South America, Asia)
Developing countr*	E: Developing countries	# + Developing countr*
In addition the following set of key words were used to narrow down the search for searches that yielded a very large number of results: utili?ation or coverage or access or quality or efficiency or strengthening or enhanc* or improv* or scaling up or scale up.		