

Constraints to Scaling Up and Costs

Working Group 1 Report



Taskforce on Innovative
International Financing
for Health Systems



Contents

Executive summary and key messages	7
1. Introduction	11
2. Guaranteed benefits and the health system platform	16
3. The main constraints that hamper scaling up of effective, efficient and equitable services	19
3.1 Constraints to improving access to benefits, by level	19
3.2 Constraints by four key health system building blocks	22
3.2.1 Financing of country health systems	22
3.2.2 The health workforce	24
3.2.3 Drugs and other essential supplies	24
3.2.4 Health information and evidence	25
3.3 Dealing with constraints	26
4. How to strengthen the overall health system and its various elements	27
4.1 Governance	27
4.2 Financing	29
4.2.1 Strengthening domestic financing and risk pooling	30
4.2.2 Purchasing and results-based financing	32
4.2.3 Paying the public sector health workforce	33
4.3 Delivery arrangements	34
4.3.1 Service infrastructure	34
4.3.2 Service integration	35
4.3.3 Public and private provision	35
4.3.4 Human resources and training	36
4.3.5 Quality of care	38
4.3.6 Drugs and supplies	39
4.3.7 Information and evidence	39
5. Financing needs for strengthening health systems and the resulting health benefits	41
6. Funding flows to countries	49
7. Concluding comments	51

Contents continued

Annex 1: Terms of Reference	56
Annex 2: List of low-income countries, July 2008	57
Annex 3: Progress towards Millennium Development Goals 4 and 5 for 43 low-income countries	58
Annex 4a: Analysis of total health expenditure (WHO health expenditure data 2006)	60
Annex 4b: Distribution of total health expenditure (WHO health expenditure data 2006)	62
Annex 5: Distribution of ODA to health, population and reproductive health and to specific purposes 2006	64
Annex 6: Summary of methods and data related to cost, financing and impact estimates	66
References	85



WORKING GROUP 1 MEMBERS

Julio Frenk (Dean, Harvard School of Public Health), Co-Chair

Anne Mills (Head, Department of Public Health and Policy, London School of Hygiene and Tropical Medicine), Co-Chair

Edward Addai (Head of Evaluation, The Global Fund)

Ariful Alam (Programme Coordinator, BRAC Health Programme)

Flavia Bustreo (Deputy Director, Partnership for Maternal and Newborn Child Health, WHO)

Helga Fogstad (Coordinator, MNCH, Global Health and AIDS Department, NORAD)

Elliot Harris (Special Representative to the UN, IMF)

Brenda Killen (Head, Aid Effectiveness, OECD)

Jacqueline Mahon (Senior Policy Adviser, Health Systems, UNFPA)

Martina Metz (Head of Section, Health, Population Policy, BMZ)

Christopher Murray (Director, Institute of Health Metrics & Evaluation)

Kampeta Pitchette Sayingoza (Director of Macroeconomic Policy Unit, Ministry of Finance and Economic Planning, Government of Rwanda)

Srinath Reddy (Head, Public Health Foundation of India)

Keizo Takemi (Research Fellow, Harvard School of Public Health)

Christine Kirunga Tashobya (Public Health Advisor, Ministry of Health/DANIDA, Kampala, Uganda)

Rajeev Venkayya (Director, Global Health Delivery, The Bill and Melinda Gates Foundation)



Julio Frenk (Dean, Harvard School of Public Health), Co-Chair



Anne Mills (Head, Department of Public Health and Policy, London School of Hygiene and Tropical Medicine), Co-Chair

Acknowledgements

This report was written by Anne Mills. Working Group members contributed specific inputs and extensively reviewed and commented on successive drafts. Assistance with literature reviews was provided by Ayako Honda; Catherine Pitt analysed NHA and DAH data; Sara Bennett reviewed the entire text and drafted specific paragraphs; and Joanne McManus was the technical editor. The analytical work related to the WHO approach to scaling up was led by Tessa Tan-Torres Edejer, Karin Stenberg, Nathalie Van de Maele, and Anderson Stanciole, all of WHO, with significant contributions from a range of partners including WHO technical departments, the Futures Institute, UNFPA, UNAIDS and USAID DELIVER Project. The analytical work related to the MBB approach was undertaken by Agnes Soucat and Netsanet Walelign, World Bank; Rudi Knippenberg and Carlos Carrera, UNICEF; Howard Friedman, UNFPA; and Henrik Axelson, Partnership for Maternal, Newborn and Child Health.





Executive summary and key messages

Since the adoption of the Millennium Declaration, total development assistance for health (DAH) has more than doubled and has saved the lives of millions of individuals and protected the livelihoods of their families. But most low-income countries are failing to make much progress towards the child and maternal mortality MDG targets, and the financial crisis threatens to increase infant deaths in developing countries by 200,000-400,000.

Progress towards all the health MDGs is impeded by insufficient funding, poor use of resources, and fragmented financing flows. Low-income countries currently spend only US\$ 25 per capita on health; of this \$10 comes from out-of-pocket payments, and only \$6 from DAH. There is unbalanced support for different services, with more than 50% of DAH provided directly to countries in 2006 supporting MDG 6, and less than 20% supporting basic health care and nutrition.

Everyone should have access to guaranteed health benefits*. The extent of these guaranteed benefits would be determined by individual countries, but as a minimum in order for the health MDGs to be achieved, services should include: universal coverage of interventions proven to reduce mortality among mothers, newborns and children under 5; childbirth care; reproductive health services; prevention and treatment of the main infectious diseases; diagnosis, information, referral, and relief of symptoms for those presenting at the primary care level; and health promotion. Effective service delivery requires a health system platform that can train and supervise the necessary health workers, provide essential drugs and supplies, channel money, and ensure accountability and transparency.

Much more money is needed from domestic and external resources to ensure that rapid progress is made towards the health MDGs, and that health systems in low-income countries can make the guaranteed benefits available to all.

Better use of domestic and external resources is needed to maximize the impact of all investments in health, whether existing or new, and address current problems of inequity, inefficiency and poor quality. Countries need to develop a technically sound country health strategy and plan for scaling up coverage of high-priority services and strengthening the health system platform. The country strategy must set out how health system governance, financing and service delivery will be improved, as follows.

- Governance arrangements are critical for maximizing the impact of health spending and ensuring poor, vulnerable and marginalized groups benefit most from increased resources; strengthened leadership is vital in public organizations, backed by stronger management systems including financial and human resources management.
- Financing arrangements must ensure sustainable and equitable domestic financing structures, predictable external finance, improved risk pooling over time, and effective purchasing of priority services.
- Service delivery arrangements should reflect the most cost-effective ways of providing services that are accessible, responsive to users and equitable, taking advantage of both public and private providers where appropriate.

There is no fixed and agreed approach that countries must follow to scale up interventions to meet the health MDGs. Countries are very diverse, and follow diverse paths. Two sets of analyses were undertaken to calculate costs and health impacts, reflecting two different views of how best to scale up services to meet the MDGs. The first was undertaken by WHO with collaboration from UNAIDS and UNFPA, and the other by an interagency group coordinated by the World Bank and UNICEF, with collaboration from UNFPA and the Partnership on Maternal, Newborn and Child Health, and using the Marginal Budgeting for Bottlenecks (MBB) tool. Both project the annual increase in capital and recurrent funding needed between 2009 and 2015 in order to adequately fund the interventions and supporting health system platform required to make substantial progress towards the health MDGs.

The WHO normative approach considers the amount of resources required to scale up country health systems to a level that is considered "best practice" by experts and practitioners. It reflects a more facility-based approach to service expansion and prioritizes rapid scaling up. The MBB identifies the critical constraints of existing health systems (bottlenecks) for scaling up effective interventions, and then identifies the strategies to overcome them. It assumes a delivery strategy that emphasizes full scale up of community-based services prior to expanding clinical services in 2014-15.

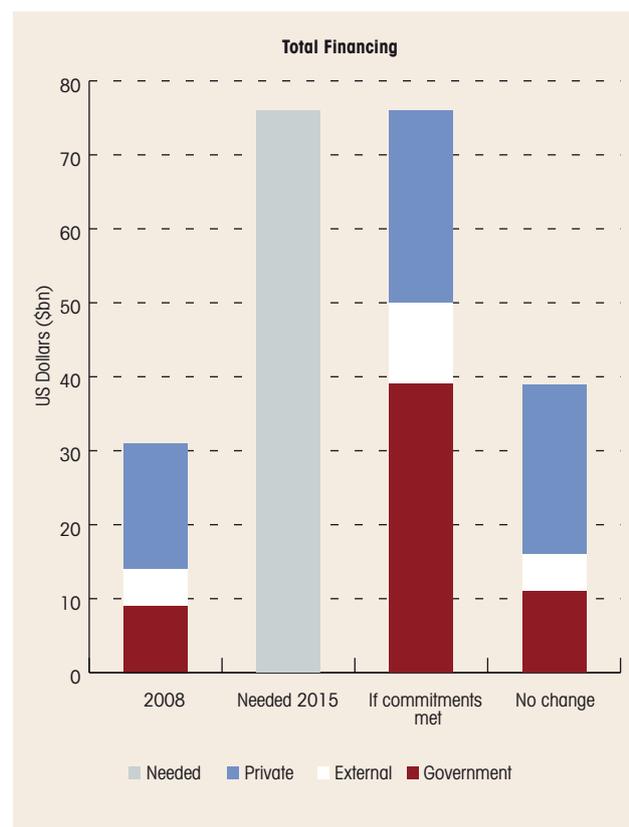
* As stated in UN conventions.

Strengthening the governance, financing and delivery of the health system to ensure rapid progress towards the health MDGs would cost, by 2015, an additional \$36-45 billion* (\$24-29 per capita) per annum, on top of the estimated \$31 billion that is spent today in low-income countries. Between 2009 and 2015 some additional financing will become available in any event, so the funding gap in 2015 is the difference between the financing need (costs) and the additional financing. The table below shows the funding gap for 2015 under two different scenarios on additional financing: commitments met (donor and recipient governments increase support as reflected in public statements[†]); and no change (maintaining current relationships between GDP and health expenditures). Private expenditures are assumed to grow in line with GDP growth, and a share is assumed to be available to support health MDG achievement.

(US\$2005 bn)	Sources of additional funding 2015				WHO normative 2015		MBB Medium 2015	
	Government	DAH	Private	Total	Cost	Gap	Cost	Gap
All countries								
Commitments met	30	7	7	44	45	1	36	-8
No change	4	0.5	4	8	45	37	36	28

If commitments are met, there is on average, across all countries, no financing gap in 2015^A. However, donors and recipient governments are currently far from delivering on agreed targets, and the economic recession is making this more difficult. If current relationships of health spending to GDP remain unchanged, the financing gap is \$28-37 billion in 2015. For sub-Saharan Africa, there is a funding gap under the "commitments met" scenario of \$3-5 billion. However, non-SSA countries would be more than able to cover additional costs under the "commitments met" scenario, and a small shift of DAH from non-SSA to SSA would reduce the SSA gap. In the "no change" scenario, the funding gap for SSA in 2015 is \$26-24 billion[#], and for non-SSA \$2-13 billion.

The figure below shows the total expenditure in 2015 under the two scenarios relative to estimated baseline levels of expenditure in 2008 and the financing need (WHO normative costs). It highlights the shortfall of expenditure under a "no change" scenario. It also highlights the importance of increasing government funding for health, and of encouraging private funding to support priority services.



If spent on high priority services and the necessary systems platform, it is estimated that the target level of health expenditure in 2015 would save the lives of around 4 million children and babies in both the WHO and MBB approaches. The WHO approach would avert up to 322,000 maternal deaths, 193,000 HIV deaths, and 265,000 tuberculosis deaths. The MBB numbers are estimated to be 259,000 (maternal), 177,000 (adult HIV), and 235,000 (TB). The WHO approach would protect more than 30 million children aged 12-59 months from stunting, and reduce unwanted births by nearly 11 million. Millions of children and adults would have their illnesses prevented or treated, averting a massive amount of morbidity. In the WHO approach an

* Constant 2005 US\$.

† It should be noted that there is no stated target for the % of government expenditure on health for non-SSA countries, so a target of 12% of government expenditure was assumed.

△ There is still a gap for the entire period 2009-2015 with the WHO normative costs, because costs increase earlier and faster than additional financing. See Annex 6 Table 11.

The MBB cost for SSA is higher than WHO's, so the gap for SSA is higher with MBB costs, unlike the all-country numbers where the gap is higher for WHO's costs.



extra 22 million women would have access to safe birth attendance and antenatal care, and their babies would receive quality care at birth and during the neonatal period. In the MBB approach an additional 17 million women would receive antenatal care in 2015, and 16 million would benefit from safe birth attendance.

Health systems would be put in place that would enable sustained health improvement into the future. Just as important, the sustained health improvement in low-income countries would increase human capital and remove the health barriers to economic growth, stimulating long-term economic development and enabling countries increasingly to fund their health systems themselves.

Capital expenditures are important for increasing system capacity to absorb more funding and would take up 40-48% of the investment, with the remainder required for ongoing health system support, including the health workforce and drugs and supplies. Health facilities would increase by 74,000-97,000, and health workers by 2.6-3.5 million. This would more than double the current numbers of facilities and workers. For additional funds to be used as intended to expand health spending, governments must agree to prioritize health within national budgets, and devote the additional resources to high impact interventions and the necessary systems support.

The country health strategy, backed by high-level political commitment, is critical for deploying external funding in ways that ensure country ownership, donor alignment with strategies, and harmonization of donor actions¹. There must be a focus on managing for results for which countries and donors are mutually accountable, backed by systems for monitoring and evaluating progress; there also needs to be a focus on building capacity for the long term, using national systems as the first option to channel money, purchase drugs and supplies, recruit technical assistance, and report on use of funds². Approaches must be tailored to the specifics of each country context; the pace of change must be agreed locally to ensure absorption of additional funding and a long-term, sustainable approach to strengthening the health system.

The cost of not raising additional funding is dire: 4 million children dying each year who would otherwise have been saved, and 780,000 avoidable adult deaths, including 322,000 women dying as a result of giving birth.







1. Introduction

At a high-level event in New York on 25 September 2008, world leaders called for an additional US\$ 30 billion to save 10 million lives: 3 million mothers and 7 million children. Stronger health systems are critical to saving these lives, and building these systems will require more resources from the international community. For this reason a High Level Taskforce on Innovative International Financing for Health Systems (the Taskforce) was announced. Its objectives are to contribute to filling national financing gaps to reach the health Millennium Development Goals (MDGs) through mobilizing additional resources for health systems; increasing the financial efficiency of health financing; and enhancing the effective use of funds.

Two technical working groups were established to present analyses and recommendations to the Taskforce: the focus of Working Group 1 was on constraints to scaling up and costs (see Annex 1 for the terms of reference) and the focus of Working Group 2 was on raising and channeling funds.

The purpose of this report from Working Group 1 is to address the health systems strengthening needed in 49 low-income countries (listed in Annex 2) to achieve the health MDGs, with a special emphasis on redressing gaps in services related to those MDGs considered to be neglected, namely MDGs 4 and 5.

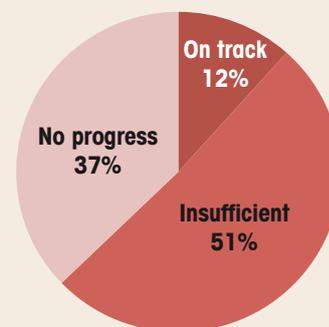
Since the adoption of the Millennium Declaration, total development assistance for health (including that from private foundations) has more than doubled, from \$6.8 billion in 2000 to \$16.7 billion in 2006³. Official Development Assistance (ODA) increased from \$5.5 billion in 2000-1 to \$13.58 billion in 2006-7. The largest share of ODA has flowed to support specific disease control efforts, especially for HIV, malaria and immunization^{4,5} and has greatly helped to increase the take-up of health technologies. Millions of AIDS patients now receive antiretroviral treatment, and the incidence of malaria is falling in many countries.

Within the health ODA increase, there has been an increase in the funding of the maternal, newborn and child health (MNCH) services needed to achieve MDGs 4 and 5. A recent analysis of all types of aid flows (including allowance for sector and general budget support) found that disbursements to MNCH had risen by 63% between 2003 and 2006⁶. Child mortality has been significantly reduced in all regions except sub-Saharan Africa, and even here child mortality fell by an average of 11% between 2000 and 2005⁷ and some countries have seen marked declines.

However, health gains in low-income countries still fall well short of those desired. Evidence on country progress towards MDGs 4 and 5 shows that the majority of low-income countries are doing poorly (Annex 3).

As many as 22 of 43 low-income countries for which data are available have made insufficient progress in reducing child mortality, and 16 have made no progress at all (Figure 1). In five countries the average annual rate of reduction in under-five mortality since 1990 has been negative (Central African Republic, Chad, Kenya, Zambia and Zimbabwe) indicating that child mortality has increased. For each newborn baby who dies, 20 more face illness or disability from conditions such as birth injury, infection and the complications of premature birth.

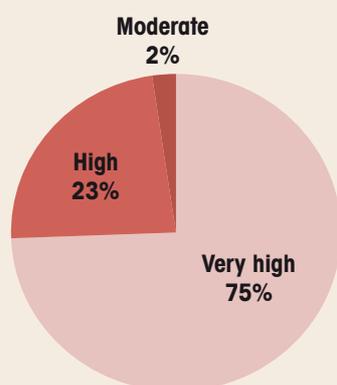
Figure 1: Poor progress towards MDG 4 (reduce child mortality)⁸



Countries with under-five mortality rates of less than 40 per 1000 live births or an average annual reduction rate (in under-five mortality from 1990-2006) of at least 4.0% are considered 'on track'.

Of the 43 low-income countries, 42 have either high (over 300 maternal deaths/100,000 live births) or very high (over 500) maternal mortality rates. Only one country (Tajikistan) has a moderate maternal mortality rate (Figure 2). For every woman who dies in childbirth, around 30 suffer short- or long-term consequences including a broad range of acute and long-term disabilities, such as chronic pelvic pain, damage to reproductive organs, kidney failure, uterine rupture and infertility. Lack of access to family planning means that many women unnecessarily and involuntarily

Figure 2: Poor progress towards MDG 5 (improve maternal health)⁸



Very high: maternal mortality ratio of 550 or greater; high: maternal mortality ratio of 300-549; moderate: maternal mortality ratio of 100-299; low: maternal mortality ratio of less than 100 per 100,000 live births.

incur the risks of pregnancy and childbirth, including unsafe abortion which is responsible for an estimated 13% of all maternal deaths.

Most countries are also struggling to meet the MDG 6 targets of achieving universal access to treatment for HIV by 2010 and halving and reversing the spread of HIV by 2015⁹. Malaria still kills more than 1 million people annually, 80% of whom are children under five in sub-Saharan Africa. Tuberculosis (TB) incidence rates are falling very slowly and TB deaths are still rising*.

Despite improvements since 1990, progress in reducing hunger is insufficient to achieve the MDG 1c target. The proportion of children aged under five who are undernourished declined from 33% in 1990 to 26% in 2006, but the number of underweight children in developing countries still exceeded 140 million in 2006¹⁰. Furthermore, the recent increase in food prices is likely to mean that 1 billion people in the world will go hungry and another 2 billion will be undernourished¹¹; the current financial crisis will further accentuate the problem of nutrition.

Figure 3 shows the most recent data on coverage levels in low-income countries for selected interventions crucial to achieving the health MDGs. This visibly demonstrates the weaknesses of the primary care systems that are needed to respond to acute infections in children, ensure safe delivery for women and babies, and support women's reproductive choices, as well as the grossly inadequate coverage of some preventive measures such as insecticide-treated nets.

Within countries there are gross inequalities in access to life-saving interventions, with clear differences in antenatal care and skilled birth attendance, for example, between the rich and the poor¹², as well as continuing inequalities by gender and for marginalized groups.

Funding for health falls well short of the levels needed to achieve the MDG targets. The Commission on Macroeconomics and Health's estimate of the cost of a package of 49 essential health interventions in low-income countries was about US\$ 38 per person per year¹³ but current spending on all health activities is only about \$25 per person per year.

Furthermore, there are imbalances in the way that money is spent. Most noticeable is the pattern of external assistance across different types of health programmes. For example, between 2002 and 2006 more than 50% of all health aid provided directly to countries was absorbed by commitments relating to MDG 6, leaving only \$2.25 per capita per year for MDGs 4 and 5³.

Despite an overall increase in MNCH funding, 16 of the 68 Countdown[†] priority recipient countries experienced a fall in MNCH support in 2006, on average by 22%⁶. The prioritization of development assistance for specific programmes has meant that funding for cross-cutting systems support, such as building clinics, has been very much neglected.

Geographic imbalances in ODA are also clearly apparent. For example, health ODA per capita between 2002 and 2006 ranged from \$20 in Zambia to \$1.6 in Chad³.

Funding imbalances are aggravated by fragmented funding patterns, multiple disbursement mechanisms and unpredictable flows of funding. In health there are more than 40 bilateral donors and 90 global initiatives, which compete for attention and scarce country resources, especially human resources. This skews country priorities, increases transaction costs, and encourages piecemeal solutions to problems of service delivery¹⁴. In the case of MNCH funding, the analysis quoted above found that 95% of ODA for MNCH was channeled in the form of project funding rather than general budget support or health sector support⁶.

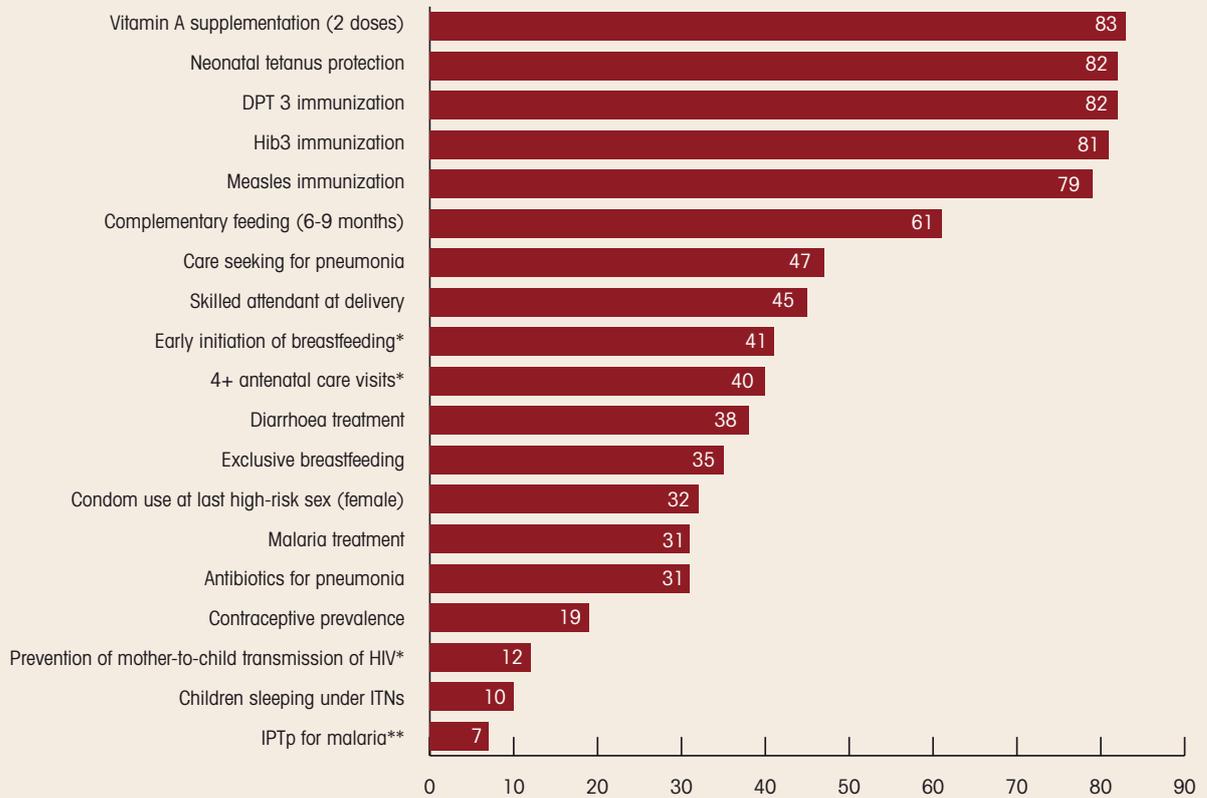
The problems of fragmentation, unpredictability and targeting of development assistance to the delivery of specific technologies have become so visible that they have resulted in a universal call for a coordinated effort to support the country health systems that all disease and programme-specific efforts must ultimately rely on.

* http://www.stoptb.org/resource_center/assets/factsheets/factsheet_april08.pdf, accessed 16/04/09.

† The Countdown is a collaboration between individuals and institutions which aims to stimulate country action by tracking coverage of interventions related to achieving MDG targets for mothers, newborns and children.



Figure 3: Median coverage levels for priority maternal, neonatal and child health interventions for 49 low-income countries^{8,15}



* Early initiation of breastfeeding, 4+ antenatal care visits and prevention of mother-to-child transmission of HIV do not include data from Comoros, Kyrgyzstan, São Tomé and Príncipe, Solomon Islands, Uzbekistan and Vietnam.

** Missing data for 28 countries; in some of these malaria may not be a public health problem.

As defined by the Taskforce:

“Within the political and institutional framework for each country, a health system is the ensemble of all organizations, institutions and resources mandated to improve, maintain or restore health. Health systems encompass both personal and population services and activities to influence policies and actions of other sectors to address the environmental and economic

determinants of health. Key subcomponents of health systems include: delivering health services through a primary health-care approach; financing and social protection; the health workforce; logistics and supply chains; information and knowledge; and governance[†].”

The health system is made up of publicly financed and provided services, and the activities of the private sector, whether in financing, service provision or the supply of

inputs such as pharmaceuticals and equipment. Most important, it encompasses not only the service delivery activities, but the supervisory, management, outreach and governance activities needed to ensure efficient, effective and equitable service delivery; the participatory and accountability mechanisms needed to ensure that services are responsive to population needs and demands; and the policies needed to promote healthy environments and lifestyles.

Efforts to strengthen health systems in low-income countries are not new (see Box 1). But the global financial crisis makes it even more important that health systems receive greater attention and support. The crisis is threatening to reduce the income of rich and poor countries alike, potentially affecting their ability and willingness to increase or even maintain funding for health. A reduction in economic growth threatens tax receipts and hence government income; it also threatens household incomes and hence ability to spend on health care. Increased unemployment in the formal

[†] <http://www.internationalhealthpartnership.net/pdf/IAWG/WG1/Taskforce%20WG1%20TOR%20Jan19%202009.pdf>, accessed 16/04/09.

Box 1: Milestones in health systems strengthening

Upon independence in the 1960s and 1970s many developing countries embarked upon a phase of health system strengthening, characterized in particular by efforts to expand their networks of basic health services through public sector investment. Such efforts were underpinned by national reports such as the Bhore report in India and the Titmuss report in Tanganyika.

This focus on basic health services, supported by community involvement, was further developed in the 1978 Alma Ata Declaration, which called for the launch and sustaining of primary health care “as part of a comprehensive national health system”¹⁶. However, the approach to strengthening the health system as a whole was superseded by the emergence of selective primary health care¹⁷ which argued that in the context of limited resources it made most sense to focus efforts on specific high-priority diseases and highly cost-effective interventions. The tension between broad support for systems strengthening, as compared with more focused support to specific diseases, has persisted, although the two approaches are best seen as complementary.

A renewed focus on health systems was stimulated in the late 1980s through World Bank publications, most notably “Financing Health Services in Developing Countries: An Agenda for Reform”¹⁸ which argued that “continuing gains [in health outcomes] depend largely on the capacity of health systems to deliver” and proposed a series of market-oriented reforms. Several of the messages in “An Agenda For Reform” were elaborated in the World Development Report of 1993 “Investing in Health”¹⁹.

These reports, combined with efforts by some bilateral donors and the influence of the new public management philosophy popularized in industrialized countries at the time, led to a wave of health sector reforms in developing countries. In subsequent decades, however, many health sector reform policies became discredited, partly because of the negative consequences of some specific policies (such as user fees) on equity, but also because of the lack of clear evidence that such policies had positive effects²⁰.

The next major international publication, “Health Systems: Improving Performance - World Health Report 2000” thus focused on providing a clear analytical approach and indicators for measuring health system performance.

Nevertheless, the perceived failures of the health sector reform movement and the growing focus on HIV had led back to a stronger focus on tackling specific priority diseases, with the GAVI Alliance established in 2000 and the Global Fund to Fight AIDS, TB and Malaria established in 2002. A rapid increase in funding for global health, particularly HIV/AIDS services, ensued. In some heavily affected countries HIV funding exceeded 150% of government health budgets²¹ and was perceived as placing a burden upon already weak health systems, most notably in terms of scaling up services in the context of scarce human resources. In 2005, in response to these concerns, the GAVI Alliance Board launched a dedicated health systems window, and the Global Fund began to accept proposals for strengthening health systems.

In 2007, the launch of the International Health Partnership marked a renewed focus on health systems, with a call to “action to scale-up coverage and use of health services, and deliver improved outcomes against the health MDGs and universal access commitments”. The 2008 G8 summit in Toyako, Japan, produced a strong commitment for collective action to strengthen health systems in developing countries, and the Japanese Government undertook follow-up activities by working with an external experts committee which produced three policy papers²² (on financing, human resources and information) with recommendations for G8 action.

sector will reduce insurance coverage, and in the informal sector it will reduce the purchase of care from the private sector. Decreasing economic activity in the rich world is reducing employment, which will in turn reduce remittances from migrant workers, further increasing rates of poverty.

All these trends will increase demands on public health services, as well as directly leading to adverse health consequences. The World Bank has forecast that in all developing countries an additional 200,000 to 400,000 infant deaths per year may result from the financial crisis[†]. Thus it is even more vital that support is increased to protect and improve the health of the poorest and most vulnerable, especially women and children, and that domestic and external resources are used in ways that ensure maximum health benefit. A financial crisis can be turned into an advantage, and enable major reforms to be introduced. For example, the Thai financial crisis in the late 1990s helped stimulate progress towards universal coverage and influenced its design²³.

The case for increased health spending does not depend on the health benefits alone. As argued by the Commission

on Macroeconomics and Health, improving the health of the poor is not only an end in itself but also a means of achieving other development goals relating to poverty reduction and economic growth¹³. The burden of disease and ill health, especially in sub-Saharan Africa, is a barrier to economic growth. Unhealthy and undernourished children do less well at school and grow up to be less productive members of the workforce.

The global impact of maternal and newborn deaths has been estimated at US\$ 15 billion a year in lost productivity²⁴. The economic burden on poor households of paying the costs of treating frequent illness, and the costs to households of pregnancy and childbirth, absorb money that could otherwise be spent on basic necessities such as food. This affects households' ability to save and invest, and reduces the productivity of the agricultural, manufacturing and services sectors. Money that governments would spend on treating illnesses could, by successful prevention, be diverted to other pressing needs.

In the long term, investment in children's health increases the proportion of the population that survives to working

* http://www.internationalhealthpartnership.net/ihp_plus_about.html, accessed 16/04/09.

† <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:22068931~pagePK:64257043~piPK:437376~theSitePK:4607,00.html>, accessed 10/04/09.



age, and so contributes to economic growth. Some 30-50% of Asia's economic growth between 1965 and 1990 has been attributed to favourable demographic and health changes, which stemmed largely from reductions in infant and child mortality, improvements in reproductive health and reductions in fertility rates²⁵. Finally, a healthier population is not just a more productive population but one that will enable people to live more socially fulfilling lives.

The remainder of this report addresses, in turn:

- the interventions that need to be provided and the necessary health system platform;
- common health system constraints in low-income countries;
- policies and approaches that offer solutions to these constraints;
- financial needs and resulting health benefits;
- how financial assistance should flow.

2. Guaranteed benefits and the health system platform

Working Group 1 supports the goal that a country's health system should be capable of providing guaranteed benefits that all citizens should enjoy. The definition of a universal set of entitlements has deep ethical and political implications, as it reflects the actionable items of the universal right to health and health care, as specified in UN conventions and declarations. The specification of guaranteed benefits also helps to hold governments to account for their performance in ensuring universal access to health care for all their citizens.

Identifying the interventions needed to achieve the health MDGs and the health system support required to provide those services efficiently, effectively and equitably is the first step in defining the benefits. Further work remains to be done to specify clearly the content of those interventions, how countries should adapt them for differing contexts, and the health system arrangements required to finance and deliver them in an efficient and equitable manner. Also, benefits

need to be dynamic so that, as certain goals are achieved and new challenges emerge, they are revised through the application of transparent and contestable criteria.

Substantial prior analytical work has led to agreement on the interventions necessary for achieving the health MDGs²⁶. These comprise interventions proven to reduce mortality among mothers, newborns and children under five, childbirth care, reproductive health services, and prevention and treatment of the main infectious diseases. In addition, benefits need to include elements to respond to the conditions with which people present in primary care, and health promotion. The main services are shown in Table 1.

These interventions need to be combined at different levels of care in ways that exploit synergies and efficiencies, and eliminate missed opportunities (such as failing to check on immunization status when a sick child is brought

Table 1: Listing of key guaranteed benefits

Groupings of services	Include the following interventions
Maternal and newborn services	<ul style="list-style-type: none"> Antenatal care (four visits) Quality facility births (maternal care during labour, delivery and immediate postpartum) Newborn care (care of the newborn at birth and immediate postnatal care, including exclusive breastfeeding) Postnatal care (care provided to the mother up to six weeks after birth, and visits at home for the newborn) Emergency obstetric and neonatal care (specialized care, including treatment of complications during pregnancy, childbirth and the postnatal period) Safe abortion (where legal) and post-abortion care Family planning
Child services	<ul style="list-style-type: none"> Oral rehydration therapy Case management of pneumonia Vitamin A supplementation, vitamin A fortification Zinc supplementation, zinc fortification Access to processed food, provision of supplementary food and counselling on nutrition Full and permanent coverage of immunization programmes Exclusive breastfeeding for children under six months
HIV	<ul style="list-style-type: none"> Prevention, treatment and care programmes for HIV Prevention of mother-to-child transmission
Malaria	<ul style="list-style-type: none"> Preventive and curative interventions for malaria
Tuberculosis	<ul style="list-style-type: none"> Diagnosis and treatment of tuberculosis
Noncommunicable diseases	<ul style="list-style-type: none"> Health promotion and early detection of noncommunicable diseases
Presenting conditions	<ul style="list-style-type: none"> Diagnosis, information, referral and relief of symptoms for any presenting conditions



Table 2: Examples of intervention delivery by level of care for four priority areas

Level of care	Malaria	HIV	Childhood diseases	Maternal/ neonatal
Hospital	Treatment of complicated malaria	Blood transfusion to treat HIV Treatment of severe opportunistic infection for AIDS	Integrated management of childhood illnesses: severe cases	Emergency obstetric and neonatal care Safe abortion (where legal)
Health centre/health post	Treatment of uncomplicated malaria Intermittent preventive treatment of malaria during pregnancy	Prevention of mother-to-child transmission Prevention of opportunistic infection, and treatment of uncomplicated opportunistic infections Voluntary counselling and testing Antiretrovirals Treatment of sexually transmitted infections	Integrated management of childhood illnesses Immunization Treatment of severe anaemia	Quality facility births Antenatal and postnatal care Family planning Treatment of mild complications; pre-referral management of serious complications
Outreach services	Epidemic planning and response Indoor residual spraying	Peer education for vulnerable groups; needle exchange	Specific immunization campaigns Outreach IMCI: home management of fever Outreach for: micronutrients and deworming	Support for family during pregnancy, childbirth and postpartum Support for breastfeeding and referral
Outside health sector or not involving direct service delivery	Social marketing of insecticide-treated mosquito nets	Social marketing of condoms School youth programmes for HIV	Improving quality of private drug sellers School deworming and micronutrients	Social marketing of contraceptives School sexual, reproductive and health education Community transport schemes

Note: Interventions are allocated to the level that will be the predominant service provider; other levels will often also provide specific interventions (e.g. skilled birth attendance at hospital). Source: adapted from 13

for treatment). For example, treatment of tuberculosis, malaria and childhood illnesses, immunization and family planning need to be integrated at the health centre level. Other interventions lend themselves to delivery through other channels, such as social marketing approaches to encouraging purchases of insecticide-treated mosquito nets or condoms. Table 2 provides examples of which interventions can be integrated at the point of delivery, and which are less dependent on a health service infrastructure.

The health system is vital for ensuring that services function efficiently, effectively and equitably. It trains and supervises the necessary health workers, ensures the availability of drugs, vaccines, diagnostics and other supplies, determines

how money is collected and how it is spent, and ensures accountability and transparency. It supplies the multipurpose infrastructure needed to provide services for mothers, babies, children and adolescents, and to treat infectious and noncommunicable diseases.

It is well known that health services are not the only influence on health outcomes, and that there are multiple other important determinants, such as female education, the environment and transport. It is important to address these as part of a broad view of development. One of the critical functions of an effective health system is to provide leadership to other sectors and thus to influence policies across government to ensure that they help promote health.





3. The main constraints that hamper scaling up of effective, efficient and equitable services

Low-income countries are in many ways highly diverse. The severity of constraints to scaling-up health services differs widely, as do the solutions to those constraints. The 49 countries range from an income level of US\$ 100 in Burundi to \$860 in Côte d'Ivoire (Annex 4). Twenty-six of them are included on the list of fragile states*, which are home to only 20% (1 billion) of the world's population, but contain a third of the world's poor, a third of the world's maternal deaths and a third of those living with HIV²⁷. About 80% of fragile states have been or are still engaged in conflict. Conflict-affected fragile states have some of the worst health indicators in the world and are farthest from meeting the MDGs²⁸. Low-income countries thus encompass both countries with a reasonably well functioning state, and those with no effective state.

With respect to the health system, low-income countries range from those with a reasonably widespread network of public and non-state health services, to those where public health services either have never been built up or have been largely destroyed by war and the informal private sector dominates. In conflict-affected fragile states, the health service infrastructure is often severely damaged, with few skilled staff, scarce drug supplies, weak management systems, and a Ministry of Health with severely limited capacity. Compared with more stable states, there is often a proliferation of poorly coordinated nongovernmental organizations (NGOs) and vertical health programmes²⁹.

Nonetheless, even if the degree of the severity of constraints varies by country, all low-income countries experience multiple constraints in seeking to increase coverage of priority interventions. Lack of money is a fundamental constraint, but unless other constraints are recognized and addressed countries will find it difficult to absorb and use additional finances effectively¹³. Constraints can be analysed in a number of ways, including the various levels of a health system and in the context of the main health system building blocks, especially financing, the health workforce, drugs and information.

3.1 Constraints to improving access to benefits, by level

Table 3 summarizes the main constraints to improving access to health benefits at the levels of: community and household; health service delivery; health sector policy and strategic management; public policies cutting across sectors; environmental and contextual characteristics; and at the global level. This approach to conceptualizing constraints makes it apparent that long-term solutions to inadequate coverage of health services demand action not just at that level but also at other levels: in other words, they demand a health system response. For example, in a specific country setting, low uptake of facility-based care during childbirth may be due to a combination of the following factors:

- low status of women affects their ability to access services;
- pregnant women and their husbands are not aware of the benefits of the services;
- services are not oriented to caring for pregnant adolescents;
- services are not sufficiently near to people's homes;
- the quality of care is inadequate in terms of the service environment (e.g. drugs, equipment, cleanliness, privacy) and provider skills;
- unaffordable charges (formal and informal) are levied;
- health workers are inadequately paid, supervised and supported, resulting in absenteeism and poor relationships with patients;
- regulations are poorly enforced, resulting in widespread private delivery practice which, although of poor technical quality, is more responsive to women's preferences;
- inadequate numbers of obstetricians and midwives due to international migration, AIDS and insufficient investment in retention strategies, and the absence of other cadres who could have been trained and authorized to provide skilled care.

* The World Bank's definition of fragile states covers low-income countries scoring 3.2 and below on the Country Policy and Institutional Assessment (CPIA). They are classified into four groups: (1) prolonged crisis or impasse; (2) post-conflict or political transition; (3) gradual improvement; and (4) deteriorating governance. The lists are revised annually, so fragility is a temporary status, not a permanent classification.

Table 3: Constraints to improving access to health benefits, by level

Level of constraint	Examples of types of constraints
Community and household level	Lack of demand for effective interventions due to knowledge, perceptions, culture, language Barriers to the use of effective interventions (physical, financial, social)
Health services delivery level	Shortages and inadequate distribution of appropriately qualified staff Weak information systems, technical guidance, programme management and supervision Inadequate drugs and medical supplies Lack of equipment, infrastructure and referral system
Health sector policy and strategic management level	Weak and overly centralized planning and management systems Insufficient use of evidence in decision-making Weak drug policies and drug supply system Weak transport, communication and referral systems, especially for emergencies Ineffective policies for engagement with and regulation of pharmaceutical and private sectors, and improper industry practices Lack of interministerial and intersectoral action, and weak partnerships for health between government and civil society Weak incentives to use inputs efficiently and to respond to users' needs and preferences Reliance on aid agency funding, which reduces flexibility and ownership Aid agency practices that overload country management capacity
Public policies cutting across sectors	Government bureaucracy (civil service rules and remuneration, centralized management) Limited fiscal space for additional public expenditure Poor availability of communications and transport infrastructure
Environmental and contextual characteristics	Governance and overall policy framework Corruption, weak government, weak rule of law and unenforceability of contracts Political instability and insecurity Low priority attached to social sectors Weak structures for public accountability, including lack of a free press Physical environment Climatic and geographic predisposition to disease Physical environment unfavourable to service delivery
Global level	Number of global initiatives and misalignment of reforms Reliance on project funding modes and limited use of country public financial management systems Poor quality reporting on DAH flows to countries Demand for skilled health workers in other countries

Source: adapted from 30



At the community and household levels demand for effective interventions can be low because people: lack information on how they will benefit from services; may be intimidated by health-care providers and do not know how to negotiate access; lack decision-making rights over health service use within their household; and/or feel their local health services do not recognize their needs, receive them well, or provide services of good technical quality. Financial barriers can also be a significant deterrent, whether in the form of fees, both formal and informal, or the costs of transport and time.

At the facility level the key issues are the availability, distribution and motivation of appropriately skilled staff, sufficient expert and supportive supervision, the availability of drugs, medical supplies and equipment, and the maintenance of the infrastructure. Often facilities are run down, lack drugs, and experience absenteeism by staff whose wages are insufficient to live on so that they need to earn income in other ways. In some countries the national pool of trained workers is insufficient to staff all facilities; the most remote facilities, and those serving the poorest populations, are most likely to be inadequately staffed. Services offered may be segmented, meaning that women attending for antenatal care may not be offered advice on family planning or prevention of mother-to-child transmission of HIV.

At the health sector policy and strategic management level, multiple constraints affect performance. Decision-making cultures where information and evidence play an appropriate role are rare, and in any case the volume of health systems research is tiny relative to the need for good evidence (see Box 2). The planning system often does not translate priorities into plans and budgets effectively. Ministries of health the world over tend not to be regarded as the most politically important or competent, and hence can face difficulties in arguing their case within government, especially with ministries of finance, for additional money. Relationships with the private health sector are often poorly developed, despite its widespread use, and opportunities are neglected for working with the private sector to improve the services they provide.

Ministries of health also tend to ignore the importance of interministerial and intersectoral action. Obvious areas of common interest include involving schools to promote health messages and to provide treatment, upgrading rural infrastructure to improve physical access to both health services and safe water, and ensuring that statistics bureaus collect essential health information.

At this level Table 3 identifies aid agency practices as a constraint³³. Weak country capacity can be further reduced by aid fragmentation, which is especially large in the health sector³⁴. In 2002, Vietnam, a fairly typical aid recipient

Box 2: Health systems strengthening - more research needed

Since the 1970s there have been calls to strengthen the field of health policy and systems research so as to improve the evidence base supporting health systems strengthening. For example:

- In 1972 it was proposed to the World Health Assembly that greater emphasis be placed on (a) studies on the economics of health, (b) studies dealing with manpower resources and development, (c) community participation and (c) the selection, specification and standardization of medical procedures and techniques.
- The 1996 report of the Ad Hoc Committee relating to Future Intervention Options identified four "best buys" in global health research, of which health policy and systems research was one.
- The 2004 Ministerial Summit on Health Research in Mexico called for a major increase in investment in health policy and systems research, and this call was subsequently reflected in a World Health Assembly resolution.

Despite these frequent calls for greater investment in health policy and systems research, the field remains neglected. The report of the Ad Hoc Committee gave rise to the creation of the Alliance for Health Policy and Systems Research*, which supports advocacy, knowledge generation and capacity building, but its resources are tiny relative to the need for funding for such research. A study of the pattern of grant awards concerning child health in developing countries found that, for the largest public and largest private health research funders, 97% of their grants were for the development of new technologies, rather than to enhance the access to and delivery of existing technologies³¹. Consequently the evidence used to identify crucial health systems solutions is often very weak.

Weak support for health systems research can be explained by the lack of clarity in the scope and nature of the field, the perceived lack of rigour in methods employed, and challenges involved in generalizing from one country context to another. But without scaling up funding for health systems research from its very low base, it is difficult to tackle these issues and generate robust, generalizable findings.

Source: 32

receiving around 5% of GDP as aid, dealt with 25 bilateral donors, 19 multilateral agencies and 350 international NGOs, and on average had one project per 9,000 people³⁵. One study found that the median recipient government interacted with 23 official donors and categorized the transaction costs of the numerous aid channels as direct and indirect³⁵.

Direct transaction costs arise from the separate negotiation, management and reporting requirements that absorb the time of politicians and bureaucrats, and the energy needed to maintain relationships with so many agencies.

Indirect transaction costs stem from: the superior purchasing power of externally funded projects, which can attract the best staff away from national employers; excessive expenditure on project-specific technical assistance and training (in 2006 technical cooperation in DAC

* <http://www.who.int/alliance-hpsr/en/>, accessed 16/05/09.

statistics* constituted 41% of total health ODA, and had tripled in real terms since 1999¹⁴); distortion of public budgetary processes and fiscal statistics since much aid is not accounted for in official statistics; competition between donors for both attractive projects and the time of bureaucrats and politicians, which encourages hoarding of information and less than enthusiastic participation in coordination efforts; and a reduced collective sense of responsibility among the donor community in a country for the outcomes of aid, given the multiplicity of donors. While global health partnerships are increasingly providing funding for health systems in addition to disease-specific funding, the separate nature of their decision-making process can create many difficulties at country level, as shown in a recent analysis of the GAVI Alliance's early experiences³⁶.

Weak government management systems, together with aid fragmentation and broader institutional weaknesses, can affect the capacity to absorb aid[†] at both macro and micro levels. Few of the global health initiatives use country financial management systems, reducing incentives to strengthen them. Disbursement rates are likely to be strongly influenced by donor processes and regulations with respect to funding modality and disbursement channels.

For example, an analysis of Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) disbursement rates suggests that low-income countries are able to absorb major increases in health assistance³⁷. However, 50% of principal or sub-recipients in round 7 were non-state actors³⁸ and 45-49% of the funds (depending on the round) has been spent on drugs and commodities^Δ. Different spending patterns may face different constraints on spending. A second notable finding of this analysis was that the implementation of grants was strongly related to political stability, with less stable states facing greater problems of implementation.

Another study analysing the relationship between per capita donor disbursements for MNCH and child and maternal mortality rates, found that a group of countries with the highest mortality rates and lowest per capita DAH were all fragile states, suggesting either that these states received lower priority and/or that anticipated or actual absorptive capacity was low³⁹. Hence absorptive capacity is likely to vary greatly across low-income countries.

At the cross-sectoral public policy level, ministries of health face major constraints relating to public service employment. In many countries health workers are part of the civil service, making it very difficult to deal with issues of pay and conditions of service separately from those of staff in other sectors. Another constraint can arise from concerns of ministries of finance relating to fiscal space, which is

the scope in a government's budget to provide resources for a desired purpose without prejudicing the government's financial position⁴⁰.

Some ministries of finance have been unwilling to support additional public health spending, especially where it increases long-term budgetary commitments and where they lack faith in the ministry of health's ability to spend additional money effectively. This may be one reason why increases in expenditure on health may not match stated commitments.

An analysis in 2005 covering the period 1998-2002 suggested that an increase in aid of 10% of GDP was associated with an increase of 0.36% of GDP in public expenditure on health, which means that only 3.6% of aid was spent on health⁴¹. This is much less than the stated share of health in total aid commitments (17%) and suggests that governments responded to increases in health aid by shifting some of their own resources out of the health sector. A recent audit of the European Commission's development assistance to health in sub-Saharan Africa found that, in most countries examined, general budget support did not lead to increased resources being channeled through the national health budget⁴².

Finally, while the low-income country health sector alone can do little about them, the environmental and contextual characteristics of a country, as well as global influences and structures, affect the functioning of a national health system.

3.2 Constraints by four key health system building blocks

Four health system building blocks are so important that they require specific mention: financing of country health systems, the health workforce, drugs and other essential supplies, and health information and evidence.

3.2.1 Financing of country health systems

Financing entails three sub-functions: revenue generation, risk pooling and purchasing. In low-income countries, total health expenditure is \$25 per capita (range \$5-\$58), government health expenditure is \$12 (\$1-\$42), and private expenditure \$13 (\$3-\$31) of which out-of-pocket expenditure is around \$10 per capita (see country data in Annex 4a). External assistance, included according to WHO reporting definitions within government and private categories, is on average \$6 (\$0.50-\$27.77). These figures show that national financing structures are fragmented and that domestic sources dominate external ones.

* DAC statistical reporting under "technical cooperation" includes only free-standing technical cooperation, i.e. activities financed by a donor country whose primary purpose is to augment the level of knowledge, skills, technical know-how or productive aptitudes of the population of developing countries.

† Absorptive capacity refers to the ability of countries to utilize DAH efficiently and effectively. Capacities are determined by a range of macroeconomic, microeconomic and institutional factors.

Δ <http://www.theglobalfund.org/en/distributionfunding/?lang=en>, accessed 10/04/09.



Out-of-pocket expenditure accounts for nearly half of total health expenditure, so a significant share of health financing does not permit risk pooling. As a result, a significant proportion of households face a burden of expenditure that is catastrophic for household welfare, and can lead to households falling into poverty⁴³. Equally important, many individuals lack capacity to fund their care at all and, as a result of not seeking treatment, their health condition may deteriorate, leading to an increased chance of dying.

Another important implication of the lack of pooling of health funds is that it makes it difficult to ensure effective purchasing, namely targeting domestic financing to the most cost-effective services and to those most in need, and to channel funding in ways that create incentives for providers to perform well. Because out-of-pocket expenditure in absolute terms tends to increase with household income level, it finances health care more for the rich than the poor, and often purchases ineffective or unnecessary services and products⁴⁴. The poorer the household, the more likely it is to purchase from the poorer quality, more informal end of the private health-care market⁴⁵. Pharmaceuticals account for a major share of private out-of-pocket payments, and in turn such payments are a significant component of total health expenditure in low-income countries (19% according to WHO data⁴⁶).

Although the 2001 Abuja Declaration committed all members of the Organization of African Unity to ensuring that at least 15% of domestically financed government expenditure went to health* few countries have achieved this. Government expenditure should be more susceptible to prioritization on cost-effective services, but in practice a high proportion of government health expenditure goes to hospitals, and within that a high share is absorbed by higher-level hospitals⁴⁷.

One study found that all levels of public hospitals in developing countries absorbed a mean of 60% of recurrent public health expenditures, and across five countries (Belize, Indonesia, Kenya, Zambia and Zimbabwe) tertiary hospitals accounted for 45-69% of total public expenditure on hospitals⁴⁸. A more recent study in South Africa found that tertiary and regional hospitals accounted for nearly 60% of total public hospital expenditure, and tertiary hospitals alone accounted for nearly one fifth of total public health expenditure⁴⁹.

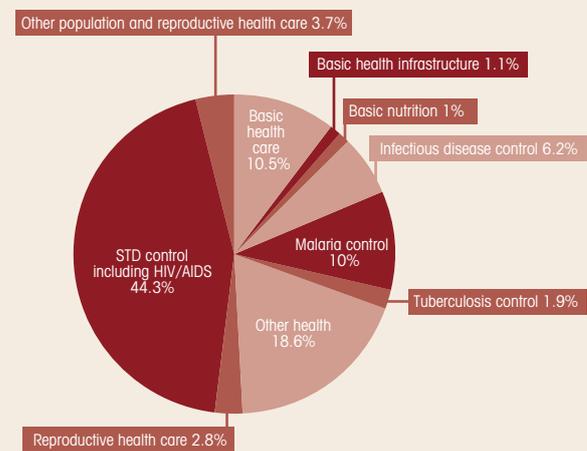
DAH disbursements can be analysed by the purpose codes in the Creditor Reporting System for that part of DAH which can be associated with country recipients (Annex 5). Of total country-specific DAH, population and reproductive health services in 2006, countries received on average 30% for sexually transmitted diseases and HIV, 10% for malaria, 4% for tuberculosis and 16% for basic health care. However, these means disguise great variation. At one extreme, over 60%

of DAH was given for HIV in Eritrea, Haiti, Uganda and Zimbabwe.

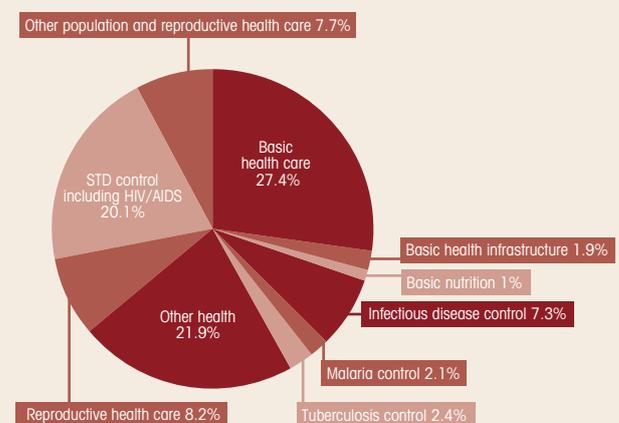
At the other extreme, basic health care absorbed 70% of DAH in Afghanistan and 47% in Tajikistan, but otherwise no country's share for basic health care was greater than 35%. Figure 4 shows the breakdown of DAH by purpose for sub-Saharan African low-income countries and all other low-income countries. In sub-Saharan Africa 62% of country-specific DAH was allocated for a disease-specific purpose.

Figure 4: Distribution of DAH to specific purposes of health, population, and reproductive health in low-income countries in 2006

Low-income countries in sub-Saharan Africa



Other low-income countries



Source: data in Annex 5

* http://www.un.org/ga/aids/pdf/abuja_declaration.pdf, accessed 16/04/09.

3.2.2 The health workforce

The health workforce is fundamental to both the delivery of care and its management. In 44 of the 49 low-income countries there are a grossly inadequate number of health workers to provide essential health services.

There is a direct relationship between the ratio of health workers to population and the survival of women during childbirth and children in early infancy⁵⁰. An estimated one third of pregnant women in developing countries do not have contact with health personnel prior to giving birth, while in sub-Saharan Africa, where most maternal deaths occur, 70% of women have no contact with health personnel following childbirth.

In some of the 49 low-income countries the problem is that inadequate numbers of health workers are being trained. In other countries there are unemployed trained workers and the problem is primarily one of funding, recruitment and imbalances in the staffing mix⁵¹. The retention of and performance by health workers are common concerns across all low-income countries.

There are often great inefficiencies in how governments allocate and manage their health wage bill⁵². Many countries do not fully utilize the health wage bill due largely to capacity constraints within the government, and to complicated processes of recruitment involving several governmental departments and levels of administration, which can be plagued by delays. For functions over which the Ministry of Health has a high degree of autonomy, limited capacity and the fact that policies are simply not followed are important factors limiting the strategic use of wage bill resources.

Retention is challenged by both internal and international migration, especially from public to private employment within countries, and from poorer to richer countries. Performance encompasses aspects such as availability for work, competence, responsiveness and productivity. Low remuneration, poor working conditions and lack of supportive supervision all contribute to suboptimal performance by the workforce.

Managers are a grossly neglected cadre of the health workforce, with few countries paying much attention to the need for professionally trained managers at all levels of the health system, from the district level upwards.

Finally, there is commonly weak leadership of the health workforce and lack of opportunities for its development at all levels, i.e. the community, clinical, public health and policy-making levels.

3.2.3 Drugs and other essential supplies

Drugs, as recognized in the MDG targets, are a critical element of health services. They also provide a mirror to the functioning of a health system, reflecting many of the critical weaknesses. Drugs and other supplies are usually widely available for sale, but often through unregulated outlets or even open marketplaces, and at substantial price markups. A study in three districts in Tanzania found, for example, that none of the drug stores had staff with the required minimum of four years' health-related training; the stocking of drugs that should not have been on sale in such a shop was common; unregistered, imported antimalarials were found in the majority of shops; and all shops sold tablets loose, not in the necessary unit packs⁵³. In the same areas, although there was little difference between the different socioeconomic groups' likelihood of seeking some form of care for fever, the poor were significantly less likely to receive an antimalarial⁵⁴. In general, the poor are more likely to purchase drugs from the informal sector, while richer groups can afford to purchase them from the formal sector.

Drug quality, both poor quality and fake drugs, is also a widespread problem⁵⁵. Of samples from 35 pharmacies in Nigeria, 48% were of poor quality⁵⁶. In mainland South-East Asia it has been reported that 38-52% of artesunate blister packs contained no artesunate and that there were at least 12 different types of fake artesunate⁵⁷.

Despite several decades of efforts to ensure the regular provision of drugs and other supplies in government health facilities, stock outs are still common, and government supply systems frequently function poorly. As a result, externally funded programmes often institute their own purchasing and distribution systems; while these provide an immediate solution specific to the programme, they cause major difficulties in standardization and management for the system as a whole, as well as ignoring the long-term issue of reform. In many cases they do not address underlying capacity constraints on ministries' and the private sector's ability to forecast, plan, manage and distribute within the context of a national system for drugs and supplies.

Pricing is yet another problem, for private and government sectors alike. Mark-ups are often high in the private sector, because of both complex, lengthy distribution chains and lack of competition. In the areas in Tanzania referred to above, the market for antimalarials was strongly geographically segmented and highly concentrated, with prices varying even for the same drug⁵⁸. Drug prices can increase substantially when a currency is devalued because of the dependency on imported finished products or raw materials, for which foreign currency must be paid. This happened in Indonesia in the late 1990s⁵⁹.



3.2.4 Health information and evidence

Health information and evidence are critical underpinnings for virtually all aspects of public health. They support policy-making, planning, programming and accountability, and are particularly important for decision-making in resource-constrained contexts. Sound information systems also form the foundations for effective disease surveillance and response. Health information must be readily available, timely and accurate, and analysts and decision-makers in country need the skills to analyse and interpret health data. The reliability of health information systems is particularly important in the current context of growing levels of development assistance for health and a stronger focus on tracking performance and measuring results. In addition to sound local health data, decision-makers need to be able to draw upon relevant and timely research evidence, whether from international literature or locally commissioned studies.

The policy paper for the G8 Toyako follow-up identifies a number of problems that limit the availability, timeliness and quality of evidence for decision-making²². First, the quantity and quality of data for monitoring progress and assessing health systems is poor and has not received priority in investment decisions. Second, responses to data scarcity have led to a proliferation of indicators, inconsistent frameworks and fragmented activities. Third, work is duplicated across agencies, which compete to fill the same gaps rather than coordinating their efforts. Fourth, progress is slow towards making data openly accessible. Fifth, political factors and relationships influence the collection, reporting

and use of data and contribute to poor data quality. Finally, many countries lack both the incentives and capacity to collect, share, analyse and interpret good quality data.

Additional constraints, noted elsewhere, include the lack of standardization across countries in definitions, data sources and methods for many essential health indicators, and the fact that health information systems rarely capture data from private sector providers although they may be a primary source of care in many countries⁶⁰. Data capture and use is still seen as a cost rather than as an essential investment to enable effective and efficient decision-making. Fragmented health information systems and excessive reporting requirements can add to the overload of already over-worked health staff.

With respect to evidence and research, while there have been repeated calls for investment in operational research, such as the Commission on Macroeconomics and Health's recommendation that 5% of country programme funding go to operational research⁶¹, nowhere near this level of investment actually takes place. Both the lack of incentives to invest in evaluations, and bureaucratic and political barriers to doing so, undermine the evidence base on the effectiveness of health policies and programmes⁶².

Further, funding for in-country research is often dominated by external funding agencies only weakly coordinated by government, if at all, and thus there is likely to be a mismatch between evidence needs and the research projects actually funded.

Table 4: Dealing with constraints

Constraint	Disease-specific remedy	Health system remedy
Financial inaccessibility	Allowing exemptions from or reducing prices for treatment of focal diseases	Developing risk-pooling strategies
Physical inaccessibility	Providing outreach for treatment of focal diseases	Building local primary care clinics
Inappropriately skilled staff	Organizing in-service training workshops to develop skills in treatment of focal diseases	Ensuring that basic medical and nursing curricula include skills needed on priority topics
Poorly motivated staff	Offering financial incentives for the delivery of particular priority services	Instituting performance review systems, creating greater clarity about roles and expectations, reviewing salary structures, promotion and incentives
Weak planning and management	Providing ongoing education and training workshops to develop planning and management skills	Restructuring ministries of health, recruiting and developing a cadre of dedicated managers
Lack of information	Introducing a special data collection system	Improving the overall information system
Lack of intersectoral action and partnership	Creating disease-focused, cross-sectoral committees and taskforces at the national level	Building systems of local government that incorporate the various sectors; promoting accountability of local governance structures to the people
Poor quality care among private-sector providers	Offering training for private-sector providers	Developing accreditation and regulation systems

Source: adapted from 63

3.3 Dealing with constraints

The list of constraints in this section is a familiar one, which both disease-specific and broader health systems initiatives have sought to address. However, as in the case of drug purchasing and distribution, a solution that resolves the problem for a disease-specific programme may be suboptimal for the system as a whole. Table 4 contrasts disease-specific and health system remedies for common constraints.

Clearly, a multiplication of disease-specific remedies would lead to fragmented initiatives that risk skewing the overall system, whereas a systems response promises greater efficiency by making improvements to a number of areas at the same time. However, some donors have taken the view that returns have been poor from investment in broad system strengthening in low capacity settings, and that investment in disease-focused initiatives is likely to be more effective, with quicker returns, than for systems strengthening where a long time horizon is required. The following section reviews the state of knowledge on selected policies and approaches that might strengthen the overall health system and make effective use of additional health systems funding.



4. How to strengthen the overall health system and its various elements

Money alone will not suffice to help countries reach the health MDGs; better policies and institutional change are needed to improve efficiency and productivity, as well as approaches which ensure that the poor benefit from additional funding. Given the scope of the health system, there are many different ways to strengthen its various elements and address the above constraints. However, especially in low-income countries, as identified in Box 2, the evidence base on the effects of different approaches is limited⁶⁴.

The conceptual framework employed by a comprehensive database of management- and policy-relevant systematic reviews* is applied here to structure the discussion, and the database, as well as other sources, has been searched for relevant reviews†. The presentation is structured around the three main functions of governance, financing, and delivery (including non-financial resource generation, such as training). Strengthened governance addresses the constraints identified earlier at higher levels of the health-care system, especially those at the policy and strategic management and cross-sectoral levels. Strengthened financing addresses constraints at all levels and strengthened delivery addresses constraints at the delivery level.

Within these overall headings, subjects have been chosen for review on the grounds that:

- empirical evidence suggests that they are key elements of health system strengthening (e.g. strengthening the stewardship role of a Ministry of Health);
- they are being suggested as key elements of a systems strengthening agenda (e.g. results-based financing).

Given the limited evidence, the text below seeks to highlight for each policy/approach:

- whether there is consensus on solutions;
- whether there is controversy;
- whether no promising solutions are available and therefore more evidence generation is required.

However, it should be kept in mind that while broad approaches can be discussed, they must be adapted to the specific contexts of different country settings if they are to have a chance of working well.

4.1 Governance

Governance of the health system is a function in and of itself, and it also incorporates governance in relation to financing and delivery. In this sense good governance is a fundamental prerequisite for all parts of the health system to work well. Indeed, countries with higher quality policies and institutions have been shown to be more effective in achieving health impact from government health spending, for example lower maternal mortality rates⁶⁵. Governance includes setting the strategic direction of the health system, designing how the system is managed, arranging for user and other stakeholder involvement, ensuring accountability and transparency, implementing regulatory arrangements, and gathering intelligence and information (Box 3). Despite its importance, this is one of the least researched areas of health systems, but some countries have taken successful steps to improve health system governance.

Box 3: The scope of governance arrangements

- Providing leadership and strategic direction, including priority setting, and coordinating and aligning all health-related actors
- System design including balance between centralization and decentralization, public and private
- Intersectoral advocacy to mobilize the various tools of public policy to support health
- Mechanisms for promoting accountability, transparency and user involvement
- Regulation of health-related activities to protect the health of the public, including regulation and accreditation of health services, pharmaceutical products, food, the environment, etc.
- Systems for intelligence and information gathering and analysis

Leadership and strategic direction are important for any health system, but especially for low-income countries since clearly expressed and maintained country priorities are needed to ensure that external assistance can follow the principles affirmed in the Paris Declaration of alignment with country strategies. Country leaders must be supported and nurtured so they can develop and maintain both leadership skills and technical abilities.

A coherent policy framework is required to provide the basis for mobilizing all public and private players within the health system. A technically sound country strategy, including a clear financing strategy, provides the focus for coordinating external and internal resources towards common goals. In

* The database includes reviews that employed systematic search methods of multiple literature databases; at 22/01/09, 30% were reviews of health effects that met Cochrane standards of evidence; in total 80% were reviews of effects; the remainder addressed questions other than effects.

† <http://www.researchtopolicy.ca/Search/Reviews.aspx>, accessed 16/04/09.

Ethiopia, for example, the health compact on scaling up for reaching the health MDGs outlines specific commitments and obligations on the part of both government and development partners, including targets for the minimum level of total aid for health, and future practice for managing external assistance including increasing use of government systems to procure, disburse, implement, report, monitor, account and audit³.

In Tanzania, the health SWAp (Sector Wide Approach) introduced in 1999 has supported a government-led health sector development programme to improve access to and delivery and quality of health services. An external evaluation found that it has delivered improvements, including reductions in infant and child mortality, greater drug provision and improved services³. In India, the National Rural Health Mission represents a step-change in political commitment to health and to improving the health status of the rural population, and has recently been supplemented

Box 4: The National Rural Health Mission in India

The National Rural Health Mission of India, launched in 2005, provides a striking example of the highest level political commitment to increasing domestic resources for health and redressing rural and urban inequalities. The NRHM seeks to provide effective health care to rural populations throughout the country with a special focus on 18 states with weak health outcomes and infrastructure⁶⁶⁻⁶⁸. A central element of the initiative is the declaration of the Government's commitment to increase public spending on health from 0.9% to 2-3% of GDP over the next five years, and to introduce reforms to ensure the additional funding is effectively used⁶⁶. About \$2 billion was budgeted to be spent in 2008.

The key components being funded include: integrated district health planning; partnership with NGOs; flexible funds for state and local governments; strengthening of public health infrastructure; and the appointment of an Accredited Social Health Activist (ASHA) in each village to act as a link between the health centres and the villagers⁶⁷. Some 250,000 women volunteers are being training as ASHAs to advise village populations about sanitation, hygiene, contraception and immunization; to provide primary medical care for diarrhoea, minor injuries and fevers; and to escort patients to medical centres. They are also expected to deliver directly observed short-course therapy for tuberculosis, as well as oral rehydration, folic acid and chloroquine, and to alert authorities to unusual outbreaks^{68,69}.

The success of the NRHM is likely to depend largely on the development of state and local institutional capacity, including strong partnerships with civil society organizations and private-sector actors⁷⁰.

In a parallel government initiative, the Rashtriya Swasthya Bima Yojana (RSBY) has been launched by the Ministry of Labour and Employment to provide health insurance coverage for families living below the poverty line and to provide protection from financial liabilities arising out of health shocks that involve hospitalization. Beneficiaries are entitled to hospitalization coverage up to Rs. 30,000 for most of the diseases that require hospitalization, and pay Rs 30 registration fee, the cost of the premium being borne by state and federal governments*.

by a Ministry of Labour initiative to roll out a nationwide hospitalization insurance scheme for poor families (Box 4).

System design is crucial. It encompasses organizational arrangements, the relative roles of the public and private sectors and of different financing sources (considered in subsequent sections) and ensuring government capacity to fulfil its governance function. Regardless of whether a government takes all responsibility for public-service provision, or contracts out service provision to others, governance, managerial leadership and capacity are needed in the public sector. Indeed, managing arms-length relationships, as required in contracting and regulation, may be more demanding of capacity than managing direct service provision⁷¹. Yet, as identified earlier, managerial capacity is a major constraint in low-income country health systems.

While there is consensus that there is a problem, evidence on what works is limited. Since the mid- to late-1990s substantial resources have been devoted to reforming the core functions of the state, including those needed for improved health-sector performance, such as the civil service and public financial management. OECD data indicate that more than \$4 billion was spent in 2005 on "improving government administration", but there is a general perception in the development community that public-sector reforms have generally fallen short of expectations⁷². The Independent Evaluation Group (IEG) report on public-sector reform found that performance usually improved for financial management, tax administration and transparency, but not for the civil service, and that reform projects tended to be less successful in low- than in middle-income countries⁷³.

Many health reform projects have sought to put in place structural reforms to decentralize management, separate purchasers from providers, stimulate competition (often on both demand and supply sides) and increase provider autonomy. Evidence about their success is very mixed, with reforms often not fully implemented, reversed (as in the case of the national and district boards of health in Zambia) or having damaging side effects (for example reduced access for the poor resulting from increased hospital autonomy)⁷⁴. Attempts to move health workers from civil service to local authority or health authority employment contracts have only rarely succeeded⁷⁴. The recent IEG evaluation of health-related World Bank projects has argued that reform designs need to be better related to the local country context, preceded by adequate diagnosis of problems and of issues of political economy, and that blueprint reform designs should be avoided⁷⁵.

It has also been argued that complex managerial reforms are ill-suited to the low capacity settings of low-income countries⁷¹ and that new approaches are needed. These should start from specific country settings, and analyse the context for change in relation to the content

* http://www.rsby.in/about_rsby.html, accessed 17 May 2009.



of an intervention⁷⁶. For example, the introduction of a performance management system might be assessed in terms of the characteristics of the context into which it would be introduced, how it might be made relevant to that context, and whether there are ways in which the context can be changed to make success more likely. A recent comparison of governance reforms in Brazil, India and Uganda found that successful reforms require a combination of political commitment, technical capacity and gradual implementation⁷⁷. Lessons for donors were that governance reform is best promoted through incremental, small-scale and flexible responses to domestically driven reform agendas, rather than by complex structural reforms.

The issue of technical assistance requires specific consideration. Technical assistance ought to be a means to address problems of leadership and managerial capacity, and to build long-term, sustainable capacity. Its magnitude (42% of all health ODA from 2002-2006³) suggests that it should provide important support to the functioning of health systems. However, the high level of fragmentation in health aid, with much technical assistance associated with project aid and HIV support (in 2006 the latter almost equalled technical assistance funding for all other health areas) suggests that much technical assistance is not used to build up core capacity. This represents enormous scope for efficiency gains if greater emphasis were placed on south-south collaboration and strengthening regional institutions. There are some positive experiences of donor coordination in pooling technical assistance funds for capacity development, as in Bangladesh where Dutch technical assistance is usually pooled with Asian Development Bank funds and increasingly uses local expertise⁷⁸.

Intersectoral advocacy is vital to address the intersectoral determinants of health, and this demands effective leadership from the health sector. National Aids Commissions (NAC) chaired by a country's president or leader provide a frequently successful example of multisectoral coordination, and demonstrate how health concerns can be positioned at the very heart of government. A recent evaluation of NACs in sub-Saharan Africa indicates that, to varying degrees, they have been able to catalyse and spearhead strong leadership and advocacy in support of national AIDS policy and action frameworks, and to provide effective multisectoral coordination, especially among non-governmental actors and development partners. However, most NACs still require greater power and incentive structures to hold line ministries accountable, a key requirement for coordinating and mainstreaming HIV-related activities across the public sector⁷⁹.

Accountability mechanisms are very important for effective health system functioning. Mechanisms for user and citizen involvement at all levels, from village health committees, hospital boards, civil society groups and citizen charters, to parliaments, help to improve services, hold the health system

accountable and transparent, and reduce corruption. For example, a participatory intervention with mothers' groups in Nepal increased the uptake of care and was associated with reduced maternal mortality⁸⁰; the introduction of community-based monitoring of public primary health-care providers in nine districts in Uganda resulted in large increases in utilization and improved health outcomes⁸¹; structures for community involvement in Burkina Faso increased the coverage of primary care services⁷⁴; and NGOs have played an important role in holding governments to account for scaling up treatment for HIV. Encouraging user and citizen involvement is especially important where states are weak, and "voice" mechanisms for accountability need to compensate for weak accountability of lower-level staff to their superiors and weak accountability of the government to the public at large. Accountability mechanisms are also important to hold officials accountable for how they spend their budgets. In Rwanda, for example, districts in effect compete to demonstrate how well they are using their funds.

Regulation of health providers is a critical area for action since, among other things, it offers ways to improve the effectiveness of the large volume of expenditure on services purchased from the private sector. A systematic review has shown that regulation can improve the quality of pharmacy services⁸². For example, a ban on a dangerous drug in Nepal resulted in its complete removal from retail outlets, and a regulatory intervention in the Lao People's Democratic Republic to improve the supervision of pharmacies, apply sanctions and provide information led to improved process quality, such as the availability of essential materials for dispensing and the provision of information to clients⁸³.

Management information systems need reform and strengthening, especially for finance and personnel. Sufficient levels of public financial management capacity are critical for the efficient, effective and accountable use of resources. Moreover, specific budgeting, control and reporting competencies may well be a precondition for the sustainable strengthening of public health systems. Health information systems are important, not only to manage the health system, but also to make information available to the general public and other government sectors. The widely quoted example of the Tanzanian Health Interventions Project, later rolled out by the government across the country, demonstrates how better information, combined with a decentralized planning and management system, enabled district managers to improve the prioritization of resource use, putting the districts on target to achieve MDG 4⁷⁴.

4.2 Financing

The financing function comprises the crucial steps of raising money, pooling risk across individuals, and purchasing services (Box 5). In addition, whatever financing arrangements they select, governments must also allocate

adequate finances to support a national health systems institutional framework which includes health system management education and training, health policy and systems research, food and drug safety, regulation for public and private sectors, laboratory networks, information systems, collection of national health accounts, and so forth. A financial strategy needs to be part of the national health strategy, and external assistance and domestic financing should be considered together.

Box 5: The scope of financial arrangements

- Raising money - raising revenue for the health system (such as through tax, community-based insurance schemes, user fees)
- Pooling risk - the accumulation and management of revenue so that the risk of paying for health care is borne by all members of the pool
- Purchasing services - how funds are allocated to lower levels of the health system, how health providers are paid for the services they provide (e.g. global budgets, capitation, fee-for-service, specific incentive payments)
- Financing the institutional framework of the health system.

4.2.1 Strengthening domestic financing and risk pooling

The overall principles of health financing are widely accepted. While the evidence base is stronger than that for governance arrangements, it is still quite limited, especially with respect to certain specific elements*. A “good” system of domestic financing is one that raises sufficient revenue and provides universal financial protection against the costs of illness. In addition, financing sources should raise revenue efficiently (i.e. with low administrative costs) and should minimize adverse micro- and macroeconomic consequences (such as excessive increases in the cost of labour or goods).

Equity principles would generally require that household contributions be in relation to ability to pay, with the poor paying less and the rich more. Out-of-pocket payment would be regarded as the least desirable form of revenue raising, except at a token level or for discretionary service elements (e.g. a hospital bed in a private ward).

These principles stand in sharp contrast to the current pattern of health financing in low-income countries where, as noted earlier, out-of-pocket payments are a significant source of funding. The debate on financing sources arises in relation to three issues: (i) whether, in a second-best situation, retaining user fees in public services as a source of revenue is better than removing them; (ii) whether financial risk protection (also called social health protection) is better achieved by general taxation or through social health insurance; and

(iii) whether either community-based or private voluntary insurance schemes have a role to play in a national financing mix, in either the short to medium term or in the longer term.

Out-of-pocket payments

Evidence on the adverse consequences of user fees is strong. These arguments apply not only to government health services, but also to private not-for-profit services such as those of faith-based providers, which in many African countries essentially form part of the public network. A recent systematic review⁸⁴ concluded that:

The reduction or removal of fees at point of use appears to increase utilization, while the level of evidence is weak for the effects on poorer groups. Some study findings suggest that if fees are introduced and quality of care improved simultaneously, this can improve access and utilization for poorer groups. However, consistent evidence shows that introducing or increasing user fees has detrimental effects on levels of health service uptake. Exemption policies are seldom well managed enough to mitigate such negative impacts.

The controversy therefore does not concern the effect of user fees, but rather how they can be effectively removed, given that health facilities often depend on user fees to help cover recurrent expenditure. An analysis of country experiences suggests that five strategies need to be in place in order for fee removal to lead to strengthened health service delivery (Box 6)⁸⁵.

Box 6: Strategies to ensure fee removal improves health services

1. Give a specific government unit the task of coordinating fee removal and the other actions necessary to strengthen the health system.
2. Communicate clearly with health workers and managers about the policy's vision and goals, as well as about what actions will be taken, and when.
3. Establish new funds at local level, controlled by managers, to allow them to make small-scale spending decisions.
4. Before the policy change, start a wide-ranging public information campaign to communicate to the general public both the policy's vision and goals and what users can expect to experience at facilities.
5. Plan for adequate drugs and staff to be available to cope with increased utilization, and plan how to tackle wider drug provision and staffing problems in the longer term.
6. Improve physical access to health services.
7. Establish monitoring systems that cover utilization trends, including the relative use of preventive versus curative care, and give health workers and managers opportunities to contribute feedback on health facility experiences.

* <http://www.researchtopolicy.ca/Search/Reviews.aspx>, accessed 16/04/09.



General taxation and social insurance

Much of the debate concerning general tax and social health insurance relates to the two issues of pooling and channeling funds to providers. Traditionally, a national health service (general tax funding, public provision of services) has been contrasted with a social insurance system (payroll taxes, contractual model of service provision). However, either general taxation or social health insurance can be associated with a contract model, as recent country experiences demonstrate. What is important is that the way of raising revenue is evaluated in terms of standard public finance criteria. In these terms, efficient performance of revenue collection systems is a major problem for low-income country tax authorities and social insurance agencies alike, although some forms of tax are less difficult to collect than others.

Enrolment in social health insurance schemes can fall well below the size of the target population, and in addition non-payment can be a major problem⁸⁶, although in some countries, such as the Philippines and Tanzania, schemes are beginning to reach out to informal sector workers through group insurance. Casualization of the workforce, and unemployment resulting from economic slumps can both threaten coverage for some in the formal labour market. It can be argued that public care free at the point of use and funded by general tax revenues is a less costly and less managerially intensive way of collecting and spending money for the provision of health care than insurance arrangements, since the former avoids the need for enrolment, premium collection, eligibility checks at facilities and monitoring compliance with insurance regulations. Moreover, social insurance contributions can only realistically be collected from those in the formal sector, a small minority of the workforce in low-income countries, and they increase the cost of labour in the formal sector.

However, political acceptability is also a key consideration, as well as potentially greater efficiency and quality of service provision resulting from the often greater autonomy enjoyed by social insurance agencies. This probably explains why many middle-income countries who recently achieved universal coverage did so using social health insurance as a core strategy⁸⁷. But given the nature of employment in low-income countries, social insurance contributions would be paid by only a small minority of the population, so substantial funding from general tax revenues, other earmarked taxes or external assistance would be required to provide financial protection for those outside the formal sector. Ultimately, the question of the relative importance of general taxation and social health insurance is a matter for each individual country and their domestic constituencies; most countries employ a financing mix. The most critical issues are to pool risks as far as possible and to ensure fair financing.

Funding the health system through some form of compulsory tax, and aggregating small risk pools of community or private insurance into larger ones, are generally regarded as preferred end-points⁸⁸. However, voluntary contributions to an insurance scheme can be argued to represent a way of improving financial protection in the short to medium term, as well as potentially facilitating longer-term progress to universal insurance-based coverage.

Community-based health insurance

Several reviews of community-based health insurance (CBHI) schemes are available⁸⁹⁻⁹² and present evidence of how they affect financial protection, utilization of care, health service quality, total funding and equity, as well as empowerment and institutional development. There are some examples of well-functioning schemes, but also many examples of schemes which appear to have made little difference to financial protection or access to good quality health care, for a variety of reasons.

- In many resource-poor settings, contributions can have only a limited impact on the direct cost of health care so, without external support, schemes struggle to survive or be effective.
- Schemes are generally small (70% of schemes covered by an International Labour Organization (ILO) review had 2000 members or fewer⁹²) so their contribution towards overall health systems goals is limited.
- Schemes usually have difficulty enrolling the poorest.
- Direct costs of care are only part of the total cost of health care, and only one of the barriers to use of services.
- From a systems perspective, such schemes may result in poorer groups contributing to their health-care costs to a greater extent than richer groups who are able to access public services, and thus may be inequitable with respect to payment.

It is difficult to draw firm general conclusions from the studies because they lack common definitions of CBHI, evaluate different objectives, and often lack methodological rigour (the ILO review of 127 studies of CBHI schemes found that only one of these studies had internal validity).

Recent experiences in Rwanda and Ghana suggest that more organized forms of voluntary non-profit insurance, particularly those where external assistance is channeled to pay the premium for the poorest, should be regarded in a more positive light. In Rwanda, schemes are organized at the community level with pooling at district and central levels; members contribute the equivalent of \$2 a year and a 10% copayment. Membership by the very poor is subsidized by external funds. By 2008, 85% of the population was reported to be enrolled⁹³, although the premium is relatively

expensive for the rural poor and yet is still insufficient to fund comprehensive health care⁹⁴.

In Ghana, a national health insurance scheme has been introduced, encompassing a scheme for the formal sector and a network of district-based mutual health organizations to encompass the informal sector⁹⁵. By the end of 2006, enrolment was 37.6% of the total population; more than 60% of the membership was made up of those exempt from payment of the premium (children, the elderly, the indigent (2%), and those making social security contributions (10%)). A 2.5% levy on VAT finances the scheme, in addition to payroll and voluntary contributions. The scheme is intended to form the basis for the long-term financing of the Ghanaian health system, and will take many years to establish fully, so judgments on performance at this time are premature.

The distinguishing characteristic of these two experiences is that, while they rely on community contributions and management, this occurs within a clearly defined and government-supported policy framework. This goes a long way to explaining the relative success and rapid expansion of the schemes.

Private health insurance

Private health insurance is distinguished from CBHI in that it is not managed by a social institution, such as a community or cooperative. The commercial private health insurance market in low-income countries is extremely small, limited by the size and wealth of the formal sector and the complexity of the products on offer. Some experiments are beginning to extend the private insurance market among lower-income employed or self-employed, through microfinance banks or schemes such as the donor-subsidized Hygeia Community Health Plan in Nigeria. Like CBHI, such schemes usually have small risk pools and are voluntary, leaving them vulnerable to adverse selection and low coverage rates.

Effective purchasing arrangements are vital if enrollees are not to be exposed to greater costs when financial coverage ceilings are limited. In China there is evidence that those insured are more rather than less exposed to catastrophic payments, given the supply-side incentives for over-treatment⁹⁶. The policy paper on financing for the G8 Toyako follow-up concludes that neither CBHI nor private insurance are viable pathways for social risk protection²², although they may offer some limited risk pooling for specific population groups.

It has been argued that if private insurance can protect higher-income groups then public funding can be devoted to lower-income groups, but there is little good evidence yet to support this argument, and it could establish the risk pool segmentation seen in South Africa, where there is very little cross-subsidy between richer and poorer groups⁹⁷.

Some voices are now calling for at least some of the externally financed subsidies to the supply side (channeled through government or NGOs) to be diverted to funding households to purchase insurance and use services (public or private) of their choosing, within a designated network⁹⁸. The Rwanda and Hygeia schemes mentioned above are examples of this approach, but there is currently insufficient evidence to support firm recommendations in this area, and no analysis of the relative returns to investment in demand-side financing versus supply-side financing.

4.2.2 Purchasing and results-based financing

Pooled funds allow purchasers of health-care services (e.g. governments, insurance agencies) to implement their priorities through financial allocations and to put in place incentives to encourage the efficient, equitable and responsive provision of care. Incentives may be transmitted through resource allocation processes in hierarchical management structures, or through more market-type approaches, such as contractual agreements. Purchasing principles can be applied both within the public sector (e.g. between a local health authority and providers) and to contracts with non-state providers. Purchasing in theory enables the purchaser to focus funding on a cost-effective package of services. However, in practice, governments with very restricted health budgets have found it difficult to maintain restrictions on the share of funding going to higher-level hospitals over many years. Zambia, for example, managed to restrain the share of government health expenditure going to higher-level hospitals for a few years, but eventually cost pressures within these hospitals, pressures from the health professions and public complaints of poor service quality forced expenditure increases⁹⁹. Shifts in expenditure patterns may be easier to achieve within growing budgets; for example in recent years and with the help of budget support and sector funding, both Uganda and Tanzania have managed to increase the share of their government budget going to the district level (Uganda 32% to 54%, Tanzania 50% to 60%)¹⁰⁰.

Ensuring that funding increases flow to priority services is important, but it is also important to ensure that increased funding is translated into efficient service provision and health impact. Results-based financing (RBF) has recently attracted considerable attention as a potentially effective way of implementing agreed priorities through purchasing services, stimulating demand, and encouraging improved health worker productivity and service quality. It can also be used, as discussed later, to influence health worker distribution, and to make use of resources in the private sector.

RBF is defined as the transfer of money or material goods conditional on taking a measurable action or achieving a predetermined performance target^{101,102} and can operate on either the demand or the supply side of health systems. Incentives can be targeted at: (i) recipients of health care



(e.g. through vouchers or cash payments linked to use of services); (ii) individual providers of health care (see also next section); (iii) health-care facilities; (iv) private sector organizations; and (v) governments or public sector organizations. On the supply side, payments can be in the form of block grants, capitation payments, payment for specific services such as delivery, or combinations of these, in all cases with agreed performance levels.

Reliable evidence on the effectiveness of RBF in low-income countries is still sparse and there is almost no evidence of the cost-effectiveness of RBF relative to other ways of improving performance¹⁰². The use of RBF has commonly been as part of a package of health interventions, making it difficult to isolate the effects of RBF from other components of the intervention. Systematic reviews suggest that, with some exceptions, financial incentives targeting recipients of health care and individual health-care professionals appear to be effective in influencing provider and patient behaviours and increasing the uptake of health-care services^{102,103}.

Latin American experiences in conditional cash transfers (CCT) show considerable promise for improving the uptake of effective interventions and services for poor populations in middle-income countries^{84,104,105}. Evaluations suggest that RBF has contributed to improvements in: the number of mothers delivering at accredited institutions in India, NGOs delivering basic health care in Haiti, and tuberculosis detection and cure rates in low- and middle-income countries. At the national government level, however, the mechanisms through which financial incentives can improve performance are less clear¹⁰⁶.

RBF schemes can create undesirable responses, including motivating unintended behaviours, distortions, gaming, corruption, cherry-picking and demoralization¹⁰²⁻¹⁰⁴. RBF design therefore needs to be based on an understanding of underlying problems in order to motivate the desired behaviours. A number of reviews identify the importance of considering the context in which RBF schemes are introduced^{84,104,105}. For instance, the approach of CCT seems relevant primarily in settings where there are accessible and functional primary health care systems; where this is not the case, concomitant strengthening of the supply side is necessary.

RBF schemes can also create unintended outcomes. For example, preliminary evidence from Nepal indicates that less poor women benefited much more than poor women from the demand- and supply-side subsidies in the Safe Delivery Incentive Programme because of the various barriers to accessing care¹⁰⁷. Similarly, while a recent evaluation of fee exemption for delivery care in Ghana found that the incidence of catastrophic out-of-pocket payments for the poorest quintile fell from 55% to 46% of households paying more than 2.5% of their income, the proportionate decrease in out-of-pocket payments was greater for the richest households (22%) as compared with the poorest (13%)¹⁰⁸.

A key need is for better evidence from rigorous evaluation of both pilot and larger-scale arrangements on the effectiveness of RBF in low-income settings, including its cost-effectiveness relative to other approaches, and the conditions that need to be in place for schemes to function effectively, such as the independent verification of levels of services provided, and effective arrangements for quality assurance of services.

4.2.3 Paying the public sector health workforce

A large proportion of the trained health workforce in developing countries is formally employed in the public sector (although often also engaged in private practice of some sort) and paid from the government's overall wages budget. To redress the major inefficiencies in public-sector management of the health workforce, lines of accountability need to be strengthened, the information base improved, and capacity within the ministries of health developed to bring human resources management practices closer into line with stated policies. Unfortunately, this is an area where ministries of health struggle to improve their efficacy.

One successful example is Kenya's Emergency Hiring Programme, where a computerized, just-in-time system with regular staff monitoring reduced the time to fill a post by half, compared with routine civil service recruitment⁵². In Indonesia, a Clinical Performance Development Management System created clear job descriptions outlining responsibilities and accountability, provided in-service training consisting primarily of reflective case discussions, and introduced a performance monitoring system. Participating staff reported that the new system had given them greater confidence about their roles and responsibilities⁵¹.

Where a ministry of health has the necessary flexibility, allowances can be used strategically and alternatives or additions to salary payment can be offered to strengthen incentives for good performance⁵². Payment mechanisms such as performance-based pay have the potential to provide stronger incentives to health workers to improve performance and efficiency, as indicated above. The balance of evidence shows that pay for performance (or supply-side RBF), at both the individual and the facility level, can be an effective way of improving health workforce performance in the public sector¹⁰⁹. In Cambodia, for example, a study found that performance contracts with individual health workers successfully reduced absenteeism and informal payments while improving drug provision and operational transparency¹¹⁰. Box 7 summarizes the promising experience of Rwanda.

Performance-based pay schemes require careful selection of performance indicators, appropriate design of the mix of financial and non-financial incentives so that health worker behaviour is aligned with the goals of the health system, and avoidance of side-effects such as unnecessary

provision of care¹¹¹. Where performance is expressed as quantity-of-service provision, performance-based pay risks approximating the fee-for-service payment system, which many middle- and high-income countries have abandoned due to its stimulus to provide unnecessary care.

Performance-based pay may lead to neglect of valuable services that are difficult to measure or monitor or are not included in the payment terms. Many countries in the developed world have experimented with performance-based pay and it is clear that monitoring capacity, management capacity, and a flexible institutional and legal framework are important factors for success¹⁰⁹. A recent suggestion is that a “social contract” granting privileges rather than financial incentives in exchange for a commitment to actively maintain and enhance the quality of services, may be a viable course of action in some settings¹¹².

Box 7: Performance-based pay in Rwanda

Performance-based pay for health workers in Rwanda, which commenced in 2001 with pilots in two districts, has been scaled up across the country since 2005⁹⁴. Currently, the scheme covers 23 of 30 Rwandan districts, with the seven excluded districts being considered as controls¹¹³. This initiative links measurable indicators with financial incentives for health workers who are paid according to their actual performance, rather than with fixed bonuses. The scheme aims to increase staff motivation and help staff retention through performance-based pay, and to increase the quantity and quality of health services provided, for both primary health care and HIV-related treatment. A technologically advanced health surveillance system is essential for the implementation of the scheme; the system, which is supported by PEPFAR, involves computerization of health centres and district hospitals⁹⁴. Recent evaluation of the impact of the performance-based pay scheme in Rwanda has highlighted a significant increase in the uptake of institutional deliveries and child preventive care, and improvement in prenatal care quality¹¹⁴.

4.3 Delivery arrangements

Delivery is the defining function of a health system: all other functions provide back-up for the delivery of services. The goal of delivery is to improve health outcomes by the provision of services that are accessible, technically effective, responsive to users, efficient and equitable. For convenience, generating the necessary resource inputs (such as education and training of health workers) is also considered in this section. Service delivery arrangements need to be laid out in the national strategy, and follow from the package of guaranteed benefits. They encompass: the types of provider needed (e.g. self care, public and private providers), integration of services, numerous issues concerning the health workforce, quality of care, and ensuring the provision of drugs and information systems (Box 8).

The evidence base on service delivery arrangements in low-income countries has been improving in recent years, but

there is a scarcity of research into health delivery in fragile states, and how to deliver services effectively within their governance and resource constraints²⁸. How best to improve health outcomes and the efficiency and effectiveness of service delivery in these highly resource-constrained settings should be a research priority.

Box 8: The scope of delivery arrangements

- Where services are provided – e.g. in the home, community health facilities, hospitals
- How services are packaged together – integration of care, referral systems
- By whom services are provided – e.g. public and private, skill mix of health workers
- Retention, motivation and distribution of the health workforce
- Quality improvement
- Provision of drugs
- Information and communication technology

4.3.1 Service infrastructure

In the words of the Commission on Macroeconomics and Health:

“All [priority] interventions can be delivered through what we have chosen to call the close-to-client health system, by which we mean the outreach services, health centres and local hospitals to which the poor are most likely to have access¹³.”

In other words, most of the service delivery network is multifunctional, addressing a number of health needs at the same time, and must be available close to people’s homes.

The efficiency of the delivery system is critical to achieving good health outcomes at low cost. Some countries have managed to expand coverage while reducing unit costs¹¹⁵; this may be possible in countries that have unused service delivery capacity due to lack of funding for complementary inputs such as drugs. However, often the underfunding of service delivery is such that unit costs need to increase, especially where services are already used to capacity and health worker remuneration needs to be increased in order to stimulate improved performance.

Funding the general infrastructure of service delivery has been neglected for a number of years as external assistance has focused on priority diseases, and domestic financing has prioritized recurrent financing, especially for salaries. Implementing the set of guaranteed benefits will require extension of the service delivery network through building new facilities and renovating existing facilities to ensure, for example, satisfactory emergency obstetric services.

Where the public sector fails to manage the activities of capital construction and maintenance well, there may be a role for the private sector to be contracted to build and



maintain primary-care facilities and local hospitals. Using the private sector to manage facilities on behalf of the public sector is a further option¹¹⁶, considered below.

4.3.2 Service integration

Although vertically organized programmes have had some major successes¹¹⁷ the fragmentation that they can cause has led to considerable interest in service integration. In several countries in the eastern WHO European Region, vertical programmes appear to have impaired the effective management of HIV, tuberculosis, substance abuse and mental health¹¹⁸⁻¹²⁰. In other settings they have led to duplication of services, created high opportunity costs for health services and communities, and impaired effective resource use¹²¹. Evidence suggests that integrating approaches to health-service delivery can improve outcomes in specific areas including HIV, mental health and certain communicable diseases¹²², as well as maternal and neonatal care¹²³.

For example, the Haitian Study Group on Kaposi's Sarcoma and Opportunistic Infections (GHESIKO) Centre in Port-au-Prince provides a full range of clinical, sexual and reproductive health, malaria, tuberculosis, diarrhoeal disease and HIV services, utilizing voluntary counselling and testing (VCT) for HIV infections as an entry point. Results from the programme show that once sexual and reproductive health services were introduced there was a rapid increase in clients seeking VCT, including a large number of pregnant women, and increased contraception utilization and STI treatment by VCT clients¹²⁴. An expanded community-based distribution programme in Zimbabwe was successful in integrating HIV and family planning in 16 health districts, resulting in improved family planning utilization, expanded condom distribution, greater HIV awareness and increases in referrals to VCT centres¹²⁵.

The lessons of many integration experiences are that integrated services are unlikely to be fully achieved unless government officials and key stakeholders support the approach. Measures are needed to ensure that: existing services are not overburdened (in order to maintain gains already achieved); staff are sufficiently trained to implement the integration; and workloads are appropriately managed to allow for staff to take on new responsibilities. It is also important to address any potential for stigma and discrimination and to create opportunities to implement innovative approaches. Initial increased costs, including both financial and transaction costs, need to be factored in at the beginning of the process.

The evaluation of the implementation of the Integrated Management of Childhood Illness strategy showed how integrated approaches can challenge capacity in low-capacity settings. Four of the five countries studied had difficulties in expanding the strategy to national level while

maintaining adequate quality, and the implications of health system weaknesses had not been sufficiently appreciated¹²⁶. Key needs were political commitment, human resources, financing, coordinated programme management and effective decentralization.

As emphasized above, improved service delivery depends not just on action at the level of service delivery, but also on actions at higher levels. The weaker the health system the more likely this is to be the case. This argues for careful phasing of service integration, with a limited range of services being introduced especially at the community level in the weakest systems, and gradual expansion as health systems strengthen¹²⁷. Prioritizing the community level can be feasible and cost-effective, and can also preferentially benefit the poorest¹²⁸. However, community-based services will not function well without arrangements for supportive supervision, as discussed below with respect to lay health workers.

Since both vertical and integrated approaches have their strengths and weaknesses, the appropriate approach needs to be selected according to: the health condition being addressed, the group or groups being targeted, the health system capability, the urgency of service requirement and other contextual factors. Vertical programmes may be appropriate as a temporary measure if the health system (and primary care) is weak or if a rapid response is needed. In some contexts they may be the preferred option to gain economies of scale, to address the needs of target groups that are difficult to reach, or to deliver certain complex services when a highly skilled workforce is needed¹²². But they must be deployed in such a way that they support the longer-term development of more broadly based services, for example by strengthening generic system elements such as management skills. Disease-specific funders can do much to support a strengthened system. For example, UNAIDS has called for 37% of HIV investment to go on health system strengthening and cross-cutting activities. However, the planning and implementation of such investments must be integrated with broader systems planning, as the GAVI experience demonstrates³⁶.

4.3.3 Public and private provision

Given the extensive availability of services offered by private providers, countries need to consider how best to improve/extend coverage of priority services through all providers: government, not-for-profit (including faith-based providers) and for-profit providers. The question is whether the involvement with private providers is one of encouraging quality improvement, or financing their operations as well. In general, evidence suggests that it is not possible to make a blanket statement on which type of provider is more efficient⁴⁵. Studies tend to show both government and private failures in technical quality, although private providers tend to

be perceived as more responsive to client preferences.

Given that the poor generally use the lowest quality, most informal part of the private-sector spectrum (e.g. local drug sellers and unlicensed practitioners) approaches that improve quality are especially pertinent. A recent review found that approaches such as shopkeeper training, drug packaging and franchising can work successfully⁸², although experience is incredibly varied and most have been tried only on a relatively small scale. Such approaches need to be tailored to the type of intervention. For example, shopkeeper training is appropriate for drugs that can safely be sold over the counter. Where the technology requires a trained provider to judge what treatment is appropriate, and when, and the service is specific and can be defined and standardized, franchising may be appropriate; the franchisor provides a package of services to the franchisee, which includes not only products and training but also ongoing support and supervision and a guarantee of service standards¹²⁹.

Other than these quality improvement efforts, and with the exception of the contracting arrangements reviewed below, there is little good evidence one way or the other that investing in private-sector delivery will reap health-care benefits specifically for the poorest. Possible options that merit exploration and testing include private-sector involvement in supply-chain management for the public sector, private training schools, low-cost clinic chains for the low-income employed in urban areas¹³⁰, and low-cost pharmacy chains and diagnostic labs¹³¹. Given the current lack of evidence, pilot schemes and rigorous evaluation would be the best way forward.

Many African governments have historically subsidized faith-based providers, with or without a formal contract, and such providers make an important contribution to rural health services in many African countries. More recently, NGOs have been contracted to provide services, often as a rapid way of extending service coverage in post-conflict settings where public services have collapsed or are very weak, as in Afghanistan, Cambodia, the Democratic Republic of Congo, and South Sudan¹³²⁻¹³⁴. The contracts are usually funded by a donor in response to a need to extend services quickly. Such arrangements can be regarded as part of an RBF approach when the contract is explicit on performance and there is a link between payment and performance.

A recent systematic review found evidence that NGOs working under contract and managing district services increased service delivery in previously underserved areas; a study in Cambodia for poorer groups came to a similar conclusion⁸⁴.

The option of contracting for-profit providers has been little studied, except in South Africa where there is some experience with firms willing to be contracted to manage public hospitals and clinics. Studies suggest that state capacity to manage such contracts, as well as appropriate payment and

supervisory mechanisms, are very important in influencing contract outcomes¹³⁵⁻¹³⁷. Where capacity is weak there is greater risk of private companies exploiting the arrangements.

Further study is needed of certain specific issues: the capacity of non-state providers to deliver services on a large scale and in the long term; the relative merits of introducing contractual arrangements where public services already exist; the sustainability of such arrangements if they are dependent on external funding; and the implications of contracting out what might be regarded as core functions of the state. A common issue with contracting out service delivery is that when a government lacks capacity to provide services effectively itself, it also tends to lack capacity to act as an effective purchaser of services from others¹³⁸. In fragile states, the creation of independent service authorities has been proposed, analogous to a central bank which is part of but independent from government, to provide an efficient and transparent mechanism to contract for service delivery^{139,140}. This approach needs testing and evaluation.

4.3.4 Human resources and training

Although human resources are considered here under delivery, action within the governance function is important to ensure: political commitment and good governance (sustained government involvement and support, a country-led health plan for the health workforce, financial investment), health workforce planning (commitment to short- and long-term planning and to producing appropriately trained workers to meet needs, and expansion of pre-service education programmes), and an enabling environment (good information systems with monitoring and evaluation, effective management and leadership, merit-based recruitment and promotion systems, labour market capacity and policy to absorb and sustain an increase in health workers)¹⁴¹. With respect to human resource issues within the delivery function, the key issues are staff mix, internal retention and motivation, geographical distribution, international migration, and education and training.

Staff mix

Given existing human resources imbalances, the scope for task-shifting has received considerable attention. An examination of systematic reviews¹⁰³ identified encouraging evidence for the effectiveness of task shifting from doctors to nurse practitioners for a wide scope of services, and likewise, shifting from health professionals to a broad range of lay providers with little training. Community health workers can rapidly increase access to many essential health interventions in rural and urban areas, and ensure that services reach poor communities^{128,142-145}. Given the earlier experiences of community health-worker programmes, which were rarely sustained or scaled up¹⁴⁶, effective linkages with local health facilities including regular supervision are likely to be critical to maintaining an effective



and motivated community-based workforce. Other elements of successful programmes are likely to include focused tasks, adequate remuneration, training and active community involvement¹²⁸. In low-income countries emphasis should be placed on community- and mid-level health workers, while continuing to produce higher level professionals, and essential management and support workers.

Retention and motivation

Health worker retention is critical for health system performance, and successfully motivating and retaining health workers is a key challenge. A systematic review consolidating existing evidence on the impact of financial and non-financial incentives on motivation and retention in developing countries concluded that financial incentives, career development and management issues are core factors, but that financial incentives alone are not enough to motivate health workers and should be integrated with other types of incentives¹⁴⁷. It was also clear that recognition for work performed was highly influential in health worker motivation. In Tanzania, for example, although inferior infrastructure and equipment were reported as demotivational factors, the need to feel valued and supported was considered more important to worker well-being. However, adequate resources and appropriate infrastructure could improve morale significantly. It was also reported in Tanzania that the trust of the community is a crucial component in motivation¹⁴⁸.

With the increase in funding for disease-specific activities, donor-driven salary top-ups have become a source of major concern, given their potential to skew the mix of services delivered. In Rwanda, for example, top-ups were given by the global health initiatives for HIV and malaria, but not for maternal and child health. Rwanda has now forbidden top-ups, but has created a basket fund into which donors can pay that provides support to Rwanda's RBF scheme. This ensures that incentives serve local priorities, not donor priorities.

Geographical distribution

To improve the equity of the geographical distribution of the health workforce, governments can use combinations of incentives and regulatory policies¹⁴⁹. Financial incentives, both direct (salaries, bonuses, hardship allowances and other monetary benefits) and indirect (loan repayment schemes, scholarships, allowances for childcare, housing, health insurance, travel subsidies and other benefits) are the most commonly used to address shortages in the rural health workforce¹⁵⁰. As with other desired outcomes relating to health worker behaviour, evidence suggests that while financial incentives are important tools in rural recruitment and retention strategies, they are insufficient to address the problem fully^{147,150}. Important non-financial incentives include: career-related incentives (professional development opportunities, training, job security); improvements in the work environment

(better management, flexibility of working hours, availability of supplies, reduced workloads) and family and lifestyle incentives (increased vacation time, housing provision, spousal employment). More rigorous research is needed to identify when, where and which incentives are effective¹⁵⁰.

Countries have experimented with a wide range of regulatory policies to improve the rural health workforce. Compulsory service, requiring doctors or nurses to work at a rural health facility for a number of years after graduation, has been instituted in many countries including Ecuador, Ethiopia, Myanmar, the Philippines, South Africa and Thailand. Compulsory service can assign new graduates to rural areas but this type of scheme may result in these areas getting the least experienced staff, and graduates being poorly supervised at a crucial stage in their career development¹⁰⁰. In Thailand, as specialists tend to congregate in large cities, the government limited the annual number of positions for specialist training, but eventually discontinued the practice due to strong opposition from physicians¹⁵¹. Evidence suggests that regulatory policies are effective in reducing short-term rural shortages in health workers¹⁵¹⁻¹⁵⁵ but have little impact on long-term retention¹⁵⁰. The effectiveness of regulatory policies depends heavily on the capacity to monitor, the penalties applied for non-compliance and on cultural factors¹⁵⁰.

An alternative to regulation and incentives is the creation of a pool of health workers willing for other reasons to work in rural and remote settings. Selecting students from rural regions for training, and exposing students to remote areas during their training, are two of the most effective methods to address rural shortages¹⁵⁰. In addition, recent evidence has shown that some types of people require fewer incentives than others to locate in a remote area¹⁵⁰. Policy-makers should explore ways of selectively targeting these individuals in job recruitment campaigns.

In general, evidence suggests that multiple levers are required to address the myriad reasons for avoiding rural work, and a multisectoral approach is needed to coordinate programmes across various ministries including health, education and local government. For instance, Malawi developed the Emergency Human Resources Programme, which uses financial (salary bonuses) and non-financial incentives, as well as regulatory policies (increased enrolment in medical and nursing schools) to address shortages in the rural health workforce¹⁵⁶. The importance of the quality and skill level of workers should not be disregarded, since the rural workforce may be on average less skilled and less involved in continuing education, as was the case for rural obstetric care in Tanzania¹⁵⁷.

International migration

Recognizing the inevitability of international migration for certain cadres of health worker, managing attrition by building opportunities for professionals to work overseas for limited periods is possible through bilaterally negotiated agreements,

or through institutional arrangements. The United Kingdom and South Africa are trialing this type of scheme with some success and the Caribbean Community (CARICOM) has devised a scheme to encourage skilled professionals to work overseas on a rotational basis, with the goal of limiting the effect of skilled labour migration in the Caribbean¹⁵⁸. While bilateral agreements promise mutual gain, and initial experiences are positive, the systems are in their infancy, and more information about their long-term effects is required¹⁵⁹.

Ethical codes of conduct relating to migration are being widely developed and advocated but they seem at best to have a transitory effect, and implementation remains a major challenge¹⁵⁸. Agreements between countries could specify that the destination country will invest in institutions in the source country so that, in effect, source countries act as providers of health-care personnel by training a surplus of health workers. This type of system has traditionally been used in the Philippines, where private nursing schools train nurses who intend to migrate, although some critics now contend that the loss of nurses is becoming detrimental to the Philippine health system¹⁵⁸. An alternative would be to establish formal "loan" schemes at the intergovernmental level, with lump-sum payments to resource providers in the event that a worker chose not to return home. Some proportion of professionals is likely to return home, and the source country will gain from the additional experience acquired. This type of arrangement was reached between Ghana and an NHS trust in the United Kingdom to allow migration of nurses for two-year periods, although it has not prevented nurses from migrating permanently¹⁰⁰.

Education and training

The Task Force for Scaling Up Education and Training for Health Workers identified the guiding principles for building strong education and training systems: address national health needs and embed education and training in the health system; increase equity and efficiencies of scale through innovation in curriculum design and delivery; and enhance quality through leadership and collaboration¹⁴¹. Schemes successful in improving education and training of health workers are characterized by the ability to respond in a flexible, cost-effective and evidence-based way to population health needs and country health priorities. Education and training programmes should be designed to prepare health workers for responsibilities faced during employment. The Faculty of Health Sciences at Walter Sisulu University in South Africa was created in 1990 with the specific goal of producing health professionals for underserved areas¹⁶⁰. The Barrio Adentro "micro-school" project in Venezuela carries out all education and training in supervised community settings, responding directly to patients' needs¹⁶¹.

Effective education and training curricula are focused on the health needs of the country, are community- and team-based, are an integral part of health service delivery, draw

on the resources of the public and private sectors and the skills of international partners, and make use of innovative means to increase training capacity, such as information and communication technologies and regional approaches. Brazil's PRO-SAUDE programme provides training institutions with financial support, through a competitive bidding process, for projects aimed at reorienting the health system to meet the needs of communities. In 2007, 90 medical, nursing and dental schools received funding for curricular changes that promoted interaction between the professions, primary care and action learning¹⁴¹.

Education and training systems need to be supported by policies and a regulatory system that foster quality. Quality assurance systems for education and training include accreditation and indicators of progress appropriate to the needs of the country, and the development of systematic methods for quality improvement, including quality standards for services and monitoring.

4.3.5 Quality of care

Quality of care is often suboptimal and varies widely within countries, but studies have shown that providing good quality care is possible, even in very resource-poor settings, either by directly acting on provider behaviour or by changing structural conditions through the approaches such as decentralization and contracting reviewed above¹⁶². Quality of care results from a combination of the skills and motivation of the health workforce, the physical environment in which they work, and the resources and support they are given to function. It can be divided into two main areas: technical quality refers to the extent to which services are performed to accepted standards, while interpersonal quality relates to how services respond to users' expectations and values¹⁶³.

Effective supervision and lifelong learning seem to have the greatest influence on technical quality⁵¹. Conversely, interpersonal quality appears most influenced by norms and codes of conduct, such as professional identity and work ethic, supervision and basic amenities, such as privacy during consultations. Team-based interventions that make health workers feel valued and permitted to innovate can also boost service quality. The performance of health workers, from care providers to managers, has consistently been found to improve with supervision, especially when coupled with audit and feedback^{164,165}. The nature of the supervision is important, with supportive, educational, consistent and specific supervision improving performance. In Ghana, for example, supportive supervision positively affected staff performance at public hospitals and autonomous quasi-government hospitals¹⁶⁶. Challenges are faced by supervisors who often lack skills, useful tools and transport, and are burdened with administrative duties^{167,168}. Drivers of supervisor performance need further study and strategies implemented to support supervisors and improve their performance¹⁶⁵.



System-level interventions, such as low-cost strengthening of decentralized district health-management teams and supervisors, and local control over budgets, can quickly improve performance of large numbers of front-line health workers. In Tanzania, managerial strengthening occurred through training in administration and management team-building, delegation and community negotiation skills. When accompanied by practical managerial tools to assist in priority setting, resource allocation and supervision, the quality of health worker performance and delivery of health care improved^{169,170}.

An institutional approach that fosters the culture and practice of lifelong learning is considered more effective in changing practices than a sole focus on stand-alone, off-site training courses. Evidence also suggests that there is more probability of knowledge and skills transfer when training courses are interactive, with extensive hands-on experience. Interactive courses improve prescribing or dispensing behaviour¹⁷¹⁻¹⁷⁴, improve specific clinical skills^{175,176} and positively affect health care utilization while promoting favourable patient responses¹⁷⁷. E-learning approaches, and internet and mobile technologies more broadly, are likely to offer considerable potential for improving quality.

4.3.6 Drugs and supplies

Drugs and other essential commodities such as contraceptives are a critical element in health service delivery. Countries need to be able to specify their needs, forecast, plan and procure drugs efficiently, and manage, store and distribute them to peripheral facilities. At facilities, appropriate prescribing and advice to patients on use are needed to ensure effective treatment. Systems for monitoring drug quality are critical given the widespread problems of fake and poor quality drugs. Action is also needed to influence dispensing practices in the private sector, given the large volume of drugs that are purchased from retail outlets, whether formal pharmacies, general shops or open marketplaces.

There is good evidence that the quality of drug dispensing by private shops can be improved⁷⁴. For example, accreditation processes can be used to “brand” drug shops that meet quality standards and where staff has been trained, as in the Strategies for Enhancing Access to Medicines project. In Kilifi, Kenya, a district-based programme to train and inform rural drug retailers and communities greatly improved selling practices for antimalarial drugs. Simple packaging and labelling of prices can improve compliance as well as affordability.

There are various examples of successful improvements in public-sector procurement practices. In 1990 the new democratic government in Chile created an electronic bidding system and used the internet for information dissemination in order to make drug purchasing more transparent and accountable. The bidding system was designed to reduce collusion by subjecting suppliers to a competitive tender

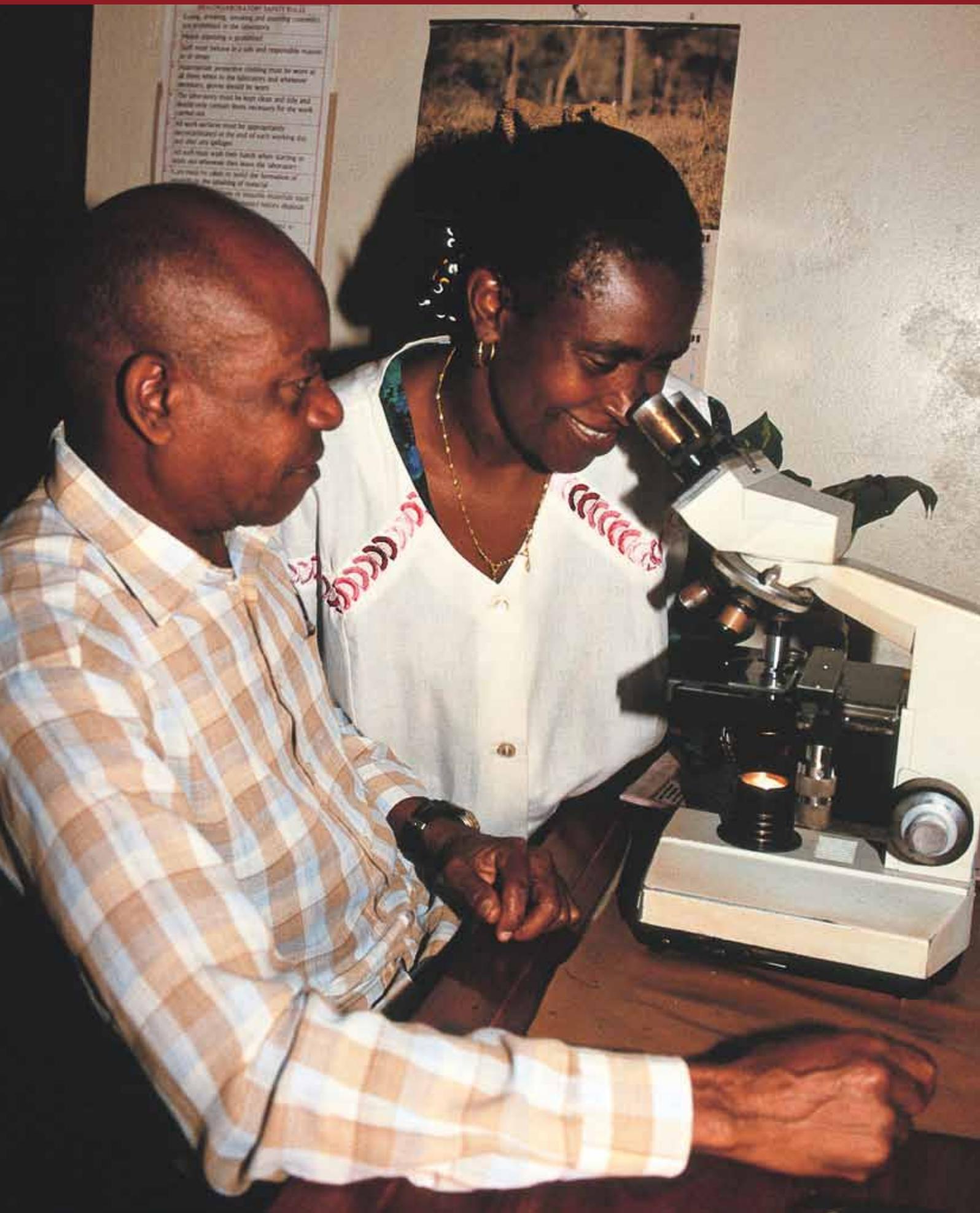
process and publicizing drug prices to all suppliers and their clients. By using the bidding process hospitals gained savings of 5-7%¹⁷⁸. In Guatemala in 1999, the health sector saved 43% by eliminating tender specifications for medicines that favoured a particular supplier¹⁷⁹. Central bulk procurement for 31 hospitals and 150 primary health care centres in the Delhi Capital Territory Essential Drugs Programme produced a 30-40% reduction in drug prices¹⁸⁰.

4.3.7 Information and evidence

Good information and evidence is another critical input into service delivery. Making information on facility performance publicly available may be of greatest value in influencing facility behaviour rather than that of the general public, at least based on evidence from developed countries¹⁸¹. Publicizing information on facility performance has been found to influence hospital behaviour in the United States, for example. Confidential audit of maternal and neonatal deaths can enable staff to understand failures in quality of care and how to improve systems and skills¹⁸². Beneficiary analysis makes it clear who is benefiting from public services, helping to create a demand for better access from disadvantaged groups. The actions of the Uganda Debt Network, which monitors the use of public resources to help ensure that they reach the people who need them most, have helped improve health services in four pilot districts³.

Recent advances in information and communication technologies including Personal Data Assistants (PDAs) and mobile phones offer great potential to improve health systems in developing countries. The Uganda Health Information Network (UHIN) Project, which distributed 200 PDAs to health workers in two districts, aimed for electronic compilation and transmission of MOH routine forms and to broadcast disease outbreak information and planned MOH activities. The districts obtained close to 100% compliance rates on weekly disease surveillance reporting, compared with a national average of 63% and a two-way communication network serving nine health facilities was established¹⁸³. In addition, district managers reported increased job satisfaction, reducing problems relating to staff retention. On the other hand the project illustrates a number of concerns, especially those related to the issue of financial sustainability and political commitment.

Many barriers inhibit the use of evidence by health professionals and policy-makers in developing countries, but there is also a rapidly emerging body of knowledge about how to address the evidence-to-policy gap¹⁸⁴. Approaches include “one-stop shopping” providing optimally packaged high-quality reviews either alone or as part of a national electronic library for health, and rapid-response units which can answer practitioners’ questions on the state of knowledge in a particular area.



LABORATORY SAFETY RULES

- 1. Eating, drinking, smoking and applying cosmetics are prohibited in the laboratory.
- 2. Please reporting a spillage.
- 3. Staff must behave in a safe and responsible manner at all times.
- 4. Appropriate protective clothing must be worn at all times when in the laboratory and whenever necessary, gloves should be worn.
- 5. The laboratory must be kept clean and tidy and waste only certain items necessary for the work should be left.
- 6. All work surfaces must be appropriately decontaminated at the end of each working day and after any spillage.
- 7. All staff must wash their hands when leaving the lab and whenever they leave the laboratory.
- 8. Care must be taken to avoid the formation of aerosols in the handling of materials.
- 9. All staff must be aware of the location of fire extinguishers and first aid kits.



5. Financing needs for strengthening health systems and the resulting health benefits

Through the combined analytical efforts of many international agencies, the estimated costs of putting in place the interventions and health system support needed to accelerate achievement of the health MDGs in low-income countries have been calculated, as have the likely increases in funding from 2009-2015 under three sets of assumptions, the resulting funding gap, and the likely health impacts of increased funding.

Work has been underway for a number of years in both WHO and the World Bank, building up evidence on the costs of scaling up. The analysis done for Working Group 1 therefore drew on these two streams of pre-existing work, and further developed the calculations specifically for the 49 low-income countries.

One team, led by WHO with collaboration from UNAIDS and UNFPA, expanded the work already done on the financial resources needed for the main health programmes, including HIV, tuberculosis, malaria, child health, immunization, and maternal and newborn health. This is termed a “normative” costing since the costs responded to the technical requirements for scaling up established by the various technical programmes. The team also drew on the expertise of the technical programmes linked to WHO to calculate the health impacts.

The second team consisted of an interagency group coordinated by the World Bank and UNICEF, with collaboration from UNFPA and the Partnership on Maternal, Newborn and Child Health; it advanced the country costings calculated using the Marginal Budgeting for Bottlenecks (MBB) approach and assuming three scaling-up scenarios, of which the medium scenario is shown here. This model calculates both costs and health impacts. Annex 6 provides summary data for both the WHO and MBB approaches and for all MBB scenarios, and full details are provided in two background technical reports^{185,186}.

Costing methods estimated the additional funding needed to expand the coverage of health interventions and programmes, and calculated the cost of providing the necessary health system support in terms of additional facilities at various levels of care, additional health workers and managers, strengthened procurement and distribution systems for drugs and commodities, better information systems, improved governance, accreditation and regulation, and health financing reforms. There are some relatively minor differences between WHO and MBB in the interventions included, such as the inclusion of sanitation in the MBB*.

Payments to pregnant women to encourage take-up of safe delivery services, and improved remuneration of health workers, were included in both. Based on assumptions of the speed of expansion, additional capital and recurrent expenditures needed each year between 2009 and 2015 were calculated.

There is no fixed and agreed path that countries must follow to scale up interventions to meet the health MDGs. Countries are very diverse, and follow diverse paths. The two sets of analyses reflect two different views of how best to scale up services to meet the MDGs.

The MBB is based mainly on country planning exercises, and assumes a delivery strategy that emphasizes full scale up of community-based services prior to expanding clinical services. Its scale-up targets are less ambitious, and probably more realistic, than WHO's. Major capital investments for the provision of clinical services are not introduced until the final years of the period and so would not come fully into operation until the period after 2015.

The WHO normative costs reflect a more facility-based approach to service expansion and the importance of rapid scaling up; they take a more optimistic view of the speed with which new infrastructure can be put into place and involve greater frontloading of capital. Capital investment would peak in 2012 and hence infrastructure would be fully operational before 2015.

Table 5 shows the additional health facilities and health workers that would be in place, under each approach, for 2015. It demonstrates the difference in the strategies, with the WHO approach emphasizing more mid-level facilities and nurses/midwives, and the MBB emphasizing more health posts and community-based workers. For example, 27% of additional workers would be community-based and 49% nurse/midwives in the WHO costs, while 64% would be community-based and 14% nurse/midwives in the MBB.

These differences reflect real-life variation, and the different choices countries need to make when faced with decisions on how best to scale up.

The final column of Table 5 also provides the estimated current number of facilities and workers. The total number of health facilities would approximately double, and the total number of health workers would more than double, with the greatest growth in numbers for community-based workers.

Table 6 shows the costs of scaling up of services required, over and above what is currently spent. In 2015 an

* The appendices of Annex 6 provide a full list of interventions costed in the WHO and MBB approaches.

Table 5: Additional health facilities and health workers by 2015

WHO Normative Approach			MBB Medium Scenario			Estimated Current (2008) [†]
	Total	%		Total	%	
Health Facilities	96,838	100	Health Facilities	73,695	100	85,112
			Health post	57,816	79	
Health centre ^Δ	88,960	92	Health centre	12,307	17	73,326
District hospital	6718	7	District hospital	2828	4	10,947
Regional hospital	1160	1	Regional hospital	744	1	839
Health Personnel	3,476,569	100	Health Personnel	2,585,894	100	2,121,054
Community health workers	950,701	27	Community-based health and nutrition promoters	1,441,929	56	295,963
			Health extension workers	200,147	8	
Nurse/midwives	1,699,107	49	Registered nurse/midwives (at least 3 years' training)	203,013	8	1,190,333
			Junior, assistant, assistant midwife nurse (1 year training)	160,478	6	
Clinical officers	233,302	7	Health officer	23,226	1	
Physicians	349,953	10	Physician/MD	35,879	1	499,544
			Specialist	6236	0	
Technicians (lab, X-ray, pharmacy, dental)	170,195	5	Technicians (lab, X-ray, pharmacy)	158,790	6	135,214
Orderlies	75,311	2	Administrative staff	356,195	14	

[†] Data not available for all countries, cover various years, and categories may not be defined in a standardized way.

^Δ Average size 230 sq m.

additional \$36-45 billion is needed, or \$24-29 per capita. The WHO approach would devote 40% of total additional costs to capital investments, 13% to drugs and supplies, and 22% to human resources (or 37% of recurrent costs). Of the additional funds, 60% would be required in sub-Saharan Africa. The MBB medium scenario would devote 48% of total additional costs to capital investments, 21% to drugs and supplies, and 12% to human resources (23% of recurrent). 80% of funds would be required for sub-Saharan Africa. Two thirds or more of total costs would be devoted to general health system support, which includes multipurpose staff and facilities as well as the necessary investments at higher levels of the system for logistics, information systems, governance, financing systems and so on.

Between 2009 and 2015 some additional funding will become available, and needs to be subtracted from the

projected additional costs in order to identify the financing gap. Estimation of additional funding is subject to a substantial degree of uncertainty, so two scenarios are reported here, as summarized in Table 7. Scenario 1 assumes that the relationship of health expenditure to GDP remains unchanged for recipient governments, and that donors similarly maintain the current share of GDP to health aid. Scenario 2 assumes that donor and government expenditures rise in line with stated commitments*.

As discussed above, domestically generated private expenditures make up a substantial proportion of total health expenditure, and they also tend to increase at a faster rate than GDP. Little is known about the services purchased by private expenditure, but it would be unrealistic to assume that such expenditure makes no contribution to services relevant to the health MDGs. Therefore both scenarios 1 and 2

* Non-SSA countries have not set a target for the share of government expenditure going to health, and this was assumed to be 12%.



Table 6: Additional costs

	WHO Normative (\$2005)	MBB Medium (\$2005)
Total additional costs 2009-2015 bn	251 bn	112 bn
Capital	101 bn	54 bn
Recurrent	151 bn	58 bn
Total additional costs in 2015 bn	45 bn	36 bn
Capital	2 bn	19 bn
Recurrent	43 bn	17 bn
Total additional costs in 2015 <u>per capita</u>	29	24
Capital	1	13
Recurrent	28	11
Capital as % of total	40%	48%
Human resources as % of total	22%	12%
Drugs and commodities as % of total	13%	21%
Programme and disease as % of total*	26%	38%
Health systems as % of total	74%	62%
Sub-Saharan Africa as % of total	60%	80%

* This figure includes only programme- or disease-specific resources; multipurpose health workers and facilities are included within health systems.

Table 7: Scenarios on additional financing

Scenarios (all in 2005 constant US\$)		
	Scenario 1: No change	Scenario 2: Commitments met
GDP, 2008	WEO, IMF April 2009 update	WEO, IMF April 2009 update
Annual GDP growth	WEO, IMF April 2009 update	WEO, IMF April 2009 update
Health as % of total government expenditure	Constant 2007 GGHE (only that which is domestically funded ¹) as a share of GDP	Reaches 15% GGHE/GGE in 2015 for sub-Saharan African (SSA) countries ² , and 12% for others
Official Development Assistance for health (multilateral, bilateral and general budget support; does not include debt relief)	Constant proportion of ODA to donor's GDP; constant patterns of allocation to countries and sector based on 2007 OECD-CRS data	ODA target as % of GNI from OECD DAC ³ ; 50% of additional EU resources up to 2010 allocated to SSA Doubling of Japan's ODA to Africa by 2012 ⁴ US\$ 63bn from the USA by 2014 ⁵
Private expenditure for health	50% of constant proportion of private health expenditures to GDP	50% of projected private funds, which were projected using elasticity to GDP (for every 1% GDP increase, private expenditure on health increases by 1.033%)

1 GGHE general government expenditure on health; external funds flowing through the government are removed using shares obtained from NHA reports from the countries.

2 General government expenditure based on Abuja Declaration of African Union.

3 Table 4 in www.oecd.org/dataoecd/47/56/42458719.pdf

4 <http://www.ticad.net/presskit2008/Japan-initiatives-TICAD-IV.pdf>.

5 http://www.whitehouse.gov/the_press_office/Statement-by-the-President-on-Global-Health-Initiative/.

Table 8: The financing gap in 2015 (US\$ 2005 billion)

	Sources of additional funding				WHO normative		MBB medium	
	Government	DAH	Private	Total	Cost	Gap	Cost	Gap
All countries								
Commitments met	30	7	7	44	45	1	36	-8
No change	4	0.5	4	8	45	37	36	28
SSA								
Commitments met	16	6	3	25	28	3	30	5
No change	2	0.4	2	4	28	24	30	26
Non-SSA								
Commitments met	14	1	4	19	17	-2	6	-13
No change	2	0	2	4	17	13	6	2

assume that 50% of increases in private spending contribute to meeting the costs of guaranteed benefits. In both scenarios recent IMF projections for economic growth are used.

Finally, Table 8 shows additional financing available under the different scenarios, the financing need (additional costs), and the resulting financial gap, for the year 2015. That year has been chosen as representing the year when substantial scaling up of services and of the health system will have occurred. Details for the entire period 2009-2015 are available in Annex 6.

If commitments are met then there is no financing gap in 2015*. However, donors and recipient governments are currently far from delivering on agreed targets, and the economic recession is making this more difficult. If current relationships of health spending to GDP remain unchanged, the financing gap is \$28-37 billion in 2015. The amount shown for increased private expenditure highlights the importance of developing domestic financing policies that can capture such spending, through insurance arrangements or increased domestic taxation.

For sub-Saharan Africa there is a funding gap under the commitments met scenario of \$3-5 billion. However, non-SSA countries would be more than able to cover additional costs under the commitments met scenario, and a small shift of DAH from non-SSA to SSA would reduce the SSA gap. In the no change scenario, the funding gap for SSA in 2015 is \$26-24 billion†, and for non-SSA \$2-13 billion.

Figure 5 shows the maximum total expenditure in 2015 under the two scenarios relative to baseline levels of expenditure in 2008 and the financing need (based on WHO normative costs). It highlights the shortfall of expenditure under a no change scenario. It also highlights the importance of increasing government funding for health, and of mobilizing private funding for priority services.

In interpreting these figures, there are a number of important caveats:

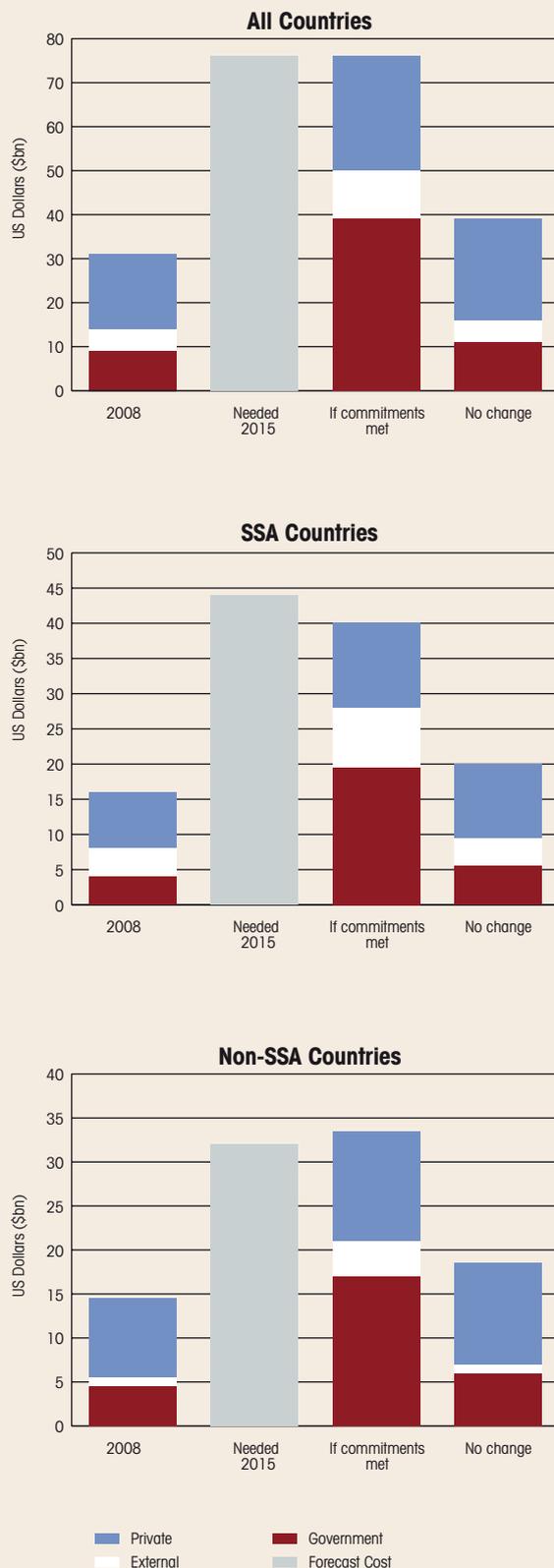
- due to lack of data, it has been assumed that interventions can be scaled up based on constant unit costs; in reality, unit costs may increase as services are extended to reach more remote and disadvantaged populations;
- conversely, the comprehensive scale-up and system strengthening, along with a rationalization of aid flows, should enable considerable efficiencies to be gained, reducing unit costs;
- aid flows would need to be managed carefully, to avoid inflationary effects (which would increase unit costs);
- the speed with which additional funds can be mobilized will affect the total financing gap in 2015; while some additional recurrent funding is required immediately, a part of the additional recurrent funding requirement is dependent on prior capital investment and health worker training;

* It should be noted that there is still a gap for the entire period 2009-2015 with the WHO normative costs, because costs increase earlier and faster than additional financing.

† The MBB cost for SSA is higher than WHO's, so the gap for SSA is higher with MBB costs, unlike the all country numbers where the gap is higher for WHO's costs.



Figure 5: Total financing 2008 and 2015



- the evidence on what private spending purchases is very weak, and hence the assumption that 50% is available for the set of benefits does not have strong evidence behind it: it could be more or less.

The key health benefits of this expansion for 2015 are shown in Table 9, and a more complete list is shown in Annex 6. There are key differences between the WHO and the MBB approaches with respect to adult deaths averted, the lower numbers in the MBB reflecting the community-based approach of MBB which achieves child health benefits similar to that of the WHO approach but with fewer maternal, adult HIV and TB deaths averted.

Selected health benefits are listed in Table 9 in terms of deaths averted, reduction in births and stunting, proportions of countries achieving MDGs 4 and 5, and proportions of countries achieving MDG 6 taking the target as halving the burden from a 2008 baseline. Other benefits include substantial reductions in morbidity, and improved individual well-being and quality of life benefiting billions of people. In the WHO approach an extra 22 million women would have access to safe birth attendance and antenatal care, and their babies would receive quality care at birth and during the neonatal period. In the MBB approach an additional 17 million women would receive antenatal care in 2015, and 16 million would benefit from safe birth attendance. Moreover, the strengthened national health systems would enable sustained health improvement into the future, which post-2015 would be well positioned to cope with the increasing burden of noncommunicable diseases, and detect and respond to newly emerging infectious diseases and other unpredictable health threats.

As with costs, these numbers on impacts should be regarded as best estimates, and there are caveats. Perhaps the most important is that these health benefits depend on spending the additional money on services that can effectively provide high-impact interventions. Low-income countries currently vary greatly in the efficiency with which they convert public spending on health into health outcomes. To the extent that part of the money is not spent at all (for example because of absorptive capacity constraints), or part of the additional funding goes on services not costed here (such as tertiary hospital care), or the quality of service delivery is poor, then the realized benefits will be lower. In addition, the evidence base for estimating real life impacts is limited, especially with respect to some elements of community-based approaches.

To assess the plausibility of the cost and impact estimates presented here, they can be compared with the cost per death averted derived from the cost and impact estimates calculated for the essential package in the 1993 World Development Report (WDR)¹⁸⁷. Updated to 2005 prices, the cost-per-death averted of the WDR package is \$9000. This can be compared with the \$8000-\$10,000 per-death-averted implied by the calculations presented here.

Table 9: Selected health benefits in 2015

	WHO normative	MBB medium
Additional deaths averted in 2015		
Under-5 deaths averted (including newborn, infant and neonatal)	3.9m	4.3m
Maternal deaths averted	322,000	259,000
HIV deaths averted	193,000	177,000 (adults)
Tuberculosis deaths averted	265,000	235,000
Examples of other benefits		
Decrease in number of births due to increased use of family planning	11m	9m
Total stunting prevented	30m (12-59 mths)	8.3m (12-23 mths)
% progress towards MDG 4 and 5*		
	From 1990/95 baseline	
MDG 4: % of countries reaching target	80%	82%
MDG 5: % of countries reaching target	45%	39%
% progress towards MDG 6		
	From 2008 baseline	
Malaria	Likely to be reached	87%**
HIV	Not available	42%**
TB	Met at regional level	72%**

* Note that the WHO and MBB proportions of countries achieving the MDGs are not strictly comparable due to different baselines, intervention mixes, and methods for calculating deaths averted.

** % of countries halving incidence (malaria and HIV) or mortality (TB).

The costs in this report adequately allow for the health systems support needed for interventions to be delivered effectively in the longer term, in contrast to the WDR costs which focused on the interventions, and yet the above cost-effectiveness range is no less cost-effective. While very high-impact and low-cost interventions which address single causes of the burden (such as immunization) can have cost-effectiveness ratios that look very much more attractive, the estimates here look plausible for a broad set of interventions which addresses the main causes of burden of disease and which require broad systems development (including buildings, staff and management) to deliver the whole set at the same time. Moreover, it is very important to emphasize that averted deaths are only one element of the broad health gains that would be created by scaling-up interventions and the health system platform.

The total costs presented here may appear high. The Commission on Macroeconomics for Health, for example, calculated the costs of ensuring high coverage of a package of 49 interventions in low-income countries, and added allowances for increasing health worker salaries and strengthening the higher levels of the health system⁶¹. The

additional funding plus current expenditure amounted to \$38 per capita in 2002 prices, or roughly \$41 per capita in 2005 prices.

In the calculations here, total health expenditure per capita would be at most an additional \$29 on top of the current \$25, namely \$54, reflecting the much more comprehensive costing undertaken of health system strengthening. However, the costs are by no means generous. The 2015 inputs would still fall short of those available now in lower middle-income countries, to deal with a much lower burden of disease. For example, the anticipated total health expenditure of \$54 per capita can be compared with the \$74 spent in lower middle-income countries; hospital beds per 10,000 people would be 22 as compared with 24, and nurses/midwives per 1000 people would be 2.3 as compared with 2.5. And \$54 is tiny compared with the \$4012 per person spent by the rich world on health services.

The hoped-for health benefits may also appear high. The deaths averted represent a roughly two thirds average reduction in child and maternal mortality from the 2005-2008 baseline over a six-year period. Rapid reductions are

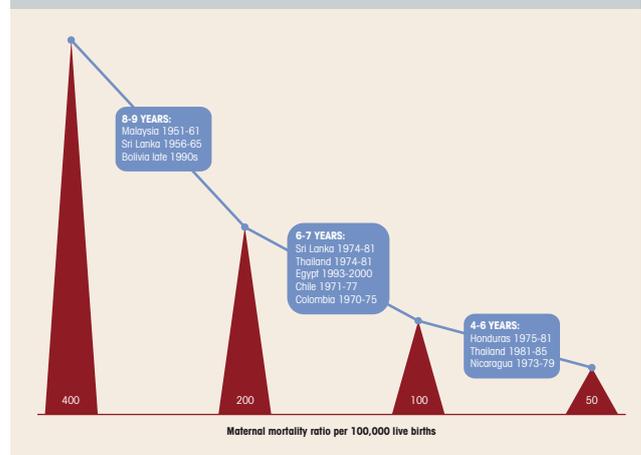


possible*. For example, Eritrea managed to reduce the under-five mortality rate from 147 deaths per 1000 live births in 1990 to 70 in 2007. This represents a reduction of 52% over the entire time period, or 6% per year at a linear rate of reduction, and should ensure the realization of the MDG 4 target. The infant mortality rate also declined significantly over this period, but at a lower absolute and relative rate, as would be expected. Tanzania managed to reduce its rate of under-five mortality from 157 to 116 deaths per 1000 live births over the same period, a slower rate of progress but one that should still allow for the achievement of MDG 4 by 2015. Rwanda has seen an increase in the use of modern methods of family planning from 10% in 2005 to 27% in 2008¹⁸⁸.

Additionally, many countries have been able to improve maternal survival dramatically (Figure 6). For example, by doubling the proportion of births attended by a doctor or nurse and improving access to emergency obstetric care, Egypt reduced its maternal mortality by more than 50% in eight years, from 174 per 100,000 live births in 1993 to 84 in 2000. Honduras brought maternal deaths down by more than 40%, from 182 to 108 per 100,000 between 1990 and 1997, by opening and staffing seven referral hospitals and 226 rural health centres, and by increasing the number of health personnel and skilled attendants.

Scaling up interventions within strengthened health systems will greatly reduce the burden of infectious diseases and of reproductive health conditions. In the longer term such health improvements will support the process of economic

Figure 6: Number of years to halve maternal mortality¹⁸⁹



growth within countries. The report of the Commission on Macroeconomics and Health roughly estimated the economic benefits of better health⁶¹. Assuming that improved health outcomes increase the life-expectancy of low-income countries by one half of the existing 19-year gap with high-income countries (for example from 59 to 68 years), economic growth would increase by around 0.5% per year. This would mean that the per capita income of low-income countries would be 10% higher than otherwise after 20 years. Allowing for both faster economic growth and the value of lives saved, the Commission estimated that economic benefits might be at least \$360 billion per year about 15 years after the scaling up of services began.



Credit: DFID/Helen Stear

* www.who.int/pmnch/topics/country_region/.





6. Funding flows to countries

The calculations above demonstrate that \$28-37 billion of additional funding per year is needed by 2015 to finance guaranteed benefits and the related health system platform in low-income countries, and much less if trends between now and 2015 are more optimistic. The key characteristic of health system strengthening is that it requires long-term expenditure on such inputs as staff and drugs. However, expansion in training capacity, expansion and renovation of physical infrastructure, and improving systems for financing, management and information, could benefit from upfront funding. While not separately costed here, rapid scaling up and improvement of treatment practices, for example for TB and malaria, could help counter the growing problems of drug resistance.

How such funding flows to countries, and what the funds are used for, will be critical in ensuring stronger health systems and improved health outcomes. Key principles are funding a technically and financially sound country strategy whose development is led by the country and which focuses on the major causes of illness and death, ensuring predictable finance and a focus on accountability for results, while also making use of all channels for delivering services, building capacity for the long term, and tailoring approaches to country contexts.

A technically sound country strategy is crucial for delivering on the Paris principles of country ownership, donor alignment with strategies, and harmonization of donor actions¹⁹⁰. Where governments have sufficient planning, management and financial capacity the strategy should be financed through general or sector budget support, or through basket funding managed by multilateral or bilateral donors for those unable to provide sector or budget support. Project funding unrelated to the country strategy must be avoided.

The country strategy must include a financing strategy that demonstrates how external and domestic resources will be used together to finance the health system, and how the domestic share of financing and arrangements for pooled funding will be increased over time. It must also demonstrate government commitment to implement solutions in the areas of governance, financing and delivery, and to ensure that these solutions benefit the needs of poor and disadvantaged groups.

Many of the weaknesses in health systems cannot be addressed simply by money, but require high-level political endorsement and mobilization of the combined efforts of governmental and other bodies. Countries with weak capacity to develop a technically sound country strategy should be supported to build their planning and management systems gradually.

Predictable finance will be critical to enable governments

to address seriously the need to implement improvements to health systems. Recipient governments have been reluctant to adopt new therapies - such as antiretroviral therapy or artemisinin-based combination therapy - when they are expensive and funding levels are unpredictable. This challenge formed part of the justification for the global subsidy for artemisinin-based combination therapy now being implemented^{191,192}. Predictable finance should encourage the adoption of improved policies; it will also be vital for countries to address seriously the effective management of a larger health system, especially with respect to public financial management and maintenance of the capital stock.

Human resources is another area where policies require long-term commitment. In Tanzania, for example, there was a large expansion of health workers in the 1980s, only for employment to be cut back in the 1990s as part of civil service retrenchment¹⁹³. Then again in the new century the same country is called on to expand employment. Such policy swings are particularly damaging to human resources planning and management, which require a long-term view.

Predictable finance must be complemented by a focus on results, for which countries and donors are mutually accountable. The evidence is persuasive that focusing on results can help engineer a culture change in public services, but there are many ways to achieve this and countries must find their own solutions tailored to their country contexts.

Monitoring and evaluating progress and operational research are crucial elements in ensuring and maintaining good performance. Capacity to generate and use health systems research knowledge requires investment within countries, in tandem with health systems strengthening, so countries can learn while doing.

Health care is already delivered in low-income countries by a wide range of different providers. Given shortages in physical and human resources, governments cannot ignore the resources available in the non-state sector, and should incorporate in their country strategy ways of making use of these resources. This will require clear governance and regulatory structures, and measures to monitor and improve the quality of care of those outlets most used by the poorest people.

A focus on building capacity for the long term must accompany the implementation of the country strategy. The aim should be to use national systems and resources as they become stronger. This applies to channeling money, purchasing drugs and supplies, purchasing technical assistance (as agreed in the Bonn Workshop Consensus*), and reporting on use of funds. This should help reduce the

* http://www.capacity.org/en/journal/policy/the_bonn_workshop_consensus_priorities_and_action, accessed 11/04/09.

Table 10: Suitability of different forms of aid for health system strengthening

Characteristic of aid mechanism	Best suited to	Should be avoided
Inflexible aid (e.g. project funding)	Any project that falls within the government plan, and is of high national priority. May be particularly effective in supporting long-term projects for which political support may wax and wane, as it is difficult to reassign resources to other priorities (e.g. decentralization, malaria elimination).	Any project that falls outside of the government plan or lacks national ownership. Any project that undermines the government's role by supporting approaches that contravene government policies (e.g. bypassing government procurement procedures).
Short-term "bursts" of aid (unsustainable in the longer term)	Tackling discrete, relatively straightforward health system constraints (e.g. developing a new human resources plan, instituting a new computerized information system for drug ordering, development of new infrastructure).	Complex institutional reforms that are likely to require sustained support (e.g. packages of health workforce reforms, development of social health insurance). Programmes where temporary suspension may have severe adverse effects (e.g. results-based financing where cessation of the programme may create negative incentives).
Aid that is likely to vary over time and be unpredictable	Interventions that can be readily expanded or contracted without having excessively adverse effects upon the health system. For example, a clinic upgrading programme or a health workforce retraining programme.	Programmes where temporary suspension may have severe adverse effects (e.g. results-based financing where cessation of the programme may create negative incentives).
Long-term budget or sector support	Channeling large volumes of resources for scaling up services.	Where national government systems are too weak to account for use of funds.

inefficiencies of current arrangements and make much better use of both external and domestic resources. More generally, the current inefficient approaches to supplying technical assistance should be replaced by strategies that promote long-term institutional capacity development and skill building so that countries develop the appropriate skills and capacities.

Whatever combination of financing sources is employed, national health financing systems require effective approaches for financial accountability, mechanisms to identify and protect the poorest from the costs of care, and effective mechanisms for purchasing health services, among other things. External funding should be used to build up, incrementally over time, the core components of strong national health financing systems. For example, donor funding can be used to protect the poorest under emerging social health insurance schemes. By working through government financing systems (being "on budget") donors can help contribute to strengthening financial accountability and planning, and use the financing system strategically to promote incremental steps towards universal access.

Finally, as identified above, approaches must be sensitive to the specifics of each country. Countries differ in terms of their economic and political contexts, their health system design, and their level of capacity. This diversity means that there can be no "one-size-fits-all" solution in health systems

strengthening. Development partners and governments must exercise great care in seeking to apply a successful intervention in one setting to another country. Strategies that are devised and supported by local country actors, and respond directly to challenges in-country, are likely to be stronger than externally driven approaches. The instruments of aid need to be adapted to each country context, and the pace of change needs to be agreed locally to ensure effective absorption of additional funding into the local health economy, and a long-term sustainable approach to strengthening the health system.

Despite the importance of the above principles, the reality is that many donor governments must work under fiscal and legal constraints that limit the types of aid they can provide, and recipient countries vary in their ability to put forward a clear, coherent and evidence-based country strategy. Given the different ways in which aid may flow to countries, it is important to identify what types of aid are best suited to different health systems strengthening approaches. This question has not been widely explored, but Table 10 provides some initial thinking.

Reform of aid flows could lead to much greater efficiency in the use of both external and domestic resources. While difficult to quantify, such efficiencies would magnify the gains from investing additional resources in health systems.



7. Concluding comments

This report has sought to:

- make the case for health system strengthening to help achieve the health MDGs;
- demonstrate that enough is known on how to strengthen health systems to guide country action;
- estimate the likely costs and benefits;
- advise on how increased funding should flow to countries.

In drawing the report to a close, there are key areas that demand continuing attention in order to ensure that funds, both domestic and external, are spent effectively and in areas of greatest need.

Strengthen the evidence base underpinning health systems strengthening

Despite commitments made during the Ministerial Summit on Health Research in Mexico, health systems research remains relatively neglected and there is scant empirical evidence to inform decisions about appropriate strategies to address many of the key health systems challenges. Too many strategies to strengthen health systems are initiated without an adequate information base, and with no simultaneous evaluation effort. The differences in this report between the WHO and MBB costs and impacts demonstrate that the evidence base must be improved on the cost and effects of large-scale service delivery expansion. The capacity of low- and middle-income countries to commission and conduct research needs to be increased; country-level institutions

able to conduct high quality health systems research need sustained support; policy maker capacity to apply evidence throughout the policy process needs to be enhanced; and more multi-country studies that can provide generalizable findings need to be supported.

Act on those elements of health systems strengthening where evidence is strong

Although it is neither possible nor desirable to provide a blueprint for health systems strengthening, this report has identified a number of features of successful health systems strengthening efforts and/or strategies that appear particularly promising and on which governments and donors should act. They include:

- strengthening governance and accountability, including encouraging citizen and user involvement, through incremental and flexible initiatives;
- reducing levels of out-of-pocket payments whenever possible through careful removal of user fees and sustained steps towards enhancing social health insurance or tax-based financing;
- promoting, when possible, integrated approaches to service delivery;
- engaging with the private health-care sector in order to enhance its quality of care, and potentially to expand service coverage through contracting;
- promoting the retention and motivation of health workers particularly in underserved areas.





Continue to tackle aid fragmentation and unpredictability

The extreme fragmentation and unpredictability of health aid, combined with weak government management capacity, has meant that the scaling up of resources for international health has not achieved its full potential. Both SWAs and country compacts under the International Health Partnership, along with the Paris Declaration, have begun to tackle these issues, but much more needs to be done to ensure that development partners work within existing framework agreements, and that all partners abide by the terms of the Paris Declaration.

Mount a special effort in conflict-affected states

Fragile states contain only 20% of the world's population but they account for one third of maternal mortality and one third of HIV cases. While many of the basic principles for establishing stronger health systems remain true in fragile states, the challenges in conflict-affected contexts are much greater: governments are typically weaker and the policy environment is more contested, the challenges associated with placing staff and getting supplies to conflict-affected areas are huge, domestic tax revenues are likely to be low, and fragile states have typically been under-funded by development partners. In order to achieve the health MDGs a special effort is required to strengthen the health systems of fragile states and further strengthen the evidence base about what works in these contexts.

The role for innovative financing

How innovative financing is raised is of less concern to low-income countries than how it is channeled. Additional sources of finance should not give rise to additional channels of funding, and should enhance predictability and help reduce fragmentation. Of special significance to health system strengthening is the long-term recurrent support needed to ensure continuing access to health services. Nonetheless, as is apparent from the costs, substantial resources are needed for physical infrastructure, purchase of drugs and supplies, and training, and these may lend themselves to specific funding mechanisms as long as the planning and implementation of service expansion is an integral part of the country strategy and does not lead to duplication of processes and systems. Physical infrastructure and training may also lend themselves to frontloading, which in addition may be appropriate to provide catalytic funding for improved financing policies and better management and information systems.







ANNEXES

Annex 1: Terms of Reference

Working Group 1 will focus on defining the need and clarifying the understanding of health systems.

The Working Group will look into the total amount and distribution of additional funds required to fill the financing gaps (existing and projected) and to deliver results in low-income countries*, as identified in national health plans and strategies. This will take into account funds expected to come from domestic sources, from existing international donor commitments, and from new sources of international finance.

The Working Group will look into the types of funding that are required (long-term, predictable, sustainable, frontloaded, etc.) for what needs.

In understanding the opportunities for resolving constraints to scaling up to reach the health MDGs at the country level, the Working Group will summarize:

- current understanding on the priority constraints that prevent scaling up, including health financing and social protection policies;
- ways to maximize the contributions of other sectors to strengthening health systems;
- how to ensure absorption and spending of additional external funds.

Working Group 1 shall:

(a) Define (i) the health system platform which is needed to support achievement of the health MDGs and (ii) the package of guaranteed benefits or interventions that is needed to achieve those MDGs where least progress is being made, namely MDGs 4, 5 and 1c, in the light of the Task Force definition of a health system that *"Within the political and institutional framework for each country, a health system is the ensemble of all organizations, institutions, and resources mandated to improve, maintain or restore health. They encompass both personal and population services and activities to influence policies and actions of other sectors to address the environmental and economic determinants of health"*. Key sub-components of health systems include: delivering health services through a primary health care approach; financing and social protection; health workforce; logistics and supply chains; information and knowledge; and governance[†].

(b) In the light of (a), review evidence on the main constraints that hamper scaling up, efficient and equitable delivery of services, and achievement of health outcomes, including:

- constraints operating at the various levels of a health system, from community to the whole system;
- constraints with respect to health system components such as the availability and productivity of the health workforce, and patterns and volumes of domestic financing;
- constraints that especially relate to fiscal space and absorptive capacity;
- constraints that result from modes of external funding and mechanisms for transferring them to countries and within countries;
- constraints that concern intersectoral action to strengthen health systems.

(c) Identify specific policies and approaches which can strengthen the overall health system, its various elements and address constraints to scaling up; with respect to each policy/approach, review:

- whether there is consensus on the preferred policy;
- whether there is controversy;
- whether no promising solutions are available and therefore more evidence generation is required.

Possible topics include: the roles that international development assistance can play in supporting improved health system performance, sources of domestic financing, modes of payment e.g. P4P, demand-side financing, contracting NGOs and commercial players, franchising, specific ways of reaching poorest and most vulnerable, task-shifting, decentralization, improving information systems, regulation, and promoting good governance.

(d) Identify, based on existing evidence including global costings and national health plans and strategies, the total amount and distribution of additional funds required to fill the financing gaps (existing and projected) and to deliver results in low-income countries. This will take into account funds expected to come from domestic sources, from existing international donor commitments, and from new sources of international finance. It will also need to take into consideration issues such as scope for productivity gains, potential for crowding out or stimulating domestic financing, and the need to fund adequately higher level system functions above the service delivery level.

(e) Recommend to Working Group 2 the specific types of flows needed (e.g. capital, upfront investments, recurrent flows, funding predictability) to support the needs and levels of flows identified in (d).

* See Annex 2.

† <http://www.internationalhealthpartnership.net/pdf/IAWG/WG1/Taskforce%20WG1%20TOR%20Jan19%202009.pdf>, accessed 16/04/09.



Annex 2: List of low-income countries, July 2008

Country	Region*		
Afghanistan	South Asia	IDA [†]	HIPC ^Δ
Bangladesh	South Asia	IDA	
Benin	Sub-Saharan Africa	IDA	HIPC
Burkina Faso	Sub-Saharan Africa	IDA	HIPC
Burundi	Sub-Saharan Africa	IDA	HIPC
Cambodia	East Asia & Pacific	IDA	
Central African Republic	Sub-Saharan Africa	IDA	HIPC
Chad	Sub-Saharan Africa	IDA	HIPC
Comoros	Sub-Saharan Africa	IDA	HIPC
Congo, Dem. Rep.	Sub-Saharan Africa	IDA	HIPC
Côte d'Ivoire	Sub-Saharan Africa	IDA	HIPC
Eritrea	Sub-Saharan Africa	IDA	HIPC
Ethiopia	Sub-Saharan Africa	IDA	HIPC
Gambia, The	Sub-Saharan Africa	IDA	HIPC
Ghana	Sub-Saharan Africa	IDA	HIPC
Guinea	Sub-Saharan Africa	IDA	HIPC
Guinea-Bissau	Sub-Saharan Africa	IDA	HIPC
Haiti	Latin America & Caribbean	IDA	HIPC
Kenya	Sub-Saharan Africa	IDA	
Korea, Dem. Rep.	East Asia & Pacific	..	
Kyrgyz Republic	Europe & Central Asia	IDA	HIPC
Lao PDR	East Asia & Pacific	IDA	
Liberia	Sub-Saharan Africa	IDA	HIPC
Madagascar	Sub-Saharan Africa	IDA	HIPC
Malawi	Sub-Saharan Africa	IDA	HIPC
Mali	Sub-Saharan Africa	IDA	HIPC
Mauritania	Sub-Saharan Africa	IDA	HIPC
Mozambique	Sub-Saharan Africa	IDA	HIPC
Myanmar	East Asia & Pacific	IDA	
Nepal	South Asia	IDA	HIPC
Niger	Sub-Saharan Africa	IDA	HIPC
Nigeria	Sub-Saharan Africa	IDA	
Pakistan	South Asia	Blend	
Papua New Guinea	East Asia & Pacific	Blend	
Rwanda	Sub-Saharan Africa	IDA	HIPC
São Tomé and Príncipe	Sub-Saharan Africa	IDA	HIPC
Senegal	Sub-Saharan Africa	IDA	HIPC
Sierra Leone	Sub-Saharan Africa	IDA	HIPC
Solomon Islands	East Asia & Pacific	IDA	
Somalia	Sub-Saharan Africa	IDA	HIPC
Tajikistan	Europe & Central Asia	IDA	
Tanzania	Sub-Saharan Africa	IDA	HIPC
Togo	Sub-Saharan Africa	IDA	HIPC
Uganda	Sub-Saharan Africa	IDA	HIPC
Uzbekistan	Europe & Central Asia	Blend	
Vietnam	East Asia & Pacific	IDA	
Yemen, Rep.	Middle East & North Africa	IDA	
Zambia	Sub-Saharan Africa	IDA	HIPC
Zimbabwe	Sub-Saharan Africa	Blend	

Source: <http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS>

* World Bank Regional Code.

[†] IDA: International Development Association.

^Δ HIPC: Heavily Indebted Poor Country.

Annex 3: Progress towards Millennium Development Goals 4 and 5 for 43 low-income countries*

Country or territory	Millennium Development Goal 4 (Reduce by two-thirds, between 1990 and 2015, the mortality rate in children under age five)					Millennium Development Goal 5 (Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio)			
	Under-five mortality rate (per 1,000 live births)		MDG 2015 target	Average annual rate of reduction (%)		Progress towards the MDG target†	Maternal mortality ratio per 100,000 live births (2005, adjusted)	Lifetime risk of maternal death (2005) 1 in:	Level of maternal mortality††
	1990	2006		Observed 1990-06	Required 2007-15				
Afghanistan	260	257	87	0.1	12.1	No progress	1,800	8	Very high
Bangladesh	149	69	50	4.8	3.6	On track	570	51	Very high
Benin	185	148	62	1.4	9.7	Insufficient	840	20	Very high
Burkina Faso	206	204	69	0.1	12.1	No progress	700	22	Very high
Burundi	190	181	63	0.3	11.7	No progress	1,100	16	Very high
Cambodia	116	82	39	2.2	8.3	Insufficient	540	48	High
Central African Republic	173	175	58	-0.1	12.3	No progress	980	25	Very high
Chad	201	209	67	-0.2	12.6	No progress	1,500	11	Very high
Comoros	-	-	-	-	-	-	-	-	-
Congo, Dem. Rep.	205	205	68	0.0	12.2	No progress	1,100	13	Very high
Côte d'Ivoire	153	127	51	1.2	10.1	Insufficient	810	27	Very high
Eritrea	147	74	49	4.3	4.6	On track	450	44	High
Ethiopia	204	123	68	3.2	6.6	Insufficient	720	27	Very high
Gambia, The	153	113	51	1.9	8.8	Insufficient	690	32	Very high
Ghana	120	120	40	0.0	12.2	No progress	560	45	Very high
Guinea	235	161	78	2.4	8.0	Insufficient	910	19	Very high
Guinea-Bissau	240	200	80	1.1	10.2	Insufficient	1,100	13	Very high
Haiti	152	80	51	4.0	5.1	On track	670	44	Very high
Kenya	97	121	32	-1.4	14.7	No progress	560	39	Very high
Korea, Dem. Rep.	55	55	18	0.0	12.2	No progress	370	140	High
Kyrgyz Republic	-	-	-	-	-	-	-	-	-
Lao PDR	163	75	54	4.9	3.6	On track	660	33	Very high
Liberia	235	235	78	0.0	12.2	No progress	1,200	12	Very high
Madagascar	168	115	56	2.4	8.0	Insufficient	510	38	High
Malawi	221	120	74	3.8	5.4	Insufficient	1,100	18	Very high
Mali	250	217	83	0.9	10.6	No progress	970	15	Very high
Mauritania	133	125	44	0.4	11.5	No progress	820	22	Very high



Country or territory	Millennium Development Goal 4 (Reduce by two-thirds, between 1990 and 2015, the mortality rate in children under age five)				Millennium Development Goal 5 (Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio)				
	Under-five mortality rate (per 1,000 live births)		Average annual rate of reduction (%)		Progress towards the MDG target†	Maternal mortality ratio per 100,000 live births (2005, adjusted)	Lifetime risk of maternal death (2005) 1 in:	Level of maternal mortality††	
	1990	2006	MDG 2015 target	Observed 1990-06					Required 2007-15
Mozambique	235	138	78	3.3	6.3	Insufficient	520	45	High
Myanmar	130	104	43	1.4	9.7	Insufficient	380	110	High
Nepal	142	59	47	5.5	2.5	On track	830	31	Very high
Niger	320	253	107	1.5	9.6	Insufficient	1,800	7	Very high
Nigeria	230	191	77	1.2	10.1	Insufficient	1,100	18	Very high
Pakistan	130	97	43	1.8	9.0	Insufficient	320	74	High
Papua New Guinea	94	73	31	1.6	9.4	Insufficient	470	55	High
Rwanda	176	160	59	0.6	11.1	No progress	1,300	16	Very high
São Tomé and Príncipe	-	-	-	-	-	-	-	-	-
Senegal	149	116	50	1.6	9.4	Insufficient	980	21	Very high
Sierra Leone	290	270	97	0.4	11.4	No progress	2,100	8	Very high
Solomon Islands	-	-	-	-	-	-	-	-	-
Somalia	203	145	68	2.1	8.5	Insufficient	1,400	12	Very high
Tajikistan	115	68	38	3.3	6.4	Insufficient	170	160	Moderate
Tanzania	161	118	54	1.9	8.7	Insufficient	950	24	Very high
Togo	149	108	50	2.0	8.6	Insufficient	510	38	High
Uganda	160	134	53	1.1	10.2	Insufficient	550	25	Very high
Uzbekistan	-	-	-	-	-	-	-	-	-
Vietnam	-	-	-	-	-	-	-	-	-
Yemen, Rep.	139	100	46	2.1	8.6	Insufficient	430	39	High
Zambia	180	182	60	-0.1	12.3	No progress	830	27	Very high
Zimbabwe	76	105	25	-2.0	15.8	No progress	880	43	Very high

* Data from 6 of the 49 low-income countries are missing (Comoros, Kyrgyz Republic, São Tomé and Príncipe, Solomon Islands, Uzbekistan, Vietnam).

† Countries with under-five mortality rates of less than 40 or an average annual reduction rate (in under-five mortality from 1990-2006) of at least 4.0% are considered 'on track.'

†† Four broad categories for maternal mortality were used to assess the progress towards Millennium Development Goal 5: low (maternal mortality ratio of less than 100), moderate (maternal mortality ratio of 100-299), high (maternal mortality ratio of 300-549) and very high (maternal mortality ratio of 550 or greater).

Source of data: 8

Annex 4a: Analysis of total health expenditure (WHO health expenditure data 2006)

	GNI per capita		Total health expenditure (THE)				Private expenditure on health (US\$)		External resources per capita US\$*	General govt expenditure on health US\$		Pop. (millions)
	Atlas method US\$	PPP int. \$	Per capita US \$	Per capita PPP int. \$	millions US\$	Per capita	.. of which out-of-pocket per capita	Per capita		.. of which Social Security per capita	WHO	
Data source	WB†	WB	WHO ^Δ	WHO	WHO/WB**	WHO	WHO	WHO	WHO	WHO	WHO	WHO
# countries with data	44	44	47	48	45	47	47	47	47	47	36	49
Mean††	\$460.2	\$1,194.6	\$24.7	\$60.9	\$628.1	\$13.0	\$10.4	\$6.28	\$11.8	\$0.37	\$0.37	27.26
Afghanistan	- ΔΔ	-	\$27	\$91	\$711	\$18	\$14.5	\$7.67	\$9	\$0.00	\$0.00	26.1
Bangladesh	\$450	\$1,230	\$12	\$37	\$1,937	\$8	\$7.5	\$1.96	\$4	\$0.00	\$0.00	156.0
Benin	\$530	\$1,260	\$26	\$61	\$223	\$13	\$12.0	\$5.36	\$13	-	-	8.8
Burkina Faso	\$420	\$1,080	\$27	\$73	\$388	\$12	\$10.6	\$8.89	\$15	\$0.04	\$0.04	14.4
Burundi	\$100	\$320	\$10	\$31	\$83	\$9	\$5.3	\$4.84	\$1	-	-	8.2
Cambodia	\$490	\$1,550	\$30	\$96	\$430	\$22	\$19.0	\$6.70	\$8	\$0.00	\$0.00	14.2
Central African Republic	\$370	\$710	\$14	\$27	\$60	\$9	\$8.2	\$2.97	\$5	-	-	4.3
Chad	\$440	\$1,150	\$29	\$72	\$308	\$14	\$13.1	\$5.21	\$16	-	-	10.5
Comoros	\$670	\$1,150	\$16	\$27	\$13	\$7	\$7.0	\$4.99	\$9	\$0.00	\$0.00	0.8
Congo, Dem. Rep.	\$130	\$270	\$10	\$19	\$681	\$8	\$3.8	\$4.98	\$2	\$0.00	\$0.00	60.6
Côte d'Ivoire	\$860	\$1,560	\$35	\$63	\$662	\$27	\$23.5	\$2.90	\$8	-	-	18.9
Eritrea	\$190	\$520	\$8	\$19	\$39	\$5	\$4.5	\$3.15	\$4	\$0.00	\$0.00	4.7
Ethiopia	\$190	\$700	\$7	\$26	\$694	\$3	\$2.4	\$3.14	\$4	\$0.00	\$0.00	81.0
Gambia	\$270	\$1,040	\$15	\$57	\$26	\$6	\$4.6	\$5.21	\$9	\$0.00	\$0.00	1.7
Ghana	\$510	\$1,240	\$33	\$76	\$780	\$22	\$17.0	\$7.50	\$11	-	-	23.5
Guinea	\$410	\$1,140	\$20	\$65	\$180	\$17	\$16.7	\$2.32	\$3	\$0.04	\$0.04	9.2
Guinea-Bissau	\$180	\$450	\$12	\$29	\$19	\$9	\$4.8	\$3.94	\$3	\$0.09	\$0.09	1.6
Haiti	\$490	\$1,110	\$42	\$89	\$399	\$14	\$12.2	\$27.77	\$29	-	-	9.4
Kenya	\$680	\$1,440	\$29	\$67	\$1,046	\$15	\$12.0	\$4.26	\$14	\$1.20	\$1.20	36.6
Korea, Dem. Rep. [○]	-	-	-	-	-	-	-	-	-	-	-	23.7
Kyrgyzstan	\$500	\$1,790	\$35	\$115	\$182	\$20	\$18.6	\$3.45	\$15	\$3.11	\$3.11	5.3
Laos	\$500	\$1,740	\$24	\$80	\$138	\$19	\$14.8	\$3.08	\$4	\$0.51	\$0.51	5.8
Liberia	\$130	\$260	\$7	\$15	\$28	\$6	\$3.6	\$3.77	\$2	\$0.00	\$0.00	3.8
Madagascar	\$280	\$870	\$9	\$28	\$178	\$3	\$1.8	\$4.58	\$6	-	-	19.2
Malawi	\$230	\$690	\$21	\$62	\$280	\$6	\$1.8	\$12.30	\$14	\$0.00	\$0.00	13.6
Mali	\$460	\$1,000	\$31	\$67	\$372	\$16	\$15.6	\$5.46	\$15	-	-	12.0
Mauritania	\$760	\$1,970	\$19	\$41	\$58	\$6	\$5.8	\$3.45	\$13	\$0.00	\$0.00	3.0



	GNI per capita		Total health expenditure (THE)				Private expenditure on health (US\$)		External resources per capita US\$*	General govt expenditure on health US\$		Pop. (millions)
	Atlas method US\$	PPP int. \$	Per capita US \$	Per capita PPP int. \$	millions US\$	Per capita	.. of which out-of-pocket per capita	Per capita		.. of which Social Security per capita		
Mozambique	\$310	\$660	\$16	\$36	\$339	\$5	\$1.9	\$9.74	\$11	\$0.00	21.0	
Myanmar	-	-	\$5	\$24	\$264	\$5	\$4.7	\$0.61	\$1	\$0.01	48.4	
Nepal	\$320	\$1,010	\$17	\$52	\$460	\$12	\$9.8	\$2.61	\$5	\$0.00	27.6	
Niger	\$270	\$630	\$16	\$38	\$221	\$7	\$7.0	\$5.26	\$9	-	13.7	
Nigeria	\$790	\$1,710	\$33	\$59	\$4,841	\$23	\$20.8	\$1.91	\$10	\$0.00	148.1	
Pakistan	\$800	\$2,410	\$16	\$47	\$2,559	\$13	\$13.0	\$0.50	\$3	\$0.00	160.9	
Papua New Guinea	\$730	\$1,730	\$29	\$62	\$180	\$5	\$2.2	\$3.26	\$24	\$0.00	6.2	
Rwanda	\$280	\$810	\$33	\$89	\$313	\$19	\$7.3	\$17.33	\$14	\$0.57	9.5	
São Tomé and Príncipe	\$800	\$1,490	\$49	\$95	\$8	\$7	\$7.4	\$24.88	\$42	\$0.00	0.2	
Senegal	\$760	\$1,560	\$44	\$92	\$534	\$19	\$14.7	\$5.43	\$25	\$1.01	12.1	
Sierra Leone	\$230	\$610	\$12	\$29	\$68	\$7	\$4.1	\$3.87	\$4	\$0.00	5.9	
Solomon Islands	\$690	\$1,600	\$44	\$100	\$21	\$4	\$2.5	\$8.32	\$40	\$0.00	0.5	
Somalia	-	-	-	-	-	-	-	-	-	-	8.4	
Tajikistan	\$390	\$1,550	\$21	\$81	\$141	\$16	\$15.9	\$1.34	\$5	\$0.00	6.6	
Tanzania	\$370	\$1,120	\$23	\$72	\$911	\$10	\$5.3	\$10.12	\$13	\$0.13	39.5	
Togo	\$350	\$780	\$21	\$46	\$132	\$16	\$13.7	\$2.54	\$4	\$0.75	6.4	
Uganda	\$300	\$870	\$24	\$71	\$710	\$18	\$9.0	\$7.40	\$6	\$0.00	29.9	
Uzbekistan	\$610	\$2,190	\$30	\$102	\$808	\$15	\$14.5	\$0.52	\$15	-	27.0	
Viet Nam	\$700	\$2,310	\$46	\$151	\$3,992	\$31	\$28.3	\$1.01	\$15	\$5.81	86.2	
Yemen	\$770	\$2,120	\$40	\$102	\$864	\$21	\$20.4	\$9.86	\$18	-	21.7	
Zambia	\$640	\$1,160	\$58	\$79	\$678	\$23	\$15.3	\$22.08	\$35	\$0.00	11.7	
Zimbabwe	-	-	\$38	-	\$502	\$19	\$9.8	\$6.58	\$18	\$0.00	13.2	

* External resources flow through private and government expenditure. Total health expenditure is the sum of private and government expenditure on health.

† World Bank, downloaded 9 February 2009: <http://dadp-ext.worldbank.org>.

Δ World Health Organization Statistical Information System (WHOSIS), downloaded 7 February 2009: <http://www.who.int/whosis/data/Search.jsp>.

** Data generated by combining WHO values for total health expenditure (THE) as % of GDP with WB data on GDP.

†† Means are weighted by country, not population.

ΔΔ - missing data.

○ Values for total, private, external, and general expenditure on health for DPRK have been omitted because conversion to US\$ using the official exchange rate produces \$0 values. Annex 4b provides information on expenditure shares.

Annex 4b: Distribution of total health expenditure (WHO health expenditure data 2006)

	Total health expenditure (THE)		Private expenditure on health*			External resources for health as % THE	General government expenditure on health [†]		
	Per capita (US\$)	as % GDP	as % THE	Out-of-pocket as % THE	Private prepaid plans as % THE		as % THE	as % total government expenditure	Social security as % THE
Data source	WHO	WHO	WHO	WHO	WHO	WHO	WHO	WHO	WHO
# countries with data	47	48	48	48	41	48	48	48	36
Mean ^Δ	\$24.7	5.18%	53.91%	46.34%	1.80%	24.91%	46.09%	9.10%	1.06%
Afghanistan	\$23	5.4%	72.5%	70.5%	0.0%	20.1%	27.5%	4.4%	0.0%
Bangladesh	\$13	3.1%	63.2%	55.8%	0.1%	14.6%	36.8%	7.4%	0.0%
Benin	\$29	5.3%	46.7%	46.7%	0.0%	13.4%	53.3%	13.1%	-
Burkina Faso	\$27	6.4%	43.1%	39.4%	0.9%	32.9%	56.9%	15.8%	0.1%
Burundi	\$4	3.0%	75.4%	75.4%	0.0%	13.7%	24.6%	2.3%	-
Cambodia	\$30	6.0%	73.9%	62.4%	0.0%	22.3%	26.1%	10.7%	0.0%
Central African Republic	\$14	3.9%	64.4%	61.4%	0.0%	22.1%	35.6%	10.9%	-
Chad	\$22	3.6%	64.4%	62.0%	0.3%	23.5%	35.6%	9.5%	-
Comoros	\$16	3.2%	44.5%	44.5%	0.0%	31.7%	55.5%	8.0%	0.0%
Congo, Dem. Rep.	\$6	4.3%	62.9%	62.9%	0.0%	28.8%	37.1%	7.2%	0.0%
Côte d'Ivoire	\$35	3.8%	77.0%	67.6%	9.4%	8.3%	23.0%	4.1%	-
Eritrea	\$10	4.5%	62.7%	45.5%	0.0%	26.5%	37.3%	4.2%	0.0%
Ethiopia	\$7	4.9%	39.6%	32.0%	1.2%	42.9%	60.4%	10.6%	0.2%
Gambia	\$13	4.3%	41.7%	29.3%	1.9%	40.3%	58.3%	8.7%	0.0%
Ghana	\$35	6.2%	63.5%	50.0%	3.9%	22.4%	36.5%	6.8%	-
Guinea	\$20	5.7%	87.7%	87.3%	0.0%	11.6%	12.3%	4.7%	0.2%
Guinea-Bissau	\$13	6.2%	75.3%	44.7%	0.0%	31.4%	24.7%	4.0%	0.7%
Haiti	\$42	8.0%	32.4%	29.0%	0.0%	65.8%	67.6%	29.8%	-
Kenya	\$29	4.6%	51.8%	41.4%	3.6%	14.8%	48.2%	6.1%	2.5%
Korea, Dem. Rep.	-	3.5%	14.4%	14.4%	0.0%	48.1%	85.6%	6.0%	-
Kyrgyzstan	\$34	6.4%	56.7%	54.1%	0.0%	6.1%	43.3%	8.7%	9.0%
Laos	\$22	3.6%	79.2%	74.1%	0.4%	14.1%	20.8%	4.1%	2.7%
Liberia	\$10	5.6%	36.1%	35.7%	0.0%	42.3%	63.9%	16.4%	0.0%
Madagascar	\$9	3.2%	37.2%	19.5%	4.0%	50.3%	62.8%	9.2%	-
Malawi	\$20	12.3%	27.9%	8.5%	4.5%	43.2%	72.1%	18.0%	0.0%
Mali	\$30	6.0%	48.3%	48.1%	0.2%	18.3%	51.7%	12.2%	-
Mauritania	\$19	2.2%	31.4%	31.4%	0.0%	17.8%	68.6%	5.3%	0.0%



	Total health expenditure (THE)		Private expenditure on health*			External resources for health as % THE	General government expenditure on health†		
	Per capita (US\$)	as % GDP	as % THE	Out-of-pocket as % THE	Private prepaid plans as % THE		as % THE	as % total government expenditure	Social security as % THE
Mozambique	\$17	4.7%	30.6%	12.1%	0.2%	56.8%	69.4%	12.6%	0.0%
Myanmar	\$4	2.3%	83.2%	82.7%	0.0%	13.9%	16.8%	1.8%	0.3%
Nepal	\$17	5.7%	69.5%	59.2%	0.3%	15.7%	30.5%	9.2%	0.0%
Niger	\$10	4.0%	47.3%	40.3%	5.5%	26.4%	52.7%	10.6%	-
Nigeria	\$32	4.1%	69.9%	63.2%	4.7%	5.9%	30.1%	3.5%	0.0%
Pakistan	\$16	2.0%	83.6%	81.8%	0.0%	3.2%	16.4%	1.3%	0.0%
Papua New Guinea	\$29	3.2%	17.3%	7.4%	1.1%	11.3%	82.7%	7.3%	0.0%
Rwanda	\$32	10.4%	36.3%	22.7%	5.0%	38.9%	63.7%	27.3%	0.0%
São Tomé and Príncipe	\$58	10.5%	14.6%	14.6%	0.0%	43.1%	85.4%	12.2%	0.0%
Senegal	\$40	5.4%	68.5%	61.9%	6.0%	13.5%	31.5%	6.7%	3.5%
Sierra Leone	\$9	3.5%	51.0%	51.0%	0.0%	45.1%	49.0%	7.8%	0.0%
Solomon Islands	\$34	4.7%	7.0%	3.8%	0.0%	24.8%	93.0%	12.6%	0.0%
Somalia	-	-	-	-	-	-	-	-	-
Tajikistan	\$21	5.0%	77.4%	75.1%	0.0%	6.4%	22.6%	5.5%	0.0%
Tanzania	\$18	5.5%	40.8%	34.0%	1.8%	35.4%	59.2%	13.3%	2.3%
Togo	\$19	5.5%	72.2%	61.2%	3.0%	15.0%	27.8%	6.9%	4.0%
Uganda	\$25	7.2%	73.1%	37.9%	0.1%	28.5%	26.9%	10.0%	0.0%
Uzbekistan	\$30	4.7%	49.8%	48.4%	0.0%	1.7%	50.2%	8.0%	-
Viet Nam	\$46	6.6%	67.6%	60.5%	1.7%	2.2%	32.4%	6.8%	12.6%
Yemen	\$40	4.6%	53.6%	51.0%	0.0%	24.6%	46.4%	5.6%	-
Zambia	\$49	5.2%	53.2%	37.8%	0.3%	37.2%	46.8%	10.8%	0.0%
Zimbabwe	\$36	8.4%	47.4%	24.1%	13.8%	18.7%	52.6%	8.9%	0.0%

* Includes external resources.

† Includes external resources.

Δ Means are weighted by country, not population.

Annex 5: Distribution of ODA to health, population and reproductive health and to specific purposes 2006*

CRS Purpose Code	Value			As % of Total ODA		As % of Health and Population and Reproductive Health													
	TOTAL ODA \$	51010: General budget support - not health specific \$	12000s + 13000s: Health + Pop. and Reproductive Health \$	51010: General budget support - not health specific	12000s + 13000s: Health + Pop. and Reproductive Health	12000s: Health						Selected Purpose codes within Health				13000s Population Policies/ Programmes and Reproductive Health		Selected Purpose codes within Population and Reproductive Health	
						12220: Basic health core	12230: Basic health infrastructure	12240: Basic nutrition	12250: Infectious disease control	12262: Malaria control	12263: Tuberculosis control	12220: Basic health core	12230: Basic health infrastructure	12240: Basic nutrition	12250: Infectious disease control	12262: Malaria control	12263: Tuberculosis control	13020: Reproductive health care	13040 STD control including HIV
Mean % / Value total	36120	2159	4159	9.0%	15.5%	59.0%	15.5%	2.4%	1.8%	6.4%	9.6%	3.8%	41.0%	6.9%	30.1%				
Afghanistan	2580.8	47.1	143.1	1.8%	5.5%	82.8%	69.7%	0.0%	0.9%	6.4%	1.5%	0.5%	17.2%	1.5%	0.9%				
Bangladesh	960	0.7	178.2	0.1%	18.6%	76.6%	-	-	-	-	-	-	23.4%	6.4%	4.4%				
Benin	284.1	34.9	40.7	12.3%	14.3%	62.7%	22.9%	1.5%	0.7%	2.5%	1.0%	0.7%	37.3%	2.9%	29.7%				
Burkina Faso	532.5	110.8	50.1	20.8%	9.4%	65.5%	20.2%	1.6%	1.2%	6.4%	0.2%	4.8%	34.5%	4.8%	25.0%				
Burundi	287.5	29.1	296	10.1%	10.3%	48.6%	17.2%	9.8%	-	4.1%	12.2%	2.4%	51.4%	7.8%	41.9%				
Cambodia	412.2	-	93.7	-	22.7%	47.7%	6.5%	6.1%	0.1%	13.4%	3.3%	2.5%	52.3%	4.4%	45.0%				
Central African Rep.	106.5	8.1	19.3	7.6%	18.1%	36.8%	1.0%	3.6%	1.0%	0.5%	21.8%	5.2%	63.2%	4.7%	52.3%				
Chad	228.3	1.7	21.1	0.7%	9.2%	68.2%	4.3%	16.6%	3.8%	1.4%	-	0.9%	31.8%	5.2%	24.2%				
Comoros	29.5	1.9	1.6	6.4%	5.4%	62.5%	12.5%	-	-	-	31.3%	-	37.5%	6.3%	12.5%				
Congo, Dem. Rep.	1775.2	2.9	126.8	0.2%	7.1%	67.2%	21.0%	0.9%	1.2%	14.8%	5.1%	4.3%	32.8%	4.9%	24.8%				
Côte d'Ivoire	318.9	35.3	59.5	11.1%	18.7%	46.9%	3.9%	0.3%	0.2%	2.9%	-	0.5%	53.1%	1.8%	48.6%				
Eritrea	91.6	-	12.9	-	14.1%	27.1%	10.1%	0.8%	1.6%	-	8.5%	-	72.9%	5.4%	62.8%				
Ethiopia	1270.8	0.4	340	0.0%	26.8%	47.0%	7.2%	0.5%	1.3%	10.3%	23.3%	1.3%	53.0%	6.7%	42.9%				
Gambia	37.1	-	8.2	-	22.1%	58.5%	4.9%	0.0%	3.7%	-	30.5%	17.1%	41.5%	4.9%	30.5%				
Ghana	672.6	129.1	124.6	19.2%	18.5%	72.5%	3.3%	-	0.3%	11.8%	4.2%	6.6%	27.5%	0.6%	26.2%				
Guinea	165	0	23.7	0.0%	14.4%	51.5%	3.8%	0.0%	1.7%	11.8%	9.3%	3.4%	48.5%	3.8%	32.9%				
Guinea-Bissau	80.6	8.5	8.2	10.5%	10.2%	79.3%	18.3%	0.0%	0.0%	4.9%	2.4%	2.4%	20.7%	4.9%	11.0%				
Haiti	470.2	12.6	114.8	2.7%	24.4%	18.9%	7.4%	0.1%	2.4%	1.8%	3.1%	3.0%	81.1%	3.7%	62.3%				
Kenya	864.8	-	288.5	-	33.4%	41.4%	2.1%	0.1%	0.1%	12.9%	18.1%	1.2%	58.6%	3.1%	54.8%				
Korea, Dem.	46.4	-	2.1	-	4.5%	52.4%	23.8%	4.8%	19.0%	-	-	-	47.6%	47.6%	-				
Kyrgyzstan	128.6	1.8	24.1	1.4%	18.7%	84.2%	29.9%	4.6%	0.4%	-	3.7%	1.2%	15.8%	1.7%	12.9%				
Laos	201.9	-	25.7	-	12.7%	81.3%	16.3%	8.6%	0.8%	2.3%	15.2%	4.7%	18.7%	5.4%	11.7%				
Liberia	248.8	1.3	22.7	0.5%	9.1%	68.7%	4.8%	-	-	18.9%	26.4%	6.2%	31.3%	6.2%	19.4%				
Madagascar	459.9	50.6	39.2	11.0%	8.5%	72.4%	29.6%	0.0%	1.3%	0.3%	15.1%	1.8%	27.6%	3.3%	22.2%				
Malawi	530.5	75.1	145.3	14.2%	27.4%	51.7%	6.1%	0.9%	2.6%	2.5%	4.4%	-	48.3%	1.2%	44.0%				
Mali	567.7	77.9	58.9	13.7%	10.4%	69.9%	30.1%	0.5%	7.0%	3.7%	1.4%	1.4%	30.1%	6.5%	22.1%				
Mauritania	133.3	5.6	7.7	4.2%	5.8%	41.6%	3.9%	1.3%	1.3%	9.1%	7.8%	9.1%	58.4%	15.6%	29.9%				



CRS Purpose Code	Value			As % of Total ODA		As % of Health and Population and Reproductive Health													
	TOTAL ODA \$	51010: General budget support - not health specific \$		1200s + 1300s: Health + Pop. and Reproductive Health \$		51010: General budget support - not health specific		1200s: Health		Selected Purpose codes within Health						1300s Population Policies/Programmes and Reproductive Health		Selected Purpose codes within Population and Reproductive Health	
Mozambique	1104.9	244	207.2	22.1%	18.8%	48.1%	16.2%	1.7%	0.3%	2.3%	3.3%	2.9%	51.9%	2.2%	46.4%				
Myanmar	131.3	-	29.5	-	22.5%	68.1%	29.5%	0.0%	0.3%	18.3%	-	-	31.9%	7.5%	22.0%				
Nepal	370.2	0	65	0.0%	17.6%	25.4%	9.5%	0.6%	0.9%	2.2%	1.5%	2.2%	74.6%	44.0%	25.2%				
Niger	351.7	30.8	52.4	8.8%	14.9%	85.5%	10.7%	0.2%	5.0%	18.7%	9.4%	6.7%	14.5%	5.7%	6.5%				
Nigeria	11935.1	-	287.6	-	2.4%	32.2%	3.7%	0.0%	0.6%	8.7%	4.6%	2.9%	67.8%	1.4%	51.1%				
Pakistan	1136.1	239.2	130.3	21.1%	11.5%	87.0%	19.6%	2.8%	1.3%	20.5%	0.9%	1.4%	13.0%	7.4%	4.6%				
Papua New Guinea	299.2	-	59.1	-	19.8%	65.0%	24.2%	0.5%	0.2%	6.3%	0.7%	-	35.0%	3.4%	30.1%				
Rwanda	500.7	96.2	128.7	19.2%	25.7%	48.8%	7.5%	3.2%	0.4%	1.0%	25.3%	0.9%	51.2%	0.7%	49.3%				
São Tomé and Príncipe	25	-	4	-	16.0%	85.0%	25.0%	-	-	0.0%	25.0%	-	15.0%	5.0%	5.0%				
Senegal	718.9	7	107.8	1.0%	15.0%	81.3%	4.0%	3.0%	0.6%	1.8%	8.3%	-	18.7%	1.9%	14.0%				
Sierra Leone	218.5	36.3	22	16.6%	10.1%	70.5%	24.5%	0.0%	2.7%	9.1%	18.2%	3.6%	29.5%	4.1%	18.6%				
Solomon Islands	196.5	17.6	9.4	9.0%	4.8%	100.0%	0.0%	-	-	-	-	-	0.0%	-	0.0%				
Somalia	373	-	23.9	-	6.4%	65.3%	15.9%	5.9%	2.1%	3.3%	18.0%	11.7%	34.7%	2.9%	29.3%				
Tajikistan	143.1	8.8	16.8	6.1%	11.7%	82.1%	47.0%	-	-	0.6%	7.1%	6.5%	17.9%	2.4%	11.3%				
Tanzania	1224.1	392.1	270.9	32.0%	22.1%	46.5%	18.0%	0.2%	0.4%	4.1%	9.3%	0.1%	53.5%	1.0%	50.8%				
Togo	84.4	3.1	14.3	3.7%	16.9%	39.2%	18.9%	7.7%	0.7%	0.0%	4.2%	3.5%	60.8%	2.8%	53.8%				
Uganda	1079.3	223.8	241.8	20.7%	22.4%	36.6%	7.6%	2.0%	1.0%	1.9%	11.5%	-	63.4%	1.2%	60.7%				
Uzbekistan	115.4	-	18.3	-	15.9%	68.3%	35.0%	-	-	6.6%	2.2%	12.0%	31.7%	4.4%	21.9%				
Viet Nam	833.4	110.3	129.6	13.2%	15.6%	67.6%	9.7%	4.9%	0.8%	8.6%	1.9%	0.5%	32.4%	2.8%	25.3%				
Yemen	190.4	1.4	28.3	0.7%	14.9%	32.2%	10.2%	-	0.7%	6.7%	7.1%	4.2%	67.8%	55.8%	4.2%				
Zambia	1335	113	198.3	8.5%	14.9%	40.6%	23.3%	0.0%	0.6%	0.6%	2.8%	1.5%	59.4%	0.4%	58.7%				
Zimbabwe	268.3	0.2	103.9	0.1%	38.7%	29.5%	2.7%	-	1.0%	3.1%	0.7%	-	70.5%	3.4%	62.5%				

* Data from <http://stats.oecd.org/WBOS/Index.aspx?DataSetCode=CRSNEW>, accessed 4 March 2009. <http://www.oecd.org/dataoecd/15/49/42584150.pdf> provides recent DAC analysis of health aid and technical details on the CRS database. Means are country-weighted.

Annex 6: Summary of methods and data related to cost, financing and impact estimates*

Estimates produced by:

1. WHO and partners (Futures Institute and USAID/DELIVER project) with collaboration from UNFPA and UNAIDS
2. UNICEF, UNFPA, World Bank, Partnership for Maternal, Newborn and Child Health

1. Introduction

This report summarizes the results of the costs, financing and impact analyses conducted for Working Group 1 for 49 low-income countries†. Two parallel streams of work were undertaken, one based on the WHO normative approach and one based on the Marginal Budgeting for Bottlenecks (MBB) costing methodology.

2. Methods

2.1. WHO Normative Approach

WHO and partners (Futures Institute and USAID/DELIVER PROJECT) utilized a normative approach, with collaboration from UNFPA and UNAIDS. The normative approach considers the amount of resources required to scale up country health systems to a level that is considered “best practice” by experts and practitioners. This approach is based on reaching universal coverage and utilizing proven interventions (listed in Appendix 1) to reach the health MDGs between now and 2015. This approach is consistent with international commitments and builds on previously published global costing on the health MDGs. Missing data meant that a few specific countries were excluded from some cost models.

2.2. Marginal Budgeting for Bottlenecks

The World Bank and UNICEF built on the Marginal Budgeting for Bottlenecks (MBB) costing methodology, with collaboration from UNFPA and the Partnership on Maternal Newborn and Child Health (PMNCH). The methodology identifies the critical constraints of existing health systems (bottlenecks) for scaling up effective interventions, and then identifies the strategies to overcome them. It finally estimates the consequent health outcomes and costs related to health system strengthening and increase in coverage. It has been applied in 39 countries. In addition, it was used in the recent development of investment cases for health MDGs in the Asia-Pacific Region, and in the WHO-UNICEF-WB Strategic framework for reaching MDG 4 and other health MDGs in Africa. The MBB approach identifies impacts, incremental funding needs and gaps based on three implementation scenarios:

- Maximum scenario: reaching the health MDGs and beyond;
- Medium scenario: reaching the health MDGs (4, 5, and 6) and contributing substantially to MDGs 1 and 7;
- Minimum scenario: focusing on the highest impact and lowest cost interventions and strategies to accelerate progress towards the neglected MDGs, namely 4 and 5.

Interventions are listed in Appendix 2.

3. Results

3.1. Costs

Table 1 presents the estimates of additional resources needed according to the different scenarios (i.e. WHO normative approach and MBB Maximum, Medium and Minimum scenarios) for the 49 countries. The additional costs are presented both in absolute values (in billion US\$) for the period 2009-2015 and for 2015, and in per capita terms. Capital costs are entered when incurred and not annualized.

The WHO normative approach and the MBB Maximum scenario lead to comparable results in terms of the additional resources needed to reach universal coverage with a basic package of services. The MBB Medium and MBB Minimum scenarios require fewer additional resources as their aims are less comprehensive. These results also highlight that, as one would expect, SSA countries need a larger share of the additional resources than non-SSA countries, although the total populations assessed in the SSA group and non-SSA group are similar. In the case of the WHO normative approach, it is estimated that 60% of the total additional resources need to flow to SSA. This share is higher (over 70%) in the MBB scenarios.

With regard to the breakdown by input, Table 1 shows that in the WHO normative approach, 40% of total costs would be allocated to capital investment and 60% to recurrent costs. MBB Medium and Minimum scenarios show comparable allocation to capital investment at 48% and 38%, respectively. In contrast, the MBB Maximum scenario shows a greater emphasis on capital expenditure (58% of total costs).

In the WHO normative approach and MBB Maximum scenario, the share of traded and non-traded costs are comparable (38% traded). However, in the MBB Medium and Minimum scenario, 46% and 53% of the costs respectively are traded.

Finally, comparing the costs between programme and disease and health systems, the difference is significant for both the WHO normative approach and the MBB scenarios. In the case of the WHO approach, three-quarters of total costs would be allocated to health systems. The MBB allocation by specific programme and health system involves 52% of the total costs going to programme and disease in the Maximum scenario, 38% in the Medium scenario and finally 52% in the Minimum scenario.

Tables 2-4 present the additional costs by capital and recurrent expenditure for the 49 countries, and for SSA countries and non-SSA countries, both in absolute numbers and in per capita values. The share of recurrent and capital spending in SSA countries and non-SSA countries follows the trend observed above for the 49 countries under the WHO normative approach and MBB scenarios. Profiles over time, including with respect to capital and recurrent, show marked differences between WHO and MBB scenarios, with capital costs incurred earlier under WHO than under MBB.

* This summary puts together two exercises that were run in parallel. These are reported in greater detail in two separate technical papers (Ref. nos. 185 & 186). Questions related to the WHO exercise can be directed to Dr Tessa Tan-Torres Edejer at tantorrest@who.int. Questions related to the MBB scenarios can be directed to Dr Agnes Soucat at asoucat@worldbank.org.

† As defined by the World Bank, through the Atlas methodology.



Table 1: Main costs and main cost breakdowns

	WHO Normative Approach	MBB Maximum Scenario	MBB Medium Scenario	MBB Minimum Scenario
Total Additional Costs (2009-2015) US\$ billion	\$251.44	\$227.24	\$111.62	\$67.46
Total Additional Costs (2009-2015) US\$per capita	\$172	\$151	\$74	\$45
Total Additional Costs in 2015 US\$ billion	\$45.16	\$57.99	\$36.48	\$18.61
Total Additional Costs in 2015 US\$per capita	\$29	\$38	\$24	\$12
Breakdown by input (2009-2015) US\$ billion (%)				
Capital	\$100.73 (40%)	\$132.45 (58%)	\$53.94 (48%)	\$25.95 (38%)
Recurrent	\$150.70 (60%)	\$94.79 (42%)	\$57.68 (52%)	\$41.51 (62%)
Personnel	\$55.46 (22%)	\$20.72 (9%)	\$13.35 (12%)	\$10.18 (15%)
Drugs and supplies	\$31.86 (13%)	\$41.1 (18%)	\$23.87 (21%)	\$19.81 (29%)
Other	\$63.38 (25%)	\$32.97 (15%)	\$20.46 (19%)	\$11.52 (18%)
Traded Costs (2009-2015) US\$ billion (%)	\$95.91 (38%)	\$87.16 (38%)	\$51.54 (46%)	\$35.51 (53%)
Non Traded Costs (2009-2015) US\$ billion (%)	\$155.21 (62%)	\$140.08 (62%)	\$60.09 (54%)	\$31.95 (47%)
Breakdown by specific programmes and health system elements 2009-2015 US\$ billion (%)				
Programme and Disease*	\$65.70 (26%)	\$117.47 (52%)	\$42.69 (38%)	\$34.81 (52%)
Management of childhood illness	\$2.53 (1%)	\$5.93 (3%)	\$3.64 (3%)	\$3.31 (5%)
Immunization	\$6.27 (2%)	\$8.8 (4%)	\$4.9 (4%)	\$3.45 (5%)
Maternal health	\$11.82 (5%)	\$7.51 (3%)	\$5.62 (5%)	\$3.72 (6%)
Family planning	\$8.43 (3%)	\$3.02 (1%)	\$2.81 (3%)	\$2.19 (3%)
HIV/AIDS	\$15.13 (6%)	\$12.73 (6%)	\$9.07 (8%)	\$7.34 (11%)
TB†	\$4.78 (2%)	\$2.38 (1%)	\$1.82 (2%)	\$1.41 (2%)
Malaria	\$7.25 (3%)	\$12.84 (6%)	\$10.67 (10%)	\$10.67 (16%)
Essential drugs (NCD, MH, Parasitic Diseases)	\$9.48 (4%)	\$11.22 (5%)	\$0 (0%)	\$0 (0%)
Water and Sanitation		\$49.12 (22%)	\$0.73 (1%)	\$0.03 (0%)
Nutrition		\$3.92 (2%)	\$3.44 (3%)	\$2.69 (4%)
Health Systems	\$185.73 (74%)	\$109.77 (48%)	\$68.93 (62%)	\$32.65 (48%)
Human resources	\$62.28 (25%)	\$26.21 (12%)	\$21.19 (19%)	\$14.64 (22%)
Infrastructure, transport and equipment	\$91.23 (36%)	\$50.04 (22%)	\$28.83 (26%)	\$9.43 (14%)
Supply chain / logistics	\$12.82 (5%)	\$20.41 (9%)	\$8.75 (8%)	\$3.42 (5%)
Health information systems	\$4.52 (2%)	\$2.09 (1%)	\$1.49 (1%)	\$1.11 (2%)
Governance, accreditation and regulation	\$5.56 (2%)	\$7.83 (3%)	\$6.36 (6%)	\$4.05 (6%)
Health financing	\$9.34 (4%)	\$3.19 (1%)	\$2.3 (2%)	\$0 (0%)
Breakdown by region (2009-2015) US\$ billion (%)				
SSA Costs (2009-2015) US\$ billion (%)	\$150.81 (60%)	\$172.47 (76%)	\$89.19 (80%)	\$48.29 (72%)
Non SSA Costs (2009-2015) US\$ billion (%)	\$100.62 (40%)	\$54.77 (24%)	\$22.43 (20%)	\$19.17 (28%)

* Generic human resources and infrastructure costs included under health systems.

† The TB cost estimates in the MBB scenarios are only for TB drugs. HR, programme and equipment costs are included with health systems.

Table 2: Additional costs by year for the 49 countries (total and per capita)

Total (in US\$ billions)								
	2009	2010	2011	2012	2013	2014	2015	Total
WHO Normative Approach	\$19.34	\$27.47	\$36.01	\$41.79	\$39.56	\$42.11	\$45.16	\$251.44
Capital	\$12.80	\$17.58	\$22.88	\$23.34	\$13.60	\$8.28	\$2.25	\$100.73
Recurrent	\$6.54	\$9.88	\$13.12	\$18.45	\$25.96	\$33.84	\$42.91	\$150.70
MBB Maximum Scenario	\$12.73	\$16.7	\$23.57	\$24.43	\$27.66	\$64.17	\$57.99	\$227.24
Capital	\$9.73	\$10.63	\$13.47	\$11.35	\$10.79	\$43.2	\$33.28	\$132.45
Recurrent	\$3	\$6.06	\$10.09	\$13.08	\$16.87	\$20.97	\$24.71	\$94.79
MBB Medium Scenario	\$4.3	\$5.65	\$7.31	\$12.64	\$18.61	\$26.62	\$36.48	\$111.62
Capital	\$2.49	\$2.45	\$2.69	\$5.61	\$8.29	\$13.06	\$19.36	\$53.94
Recurrent	\$1.81	\$3.21	\$4.62	\$7.03	\$10.32	\$13.56	\$17.13	\$57.68
MBB Minimum Scenario	\$2.95	\$4.42	\$6.57	\$8.47	\$10.78	\$15.65	\$18.61	\$67.46
Capital	\$1.82	\$2.03	\$2.51	\$2.84	\$3.05	\$6.26	\$7.45	\$25.95
Recurrent	\$1.14	\$2.4	\$4.06	\$5.63	\$7.73	\$9.39	\$11.17	\$41.51
Per capita (in US\$)								
	2009	2010	2011	2012	2013	2014	2015	Total
WHO Normative Approach	\$14.20	\$19.75	\$25.35	\$28.82	\$26.72	\$27.87	\$29.30	\$172.01
Capital	\$9.40	\$12.64	\$16.11	\$16.10	\$9.18	\$5.48	\$1.46	\$70.37
Recurrent	\$4.80	\$7.11	\$9.24	\$12.72	\$17.54	\$22.40	\$27.84	\$101.64
MBB Maximum Scenario	\$8.9	\$11.67	\$16.47	\$16.41	\$18.58	\$41.61	\$37.6	\$151.24
Capital	\$6.8	\$7.43	\$9.42	\$7.62	\$7.25	\$28.01	\$21.58	\$88.11
Recurrent	\$2.1	\$4.24	\$7.06	\$8.79	\$11.33	\$13.6	\$16.02	\$63.14
MBB Medium Scenario	\$3	\$3.95	\$5.11	\$8.49	\$12.51	\$17.26	\$23.66	\$73.98
Capital	\$1.74	\$1.71	\$1.88	\$3.77	\$5.57	\$8.47	\$12.55	\$35.69
Recurrent	\$1.26	\$2.24	\$3.23	\$4.73	\$6.94	\$8.79	\$11.11	\$38.30
MBB Minimum Scenario	\$2.06	\$3.09	\$4.59	\$5.68	\$7.22	\$10.1	\$12.01	\$44.75
Capital	\$1.27	\$1.42	\$1.76	\$1.9	\$2.05	\$4.04	\$4.8	\$17.24
Recurrent	\$0.79	\$1.68	\$2.84	\$3.78	\$5.18	\$6.06	\$7.21	\$27.54



Table 3: Additional costs by year for sub-Saharan Africa (total and per capita)

Total (in US\$ billions)								
	2009	2010	2011	2012	2013	2014	2015	Total
WHO Normative Approach	\$11.14	\$16.05	\$21.01	\$24.72	\$24.11	\$25.82	\$27.96	\$150.81
Capital	\$6.79	\$9.53	\$12.59	\$12.90	\$7.75	\$4.81	\$1.50	\$55.89
Recurrent	\$4.35	\$6.52	\$8.41	\$11.82	\$16.36	\$21.00	\$26.46	\$94.93
MBB Maximum Scenario	\$9.96	\$13.25	\$18.99	\$18.71	\$21.06	\$47.03	\$43.47	\$172.47
Capital	\$7.84	\$8.91	\$11.64	\$9.28	\$9.05	\$32.31	\$26.47	\$105.51
Recurrent	\$2.11	\$4.34	\$7.35	\$9.43	\$12	\$14.72	\$17	\$66.96
MBB Medium Scenario	\$3.19	\$4.07	\$5.15	\$9.96	\$15.27	\$21.4	\$30.15	\$89.19
Capital	\$1.88	\$1.8	\$1.93	\$4.78	\$7.32	\$10.98	\$17.07	\$45.75
Recurrent	\$1.31	\$2.27	\$3.22	\$5.18	\$7.95	\$10.42	\$13.09	\$43.44
Per capita (in US\$)								
	2009	2010	2011	2012	2013	2014	2015	Total
WHO Normative Approach	\$15.84	\$22.25	\$28.41	\$32.61	\$31.05	\$32.45	\$34.32	\$196.92
Capital	\$9.66	\$13.21	\$17.03	\$17.02	\$9.98	\$6.05	\$1.84	\$74.79
Recurrent	\$6.18	\$9.03	\$11.38	\$15.60	\$21.06	\$26.40	\$32.48	\$122.13
MBB Maximum Scenario	\$13.38	\$17.8	\$25.51	\$24.05	\$27.07	\$58.11	\$53.71	\$219.63
Capital	\$10.54	\$11.97	\$15.64	\$11.93	\$11.64	\$39.92	\$32.71	\$134.35
Recurrent	\$2.84	\$5.83	\$9.87	\$12.13	\$15.43	\$18.19	\$21	\$85.29
MBB Medium Scenario	\$4.28	\$5.47	\$6.92	\$12.81	\$19.63	\$26.44	\$37.26	\$112.81
Capital	\$2.52	\$2.42	\$2.59	\$6.15	\$9.4	\$13.57	\$21.09	\$57.74
Recurrent	\$1.76	\$3.05	\$4.33	\$6.66	\$10.22	\$12.87	\$16.17	\$55.06
MBB Minimum Scenario	\$2.69	\$4.17	\$6.44	\$7.69	\$9.82	\$13.78	\$16.44	\$61.03
Capital	\$1.74	\$2	\$2.56	\$2.55	\$2.65	\$5.63	\$6.96	\$24.09
Recurrent	\$0.95	\$2.17	\$3.89	\$5.14	\$7.16	\$8.15	\$9.48	\$36.94

Table 4: Additional costs by year for non sub-Saharan African countries (total and per capita)

Total (in US\$ billions)								
	2009	2010	2011	2012	2013	2014	2015	Total
WHO Normative Approach	\$8.20	\$11.42	\$15.00	\$17.07	\$15.45	\$16.30	\$17.19	\$100.62
Capital	\$6.01	\$8.05	\$10.29	\$10.44	\$5.84	\$3.46	\$0.75	\$44.85
Recurrent	\$2.19	\$3.37	\$4.71	\$6.63	\$9.60	\$12.83	\$16.45	\$55.78
MBB Maximum Scenario	\$2.77	\$3.45	\$4.58	\$5.72	\$6.6	\$17.14	\$14.51	\$54.77
Capital	\$1.88	\$1.72	\$1.83	\$2.07	\$1.74	\$10.89	\$6.8	\$26.93
Recurrent	\$0.89	\$1.73	\$2.75	\$3.65	\$4.87	\$6.25	\$7.71	\$27.84
MBB Medium Scenario	\$1.11	\$1.58	\$2.17	\$2.68	\$3.35	\$5.22	\$6.33	\$22.43
Capital	\$0.61	\$0.65	\$0.76	\$0.83	\$0.98	\$2.08	\$2.29	\$8.19
Recurrent	\$0.5	\$0.93	\$1.4	\$1.85	\$2.37	\$3.14	\$4.04	\$14.24
MBB Minimum Scenario	\$0.95	\$1.32	\$1.77	\$2.46	\$3.11	\$4.38	\$5.18	\$19.17
Capital	\$0.52	\$0.53	\$0.61	\$0.84	\$0.98	\$1.66	\$1.76	\$6.9
Recurrent	\$0.43	\$0.79	\$1.16	\$1.62	\$2.13	\$2.73	\$3.42	\$12.27
Per capita (in US\$)								
	2009	2010	2011	2012	2013	2014	2015	Total
WHO Normative Approach	\$12.45	\$17.05	\$22.03	\$24.66	\$21.95	\$22.79	\$23.66	\$144.60
Capital	\$9.13	\$12.03	\$15.11	\$15.09	\$8.30	\$4.84	\$1.03	\$65.53
Recurrent	\$3.32	\$5.03	\$6.92	\$9.57	\$13.65	\$17.95	\$22.63	\$79.07
MBB Maximum Scenario	\$4.04	\$5.02	\$6.67	\$8.05	\$9.29	\$23.38	\$19.8	\$76.25
Capital	\$2.75	\$2.51	\$2.67	\$2.91	\$2.44	\$14.86	\$9.28	\$37.42
Recurrent	\$1.3	\$2.52	\$4	\$5.13	\$6.85	\$8.53	\$10.52	\$38.85
MBB Medium Scenario	\$1.62	\$2.31	\$3.16	\$3.77	\$4.71	\$7.12	\$8.64	\$31.33
Capital	\$0.89	\$0.95	\$1.11	\$1.16	\$1.37	\$2.84	\$3.13	\$11.45
Recurrent	\$0.73	\$1.36	\$2.04	\$2.61	\$3.34	\$4.28	\$5.51	\$19.87
MBB Minimum Scenario	\$1.39	\$1.92	\$2.58	\$3.46	\$4.37	\$5.98	\$7.07	\$26.77
Capital	\$0.76	\$0.78	\$0.89	\$1.18	\$1.38	\$2.26	\$2.4	\$9.65
Recurrent	\$0.63	\$1.11	\$1.57	\$2.19	\$2.97	\$3.8	\$4.91	\$17.18

3.2. Financing gap

Additional financing has been estimated based on WHO calculations*. Baseline expenditures estimated for 2008, from which projections were made, are presented in Table 5.

Table 5: 2008† baseline expenditure data (billion US\$) (48 countries)

All countries	30.65	SSA	16.16	Non SSA	14.49
Government	7.99	Government	3.88	Government	4.12
External	5.02	External	3.78	External	1.24
Private	17.64	Private	8.50	Private	9.14

* See Technical Background Report for details. Additional financing was estimated for 48 countries only, due to lack of information on Somalia.

† 2008 data are estimated based on 2006 data.



Two scenarios were chosen to project the available additional financing by 2015: a no change scenario in which public, private, and external sources of funds would evolve in line with country GDP, and a commitments met scenario, in which countries would abide by the various pledges they have made.

Table 6: Assumptions for the additional financing scenarios

WHO scenarios (all in 2005 constant US\$)			
	Scenario 1: No change	Scenario 2: Optimistic	Scenario 3: Pessimistic
GDP, 2008	WEO, IMF April 2009 update	WEO, IMF April 2009 update	WEO, IMF April 2009 update
Annual GDP growth	WEO, IMF April 2009 update	WEO, IMF April 2009 update	1% less than that predicted in WEO, IMF April 2009 update
Health as % of Total Government Expenditure	Constant 2007 GGHE (only that which is domestically funded [*]) as a share of GDP	Reaches 15% GGHE/GGE in 2015 for sub Saharan African (SSA) countries [†] , and 12% for others	Constant to GDP, except for 2009-2010, where there is a 10% decrease of the share to GDP
Official Development Assistance for health (multilateral, bilateral and general budget support; does not include debt relief)	Constant proportion of ODA to donor's GDP; constant patterns of allocation to countries and sector based on 2007 OECD-CRS data	ODA target as % of GNI from OECD DAC ^Δ ; 50% of additional EU resources up to 2010 allocated to SSA Doubling of Japan ODA to Africa by 2012 ^{**} 63B US\$ from the USA by 2014 ^{††}	Constant to GDP, except for 2009-2010, where there is a 10% decrease of the share to GDP; then returns to 2008 ratios and kept constant starting from 2011 to 2015
Private expenditure for health	50% of constant proportion of private health expenditures to GDP	50% of projected private funds, which were projected using elasticity to GDP	50% of constant proportion of private health expenditures to GDP

* GGHE general government expenditure on health; external funds flowing through the government are removed using shares obtained from NHA reports from the countries.

† General government expenditure based on Abuja Declaration of African Union.

Δ Table 4 in www.oecd.org/dataoecd/47/56/42458719.pdf.

** <http://www.ticad.net/presskit2008/Japan-initiatives-TICAD-IV.pdf>.

†† http://www.whitehouse.gov/the_press_office/Statement-by-the-President-on-Global-Health-Initiative/.

Table 7 presents the additional financing by year under the three scenarios for low-income countries.

Table 7: Available additional financing for 48 countries (million constant 2005 US\$) (2009-2015)

	2009	2010	2011	2012	2013	2014	2015	Total ('09-'15)
No change scenario	441	1,142	2,266	3,556	4,953	6,453	8,039	26,850
Government	303	643	1,114	1,651	2,237	2,873	3,546	12,368
External	-186	-193	-74	74	219	351	496	688
Private	324	692	1,226	1,832	2,496	3,228	3,998	13,795
Optimistic scenario	5,076	9,084	13,595	19,137	25,930	34,008	44,366	151,196
Government	1,574	3,577	6,311	9,923	14,698	21,105	29,686	86,875
External	2,876	4,176	5,031	5,905	6,741	7,084	7,411	39,224
Private	625	1,330	2,254	3,309	4,491	5,820	7,268	25,097
Pessimistic scenario	-879	-1,308	511	1,685	2,955	4,317	5,757	13,039
Government	-529	-1,002	-625	-195	274	783	1,321	27
External	-670	-990	-77	69	213	343	486	-627
Private	320	684	1,213	1,812	2,468	3,191	3,950	13,639

Table 8 and Table 9 present the same data, broken down for SSA and non-SSA countries.

Table 8: Available additional financing for sub-Saharan African countries (million constant 2005 US\$) (2009-2015)

	2009	2010	2011	2012	2013	2014	2015	Total ('09-'15)
No change scenario	142	451	1,032	1,678	2,367	3,085	3,853	12,607
Government	135	287	516	768	1,039	1,329	1,637	5,712
External	-141	-147	-58	51	160	258	366	490
Private	147	310	574	858	1,168	1,498	1,849	6,405
Optimistic scenario	3,614	6,114	8,688	11,823	15,604	19,847	25,285	90,975
Government	828	1,885	3,358	5,294	7,853	11,250	15,788	46,255
External	2,494	3,612	4,262	4,962	5,628	5,863	6,091	32,913
Private	293	617	1,068	1,567	2,123	2,734	3,406	11,807
Pessimistic scenario	-627	-941	184	774	1,405	2,059	2,759	5,613
Government	-267	-507	-324	-122	95	326	573	-226
External	-506	-741	-61	48	155	253	359	-492
Private	146	307	568	849	1,155	1,480	1,827	6,332

Table 9: Available additional financing for non-SSA countries (million constant 2005 US\$) (2009-2015)

	2009	2010	2011	2012	2013	2014	2015	Total ('09-'15)
No change scenario	299	691	1,234	1,879	2,586	3,368	4,187	14,243
Government	168	356	598	883	1,198	1,545	1,909	6,656
External	-45	-46	-15	22	59	93	129	197
Private	176	381	651	973	1,328	1,731	2,149	7,389
Optimistic scenario	1,461	2,970	4,907	7,314	10,326	14,162	19,081	60,221
Government	746	1,692	2,953	4,629	6,845	9,855	13,898	40,620
External	382	564	768	942	1,113	1,221	1,320	6,311
Private	333	713	1,186	1,742	2,368	3,086	3,863	13,290
Pessimistic scenario	-252	-367	327	911	1,550	2,258	2,998	7,426
Government	-261	-495	-301	-73	179	457	748	253
External	-165	-249	-16	21	58	91	127	-134
Private	174	377	645	963	1,314	1,711	2,123	7,307



Table 10 presents the funding gap in 2015, for the WHO normative costs and the MBB scenarios.

Table 10: Funding requirements and funding gap for 2015 for each group of countries and under the three financing scenarios (billion constant 2005 US\$)												
	Sources of additional funding				WHO scenario		MBB Maximum Scenario		MBB Medium Scenario		MBB Minimum Scenario	
	Gov't	DAH	Private	Total	Cost	Gap	Cost	Gap	Cost	Gap	Cost	Gap
All countries												
Optimistic	30	7	7	44	45	1	58	14	36	-8	19	-26
No change	4	0.5	4	8	45	37	58	50	36	28	19	11
Pessimistic	1.32	0.5	4	6	45	39	58	52	36	31	19	13
SSA												
Optimistic	16	6	3	25	28	3	43	18	30	5	13	-12
No change	2	0.4	2	4	28	24	43	40	30	26	13	10
Pessimistic	0.6	0.4	2	3	28	25	43	41	30	27	13	11
Non-SSA												
Optimistic	14	1	4	19	17	-2	15	-5	6	-13	5	-14
No change	2	0	2	4	17	13	15	10	6	2	5	1
Pessimistic	0.7	0	2	3	17	14	15	12	6	3	5	2

Table 11 presents a similar funding gap analysis but for the seven-year period from 2009 to 2015.

Table 11: Funding requirements and funding gap for 2009-2015 for each group of countries and under the three financing scenarios (billion constant 2005 US\$)												
	Sources of additional funding				WHO scenario		MBB Maximum Scenario		MBB Medium Scenario		MBB Minimum Scenario	
	Gov't	DAH	Private	Total	Cost	Gap	Cost	Gap	Cost	Gap	Cost	Gap
All countries												
Optimistic	87	39	25	151	251	100	227	76	112	-40	67	-84
No change	12	0.7	14	27	251	225	227	200	112	85	67	41
Pessimistic	0.03	-0.6	14	13	251	238	227	214	112	99	67	54
SSA												
Optimistic	46	33	12	91	151	60	172	81	89	-2	48	-43
No change	6	0.5	6	13	151	138	172	160	89	77	48	36
Pessimistic	-0.2	-0.5	6	6	151	145	172	167	89	84	48	43
Non-SSA												
Optimistic	41	6	13	60	100	40	55	-5	22	-38	19	-41
No change	7	0	7	14	100	86	55	41	22	8	19	5
Pessimistic	0.3	0	7	7	100	93	55	47	22	15	19	12

3.3. Additional facilities and health workers

Table 12 shows that almost 97,000 new or renovated facilities would be operating by 2015 according to the WHO normative approach. The large majority (92%) would be health centres. During this period, some 3.5 million additional health workers would be required. The majority of all new positions would be either nurses/midwives (49%) or community health workers (27%).

Table 12: Additional facilities and health workers, WHO normative scenario

	Total	%
Health Facilities	96,838	100
Health Centre	88,960	92
District Hospital	6,718	7
Regional Hospital	1,160	1
Additional Health Personnel	3,476,569	100
Physicians	349,953	10
Nurses/Midwives	1,699,107	49
Clinical Officers	233,302	7
Radiology Technicians	47,697	1
Lab Technicians	37,656	1
Pharmacy Aides	20,083	1
Orderlies	75,311	2
Pharmacists	16,317	0.5
Laboratory Technologists	16,317	0.5
Dental Technicians	30,125	1
Community Health Workers	950,701	27

Table 13 describes the additional facilities and health workers under the MBB Maximum scenario and Table 14 the Medium scenario. In the Medium scenario, during the seven-year period more than 73,000 facilities are proposed for construction or rehabilitation. A large majority of the facilities would be health posts (79%) and health centres (17%). During the same period over 2.6 million additional health workers would be required. Seven of every ten new positions would be either a community health worker (56%), health extension worker (8%) or junior nurse (6%).

Table 13: Additional facilities and health workers, MBB maximum scenario

	Total	%
Health Facilities	92,451	100.0
Health Post	72,923	78.9
Health Centre	14,675	15.9
District Hospital	3,848	4.2
Regional Hospital	1,005	1.1
Health Workers	2,933,739	100
Community based health & nutrition promoters	1,599,479	55
Health extension workers	247,224	8
Junior, assistant, assistant midwife nurse (1 year training)	249,092	8
Technicians (lab, x-ray, pharmacy)	166,082	6
Registered nurses/midwives (at least 3 years' training)	237,816	8
Health officer	20,694	1
Physician/MD	41,599	1
Specialist	12,713	0
Administrative staff	359,039	12



Table 14: Additional facilities and health workers, MBB medium scenario

	Total	%
Health Facilities	73,695	100.0
Health Post	57,816	78.5
Health Centre	12,307	16.7
District Hospital	2,828	3.8
Regional Hospital	744	1.0
Health Workers	2,585,894	100
Community based health & nutrition promoters	1,441,929	56
Health extension workers	200,147	8
Junior, assistant, assistant midwife nurse (1 year training)	160,478	6
Technicians (lab, x-ray, pharmacy)	158,790	6
Registered nurses/midwives (at least 3 years' training)	203,013	8
Health officer	23,226	1
Physician/MD	35,879	1
Specialist	6,236	0
Administrative staff	356,195	14

Finally, Table 15 describes the additional facilities and health workers under the MBB Minimum scenario. During the period more than 64,000 facilities would be constructed or rehabilitated. A large majority of the facilities would be health posts (78%) and health centres (16%). During this period, some 1.3 million additional health workers would be required. More than 60% of all new positions would be community health workers (29%), health extension workers (13%) or junior nurses (14%).

Table 15: Additional facilities and health workers, MBB minimum scenario

	Total	%
Health Facilities	64,069	100.0
Health Post	50,468	78.8
Health Centre	10,354	16.2
District Hospital	2,757	4.3
Regional Hospital	490	0.8
Health Workers	1,299,680	100
Community based health & nutrition promoters	372,228	29
Health extension workers	170,561	13
Junior, assistant, assistant midwife nurse (1 year training)	176,222	14
Technicians (lab, x-ray, pharmacy)	116,988	9
Registered nurses/midwives (at least 3 years' training)	167,238	13
Health officer	14,597	1
Physician/MD	29,020	2
Specialist	8,954	1
Administrative staff	243,873	19

3.4. Health outputs

The tables below provide examples of the additional outputs produced by the health system for the WHO approach and for the MBB scenarios. In the WHO approach, more than 22 million additional women will gain access to safe birth attendance and antenatal care, with their children receiving quality of care at birth and neonatal care. More than 40 million additional children will have their pneumonia treated according to standard guidelines.

Table 16: Additional outputs in WHO approach, 2015 (millions)

	SSA	Non-SSA	Total
Additional women obtaining access to SBA and ANC	14.95	7.10	22.05
Additional newborns getting quality of care at birth and neonatal care	14.95	7.10	22.05
Number of new users (both women and men) receiving contraceptive services	26.10	16.53	42.63
Additional number of children with pneumonia managed according to standard guidelines	24.32	15.78	40.09
Number of lives prolonged due to ART (= total number of persons on ART in 2015)	5.02	0.18	5.20

In the MBB Maximum scenario more than 19 million additional women will have access to ANC, and 18 million will deliver with skilled attendants. Nearly 179 million* additional episodes of acute respiratory infections will be treated by an adequate caregiver. In the MBB Medium scenario more than 17 million additional women will have access to ANC, and 16 million will deliver with skilled attendants. Over 212 million additional episodes of acute respiratory infections will be treated by an adequate caregiver. In the MBB Minimum scenario nearly 14 million additional women will have access to ANC, and over 10 million will deliver with skilled attendants. More than 242 million additional episodes of acute respiratory infections will be treated by an adequate caregiver.

Table 17: Additional health outputs for different MBB scenarios in 2015 (millions)

	MBB Maximum	MBB Medium	MBB Minimum
Additional # of pregnant women receiving ANC	19.51	17.22	13.51
Additional # of deliveries by SBA	18.21	16.23	10.20
Additional # neonatal Infections treated	1.13	1.29	1.48
Additional # of WRA with access to FP	106.57	87.25	67.04
Additional # of episodes of ARI in under-5 treated	178.79	212.46	241.58
Additional # episodes of malaria in under-5 treated	57.90	82.42	146.39
Additional # episodes of diarrhoea in U5 receiving zinc	66.24	126.81	228.81
Additional # of infants exclusively breastfed 6 months	20.17	17.95	14.25
Additional # of children (12 Mo) fully immunized	17.36	15.22	11.37
Additional # of severely malnourished children under-5 receiving therapeutic feeding	11.95	10.72	8.96
Additional # of children under-5 receiving 2 doses of vitamin A per year	225.11	196.99	165.06
Total # of people receiving first-line ART	2.71	2.26	1.84
Additional # of people with receiving DOTS	4.18	3.78	2.99
Total # of long lasting ITNs distributed (2009-2015)	353.29	313.56	232.23
Additional # of people with access to improved source of drinking water	468.97	-	-
Additional # of people with access to improved sanitation	866.88	569.65	306.11

* fewer cases are treated in the maximum scenario because greater preventive efforts reduce the numbers of cases needing treatment.



3.5 Health impact

Both the WHO normative approach and the MBB maximum scenario aim to strengthen all building blocks of health systems to provide universal coverage with a set of essential services which would dramatically improve health outcomes in developing countries, providing basic care for most frequent health ailments. Both encompass the most complete set of interventions including basic care for non-communicable diseases and relief of symptoms for patients with unspecified illnesses. In addition, the MBB Maximum scenario includes substantial water and sanitation investments.

Table 16 provides the impact estimates for WHO and MBB scenarios for the year 2015. It should be noted that the modelling methods to obtain these numbers are not strictly comparable between WHO and MBB estimates, and hence that some differences are due to differing methods of estimation. In addition, as indicated in Appendices 1 and 2, there are differences in the intervention mixes which give rise to differing impacts.

In the WHO Normative scenario, in 2015:

- Nearly 4 million child and infant deaths would be averted, and MDG 4 would be achieved in 80% of countries.
- Over 300,000 maternal deaths would be averted in 2015 and MDG 5 would be achieved in 45% of the countries.
- Nearly 200,000 HIV deaths and 265,000 TB deaths would be averted.
- According to the Global Plan to Stop TB, MDG target 6c will be met at the regional level in all regions, as TB incidence rates will fall by 2015; the MDG 6 malaria target is likely to be reached, since incidence and mortality would decline by 2015.
- 11 million births would be averted and the MDG target for unmet demand for family planning would be met in all countries.
- 30 million children (aged 12-59 months) would be protected from stunting.

In the MBB Maximum scenario, in 2015:

- 4.7 million child and infant deaths would be averted, and MDG4 would be achieved in 86% of countries.
- Nearly 300,000 maternal deaths would be averted in 2015 and MDG 5 would be achieved in 55% of the countries.
- Nearly 200,000 HIV deaths and 283,000 TB deaths would be averted.
- 16 million births would be averted and the MDG target for unmet demand for family planning would be met in all countries
- 9.9 million children (aged 12-23 months) would be protected from stunting.
- There would be 100% access to an improved source of drinking water and sanitation and an additional improvement in the quality of drinking water through household water treatment in 37% of households. MDG 7 would be fully achieved in all countries.

In the MBB medium scenario, in 2015:

- Over 4 million child and infant deaths would be averted, and MDG 4 would be achieved in 82% of countries.
- 259,000 maternal deaths would be averted in 2015 and MDG 5 would be achieved in 39% of the countries.
- Nearly 177,000 HIV deaths and 235,000 TB deaths would be averted.
- 11.9 million births would be averted and the MDG target for unmet demand for Family Planning would be met in all countries.
- 8 million children (aged 12-23 months) would be protected from stunting.
- There would be an increase of three quarters in access to improved sanitation and improvement in the quality of drinking water through household water treatment in 18% of households. The sanitation goal of MDG 7 would be fully achieved in 48 of the 49 countries.

In the MBB minimum scenario, in 2015:

- 3.5 million child and infant deaths would be averted, and MDG 4 would be achieved in 45% of countries.
- 200,000 maternal deaths would be averted in 2015 and MDG 5 would be achieved in 12% of the countries.
- Over 116,000 HIV deaths and 169,000 TB deaths would be averted.
- 7 million births would be averted and 73% of countries would meet the MDG family planning target.
- 6 million children (aged 12-23 months) would be protected from stunting.
- There would be an increase of nearly two thirds in access to improved sanitation.

Table 18: Comparative impact of different scenarios on reaching the health related MDGs (values for year 2015 as compared with a year-specific [1990/2005] baseline)

49 countries											
	WHO - Normative scenario			MBB Maximum			MBB Medium			MBB Minimum	
	Estimate	% countries reaching target	Estimate	% countries reaching target	Estimate	% countries reaching target	Estimate	% countries reaching target	Estimate	% countries reaching target	
Additional deaths averted in 2015											
Under-five deaths averted (including infant and neonatal)	3,940,608		4,778,016		4,288,519		3,522,655				
Newborn deaths averted (included above in U5 deaths)	1,297,498		1,418,165		1,260,918		1,009,863				
Maternal deaths averted	321,630		297,273		259,383		200,079				
Malaria deaths in adults averted	N/A		75,438		63,750		55,914				
Malaria deaths in children averted (included above in U5 deaths)	832,750										
HIV/AIDS deaths averted (WHO: adults + children; MBB: adults only)	193,399		191,176		176,817		116,355				
Tuberculosis deaths averted	264,867		283,191		235,127		169,165				
Total number of deaths averted	4,710,000		5,631,434		4,920,353		3,933,623				
Decrease in # births	10,863,730		16,326,543		11,874,492		7,131,992				
Total # stunting prevented (WHO 12-59 Months; MBB: 12-23 Months)~	30,070,000		9,938,891		8,332,510		6,190,619				
% progress towards MDG4 and 5 from 1990/95 baselines											
MDG 4: U5MR reduction from 1990 by two thirds		80% (39/49)	80%	86%	72%	82%	67%	45%			
MMR reduction from 1990/1995 baseline	63.8%†	45% (22/49)	77%	55%	64%	39%	57%	12%			
Countries reaching 70% MMR reduction				69%		45%		29%			
% progress towards MDG1 malnutrition goal since 2005-8 baseline											
Anaemia*	N/A	N/A	66%	100%	56%	88%	45%	16%			
Reduction of low birth weight*	N/A	N/A	42%	24%	36%	0%	30%	0%			
Estimated reduction in stunting children 12-23 months	33.71%	0%	29%	0%	20%	0%	15%	0%			
Estimated reduction in stunting children 24-59 months	24.18%										
% progress towards MDG4 child survival goal since 2005-8 baseline											
Average % reduction in U5MR *	66%		73%	86%	63%	82%	55%	45%			
IMR reduction*			70%		61%		52%				
NNMR reduction*			65%		57%		48%				



49 countries									
WHO - Normative scenario		MBB Maximum		MBB Medium		MBB Minimum			
Estimate	% countries reaching target	Estimate	% countries reaching target	Estimate	% countries reaching target	Estimate	% countries reaching target	Estimate	% countries reaching target
% progress towards MDG5 reproductive health goal since 2005-8 baseline									
Average % reduction in MMR*	67.1% ^Δ	72%	53%	62%	46%	49%	12%		
% of total demand for family planning met*	100%	103%	100%	96%	100%	85%	73%		
% progress towards MDG6 communicable disease goal since 2005-8 baseline ○									
Reduction of malaria mortality in adults	N/A	66%	100%	59%	100%	53%	100%		
Reduction in malaria incidence*	68% [▼]	55%	97%	45%	87%	35%	69%		
Reduction in AIDS mortality*		25%	2%	15%	0%	9%	0%		
Reduction in HIV/AIDS incidence		49%	57%	41%	42%	19%	0%		
Change in HIV/AIDS prevalence		1%	12%	12%	26%	0%	2%		
Reduction in TB mortality*		61%	88%	49%	72%	33%	12%		
% progress towards MDG7 WASH goal since 2006-8 baseline									
Quality of drinking water increase*	N/A	38%	N/A	18%		2%			
Access to improved sanitation*	N/A	100%	100%	79%	98%	63%	0%		
Access to an improved source of drinking water*	N/A	100%	100%	0%	0%	0%	0%		

Indicators with * are calculated as a weighted average based on country population for MBB scenarios.

[†] Country weighted; population weighted is 68.3%.

^Δ Country weighted; population weighted is 67.1%.

○ % of countries column refer to proportion of countries where incidence and/or mortality will be halved by 2015 relative to 2008.

[▼] Refers to malaria incidence in children under five.

Appendix 1: List of health interventions costed in WHO normative approach*

Preventive interventions

Communication and behaviour change
Condom promotion and distribution
Control of tobacco use
Counselling for improved complementary feeding
Counselling for promotion of exclusive and continued breastfeeding
Family planning interventions: oral contraceptives, injectables, condom (male and female), intrauterine device (IUD), implant, sterilization (female and male)
Harm reduction among intravenous drug users
HIV prevention among female sex workers
HIV prevention among male sex workers
HIV prevention among men who have sex with men
HIV prevention: mass media
Immunizations (all routine immunizations including BCG, DPT, OPV, Hib, pneumococcus, two-dose measles, hepatitis B, yellow fever, rubella, rotavirus, and meningitis A, and Japanese encephalitis for populations at risk)
Implementation of the international code of marketing of breast milk substitutes
Insecticidal mosquito nets, long-lasting, or other malaria vector control intervention
Intermittent preventive therapy for malaria
Male circumcision
Newborn care, routine (immediate postnatal care, breastfeeding support, resuscitation, small baby care and kangaroo mother care, care for minor problems, presumptive sepsis care, eye prophylaxis, presumptive treatment for syphilis, pre-referral care for seriously ill neonate)
Post-exposure prophylaxis
Postnatal care
Postpartum administration of anti-D immunoglobulin to rhesus-negative women with a rhesus-positive foetus
Postpartum care in the maternity ward, routine (examination of the mother, information and counselling, recording and reporting, administration of iron and folate supplements, administration of vitamin A supplements)
Postpartum care, follow-up visit (postpartum examination of the mother, information and counselling on home care, care seeking, counselling on family planning methods)
Postpartum counselling on family planning (counselling on family planning methods, voluntary tubal ligation, intrauterine device, combined oral contraceptives, combined injectables)
Prevention and control of malaria epidemics
Prevention of mother to child transmission of HIV by antiretroviral prophylaxis and infant feeding counselling
Salt reduction in processed foods
Screening all pregnant women for blood group isoimmunization

Social marketing
Sexually transmitted infection management
Universal salt iodization
Vitamin A supplementation to children under five, routine
Voluntary counselling and testing

Treatment interventions

Antibiotic treatment for dysentery
Antiretroviral therapy
Antiretroviral therapy (plus co-trimoxazole preventive therapy for HIV positive TB patients)
Basic care package for HIV positive people
Case management of diarrhoea
Case management of malaria (artemisinin-based combination therapies and rapid diagnostic tests)
Case management of pneumonia
Case management of severe malnutrition
Case management of neonatal infections
Co-trimoxazole preventive therapy for HIV positive TB patients
Diagnostic testing (HIV)
HIV care and support in TB patients
HIV surveillance in TB patients tested
HIV testing and counselling of TB patients
Home-based care for people living with HIV
Isoniazid preventive therapy, following tuberculin skin test
Isoniazid preventive therapy, no tuberculin skin test
Management of breathing difficulty
Management of congenital syphilis
Management of convulsions
Management of mastitis
Management of neonatal tetanus
Management of postpartum depression
Management of severe hypothermia
Management of severe jaundice
Multidrug-resistant tuberculosis patients treated
Nutritional support
Palliative care for people living with HIV
Prophylaxis for opportunistic infections
Regular deworming
Routine offer of counselling and testing
Safe abortions/management of abortion complications
Sepsis management
Severe and complicated malaria, case management
Special general care for seriously ill neonate
Supporting breastfeeding (maternal stay for baby care)

* Investments required to ensure scale-up of HIV activities related to blood safety, safe injections and universal precautions are included in the costs for health systems investments

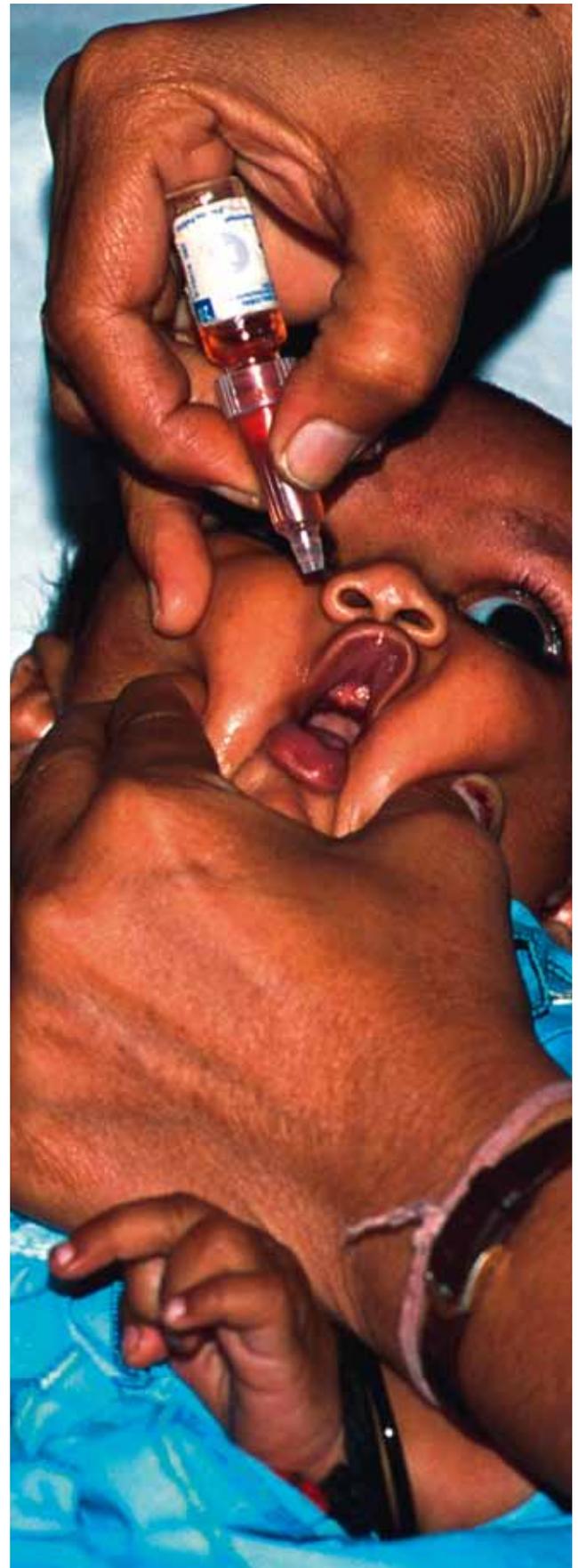


TB smear positive/ negative / extrapulmonary treatment
TB screening among people living with HIV
Treatment of bacterial vaginosis or trichomoniasis infection in pregnancy
Treatment of chlamydia in pregnancy
Treatment of chronic diseases including asthma, cardiovascular disease, mental illness and neglected tropical diseases and symptomatic treatment
Treatment of complications during childbirth (ultrasound, promote foetal maturation before preterm delivery, management of pre-labour rupture of membranes or infection, management of antepartum haemorrhage, management of puerperal sepsis, management of obstructed labour, management of prolonged labour, management of foetal distress, episiotomy, avoid breech presentation at birth [with external cephalic version], vaginal breech delivery, craniotomy or embryotomy, management of postpartum haemorrhage, management of perineal infection, repair of vaginal or perineal tear, repair of cervical tear, symphysiotomy)
Treatment of eclampsia
Treatment of gonorrhoea in pregnancy
Treatment of hookworm infection (antenatal care)
Treatment of lower urinary tract infection in pregnancy
Treatment of measles and measles complications
Treatment of moderate anaemia in pregnancy
Treatment of opportunistic infections
Treatment of severe anaemia
Treatment of severe hypertension in pregnancy
Treatment of severe pre-eclampsia
Treatment of syphilis in pregnancy
Treatment of upper urinary tract infection
Treatment of upper urinary tract infection in pregnancy
Treatment of vaginal candida infection in pregnancy
Very small baby care and kangaroo mother care

Complicated interventions

Antenatal care, routine (assessment of maternal and foetal well-being, information and counselling, recording and reporting, screening for hypertensive disorders of pregnancy [pre-eclampsia], screening for anaemia, prevention of anaemia, specialist care for pregnant women with diabetes, syphilis testing, tetanus toxoid immunization)

Childbirth care, routine (initial assessment and recognition of delivery complications, surveillance and regular monitoring of labour and delivery, social support throughout labour and delivery, prevention and control of infections, assistance during childbirth, active management of the third stage of labour, care and support of the mother)



Appendix 2: List of interventions costed in MBB*

Interventions to reduce under-5 mortality

Diarrhoea

Antibiotics (diarrhoea)
Breastfeeding, children 6-11 months
Complementary feeding
Exclusive breastfeeding 0-5 months
Oral rehydration therapy
Vitamin A supplement (child)
Hand washing with soap by mother
Use of sanitary latrine
Supply of safe drinking water
Quality of drinking water
Multiple water/sanitation/hygiene interventions
Zinc supplements (child)
Zinc therapy
Rotavirus vaccine
Management of severe dehydration and complicated enteric fevers at referral level

HIV / AIDS

Condom use
Male circumcision
Sexually transmitted infection management
Preventing mother-to-child transmission of HIV, (testing and counselling, AZT + single dose nevirapine and infant feeding counselling)
First-line antiretroviral therapy for pregnant women with HIV/AIDS
Co-trimoxazole prophylaxis for children of HIV-positive mothers
Antiretroviral therapy for children with AIDS
Management of complicated AIDS
Management of first-line antiretroviral therapy failures

Malaria

Complementary feeding
Therapeutic feeding
Insecticide-treated mosquito nets for under-5 children
Vitamin A
Zinc
Chloroquine for malarial treatment
Antimalarial combination treatment at primary health care level
Management of complicated malaria at referral level
Intermittent presumptive treatment for children

Measles

Complementary feeding
Therapeutic feeding
Measles immunization
Vitamin A - supplementation
Vitamin A - treatment for measles
Management of severe measles at referral level

Neonatal prematurity

Calcium supplementation in pregnancy
Detection and management of (pre) eclampsia (magnesium sulphate)
Additional antenatal care: detection and treatment of asymptomatic bacteriuria
Additional intrapartum: antenatal steroids
Universal skilled maternal and immediate neonatal care
Community support to low birth weight babies
Universal emergency neonatal care (asphyxia aftercare, management of serious infections, management of the very low birth weight infant)
Balanced protein energy supplements for pregnant women
Supplementation in pregnancy with multi-micronutrients

Neonatal severe infection

Clean delivery
Community support to low birth weight babies
Early breastfeeding
Universal case management for pneumonia
Intermittent presumptive treatment of malaria (IPT) for pregnant women
Skilled delivery and neonatal care
Detection and treatment of syphilis in pregnancy
Additional intrapartum: antibiotics for premature and prolonged rupture of membranes
Additional emergency newborn care (management of serious infections)
Universal emergency neonatal care (asphyxia aftercare, management of serious infections, management of the very low birth weight infant)

Neonatal tetanus

Skilled delivery
Tetanus toxoid
Clean delivery

Asphyxia

Universal antenatal care
Skilled delivery and immediate neonatal care
Resuscitation of asphyctic newborns at birth
Asphyxia aftercare at referral level
Assisted delivery or vacuum extraction at basic emergency obstetric care level
Caesarean section at comprehensive emergency obstetric care level

Pneumonia

Complementary feeding
Therapeutic feeding
Breastfeeding for children 0-5 months
Breastfeeding for children 6-11 months
Zinc
Hib immunization
Antibiotics for under-5 children with pneumonia
Management of severe pneumonia at referral level
Pneumococcal immunization

* Interventions included vary by scenario.



Interventions to reduce stunting

Balanced protein energy supplements for pregnant women
Intermittent preventive treatment (IPTp) for malaria in pregnancy
Supplementation in pregnancy with multi-micronutrients
Complementary feeding
Zinc preventive
Hand washing by mother

Interventions to reduce maternal mortality

Tetanus toxoid
Screening for pre-eclampsia
Screening and treatment of asymptomatic bacteriuria
Normal delivery by skilled attendant
Active management of the third stage of labour
Initial management of post-partum haemorrhage
Drugs for preventing malaria-related illness in pregnant women and death in the newborn
Treatment of severe pre-eclampsia or eclampsia
Assisted delivery and vacuum extraction at basic emergency obstetric care level
Management of obstructed labour, breech and fetal distress at comprehensive obstetric care level (caesarean section)

Referral care for severe post-partum haemorrhage
Management of maternal sepsis
Medical termination of pregnancy / management of complicated abortions
Family planning
Iron/folic acid supplements
Multi micronutrients
Deworming
Calcium supplements

Interventions to reduce deaths from AIDS, TB and malaria in adults and during pregnancy

Co-trimoxazole prophylaxis for adults with HIV/AIDS
ART for adults with AIDS
Management of first-line ART failures
Management of complicated AIDS
DOTS
DOTS retreatment
Treatment of multidrug-resistant TB
Artesunate combination treatment
Management of complicated malaria with second-line drugs



Credit: DFID/Helen Stear





References

- 1 *The Paris declaration on aid effectiveness: ownership, harmonization, alignment, results and mutual accountability*. Paris, Organization for Economic Co-operation and Development, 2005.
- 2 *Accra Agenda for Action*. Third High Level Forum on Aid Effectiveness, Accra, 2008.
- 3 OECD, World Health Organization, The World Bank. *Effective aid, better health*. Geneva, World Health Organization, 2008.
- 4 Shiffman J. Has donor prioritization of HIV/AIDS displaced aid for other health issues? *Health Policy and Planning*, 2008, 23:95-100.
- 5 Sridhar D, Batniji R. Misfinancing global health: a case for transparency in disbursements and decision making. *Lancet*, 2008, 372:1185-1191.
- 6 Greco G et al. Countdown to 2015: assessment of donor assistance to maternal, newborn, and child health between 2003 and 2006. *Lancet*, 2008, 371:1268-1275.
- 7 Loaiza E, Wardlaw T, Salama P. Child mortality 30 years after the Alma-Ata Declaration. *Lancet*, 2008, 372:874-876.
- 8 2008 Countdown Working Group. *Tracking progress in maternal, newborn & child survival: the 2008 report*. United Nations Children's Fund.
- 9 United Nations Fact Sheet. Goal 6: combat HIV/AIDS, malaria and other diseases. New York, United Nations, 2008.
- 10 The Millennium Development Goals Report 2008. New York, United Nations, 2008.
- 11 United Nations Fact Sheet. Goal 1: eradicate extreme poverty and hunger. New York, United Nations, 2008.
- 12 Countdown 2008 Equity Analysis Group et al. Mind the gap: equity and trends in coverage of maternal, newborn, and child health services in 54 Countdown countries. *Lancet*, 2008, 371(9620):1259-1267.
- 13 Working Group 5 of the Commission on Macroeconomics and Health. *Improving health outcomes of the poor*. Geneva, World Health Organization, 2002.
- 14 *World health report 2008. Primary health care: now more than ever*. Geneva, World Health Organization, 2008.
- 15 *The state of the world's children*. New York, United Nations Children's Fund, 2008.
- 16 Declaration of Alma-Ata, International Conference on Primary Health Care. Alma-Ata, USSR, 1978.
- 17 Walsh JA, Warren KS. Selective primary health care: an interim strategy for disease control in developing countries. *New England Journal of Medicine*, 1979, 301:967-974.
- 18 Akin JS, Birdsall N, de Ferranti D. *Financing health services in developing countries: an agenda for reform*. Washington DC, The World Bank, 1987.
- 19 *World development report 1993: investing in health*. Washington DC, The World Bank, 1993.
- 20 Mills A, Ranson K. The design of health systems. In: Merson M, Black R, Mills A, eds. *International public health: diseases, programs, systems and policies*, Boston, Jones and Bartlett, 2005.
- 21 Lewis M. *Addressing the challenge of HIV/AIDS: macroeconomic, fiscal and institutional issues*. Working Paper No. 58, Center for Global Development, 2005.
- 22 Reich MR, Takemi K. G8 and strengthening of health systems: follow-up to the Toyako summit. *Lancet*, 2009, 373:508-515.
- 23 Pitayarangsarit S. Agenda setting process. In: Tangcharoensathien V, Jongudomsuk P, eds. *From policy to implementation: Historical events during 2001-2004 of universal coverage in Thailand*, Nonthaburi, Thailand, National Health Security Office, 2004.
- 24 *Investing in development. A practical plan to achieve the MDGs*. New York, UN Millenium Project, UNDP, 2005.
- 25 Bloom DE, Williamson JG. Demographic transitions and economic miracles in emerging Asia. *World Bank Economic Review*, 1998, 12:419-455.
- 26 *Committing to action: achieving the Millennium Development Goals: Background note by the Secretary General*. Prepared for high-level event on the Millennium Development Goals. United Nations Headquarters, New York, 2008.
- 27 *Millennium Development Goals - confronting the challenges of gender equality and fragile states*. Washington DC, The World Bank, 2007.
- 28 Alliance for Health Policy and Systems Research. *Neglected health systems research: health policy and systems research in conflict-affected fragile states. Research Issues 1*. Geneva, World Health Organization, 2008.
- 29 Pavignani E, Colombo A. *Analysing disrupted health sectors: a toolkit. Module 1: the crisis environment*. Geneva, World Health Organization, 2005.
- 30 Hanson K et al. Expanding access to health interventions: a framework for understanding the constraints to scaling-up. *Journal of International Development*, 2003, 15:1-14.
- 31 Leroy JL et al. Current priorities in health research funding and lack of impact on the number of child deaths per year. *American Journal of Public Health*, 2007, 97:219-223.
- 32 Alliance for Health Policy and Systems Research. *What is health policy and systems research and why does it matter? Briefing note No 1*. Geneva, World Health Organization, 2007.
- 33 Easterly W, Pfutze T. Where does the money go? Best and worst practices in foreign aid. *Journal of Economic Perspectives*, 2008, 22:29-52.
- 34 Lane C, Glassman A. Bigger And better? Scaling up and innovation in health aid. *Health Affairs*, 2007, 26:935-948.
- 35 Acharya A, De Lima ATF, Moore M. Proliferation and fragmentation: transactions costs and the value of aid. *Journal of Development Studies*, 2006, 42:1-21.
- 36 Naimoli JF. Global health partnerships in practice: taking stock of the GAVI Alliance's new investment in health systems strengthening. *International Journal of Health Planning and Management*, 2009, 24:3-25.
- 37 Lu C et al. Absorptive capacity and disbursements by the Global Fund to Fight AIDS, Tuberculosis and Malaria: analysis of grant implementation. *Lancet*, 2006, 368:483-488.
- 38 Low-Beer D et al. *Scaling up for impact: results report*. Geneva, The Global Fund to Fight AIDS, Tuberculosis and Malaria, 2009.

- 39 Powell-Jackson T et al. Countdown to 2015: tracking donor assistance to maternal, newborn, and child health. *Lancet*, 2006, 368:1077-1087.
- 40 Heller PS. The prospects of creating 'fiscal space' for the health sector. *Health Policy and Planning*, 2006, 21:75-79.
- 41 Williams G. Fiscal space and sustainability from the perspective of the health sector. In: *High-Level forum on the health millennium development goals*. Selected Papers 2003-2005. Geneva, World Health Organization, 2005.
- 42 European Court of Auditors. EC development assistance to health services in sub-Saharan Africa together with the Commission's replies. Special Report No 10/2008, Luxembourg, 2008.
- 43 Xu K et al. Household catastrophic health expenditure: a multicountry analysis. *Lancet*, 2003, 362:111-117.
- 44 Das J, Hammer J. Money for nothing: The dire straits of medical practice in Delhi, India. *Journal of Development Economics*, 2007, 83:1-36.
- 45 Hanson K et al. Is private health care the answer to the health problems of the world's poor? *PLoS Medicine*, 2008, 5(11):233.
- 46 *World pharmaceutical situations report 2004*. Geneva, World Health Organization, 2004.
- 47 Hensher M, Price M, Adomakoh S. Referral hospitals. In: Jamison DT et al., eds. *Disease control priorities in developing countries*, Washington DC, The World Bank and Oxford University Press, 2006.
- 48 Barnum H, Kutzin J. *Public hospitals in developing countries: resource use, cost, financing*. Baltimore, MD, Johns Hopkins University Press, 1993.
- 49 Thomas S, Muirhead D. *National Health Accounts Project: the public sector report*. Cape Town, South Africa, University of Cape Town, 2000.
- 50 The global shortage of health workers and its impact. Fact Sheet Number 302 Geneva, World Health Organization, 2006.
- 51 *The world health report 2006—Working together for health*. Geneva, World Health Organization, 2006.
- 52 Vujcic M, Ohiri K, Sparkes S. Executive summary. In: *Working in health: financing and managing the public sector health workforce*, Washington DC, The World Bank, 2009.
- 53 Goodman C et al. Drug shop regulation and malaria treatment in Tanzania-why do shops break the rules, and does it matter? *Health Policy and Planning*, 2007, 22:393-403.
- 54 Njau JD et al. Fever treatment and household wealth: the challenge posed for rolling out combination therapy for malaria. *Tropical Medicine & International Health*, 2006, 11:299-313.
- 55 Amin AA, Kokwaro GO. Antimalarial drug quality in Africa. *Journal of Clinical Pharmacy and Therapeutics*, 2007, 32:429-440.
- 56 Taylor RB et al. Pharmacopoeial quality of drugs supplied by Nigerian pharmacies. *Lancet*, 2001, 357: 1933-1936.
- 57 Newton PN et al. Manslaughter by fake artesunate in Asia-will Africa be next? *PLoS Medicine*, 2006, 3(6):197.
- 58 Goodman C et al. Concentration and drug prices in the retail market for malaria treatment in rural Tanzania. *Health Economics*, 2009, 16:727-742.
- 59 Simms C, Rowson M. Reassessment of health effects of the Indonesian economic crisis: donors versus the data. *Lancet*, 2003, 361:1382-1385.
- 60 AbouZahr C, Boerma T. Health information systems: the foundations of public health. *Bulletin of the World Health Organization*, 2005, 83:578-583.
- 61 *Macroeconomics and health: investing in health for economic development*. Report of the Commission on Macroeconomics and Health. Geneva, World Health Organization, 2001.
- 62 Savedoff W, Levine R, Birdsall N. *When will we ever learn? Improving lives through impact evaluation*. Report of the Evaluation Gap Working Group, Center for Global Development, 2006.
- 63 Travis P et al. Overcoming health-systems constraints to achieve the Millennium Development Goals. *Lancet*, 2004, 364:900-906.
- 64 Task Force on Health Systems Research. Informed choices for attaining the Millennium Development Goals: towards an international cooperative agenda for health-systems research. *Lancet*, 2004, 364:997-1003.
- 65 Wagstaff A, Claeson M. *The millennium goals for health: Rising to the challenges*. Washington DC, The World Bank, 2004.
- 66 Hota P. National rural health mission. *Indian Journal of Pediatrics*, 2006, 73(3):193-195.
- 67 Kapil U, Choudhury P. National Rural Health Mission (NRHM): will it make a difference? *Indian Journal of Pediatrics*, 2005, 42(8):783-6.
- 68 Mudur G. India launches national rural health mission. *British Medical Journal*, 2005, 330(7497): 920-a.
- 69 Deolalikar AB et al. Financing health improvements in India. *Health Affairs*, 2008, 27:978-990.
- 70 Schweitzer J. Improving health services in India: a different perspective. *Health Affairs*, 2008, 27:1002-1004.
- 71 Mills A et al. *The challenge of health sector reform: what must governments do?* Oxford, Macmillan Press, 2001.
- 72 Fritz V, Menocal A. Development states in the new millennium: concepts and challenges for a new aid agenda. *Development Policy Review*, 2007, 25:531-552.
- 73 Independent Evaluation Group. *Public sector reform: what works and why? An IEG evaluation of World Bank support*. Washington DC, The World Bank, 2008.
- 74 Mills A, Tollman S, Rasheed F. Improving health systems. In: Jamison D et al., eds. *Disease control priorities in developing countries*, The World Bank and Oxford University Press, 2006.
- 75 Independent Evaluation Group. *Improving effectiveness and outcomes for the poor in health, nutrition and population: an evaluation of World Bank Group support since 1997*. Washington DC, The World Bank, 2009.
- 76 Grindle M. Good enough governance revisited. *Development Policy Review*, 2007, 25:553-574.



- 77 Robinson M. The politics of successful governance reforms: lessons of design and implementation. *Commonwealth and Comparative Politics*, 2007, 45:521-548(28).
- 78 *Synthesis report: capacity development on the road to Accra*. Prepared as a room document for the 15-16 May 2008 Bonn workshop on Capacity Development: Accra and Beyond. Paris, Organization for Economic Co-operation and Development, 2008.
- 79 Morah E, Ihalainen M. National AIDS commissions in Africa: performance and emerging challenges. *Development Policy Review*, 2009, 27:185-214.
- 80 Manandhar DS et al. Effect of a participatory intervention with women's groups on birth outcomes in Nepal: cluster-randomized controlled trial. *Lancet*, 2004, 364:970-979.
- 81 Bjorkman M, Svensson J. Power to the people: evidence from a randomized field experiment on community-based monitoring in Uganda. *The Quarterly Journal of Economics*, 2009, 124:735-769.
- 82 Patouillard E et al. Can working with the private for-profit sector improve utilization of quality health services by the poor? A systematic review of the literature. *International Journal for Equity in Health*, 2007, 6(1):17.
- 83 Stenson B, Tomson G, Syhakhang L. Pharmaceutical regulation in context: the case of Lao People's Democratic Republic. *Health Policy and Planning*, 1997, 12:329-340.
- 84 Lagarde M, Palmer N. Evidence from systematic reviews to inform decision making regarding financing mechanisms that improve access to health services for poor people. In: *A policy brief prepared for the international dialogue on evidence-informed action to achieve health goals in developing countries* (IDEAHealth). Khon Kaen, Thailand, Alliance for Health Policy and Systems Research, 2006.
- 85 Gilson L, McIntyre D. Removing user fees for primary care in Africa: the need for careful action. *British Medical Journal*, 2005, 331:762-765.
- 86 Wagstaff A. *Social health insurance re-examined*. Washington DC, The World Bank, 2007.
- 87 Mills A. *Strategies to achieve universal coverage: are there lessons from middle-income countries?* Report prepared for the Health Systems Knowledge Network of the WHO Commission on Social Determinants of Health. London, London School of Hygiene and Tropical Medicine, 2007
- 88 *Social Health Insurance Discussion Paper*, GTZ, 2005.
- 89 Atim C. *The contribution of mutual health organizations to financing, delivery and access to health care in West and Central Africa: synthesis of research in nine countries*. Partnership for Health Reform Project, Technical Report No 18. Bethesda, MD., Abt Associates. 1998.
- 90 Bennett S, Creese A, Monasch R. *Health insurance schemes for people outside formal sector employment*. Geneva, World Health Organization, 1998.
- 91 Carrin G. *Community-based health insurance schemes in developing countries: facts, problems and perspectives*. Geneva, World Health Organization, 2003 (Health Financing Policy Issues Paper, WHO/EIP).
- 92 *Extending social protection in health through community-based health organizations: evidence and challenges*. Geneva, ILO-Universitas Programme, 2002
- 93 Rwangombwa, J. *Rwanda's health sector: innovative financing and aid effectiveness*. Paris, OECD Global Forum on Development, workshop on innovative financing in health, 2008.
- 94 Logie DE, Rowson M, Ndagije F. Innovations in Rwanda's health system: looking to the future. *Lancet*, 2008, 372:256-261.
- 95 Rajkotia Y. The political development of the Ghanaian national health insurance system: lessons in health governance. Bethesda MD, Health Systems 20/20 project, Abt Associates Inc., 2007.
- 96 Wagstaff A, Lindelow M. Can insurance increase financial risk? The curious case of health insurance in China. *Journal of Health Economics*, 2008, 27:990-1005.
- 97 Ataguba J, McIntyre D. Financing and benefit incidence in the South African health system: preliminary results. Cape Town, South Africa, University of Cape Town, 2009 (Health Economics Unit Working Paper 09/01).
- 98 Lagomarsino G, Kundra SS. *Better understanding of the role of the private sector in health systems. Risk-pooling: challenges and opportunities*. Washington DC, Results for Development, 2008.
- 99 Blas E, Limbambala ME. The challenge of hospitals in health sector reform: the case of Zambia. *Health Policy and Planning*, 2001, 16(Suppl. 2):29-43.
- 100 High-Level Forum on the Health MDGs. Health workforce challenges: lessons from country experiences. Abuja, 2004.
- 101 Eichler R. Can "pay for performance" increase utilization by the poor and improve the quality of health services? Discussion paper for the first meeting of the Working Group on Performance-Based Incentives. Washington DC, Center for Global Development, 2006.
- 102 Oxman AD, Fretheim A. *An overview of research on the effects of results-based financing*. Oslo, Norwegian Knowledge Centre for the Health Services, 2008.
- 103 Lewin S et al. Supporting the delivery of cost-effective interventions in primary health-care systems in low-income and middle-income countries: an overview of systematic reviews. *Lancet*, 2008, 372:928-939.
- 104 Lagarde M, Haines A, Palmer N. Conditional cash transfers for improving uptake of health interventions in low- and middle-income countries: a systematic review. *Journal of the American Medical Association*, 2007, 298:1900-1910.
- 105 Palmer N et al. Health financing to promote access in low income settings-how much do we know? *Lancet*, 2004, 364:1365-1370.
- 106 Chee G et al. *Evaluation of the first five years of GAVI immunization services support funding*. Prepared for the GAVI Alliance. Bethesda, MD, Abt Associates Inc., 2007.
- 107 Powell-Jackson T, Wolfe R. *Encouraging women to use professional care at childbirth: does Nepal's safe delivery incentive programme work? Evidence from the district of Makwanpur*. Briefing paper 2 London, Department for International Development, 2008.

- 108 Witter S et al. Providing free maternal health care: ten lessons from an evaluation of the national delivery exemption policy in Ghana. *Global Health Action*, 2009, Vol 2 (2009) incl. Supplements.
- 109 Vujicic M, Ohiri K, Sparkes S. Annex 4. In: *Working in health: financing and managing the public sector health workforce*. Washington DC, The World Bank, 2009.
- 110 Soeters R, Griffiths F. Improving government health services through contract management: a case from Cambodia. *Health Policy and Planning*, 2003, 18:74-83.
- 111 Liu X, Mills A. The influence of bonus payments to doctors on hospital revenue: results of a quasi-experimental study. *Applied Health Economics and Health Policy*, 2003, 2:91-98.
- 112 Dussault G. The health professions and the performance of future health systems in low-income countries: support or obstacle? *Social Science & Medicine*, 2008, 66:2088-2095.
- 113 Sekabaraga C. Scaling Up: Rwanda on track for health MDGs: the role of autonomization, decentralization and results-based financing. Unpublished.
- 114 Basinga P et al. Impact of paying primary health care centers for performance in Rwanda. Unpublished.
- 115 Rannan-Eliya R. Strengthening health financing in partner developing countries. In: *Global action for health system strengthening*. Policy recommendations to the G8. New York, Japan Center for International Exchange, 2009.
- 116 *Public-private investment partnerships in health systems strengthening*. Report on Wilton Park Conference 909. Wilton Park, in cooperation with The Global Health Group at the University of California, San Francisco, Global Health Sciences and The Healthcare Redesign Group, 2008.
- 117 Oliveira-Cruz V, Kurowski C, Mills A. Delivery of priority health services: searching for synergies within the vertical versus horizontal debate. *Journal of International Development*, 2003, 15(1):67-86.
- 118 Atun R et al. Analysis of how health system context influences HIV control: case studies from the Russian Federation. *Bulletin of the World Health Organization*, 2005, 83:730-738.
- 119 Atun RA et al. Barriers to sustainable tuberculosis control in the Russian Federation health system. *Bulletin of the World Health Organization*, 2005, 83:217-223c.
- 120 McDaid D et al. Health system factors impacting on delivery of mental health services in Russia: Multi-methods study. *Health Policy*, 2006, 79:144-152.
- 121 Atun RA et al. Health systems' responses to 25 years of HIV in Europe: Inequities persist and challenges remain. *Health Policy*, 2008, 86:181-194.
- 122 Atun RA, Bennett S, Duran A. *When do vertical (stand-alone) programmes have a place in health systems?* Geneva, World Health Organization, 2008.
- 123 Bhutta ZA et al. Interventions to address maternal, newborn, and child survival: what difference can integrated primary health care strategies make? *Lancet*, 2008, 372:972-989.
- 124 *Linking sexual and reproductive health and HIV/AIDS, Gateways to Integration: A case study from Haiti*. Prepared and published by WHO, UNFPA, UNAIDS, IPPF, 2008.
- 125 Extending Service Delivery (ESD) Project. Management and organizational sustainability tool (MOST), best practice tools series # 1. Washington DC, United States Agency for International Development, 2007.
- 126 Bryce J et al. Programmatic pathways to child survival: results of a multi-country evaluation of Integrated Management of Childhood Illness. *Health Policy and Planning*, 2005, 20 (Suppl. 1):i5-i17.
- 127 Victora CG et al. Achieving universal coverage with health interventions. *Lancet*, 2004, 364:1541-1548.
- 128 Haines A et al. Achieving child survival goals: potential contribution of community health workers. *Lancet*, 2007, 369:2121-2131.
- 129 Montagu D. Franchising of health services in low-income countries. *Health Policy and Planning*, 2002, 17:121-130.
- 130 Palmer N et al. A new face for private providers in developing countries: what implications for public health? *Bulletin World Health Organization*, 2003, 81:292-297.
- 131 *The business of health in Africa*. Washington DC, International Finance Corporation, 2007.
- 132 Loevinsohn B, Harding A. Buying results? Contracting for health service delivery in developing countries. *Lancet*, 2005, 366:676-681.
- 133 Palmer N et al. Contracting out health services in fragile states. *British Medical Journal*, 2006, 332:718-721.
- 134 Roberts B et al. A basic package of health services for post-conflict countries: Implications for sexual and reproductive health services. *Reproductive Health Matters*, 2008, 16:57-64.
- 135 Broomberg J, Masobe P, Mills A. To purchase or to provide? The relative efficiency of contracting out versus direct public provision of hospital services in South Africa. In: Bennett S, McPake B, Mills A, eds. *Private health providers in developing countries: serving the public interest?* London, Zed Press, 1997.
- 136 Mills A et al. The performance of different models of primary care provision in Southern Africa. *Social Science & Medicine*, 2004, 59:931-943.
- 137 Palmer N, Mills A. Contracts in the real world: case studies from Southern Africa. *Social Science & Medicine*, 2005, 60:2505-2514.
- 138 Bennett S, Mills A. Government capacity to contract: health sector experience and lessons. *Public Administration and Development*, 1998, 18:307-326.
- 139 Collier P. *The bottom billion: why the poorest countries are failing and what can be done about it*. Oxford, Oxford University Press, 2007.
- 140 Hansen S. *Independent service authority and compact for service delivery in fragile states and post-conflict settings*. Working Paper 2008:119. Oslo, Norwegian Institute for Urban and Regional Research, 2008.



- 141 *Scaling up, saving lives: Task Force for Scaling Up Education and Training for Health Workers*. Geneva, Global Health Workforce Alliance, World Health Organization, 2008.
- 142 *People first: African solutions to the health worker crisis*. London, African Medical Relief Foundation, United Kingdom, 2007.
- 143 Bang A et al. Effect of home-based neonatal care and management of sepsis on neonatal mortality: field trial in rural India. *Lancet*, 1999, 354:1955-1961.
- 144 Lehmann U, Sanders D. *Community health workers: what do we know about them? A report by the School of Public Health, University of the Western Cape*. Geneva, World Health Organization, 2007.
- 145 Oxford Policy Management. *External evaluation of the National Programme for Family Planning and Primary Health Care. Quantitative Survey Report*. Islamabad, Pakistan, Lady Health Worker Programme, 2002.
- 146 Walt G. *Community health workers in national programmes: just another pair of hands?* Open University Press, 1990.
- 147 Willis-Shattuck M et al. Motivation and retention of health workers in developing countries: a systematic review. *BMC Health Services Research*, 2008, 8:247.
- 148 Manongi R, Marchant T, Bygbjerg IC. Improving motivation among primary health care workers in Tanzania: a health worker perspective. *Human Resources for Health*, 2006, 4(1):6.
- 149 Zurn P et al. Imbalance in the health workforce. *Human Resources for Health*, 2004, 2(1):13.
- 150 Hayford K, Vujcic M, Lindelow M. *Recruiting and retaining health workers in remote areas: review of global evidence*. Washington DC, The World Bank, 2009.
- 151 Wibulpolprasert S, Pengpaibon P. Integrated strategies to tackle the inequitable distribution of doctors in Thailand: four decades of experience. *Human Resources for Health*, 2003, 1(12).
- 152 Reid SJ. Compulsory community service for doctors in South Africa—an evaluation of the first year. *South African Medical Journal*, 2001, 91:329-336.
- 153 Sein T, Win M, Tin N. *Coverage and skill mix balance of human resources for health in Myanmar*. Asia-Pacific Action Alliance on Human Resources for Health, 2005.
- 154 Sempowski IP. Effectiveness of financial incentives in exchange for rural and underserved area return-of-service commitments: systematic review of the literature. *Canadian Journal of Rural Medicine*, 2004, 9:82-88.
- 155 Van Rensburg D, Van Rensburg N. Distribution of human resources. In: Crisp N, Ntuli A, eds. *South African Health Review*. Durban, Health Systems Trust, 1999.
- 156 Mtonya B, Chizimbi S. *System-wide effects of the Global Fund in Malawi: final report*. Partners for Health Reform Plus. Bethesda, MD, Abt Associates, 2006.
- 157 Olsen O, Ndeki S, Norheim O. Human resources for emergency obstetric care in northern Tanzania: distribution of quantity or quality? *Human Resources for Health*, 2005, 3:5.
- 158 Stilwell B et al. Migration of health-care workers from developing countries: strategic approaches to its management. *Bulletin World Health Organization*, 2004, 82:595-600.
- 159 International migration of health personnel: a challenge for health systems in developing countries. Fifty-ninth World Health Assembly. Geneva, World Health Organization, 2006.
- 160 Lehmann U, Andrew G, Sanders D. *Change and innovation at South African medical schools—an investigation of student demographics, student support, and curriculum innovation*. Durban, Health Systems Trust, 2000.
- 161 *Mission Barrio Adentro: The right to health and social inclusion in Venezuela*. Caracas, Pan American Health Organization, 2006.
- 162 Peabody JW et al. Improving the quality of care in developing countries. In: Jamison D et al., eds. *Disease control priorities in developing countries*. The World Bank and Oxford University Press, 2006.
- 163 Donabedian A. The quality of care. How can it be assessed? *Journal of the American Medical Association*, 1988, 260:1743-1748.
- 164 Egger D et al. *Strengthening management in low-income countries*. Geneva, World Health Organization, 2005.
- 165 Rowe AK et al. How can we achieve and maintain high-quality performance of health workers in low-resource settings? *Lancet*, 2005, 366:1026-1035.
- 166 Dovlo D et al. Ghana case study: staff performance management. In: *European Union funded research project, measuring and monitoring staff performance in reforming health systems*. Ghana, Ministry of Health, 1998.
- 167 Marquez L, Kean L. Making supervision supportive and sustainable: new approaches to old problems. In: *Paper No. 4. Supplement to population reports*. Washington DC, Maximizing Access and Quality (MAQ) Initiative, 2002.
- 168 Tavrow P, Kim YM, Malianga L. Measuring the quality of supervisor-provider interactions in health care facilities in Zimbabwe. *International Journal for Quality in Health Care*, 2002, 14(Suppl.1):57-66.
- 169 De Savigny D et al. *Fixing health systems*. Ottawa, International Development Research Centre, 2004.
- 170 Tanzania IMCI Multi-Country Evaluation Health Facility Survey Study Group. The effect of Integrated Management of Childhood Illness on observed quality of care of under-fives in rural Tanzania. *Health Policy and Planning*, 2004, 19:1-10.
- 171 Garcia P et al. Training pharmacy workers in recognition, management, and prevention of STDs: district-randomized controlled trial. *Bulletin World Health Organization*, 2003, 81:806-814.
- 172 Hadiyono JEP et al. Interactional group discussion: results of a controlled trial using a behavioral intervention to reduce the use of injections in public health facilities. *Social Science & Medicine*, 1996, 42:1177-1183.
- 173 Herbert CP et al. Better prescribing project: a randomized controlled trial of the impact of case-based educational modules and personal prescribing feedback on prescribing for hypertension in primary care. *Family Practice*, 2004, 21:575-581.

- 174 Ratanajamit C, Chongsuvivatwong V, Geater AF. A randomized controlled educational intervention on emergency contraception among drugstore personnel in southern Thailand. *Journal of American Medical Women's Association*, 2002, 57:196-199, 207.
- 175 Gormley GJ et al. A randomized study of two training programmes for general practitioners in the techniques of shoulder injection. *Annals of the Rheumatic Diseases*, 2003, 62:1006-1009.
- 176 Roberts I et al. Airway management training using the laryngeal mask airway: a comparison of two different training programmes. *Resuscitation*, 1997, 33:211-214.
- 177 Clark NM et al. Impact of education for physicians on patient outcomes. *Pediatrics*, 1998, 101:831-836.
- 178 Cohen JC, Montoya JC. *Using technology to fight corruption in pharmaceutical purchasing: lessons learned from the Chilean experience*. Washington DC, The World Bank, 2001
- 179 *Harmonizing donor practices for effective aid delivery. Volume 3: strengthening procurement capacities in developing countries*. Paris, Organization for Economic Co-operation and Development, 2005 (DAC Guidelines and Reference Series).
- 180 *Annual report 2001—Essential drugs and medicines policy: extending the evidence base*. Geneva, World Health Organization, 2002.
- 181 Fung CH et al. Systematic review: the evidence that publishing patient care performance data improves quality of care. *Annals of Internal Medicine*, 2008, 148:111-123.
- 182 South Africa Every Death Counts Writing Group. Every death counts: use of mortality audit data for decision making to save the lives of mothers, babies, and children in South Africa. *Lancet*, 2008, 371:1294-1304.
- 183 Lucas H. Information and communications technology for future health systems in developing countries. *Social Science & Medicine*, 2008, 66:2122-2132.
- 184 Lavis JN et al. Assessing country-level efforts to link research to action. *Bulletin of the World Health Organization*, 2006, 84:620-628.
- 185 WHO. Constraints to scaling up health related MDGs: costing and financial gap analysis. Geneva, World Health Organization, 2009. http://www.who.int/choice/publications/d_ScalingUp_MDGs_WHO_report.pdf.
- 186 World Bank, UNICEF, UNFPA, PMNCH. Health systems for the MDGs: country needs and funding gaps. Background document for the High-Level Taskforce on Innovative International Financing for Health Systems, Working Group 1: constraints to scaling up and costs. Washington DC, World Bank, 2009.
- 187 Mills A, Shillcutt S. The challenge of communicable disease. In: Lomborg B, ed. *Global crises, global solutions*. Cambridge University Press, 2004.
- 188 *A strong supply chain responds to increased demand for contraceptives in Rwanda*. Arlington, USAID, 2009.
- 189 *The world health report 2005: make every mother and child count*. Geneva, World Health Organization, 2005.
- 190 Herfkens E and Bains M. Reaching our development goals: why does aid effectiveness matter? United Nations Millennium Campaign and Organization for Economic Co-operation and Development, 2008.
- 191 Arrow K, Panosian C, Gelband H. *Saving lives, buying time—Economics of malaria drugs in an age of resistance*. Washington DC, Institute of Medicine, National Academies Press, 2004.
- 192 Attaran A et al. WHO, the Global Fund, and medical malpractice in malaria treatment. *Lancet*, 2004, 363:237-240.
- 193 Kurowski C et al. Scaling up priority health interventions in Tanzania: the human resources challenge. *Health Policy and Planning*, 2007, 22:113-127.





Taskforce on Innovative
International Financing
for Health Systems



Taskforce on Innovative
International Financing
for Health Systems



Taskforce on Innovative
International Financing
for Health Systems



Taskforce on Innovative
International Financing
for Health Systems



Taskforce on Innovative
International Financing
for Health Systems



Taskforce on Innovative
International Financing
for Health Systems



Taskforce on Innovative
International Financing
for Health Systems



Taskforce on Innovative
International Financing
for Health Systems



Taskforce on Innovative
International Financing
for Health Systems



Taskforce on Innovative
International Financing
for Health Systems



Taskforce on Innovative
International Financing
for Health Systems



Taskforce on Innovative
International Financing
for Health Systems