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INNOVATING FOR HEALTH

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Acronyms

ANC	Antenatal Care
ARI	Acute Respiratory Infection
BBS	Bangladesh Bureau of Statistics
BDHS	Bangladesh Demographic and Health Survey
BHP	BRAC Health Program
BHW	Bangladesh Health Watch
BiBEAT	Bangladesh Institute for Biomedical Engineering and Appropriate Technology
BIID	Bangladesh Institute for ICT in Development
BIRDEM	Bangladesh Institute for Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders
BMA	Bangladesh Medical Association
BMDC	Bangladesh Medical and Dental Council
BMGF	Bill and Melinda Gates Foundation
BMMS	Bangladesh Maternal Mortality Survey
BNC	Bangladesh Nursing Council
BNHA	Bangladesh National Health Accounts
BSP	Bangladesh Sprinkles Program
CCM	Global Fund Country Co-ordination Mechanism
CDD	Center for Disability in Development
CHMI	Center of Health Market Innovations
CHW	Community Health Worker
CHX	Antiseptic Chlorhexidine
CIET	*Centro de Investigación de Enfermedades Tropicales* (Tropical Disease Research Centre)
CLP	Chars Livelihood Program
CRP	Centre for the Rehabilitation of the Paralysed
CSR	Corporate Social Responsibility
DAB	Diabetic Association of Bangladesh
DCHT	Dhaka Community Hospital Trust
DFID	Department for International Development
DGMIS	Directorate General of MIS
DHS	Demographic and Health Surveys
DI	Data International
DOTS	Directly Observed Treatment
EHC	Essential Health Care
EPI	Expanded Programme on Immunization
ETS	Emergency Transport Schemes
FP	Family Planning
GAIN	Global Alliance for Improved Nutrition
GAVI	Gavi Alliance
GFATM	The Global Fund to Fight AIDS, Tuberculosis and Malaria
GIZ	Gesellschaftfür Internationale Zusammenarbeit
GK	Gonoshasthya Kendra
GMSA	Groupe Speciale Mobile Alliance

GoB	Government of Bangladesh
GrK	Grameen Kallyan
HER	Herproject
HEU	Health Economics Unit
HIES	Household Income and Expenditure Survey
HIS	Health Information System
HLSP	HLSP Institute
HPNSDP	Health Population and Nutrition Sector Development Program
IAP	Informal Allopathic Provider
ICDDR,B	International Centre for Diarrhoeal Disease Research, Bangladesh
ICT	Information and Communications Technology
IDRA	Insurance Development Regulatory Agency
IDS	Institute of Development Studies
ILO	International Labour Organization
INAFI Bangladesh	International Network of Alternative Financing Institutions, Bangladesh
InM	Institute of Micro Finance
ITN	Insecticide Treated Nets
JSI	John Snow International
LMIC	Lower and/or Middle Income Countries
MAMA	Mobile Alliance for Maternal Action
MBBS	Bachelor of Medicine, Bachelor of Surgery
MCH	Medical College Hospital
MCH	Maternal and Child Health
MCWC	Maternal and Child Welfare Centre
MDG	Millennium Development Goals
MFI	Micro Finance Institutions
MHI	Micro Health Insurance
MIS	Management Information System
MNCH	Maternal, Newborn and Child Health
MOHFW	Ministry of Health and Family Welfare
MR	Menstrual Regulation
MRA	Microcredit Regulatory Agency
NCD	Non-Communicable Disease
NGO	Non-Governmental Organisation
NHSDP	NGO Health Services Delivery Project
NIPORT	National Institute of Population Research and Training
NIPSOM	National Institute of Preventative and Social Medicine
NTP	National TB Programme
OED	Operations Evaluation Department
OOP	Out-of-pocket
ORS	Oral Rehydration Solution
PCB	Pharmacy Council of Bangladesh
PHC	People's Health Centre
PHD	Partners in Health Development
PPP	Public Private Partnership
RMG	Ready-made Garment
RUTF	Ready to Use Therapeutic Food
SBA	Skilled Birth Attendant

SFP	School Feeding Program
SIDA	Swedish International Development Cooperation Agency
SMC	The Social Marketing Company
SMF	State Medical Faculty
SRH	Sexual and Reproductive Health
SSs	Shasthya Sebikas
STI	Sexually Transmitted Infection
SWaPS	Sector Wide Approaches in Health
TBA	Traditional Birth Attendants
THE	Total Health Expenditure
TRCL	Telemedicine Reference Center Limited
UHC	Upazila Health Complexes
UPHCP II	Urban Primary Health Care Project II
WFP	World Food Programme
WHO	World Health Organisation

Executive Summary

Introduction to the study

The study was undertaken for the UK Government-funded SRIJON Initiative, whose aim was to stimulate non-state actors to develop innovative approaches for meeting the health needs of the poor, with the potential to provide benefits to large numbers of people on a commercially viable basis. The purpose of the study was to provide a systematic analysis of the health market system in Bangladesh and inform project implementation with the following specific objectives:

- Documenting the structure of the health market system and the context within which it is embedded (chapters 2-3);
- Identifying sources of innovation and the constraints to their emergence and spread (chapters 4-6);
- Identifying types of partnership between innovators and other organisations with the potential to take new ways of doing things to scale (chapter 4); and,
- Providing evidence to support decisions about priority areas for the Health Innovation Challenge Fund, as well evidence about strategies to mitigate risk and increase chances of success (all chapters).

Although the emphasis of the SRIJON Initiative was on innovations with the potential to become commercially viable, this report includes innovations that link private-for-profit and not-for-profit organizations and that strengthen accountability and the creation of institutional arrangements for improving the performance of health markets.

This is a report on the findings of a rapid scoping study aimed at analysing key elements of the market system in Bangladesh. We sought information from the following sources:

- Reviews of published evidence on demand and supply-side issues in Bangladesh, available data from routine health and demographic information systems and surveys, relevant policies and regulations and international literature on health markets;
- Interviews with fifty-six key informants in government, NGOs, private organisations and research institutes, which provided information on the different health market sub-systems. The team used its in-depth knowledge of the Bangladesh health system and business community and identified additional informants through a snowball methodology.

Bangladesh's pluralistic health system

Bangladesh has a pluralistic health system in which the government, large and small NGOs, private clinics and hospitals and large numbers of informal health workers and drug sellers play a role. The government has established a health policy framework and manages a large national network of health facilities. It also organises a number of public health programmes, with an emphasis on family planning and maternal and child health. In terms of the non-state sector, around 2000 NGOs provide health-related services – a few of which are very large NGOs with the capacity to develop and test new approaches for meeting needs at low cost. In the formal, for-profit sector, between 2000 and 2009 the number of clinics/hospitals and laboratories/diagnostic facilities registered with the Ministry of Health and Family Welfare rose

from 682 to 2271 and 838 to 4753 respectively. There is also a flourishing informal sector, including a wide variety of village doctors and drug vendors.

Seventy-nine percent of outpatient visits are to private doctors or to informal health workers and drug sellers. Residents of rural areas and urban slums rely heavily on these informal markets for treatment of common health problems. Bangladesh also has a thriving pharmaceuticals industry and mobile phone operators are becoming increasingly interested in health.

Health needs and access by the poor

Inequality and social exclusion in Bangladesh are reflected in differences in the burden of disease and in access to health services between population groups, though health inequalities have been narrowing over the last decade. Around 47 million people in Bangladesh are estimated to live below the poverty line, a large enough number to make generalisations difficult. There is local evidence that health status and health access among poor Bangladeshis varies significantly by urban/rural status, gender, age, region and geography, occupation and ethnicity. Of the reviewed health areas – child health, maternal health and sexual and reproductive health services – patterns of inequity were consistent.

Generally, the oldest, least educated and poorest have the highest rates of self-reported ill-health. The country looks on-track to meet several of the MDG indicators, particularly on maternal and child health. However the burden of disease also appears to be shifting, with non-communicable diseases becoming more prominent in both urban and rural areas. Physical disabilities are also an important aspect of the disease burden in Bangladesh, with the poor most likely to be affected.

In terms of access to health services, the majority of healthcare in Bangladesh is financed by out-of-pocket expenditure, most of which is spent on medicines. Beside finance, the poor face other key access issues. Government-run health facilities see significantly more use from higher-income populations, leaving the poor to mainly access health services through informal providers.

Suppliers of health services and products to the poor

To understand the complex reality of existing health market innovations in Bangladesh, a series of in-depth interviews were conducted with a range of non-state actors across a number of health sub-sectors. The interviews focused on innovations in the health supply side across four subsectors: e- and m-health interventions, outreach services, low-cost health technologies and health financing.

The **e- and m-health sector** in Bangladesh is flourishing and highly competitive. Most e- and m-health interventions provide information through SMS messages or a website for education and awareness, or provide point of care support and diagnostics through a medical advice line. Business models for e- and m-health services vary, with only a few interventions generating profits. More typically, a partner NGO or research institute is involved to help test the viability of a product, or a company operates these services as part of their CSR mandate. The current priority is to take these interventions to scale on a sustainable basis. There are several regulatory issues to be resolved.

A number of factors hinder the access of poor people to health services. To overcome this, there are various **outreach services** aimed at meeting the health needs of specific populations. These services range from engagement with frontline health workers, provision of mobile health clinics and operate through a combination of facility-based and community-based services. In addition, a large proportion of health services used by residents of rural areas or urban slums are provided by around 180,000 **informal health service providers and/or drug sellers**. They are the first port of call for poor people living in rural areas or urban slums. There is some evidence that the widespread availability of antibiotics and other effective treatments for common illnesses may have contributed to falls in mortality. However, there is also evidence that informal providers sell large quantities of inappropriate, unnecessary and sub-standard drugs. Unsurprisingly, informal providers have a close relationship with pharmaceutical companies. Any projects that a challenge fund considers that involve informal providers must prioritise shifting business models of informal providers away from selling unnecessary and sub-standard drugs.

Low cost health technologies, which include medicines, vaccines and medical devices, are an essential component of effective health care systems. Despite the exponential growth of health technological development, most developing countries, including Bangladesh, do not have adequate access to appropriate and affordable health technologies. It is a growing sector in Bangladesh, however, despite a weak business and regulatory environment for such activities. There appears to be a focus in the country on innovations in low-cost prostheses and mobility devices. This may be influenced by the growing incidence of road traffic and industrial accidents and growing burden of chronic non-communicable diseases, which have resulted in increased demand for assistive and mobility devices and artificial limbs in Bangladesh.

With the large number of poor in Bangladesh, there is an immense pressure in both the public and non-state sectors to find innovative **health financing mechanisms** to reduce out-of-pocket expenses, especially catastrophic ones that spur the intergenerational transmission of poverty. A range of health financing interventions is being implemented in Bangladesh. These include pre-paid health cards, vouchers, micro health insurance, community-based insurance, private health insurance, buffer funds and emergency loans. Pre-paid health cards schemes are the most common intervention. Although there has been serious interest from the Government to develop health financing mechanisms, most of the local innovations have been driven by large NGOs. Almost all health financing initiatives are dependent on external funding, and most lack a viable business model. Overall, health financing schemes targeted at the ultra-poor must have a broader client base to become financially sustainable. It should also be noted that, after the adoption of the health care financing strategy (HCFS) 2012-2032, it is not appropriate to fund any health financing scheme that does not fit in this framework.

Health regulatory framework

All markets in Bangladesh are subject to a wide variety of regulations regarding registration of a business, payment of taxes and enforcement of contracts. In addition, in the health sector, there is a relatively complex regulatory framework aimed at protecting the public against dangerous products and practices. In Bangladesh, as in many other low- and middle-income countries, health related laws are primarily to regulate inputs used in producing health services. In Bangladesh, regulations focus mainly on registration, price and quality of inputs and overlook

issues of quality of outputs and of consumer protection. In some cases, community and civil society groups are playing a role in making the health sector more accountable to the public, as the government has a limited ability to enforce these regulations.

Key regulations on **human resources for health** govern conferring medical and dental degrees/diplomas as well as registration of such providers. There are specific laws to regulate different categories of health workers and their practice. There are also a number of laws that regulate **health financing**, especially when it comes to micro-insurance. These laws are overseen by two regulatory agencies relevant for health financing initiatives – Microcredit Regulatory Agency (MRA) and Insurance Development Regulatory Agency (IDRA). There are also clear laws in place when it comes to production and sale of drugs and medicines: the National Drug Policy 2005 (the first policy was adopted in 1982), the Drugs (Control) Ordinance 2006 and 1982, Drug Act 1940, Drug Rules (1945 and 1946) govern production, sale, distribution, storage, pricing and quality of pharmaceutical products.

In contrast, there are no clear regulations regarding **health technologies**, nor are there many clear guidelines on **e- and m-health services**, though the MoHFW is responsible for the implementation of the recent Digital Bangladesh Policy. These are both obvious gaps in the regulatory environment. There also needs to be more consideration of regulations regarding practice for informal providers.

Outside of the government sector, there are also a number of civil society actors that work to enforce regulations. One notable initiative is Health Watch, which produces regular reports on different aspects of the health system. It has not yet produced a report on the performance of the private health sector. The rapid increase in access to the Internet is creating new opportunities for making private providers more accountable. As one example, a team at ICDDR,B is producing an inventory of all private providers in urban areas and inserting them into mapping software, which has been made available online.

The Way Forward

The value added of a health challenge fund

Given the substantial global investments in health innovations, it is important for a health challenge fund to ensure it adds value. The study team identified several key issues:

- It will need to address both persistent and emerging health challenges, including the persisting social inequalities in access to MNCH services, the critical gap in access to skilled health care professionals, and emerging challenges such as the rising burden of chronic non-communicable diseases and mental illness.
- There is a particular need for investment in adapting innovations in technologies or new organisational arrangements to the Bangladesh context and the development of business models for delivering information, products and services at scale. A challenge fund should also leave a window open for testing blue skies ideas.
- A health challenge fund will need to balance its investments in innovations that address the needs of the large numbers of relatively poor people who already spend a proportion of their income on health against investments in innovations that address the needs of the extremely poor.

- A health challenge fund should support innovative partnerships (between NGOs, for-profit companies and informal providers, for example) that increase the potential for taking innovations to scale on a sustainable basis.
- A health challenge fund should provide opportunities for young and promising entrepreneurs to secure investment for translating award-winning concepts into viable businesses that provide benefits at scale.

Potential themes for support by a health challenge fund

Poor people in rural areas and urban slums face several barriers to access to safe, effective and affordable health services. The first concerns the quality of health-related goods and services available in the large informal markets. The second is related to the high cost of services provided by facilities staffed by licensed doctors and also to the long distances people need to travel to use these services. The third is related to problems that clients and providers of health services have in gaining access to reliable and trustworthy information. The study team identified the following themes for possible investment to overcome these access barriers:

- **New practice models for doctors and community skilled birth attendants**, in which the growing number of graduates from expanded training programmes can provide low cost services in rural areas through linking paramedical personnel to doctors.
- **Improve the performance of informal providers** in providing appropriate treatment for common diseases, like childhood pneumonia or hypertension and diabetes, by linking them to a service delivery organisation and leveraging their existing links with pharmaceutical companies.
- **Strengthen supply chains for low-cost commodities** to distribute them through community health workers and informal providers, and thereby provide them with an additional source of income.
- **Mobilising ICTs to support service delivery at scale** by linking m-health to the delivery of services and by linking providers of front-line health services with doctors electronically.
- **Ambulance services for emergency obstetric care** to enable more rapid referral to a hospital when necessary.
- **Develop innovative ways to help poor people manage hypertension and diabetes** and purchase appropriate drugs at low cost by improving the performance of informal providers in monitoring blood pressure and blood sugar and creating links with medical doctors through a service delivery organisation and/or an m-health company.
- **Support the development of health services for migrant workers or people working in the garment and other industries** to include insurance and provision of cost effective services.
- **Innovations for accountability and regulation** to provide information on non-state providers to the community and support measures to make them more accountable for the safety and quality of their services.

Prospective grantees and partners

The study identified a number of different types of organisations that could potentially apply for investment to become partners or mentors for the grantees:

- **New practice models for doctors and community skilled birth attendants** – NGOs with health programmes, pharmaceutical companies, individual practitioners or social franchises, training institutions and m-health companies;

- **Improve the performance of informal providers –** service delivery organisations, research organisations, manufacturers and distributors of hygiene and sanitary products and nutrition supplements, pharmaceutical companies, m-health companies;
- **Strengthen supply chains for low-cost commodities** - manufacturers and distributors of hygiene and sanitary products and nutrition supplements, service delivery organisations;
- **Mobilise ICTs to support service delivery at scale** - m-health application developers, mobile phone operators, telemedicine service providers, health NGOs for profit health facilities, research organisations, young innovators;
- **Ambulance services for emergency obstetric care**– health NGOs, young entrepreneurs, social enterprises;
- **Develop innovative ways to help poor people manage hypertension and diabetes** – pharmaceutical companies, health service delivery organisations, research organisations, m-health companies, community radio service providers;
- **Support the development of health insurance for migrant workers or employees in the garment and other sectors –** health insurance organisations, insurance companies, garment owners' association, medical practitioners' associations;
- **Innovations for accountability and regulation**– NGOs, research organisations, citizen groups.

1. Introduction

This study was undertaken for the SRIJON Initiative, which was supported through UK aid by the UK Government. The purpose of the study was to provide a systematic analysis of the health market system in Bangladesh and inform project implementation. Its specific objectives were to:

- document the structure of the health market system and the context within which it is embedded (chapters 2-3);
- identify sources of innovation and the constraints to their emergence and spread (chapters 4-6);
- identify types of partnership between innovators and other organisations with the potential to take new ways of doing things to scale (chapter 4); and
- Provide evidence to support decisions about priority areas for the Health Innovation Challenge Fund to support and about strategies to mitigate risk and increase chances of success (all).

Many low- and middle-income countries have pluralistic health systems, in which private (for profit and not-for-profit) service providers play an important role. There have been relatively few systematic studies of the organisation and performance of this kind of health system. One reason is a tension between two approaches for analysing the health sector. One is a public health perspective which focuses on the special characteristics of health, and the other is an institutional analysis of how markets operate in health which focuses on common challenges to be addressed in making markets more effective in meeting the needs of the poor. It is important to combine both approaches in analysing markets for health-related goods and services (Bloom et al. 2011).

Markets, on their own, do not provide safe, effective and affordable health services. Table 1 lists some widely acknowledged market failures in the health sector, which explain why governments in almost every country play a substantial role as a funder and regulator/ manager of health services. The view that health is a 'special case', guided first and foremost by the principle of 'do no harm', has led many health policy analysts to view engagement with the market as inappropriate in the health sector.

Yet, market relationships have become pervasive in the health systems of many countries, especially in the developing world. Inadequacies in provision and, in many cases, large-scale public sector failures have produced health systems in which a wide variety of non-state actors fill a huge gap by providing health goods and services through the market. These actors often have an array of relationships to government regulatory frameworks. Also, government employees frequently augment their salary by charging patients for services and selling drugs. Policy interventions that ignore this reality effectively ignore the bulk of the *de facto* health system, fail to exploit its potential and can have unintended outcomes. It is important to understand the factors that influence the performance of these health markets.

Table 1: 'Market failures' in the health sector

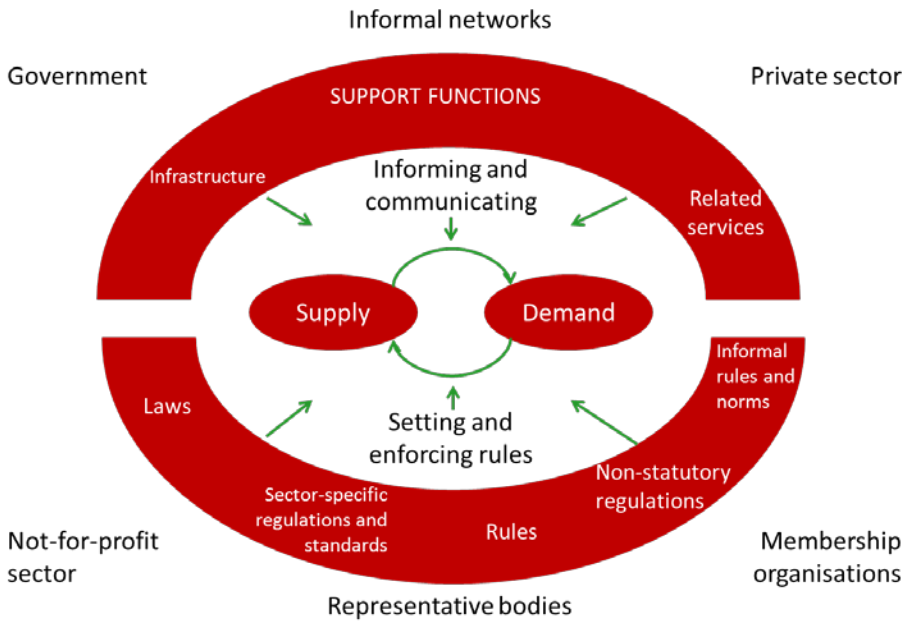
- ✓ Health-related services include public goods such as public sewerage and water supply systems, which are often undersupplied if left to the market.
- ✓ Health decisions based only on individual needs are likely to result in sub-optimal funding patterns, as some services – such as immunisations – have wider societal benefits.
- ✓ Markets tend to under-insure against major health expenditure because they cannot control costs effectively and there is little incentive for a healthy person to join an insurance scheme.
- ✓ Markets may not adequately reflect the greater willingness of the population to finance basic health care other than non-health goods and services.
- ✓ Markets can worsen distributive outcomes and hence health inequities.
- ✓ Markets for goods and services that embody expert knowledge produce information asymmetry between providers and clients that can make clients vulnerable to abuse of provider power.

Figure 1 provides a framework for analysing a health market system. In the middle are the suppliers and users of a particular service. This makes clear that their performance is strongly influenced by the institutional context within which they are embedded. These include formal and informal standards and regulatory rules enforced by government and a variety of civil society organisations. In assessing the likely impact of a particular intervention, it is important to take into account issues of safety and effectiveness of services provided (and the associated institutional 'rules of engagement'), as well as issues of access and profitability.

Health system analysts face a number of challenges in applying this framework. On the demand side, where someone lives, their socio-economic status, gender, age and other characteristics strongly influence which segment(s) of health markets they use. On the supply side, health markets are highly segmented in terms of specific health problems and the sub-populations they serve. For example, the providers of maternal health services, sexual health care for young adults and the management of a chronic disease differ greatly. There are complex inter-relationships between providers on the basis of referral and other forms of collaboration and competition. Also, the market for health services intersects and is influenced by markets for drugs, diagnostic services and, more recently, telecommunications. For example, the behaviour of doctors and informal providers of health services is strongly influenced by the marketing of pharmaceutical companies. Telecommunications companies are also becoming increasingly interested in the possibility of generating revenue from health-related services.

In terms of the institutional context, the dynamic nature of health markets and the rate of technological change pose a continual challenge to the rules of engagement, including both formal and informal regulatory mechanisms. The telecommunications industry is a case in point, where institutional rules have not evolved to manage the relationship between these new providers and the field of health care provision.

Figure 1: Conceptualising market systems



Source: Adapted from Elliot et al. (2008)

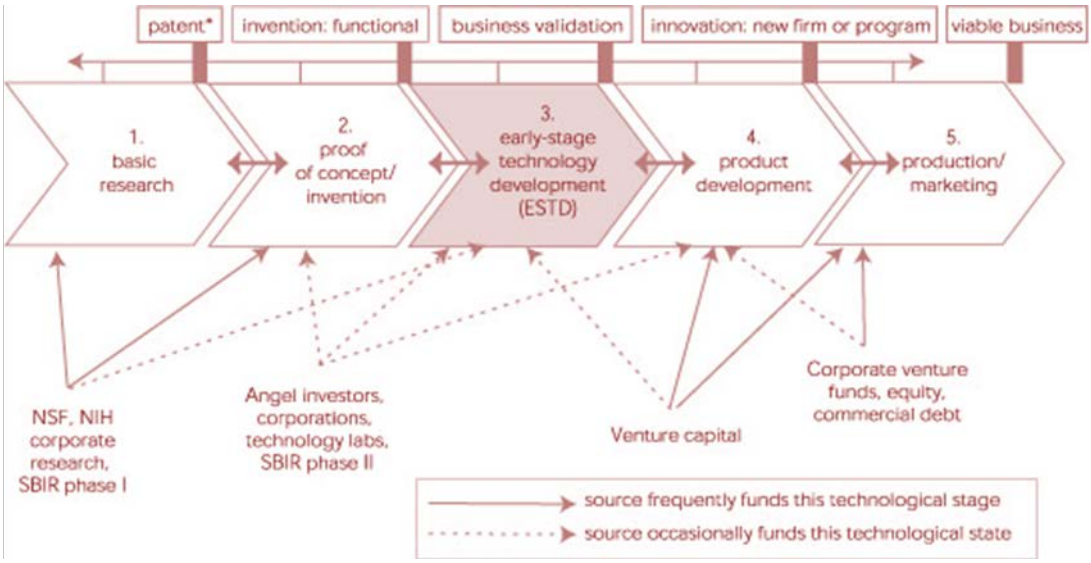
Innovations span a spectrum from basic research and the development of new technological applications to the delivery of the benefits of new technologies in the form of goods and services to specific beneficiaries or markets.

The aim of a challenge fund is to support innovation in the health sector. It is misleading to equate innovation with the development of a new technology. Innovations span a spectrum from basic research and the development of new technological applications to the delivery of the benefits of new technologies in the form of goods and services to specific beneficiaries or markets. This is the conclusion of a paper, which summarises the lessons from years of efforts to create technology-based industries in low and middle-income countries (Bell 2009). The author concludes that investment in R&D, on its own, has only a limited impact and that it is equally important to build the capacity of small and large enterprises to adapt technologies to local contexts and build successful businesses that provide technology-based goods and services. Figure 2 provides a framework for understanding the stages of technology development from basic research to proof of concept, technology development, product development and production and marketing. It emphasises the importance of each phase of this process.

Reviews of innovation in health systems in low income countries also emphasise the importance of downstream organisations. Frost and Reich (2008) looked at investments by large foundations in new technologies in the health sector. They found that the impact on poor people has been limited because of a lack of investment in approaches for making the benefits of these technologies widely available. The Acumen Fund assessed its ten years of investing in health sector innovation and concluded that investments in innovative approaches for delivering

low cost services and/or effective health commodities had more impact on their target population than investment in the development of new technologies (Batavia et al 2011).This reflected their wish to achieve relatively rapid impact.

Figure 2: Stages of technology development



Source: Economic Assessment Office of the National Institute of Standards and Technology http://www.atp.nist.gov/factsheets/1-c-9.htm

The recent experience with the investment in new applications for mobile phones, to take advantage of the rapid growth in their use, illustrates the above conclusions. A review of the international experience by Lucas (2011) found a lot of investment in highly innovative small-scale pilots, but little systematic evidence about their health impact or their financial viability. It also found few examples of an m-Health service that has gone to scale. This underlines the many steps involved in translating a new technology into a service that is widely available on a financially sustainable basis. A recent report to the World Bank concluded that the present focus with regard to m-Health should be on the development of appropriate business models to take these services to scale (Qiao et al 2012).

These reviews of international experience indicate that there are major barriers to the rapid spread in the benefits of new technologies to low income countries and particularly to poor residents in these countries. There is a need for more investment in innovative approaches for overcoming these barriers.

1.1 Study method

The study team has faced a challenge in producing a report about a complex and rapidly changing reality which identifies potential areas for beneficial investment in innovation. We designed the work as a rapid scoping study aimed at analysing key elements of the market system in Bangladesh. To do this, we put together a team with expertise in both health systems and market analysis and with a good understanding of the Bangladesh reality. We sought information from the following sources:

- Review of published evidence on demand- and supply-side issues in Bangladesh, including in grey literature;
- Review of available data from routine health and demographic information systems and surveys;
- Review of relevant policies and regulations;
- Interviews with key informants in government, NGOs, private organisations and research institutes. They were chosen to provide information on the different health market sub-systems, both formal and informal. The team used its in-depth knowledge of the Bangladesh health system and of the business community. Using a snowball methodology, a first round of interviews yielded further leads that were, in turn, followed up (see Annex 2 for list of informants); and,
- Review of relevant international literature on health markets, health innovation and relevant policy and project interventions.

Methodology for identification of current and prospective innovators in the health systems in Bangladesh

- A preliminary list of key informants was developed based on the review of the CHMI case studies published by Access Health Interventional;
- The preliminary list was further populated by the scoping study team members, based on their experience with the non-state stakeholders in Bangladesh;
- Initial interviews were conducted with informants who have sector-wide knowledge about the initiatives undertaken by different organisations;
- On the basis of the initial interviews, the team decided to focus on five subsectors: m-health and e-health, low cost health technologies, health commodities supply, outreach services and demand side financing since the existing innovations were found concentrated mostly around these subsectors;
- At this stage the team met with decision makers from leading businesses and NGOs in Bangladesh under the different subsectors;
- We followed up suggestions about other companies active in the sector;
- Members of the scoping study team drew on their individual networks to identify and consult stakeholders, with an emphasis on young innovators, inventors and members of professional networks.

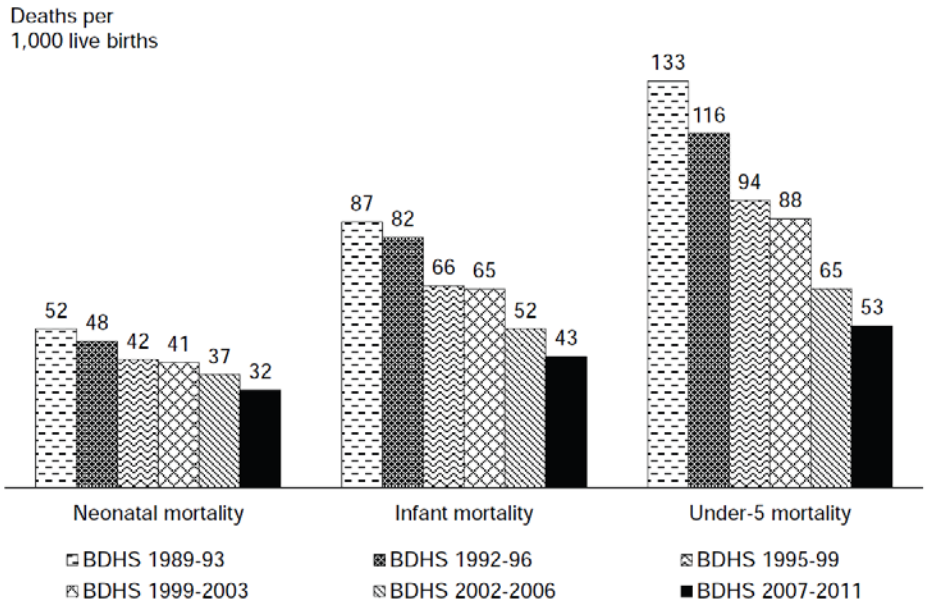
We organised the study in two phases. During the first phase, the team pulled together preliminary findings from an initial review of the available evidence and a limited number of key informant interviews. We presented these findings to a workshop attended by stakeholders in government, NGOs, the private sector and research organisations (Annex 3). We designed a second phase of in-depth study on the basis of the initial findings and the comments and suggestions by the workshop participants.

The report is structured as follows. Chapter 2 presents an introduction to the pluralistic health system of Bangladesh. Chapter 3 provides an overview of the degree to which the health system meets the health needs of the poor and vulnerable. Chapter 4 presents an analysis of several health market sub-systems of particular relevance to the poor. Chapter 5 focuses on the large number of paramedical front-line personnel and Chapter 6 discusses the regulatory framework. Chapter 7 presents the principal conclusions of the study.

2. Introduction to Bangladesh's pluralistic health system

In 1972, after the War of Liberation, the new Bangladeshi state adopted a constitution recognising the right to healthcare. The achievement of this aim has not been straightforward. Bangladesh's public health system does badly on measures traditionally associated with an effective health system. For example, it suffers from a severe shortage of qualified health professionals (Ahmed et al. 2011) and the level of government health expenditure continues to be very low. In 2007, it was just 1.1% of GDP (WHO cited in Koehlmoos et al. 2011). Nonetheless, Bangladesh has made substantial improvements in a number of health indicators, such as child and maternal mortality (see Figure 3).

Figure 3: Trends in childhood mortality, 1989-2011



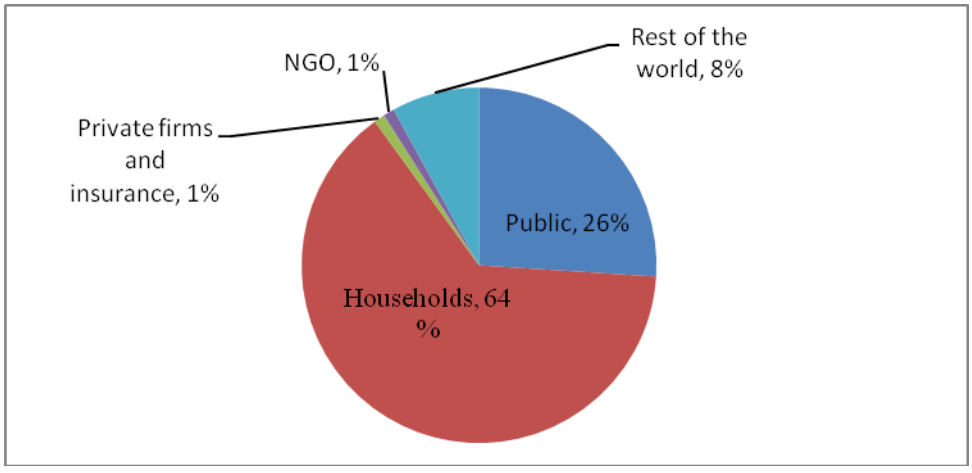
Source: NIPORT 2013

Health system analysts have drawn attention repeatedly to the pluralistic nature of the Bangladesh health system (Peters and Kayne 2003; BHW 2008; World Bank and HLSP 2010). This discussion of pluralism draws heavily on papers by Koehlmoos et al. (2011) and Ahmed et al. (2013).Table 2, which is extracted from Ahmed et al., provides an overview of the health system. The government has established a health policy framework and manages a large national network of health facilities. It also organises a number of public health programmes, with an emphasis on family planning and maternal and child health. There are around 2000 NGOs providing health-related services, including some very large ones. They employ many health workers and they also work with a large number of community health workers. They have played important roles in testing innovative approaches and taking them to scale, often in partnership with government.

Bangladesh also has a large and complex formal private sector, which is growing rapidly. Between 2000 and 2009 the number of clinics/hospitals and laboratories/diagnostic facilities registered with the Ministry of Health and Family Welfare rose from 682 to 2271 and 838 to 4753, respectively (MOHFW Health Bulletin 2009). There is also a flourishing informal sector, including a wide variety of village doctors and drug vendors, who work largely outside the legal framework. A substantial number of practitioners adhere to the Unani and Ayurvedic medical traditions. In 2003, Peters and Kaye estimated that the total number of private practitioners was around 450,000, or 3.6 per 1000 population. They reported that the unqualified providers outnumbered the formally qualified ones by 12 to 1 (Peters and Kaye 2003).

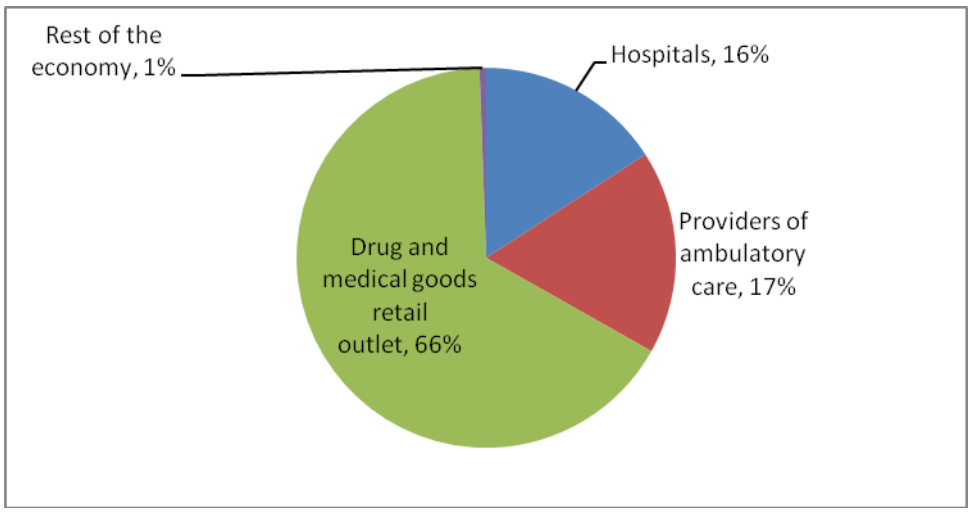
The data on health expenditure compiled by the Bangladesh National Health Accounts (BNHA) provide further evidence of the pluralistic nature of the Bangladesh health system. The BNHA estimates that between 1997 and 2007 total health expenditure (THE), excluding expenditure outside Bangladesh on the treatment of Bangladeshi citizens, grew from Taka 48.7 billion (US$1.1 billion) to Taka 160.9 billion (US$2.3 billion). This represented a yearly increase of 12.7 percent, in nominal terms, and eight percent a year, once corrected for inflation. Total health expenditure grew faster than the GDP (HEU/DI 2010). There were several major sources of health care funding: government provided 26%, households 64%, NGOs, private firms and private insurance 2% and development assistance to NGOs 8% (Figure 4).The very large contribution of households is particularly notable. Figure 5 shows that in 2007, households allocated two thirds of their health expenditure to drugs and medical goods and one sixth, each, to hospitals and private providers of ambulatory care. Poorer people probably allocated an even higher proportion of their health expenditure to drugs and medical goods, since they made relatively little use of private hospitals and formal ambulatory care (see Annex 4).

Figure 4: Health care financing in Bangladesh in 2007



Source: BNHA 1997-2007

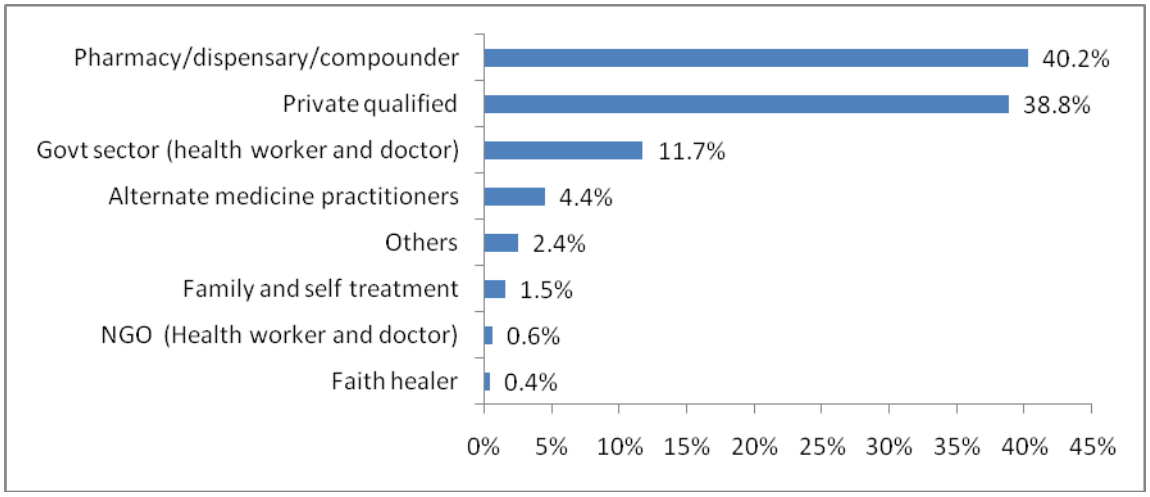
Figure 5: Distribution of medical pocket expenditure of households in 2007



Source: BNHA 1997-2007

The data from household surveys, such as the Household Income and Expenditure Survey (HIES) 2010, and the Bangladesh Demographic and Health Survey (BDHS) 2011 provide additional information on the providers of outpatient health care (Figure 6). According to HIES 2010, private for-profit providers are the dominant health care providers regardless of whether they are medically trained. 40% of people who sought medical care went to drug retailers (pharmacies/dispensaries/shops) and 39% sought care from qualified private providers (BBS 2011). These qualified private providers include government-employed doctors engaged in private practice. 12% of visits were to public-sector providers, while only a relatively small proportion of consultations were with other types of provider.

Figure 6: Distribution of different sources of health care visits



Source: HIES 2010, BBS

Table 2: Organisational pluralism in health sector of Bangladesh*

Organisations		Characteristics	Health workers	Training facilities	Clinical facilities	Expenditure (% of THE)
Government	National	- Highly centralised - Policy and regulation - Country-wide preventive and curative services	- Physicians: ~ 38,000 - Nurses: ~14,000 - Paramedics: 9,230	- Medical: 44 - Nursing: 84 - Public Health: 8	- Hospitals: 581; Beds:39,341 - Upazila level sec & ambulatory care: 5,168 - Community Clinics:14,025	26%
	Local	- Responsible for urban health services - Limited delivery capacity		Nil	- Refer to public hospitals - Outsource clinical provision to NGOs	?
Private Sector	Formal	- High-end hospital care - Diagnostic centres - Loosely regulated - Rapid growth	- Doctors:~ 20,000 - Nurses: ~5,000 - Medical assists: ~5,000	- Medical colleges 22 - Nursing colleges 6 - Public Health 11 - Rapid new entrants	- Registered hospitals and clinics: 2,501 - Beds: 42,237 - Diagnostic centres: 5,122	Private firms: ~ 1% Household: 64%
	Informal	- "Village doctors" – 1st contact for most Bangladeshis, esp. poor - Allopathic & other care (faith-healing, Ayurvedic, Unani, Homeopathy) - Largely unregulated	- Unani: ~20,000 - Ayurvedic: ~22,000 - Homeopathic: 94,000 - Drug-shop sellers: 182,400 - Traditional healers: over 100,000	- Unani - 11 - Alternative medicine2 (government) - Ayurvedic -7 - Homeopathic- 12	- Unlicensed, drug shops: ~70,000 - Licensed drug shops: 64,000 - : 100-bed hospitals (Ayurvedic and Unani and Homeopathy) in Dhaka - Alternative medicine hospitals: 2,Beds 350	Pharmaceutical expenditure – major share of THE
NGO - Private (non-profit)		- Health NGOs and development NGOs with health programmes - Mostly primary care to poor - Large scale and rapid action - Most work independently - Contracted by local government to provide urban PHC	- Doctors: ~ 11,000 - Nurses: ~9,000 - Paramedics: ~5000 - CHWs: ~70,000 - SBAs : 3,000 - Health assists:21,016	Non-accredited training of paramedics, SBAs, CHWs.	- Hospitals: ~100; Beds: ~ 50,000 - Focused on specific diseases (e.g. Diabetes), services (e.g. Obstetric care), or disadvantaged population (e.g. People's Health Centre-GK) - PHC Clinics or delivery centres: ~1,000	~ 1%
Donors	Bilateral and Multi-lateral	- Financing health sector and programmes with addition of GAVI and GFATM global funding in last decade. - Policy influence through SWaPS, ICCs, and CCMs. - Technical assistance provision and sourcing	- Provides and sources technical assistance	- support to "in-service" or short course training primarily - little support of pre-service training	- support to infrastructure development	10%

NB. THE: Total Health Expenditure

*Source: Ahmed et al (2013) Ahmed et al. 2011[10]; Bangladesh National Health Accounts 1999-2007[13]; Bangladesh Health Bulletin 2010[27]

Koehlmoos et al. (2011) have identified several factors that may have enabled Bangladesh to achieve relatively good health indicators for its level of development, despite the pervasiveness of market relations in its health system.

The commitment of the government to the objective of increasing access to effective basic health services and its success in implementing a number of programmes, such as immunisation and family planning have been important. The government has also implemented several policies, which have had a long-term impact on the health system. One is the introduction in 1982 of a policy to favour local production of generic drugs. This stimulated the growth of a local pharmaceutical industry, which now supplies 75 percent of the Bangladesh market and has ensured the availability of low cost, essential drugs.

The emergence of a very large NGO sector with the capacity to develop and test new approaches for meeting needs at a very low cost has been an important factor. One example has been the development of oral rehydration solution (ORS) for people with diarrhoea. ICDDR,B, a health research centre, developed and demonstrated its effectiveness in the field; BRAC, a large development NGO, took its use to scale. Eventually, the government accepted this low-cost approach for preventing avoidable deaths.

In addition, the emergence of a large number of village doctors and drug sellers has made drug treatment for common health problems very widely available. The pharmaceutical companies have developed supply chains to provide them with their products. The first village doctors were trained in the late 1970s and early 1980s in a special programme inspired by the Chinese barefoot doctors. Subsequently, most have not received any accredited training. This network of informal health care providers ensures wide access to basic drugs, but there are problems with the quality of some of the products, high levels of prescription of inappropriate or harmful drugs and a tendency for village doctors to supply more drugs than necessary, exposing their clients to harmful side-effects and unnecessarily high levels of expenditure.

Several analysts emphasise the degree to which the pluralistic system in Bangladesh has encouraged innovations in low-cost technology and in new approaches for the delivery of services. In many cases the translation of an innovation into a large-scale change has involved partnerships or other forms of relationship between several public and/or private actors.

Despite these relatively good outcomes, a number of serious problems remain to be addressed. The health system is highly segmented, with the better off having access to well-managed and regulated providers of services and the poor relying heavily on untrained informal providers and poorly functioning referral networks. This has led to major problems with safety, the effectiveness of treatment and with unnecessary costs. There are still big disparities in access to services and in health outcomes, as is discussed in the next chapter.

3. Health needs and access to services by the poor and vulnerable

This chapter describes how inequality and social exclusion in Bangladesh are reflected in differences in the burden of disease and in access to health services between population groups.

3.1 Population characteristics

Bangladesh has made significant progress in poverty reduction in the last decade, but the population below the poverty line, using the World Bank international definition, was 31.5% in 2010 (World Bank, 2013). This equates to around 47 million people, which is too large a group for easy generalisations about health needs and patterns of health care utilisation. There is local evidence that the poor also vary by urban/rural status, gender, age, region and geography, occupation and ethnicity. However, large data-set health and demographic studies, such as the DHS, are only broken down by wealth quintile. Table 3 shows the geographical distribution of Bangladesh's population by quintile in the DHS 2011. Rural populations are poorer than urban ones, with 24.5% of the rural population falling into the lowest wealth quintile compared to 5.8% in urban areas; conversely, 79.1% of the urban population are categorised in the highest two wealth quintiles compared to only 27.5% in rural areas. There are regional differences too. The administrative division of Dhaka has the highest proportion of population classified in the top quintile, but it is also the district with the most unequal income distribution, as measured by the Gini coefficient.

Table 3: Wealth quintiles in DHS 2011

Percent distribution of the sampled population by wealth quintiles, and the Gini Coefficient, according to residence and region, Bangladesh 2011

Residence/ Region	Wealth quintile					Total	Number of persons	Gini coefficient
	Lowest	Second	Middle	Fourth	Highest			
Residence								
Urban	5.8	5.9	9.2	24.0	55.1	100	19,158	24.4
Rural	24.5	24.5	23.5	18.7	8.8	100	59,752	30.3
Division								
Barisal	20.7	28.4	24.7	17.7	8.5	100	4,603	30.7
Chittagong	15.3	19.6	21.0	24.5	19.7	100	15,386	33.1
Dhaka	19.1	16.2	17.1	18.3	29.3	100	25,126	40.6
Khulna	16.4	18.6	22.7	22.6	19.8	100	8,742	31.5
Rajshahi	21.3	21.9	23.2	21.1	12.5	100	11,001	30.4
Rangpur	30.0	27.4	18.2	15.4	8.9	100	8,916	29.1
Sylhet	24.0	17.4	19.0	18.1	21.5	100	5,135	34.3
Total	20.0	20.0	20.0	20.0	20.0	100	78,909	32.7

Source: NIPORT, 2013

3.1.1 Socio-economic differentials

These socio-economic differentials imply very different dynamics for health and healthcare across Bangladesh. What is more, these dynamics are changing: for instance, rapid urbanisation has led to rising rates of urban poverty and reductions in rural poverty (O'Connell et al. 2012). These trends create new challenges for the health system. Within urban areas there are particular vulnerabilities and needs among growing slum populations. Data from the Urban

Health Survey 2006 (NIPORT 2008) shows slum housing is more likely to be precarious and liable to flooding or suffering from hazardous surroundings. Health and sanitation, measured by access to piped water, or use of open latrines, is worse in slum areas. Access to qualified health professionals and services is also significantly worse. Unsurprisingly then, slum dwellers, and particularly women in the poorest slum-based households, have higher levels of self-reported ill-health (measured by reports of functional limitation in the preceding month), infant mortality, and higher fertility rates. The trend for worse health among slum dwellers holds on most indicators except for non-communicable diseases (NCDs) such as hypertension and diabetes where the situation is reversed with the richer non-slum populations suffering more. However, recent data show that chronic NCDs are also a significant problem for the rural poor (see Parr et al. 2011).

3.1.2 Other differentials

The preceding discussion has focused mostly on characteristics of poverty, but there are other factors besides socio-economic status which influence health status and service utilisation. Gender, age, diagnostic category and residence in urban or rural areas are all related to patterns of disease and treatment, with each classification highlighting particular vulnerabilities and demand side issues. Generally, the oldest, least educated and poorest have the highest rates of self-reported ill-health. Gender is also a factor; for example, sex bias in under-five mortality reduction remains a concern, particularly in Sylhet and Chittagong (World Bank, OED 2004).Where reliable data are available, the rest of this report illustrates key differences in health status and service utilisation related to factors mentioned here.

3.2 Population Health

3.2.1 General health trends

Table 4: Progress toward key MDGs

Key Outcome indicators	Baseline 1990/1991[1]	2004[2]	2007[3]	Progress Towards MDG targets 2015
Under 5 mortality/1,000 live births	146	88	65	On track to 48
Infant mortality rate/1,000 live births	92	65	52	On track to 31
Maternal mortality rate 100,000 live births	574	320	194[4]	On track to 144
Neonatal mortality rate/1,000 live births	52	41	37	Off track to 22
Prevalence of underweight children (6-59 months)	66	47.5	46.3	Off track to 33
Total fertility rate	4.3	3.0	2.7	On track to 2.2
Prevalence of HIV/100,000	0.005	-	0.319	On track – halting
Prevalence of malaria/100,000	43	34	59	On track – halting
Prevalence of TB/100,000	264	406	225	On track- halting

Source: World Bank and HLSP, 2010, pxiii

Overall, population health in Bangladesh has undergone some remarkable improvements. Table 4 provides a helpful summary. Many factors have contributed to these falls in mortality rates, including relatively high levels of immunisation (81% in 2007) and take up of family planning

[1] Data from the Bangladesh MDGs Progress Report 2008, except for neonatal mortality (data source: DHS 1993/1994) and total fertility rate (data source: Contraceptive Prevalence Survey 1991; target set as the replacement rate).
[2] DHS 2004, except for maternal mortality (data source: Bangladesh Maternal Mortality Survey (BMMS) 2001) and MDG 6 indicators (data source: Bangladesh MDGs Progress Report 2008).
[3] BDHS 2007, except for MDG 6 indicators (data source: Bangladesh MDGs Progress Report 2008).
[4](Data source: BMMS 2010, NIPORT, 2012)

(47.5% using contraceptives), increased use of facility-based deliveries, higher levels of education of mothers and increased household incomes. However, neonatal mortality and levels of childhood malnutrition are not meeting the MDG targets. The gap in access to services between the rich and the poor has diminished since 2001, however large inequalities persist (NIPORT 2012). As Table 5 shows, very large gaps still exist, particularly in access to appropriately trained providers for antenatal care and births. This may explain a persistently high neonatal mortality rate (Chowdhury et al. 2010). There is therefore a need to focus on the manifestations of inequality on the demand side, which is the focus of the next chapter.

Table 5: Achievements and inequalities in health indicators

Key output indicators[5]	Baseline 1993/1994	2004	2007	Rich-poor gap
Detection rate of TB under DOTS, %	21	46	72	-
Cure rate of TB under DOTS, %	73	89	92	-
Children under 2 fully immunised, %	58.9	73.1	81.9	8.5
Children 1-5 receiving vitamin-A supplements in last 6 months, %	80.4	81.8	88.3	1.2
Births attended by medically trained providers, %	9.5	13.4	17.8	46.1
Antenatal care by medically trained providers %	25.7	48.7	51.7	52.8
Contraceptive prevalence rate – any modern methods, %	36.2	47.3	47.5	2.5
Unmet need for family planning, %	19.4	11.3	17.1	-1.8

Source: World Bank and HLSP, 2010, pxiii

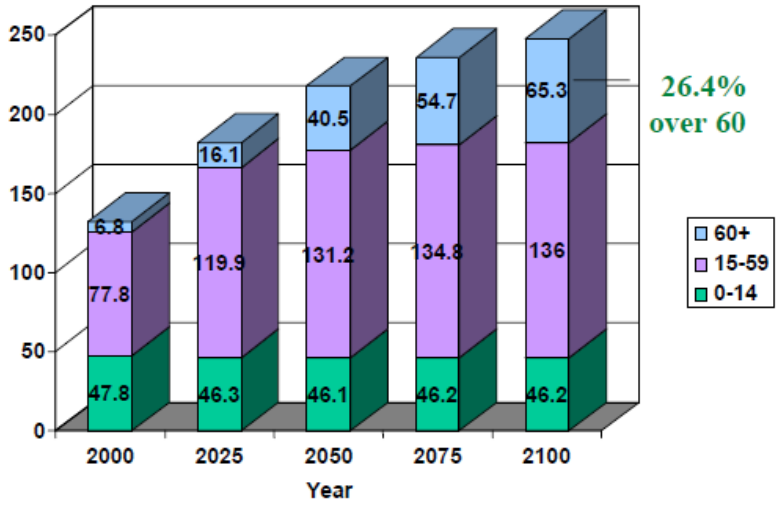
Another potentially important development for the health sector is predicted population growth. Rises in life expectancy contribute significantly to population growth and bring with it new challenges for health services, particularly concerning NCDs.

Figure 7 shows predicted population growth in Bangladesh from 2000 to 2100 (Koehlmoos, T. cited in World Bank and HLSP, 2010, p3). While the proportion of the population aged 0-14 years remains level, the proportion of those aged 60 years and over is expected to rise significantly to 26.4% in 2100.

Bangladesh is straddling the demographic and epidemiological transitions. In a review of twenty-three developing countries, Bangladesh was found to have the ninth highest rate of age-standardised mortality among the included countries due to chronic diseases (Abegunde et al. 2007).Some 51% of deaths in Bangladesh are due to non-communicable diseases and other chronic health conditions (BBS 2007) and a recent study conducted in medical college hospitals around Bangladesh found that among patients over 30 years of age about one-third of hospital admissions were due to major non-communicable diseases (Directorate General of Health Services 2007). The implications of this transition and emerging demand side behaviour are discussed in the final chapter of this report.

[5] DHS1993/1994, 2004 and 2007, except for vitamin A supplementation (1999/2000 is earliest available BDHS source) and TB indicators (data source National TB Programme (NTP) 1994, 2004 and 2007).

Figure 7: Estimated population of Bangladesh by end of 21st century (in millions)

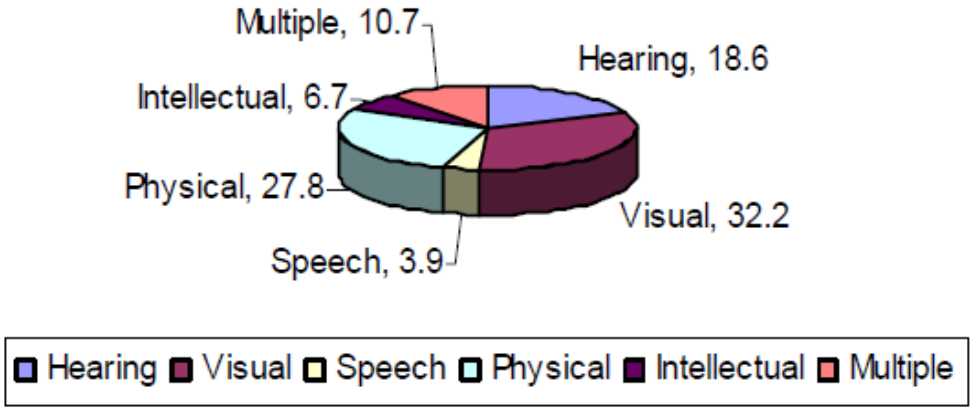


Source: Koehlmoos, T. cited in World Bank and HLSP, 2010, p3)

3.2.2 *Disability*

A national survey has found the overall prevalence of disability in Bangladesh to be 5.6% (Titumir and Hossain 2005). The most commonly reported disabilities were visual and physical impairment (see Figure 8).

Figure 8: Prevalence of types of disability in Bangladesh



Source: Titumir and Hossain 2005

There are some differences in the distribution of disability in Bangladesh. More people reported disabilities in rural areas than urban ones (6% v 4.2%). Higher rates of disability were observed in Chor/Haor areas (6%), and lower rates in hill tract areas (2.8%). But there is no way of knowing whether this simply reflects lower levels of reporting. The prevalence of disability is also reported to be higher in the division of Dhaka (8.2%) and lowest in the divisions of Chittagong (4.2%), Sylhet (4.3%) and Khulna (4.3%). Prevalence of disability increases with age,

with increasing visual impairment accounting for a significant proportion of the increase in disability prevalence in the elderly.

Income is also related to levels of disability, with 13.5% of those earning less than 1000 Taka per month reporting an impairment, compared to 3.4% of those earning over 10,000 Taka per month. The negative impact of disability on potential to earn is likely to be significant here. While visual impairments accounted for a significant proportion of the disability burden in all income groups, the proportion of people suffering from physical disabilities was higher in the lower income groups, which suggests their capacity to earn is severely limited. The devastating impact of disability on social life as well as finances has also been identified (Hosain et al. 2011). People labelled with disabilities face social exclusion, stigma and often are unable to access services (Foley and Chowdhury, 2007). The national survey (Titumir and Hossain 2005) found that 68% of disabled respondents had seen a doctor about their condition; those who had not, reported financial constraints as the main reason why. Razzaque et al. (2010) found that those who appear to suffer most are women, the elderly, the single, the poor and the uneducated.

Disabilities make both the sufferer and their carer dependent on local and familial support networks. Slum dwelling families are at a higher risk, as these networks are more precarious with fewer community resources available to assist (Goto et al. 2011). Another study showed how elderly rural populations are dependent on family for assistance, but family support is under threat because of migration to urban areas (Cherry et al. 2012). Both these studies suggest that the better integration of services for disabled people into primary care should be a priority.

Much disability is associated with chronic disease and mental health. One study has estimated the overall prevalence of psychiatric disorders in an area of rural Bangladesh as 16.5%, mostly depression and anxiety. The survey also found higher rates of these disorders among women, the poor and those over 45 years of age (Hosain et al. 2007).

3.3 Health inequalities

The pattern over the last 15 years has shown a narrowing of differences in disease burden and health care utilisation between the poorest and richest quintiles. For instance, in 2005, the poorest were two to three times more likely to have an illness and two to four times less likely to use health care services (the problem of “under-demand”), a significant narrowing from a decade earlier (Varghese et al. 2005). Nonetheless, much remains to be done to address issues of access, under-demand and under-utilisation of certain kinds of services by the poor and extreme poor. The previous discussion of slum and non-slum residents’ health has already demonstrated that there are entrenched, and perhaps even growing, pockets of unmet need. In the next chapter, population-level health care seeking is described before disaggregated data (mostly by quintile) on inequalities is examined. Then, the areas of child health, maternal health and sexual health are described in more detail as there is more current data available on those topics.

3.4 Access, utilisation and expenditure data

The majority of healthcare in Bangladesh is financed by out-of-pocket expenditure, most of which is spent on medicines (Rannan-Eliya et al. 2012c). Figure 9 shows the distribution of

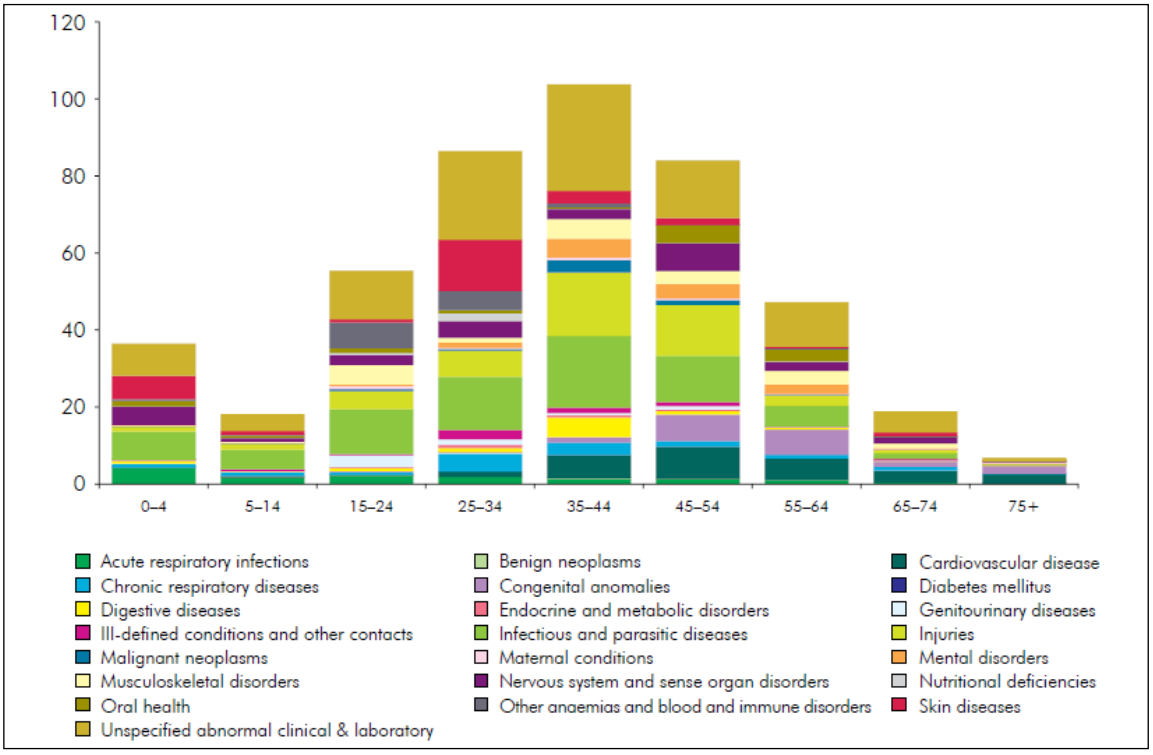
spending per capita on medicine by age and diagnostic category. Observational data on clients' age, sex and medicine purchase (including reason for buying), was collected from 6,648 customer transactions in a national sample of pharmacies. Population-level estimates were then derived using national survey data on pharmacy sales.[6] Accepting the likelihood of error, particularly the possibility of a bias towards data from formal pharmacies used by the better off, this provides an interesting overview of the medicine mix purchased in Bangladesh and the reasons patients think they are buying them. As a representation of diagnoses it is not likely to be accurate.

Except for raised levels of spending on infants and children under four years of age, there is a normal distribution of spending across the life span, with most being spent on people aged between 35-44 years old and less on children (over 4) and older generations. Government expenditure patterns look broadly similar. Given that older populations usually suffer higher rates of ill health, the lower spending on the elderly might be interpreted as discriminatory. However, it is also likely to be due to the low relative proportion of the population accounted for by the higher age groups. In terms of demand-side needs, there are also clear patterns in terms of kinds of disease: acute respiratory infections (ARIs) account for more spending in earlier life, whereas cardiovascular disease accounts for more spending later in life. Infectious diseases seem to represent an almost constant threat and source of expenditure. Unspecified abnormal clinical and laboratory conditions account for a considerable proportion of spending in each age group. This suggests that improved diagnostic services could positively influence demand side behaviour, and is an area where unnecessary expenditure could be reduced. It is likely that purchases for unspecified or undiagnosed conditions are more frequent in the large informal market.

HIES 2010 data do not show dramatic differences in types of provider used by male and female or urban and rural populations. For example, the most common provider used by all groups was pharmacists/dispenser: that category was used by 38% of urban men and 35% of urban women. In rural areas the figures are slightly higher, but similar for men and women, with 42% of men and 40% of women reporting consulting them. Figures are similar for the next most frequently used provider, a private doctor: 22% of urban men and 22% of urban women report consulting them, compared to 25% rural men and 25% rural women (but the definitions of "private doctor" may vary with respondent).There are data to suggest that the kind of health condition being treated influences the place of treatment. In Figure 10 there is considerably more use of public services for family planning (FP) than other types of provider, whereas for diarrhoea and ARI, treatment the private sector is more significant. NGO's provide minimal levels of service, but more for FP and antenatal care. These trends are related to factors such as the government's historical commitment to population control and, presumably, to the fact that ARIs and diarrhoea are common but usually minor complaints for which self-treatment methods are well established.

[6] Reasons for purchase was then coded using the WHO's International Classification of Primary Care, second edition (ICPC-2), and the International Classification of Diseases (ICD-10). Medicines sold were coded using the WHO's Anatomical Therapeutic Chemical (ATC) classification. Thus, a distribution of medicine sales by age, sex and ICD-10 and ATC codes could be obtained. This was then re-weighted according to national estimates of pharmacy sales (from IMS Health 2006) and the Bangladesh National Health Accounts 2007. The methodology is described in more detail in the report (Rannan-Eliya et al., 2012c, p9).

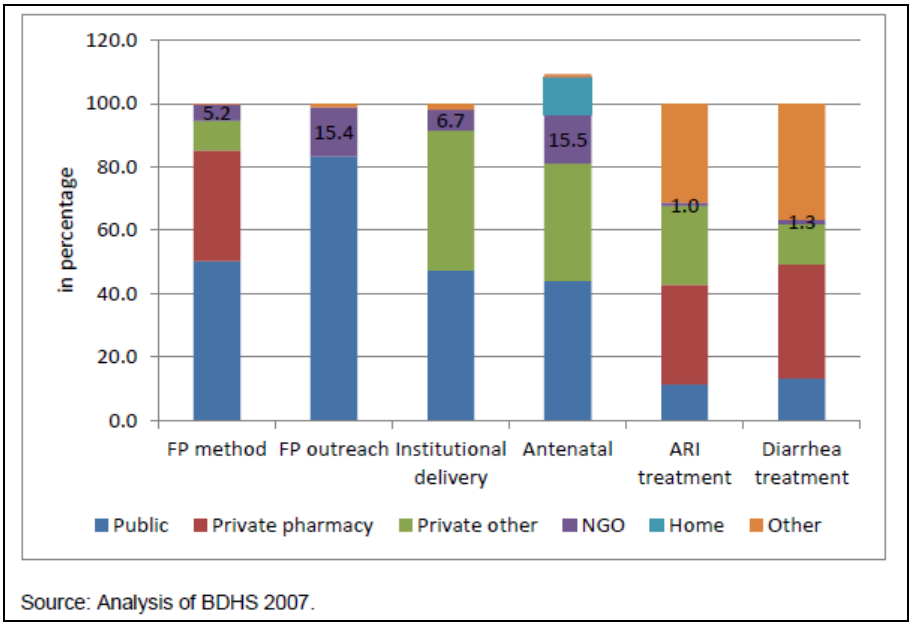
Figure 9: Sales of medicines per capita by age and diagnostic category, FY 2007 (Tk)



Source: Rannan-Eliya et al., 2012c, p10

The four most common reasons for not seeking care for an ailment (experienced in the preceding 30 days), reported in the 2010 Household Income and Expenditure survey (HIES), are that the problem is not serious, 'other' reason not given, and the expense of treatment and lack of support from family (HIES, 2010).Table 6 summarises the data from the HIES 2010 (less common reasons are not included, so percentages do not add up to 100). Women report lack of support from family more frequently than men, particularly in rural areas where 5.57% of women gave this reason compared to 2.81% of men. Women were also more likely to report high expense as a deterrent than men, with only 7.9% of men in urban areas reporting that reason compared to 19.40% of women. The difference in rural areas was less marked, but still considerable. On the whole, women wait longer than men before seeking treatment for an ailment (3.36 days, compared to 2.74 days) (HIES, 2010, p107). The top three reasons given for preferring a particular service or facility are shown in Table 7, taken from HIES 2010 data (p117) (not adding up to 100% as other answers are excluded). Proximity of provider (42%) and low cost (31%) were also key reasons given in a study of rural health seeking behaviour and expenditure by Ahsan et al (2012).

Figure 10: Place of care for those who sought services for select interventions



Source: World Bank and HLSP, 2010, p72

Table 6: Most common (top four) reasons for not seeking care

Reason for not seeking care	Both sexes	Male	Female
Urban			
Not serious	68.98%	75.32%	66.10%
High expense	14.26%	7.19%	19.40%
Non-support from family	1.22%	0.62%	1.66%
Other	12.00%	14.24%	10.38%
Rural			
Not serious	54.00%	57.15%	51.65%
High expense	15.81%	14.02%	17.15%
Non-support from family	4.39%	2.81%	5.57%
Other	19.88%	20.58%	9.35%

Source: HIES 2010 data

Table 7: Top 3 reasons for provider preference

Reason for preference	Both sexes	Male	Female
Short distance	33%	33%	32%
Reasonable expenditure	21%	21%	21%
Quality of treatment	31%	31%	30%

Source: HIES 2010 data

3.4.1 Utilisation of health services among the poor/very poor

Several studies have documented lower use of government-provided health services by the poorest quintiles. Most recently, a 2012 report on behalf of the Asian Development Bank (Rannan-Eliya et al. 2012b), reporting on a facility efficiency survey and an accompanying patient exit survey carried out in 2011, found significant inequity in access to government health facilities. The exit survey collected socio-economic data on a sub-sample of patients using the government facilities included in the facility efficiency survey[7]. The authors conclude that

[7] The report describes the methodology used (Rannan-Eliya et al., 2012b, p3). The survey collected data on recurrent and unit costs in a sample of high and mid level health facilities run by the Ministry of Health and Family Welfare (MOHFW). The sample consisted of 71 Upazila Health Complexes (UHCs), 22 district and general hospitals, 8 Medical

overall utilisation of MOHFW services is pro-rich. Their results are presented in Table 8. All levels of Government-provided services had statistically significant levels of inequality. Maternal and child and welfare centres were the most unequal, with higher percentages of rich compared to poor patients. Inpatient *upazila* health complexes performed the best, but inequality was still marked, with 10.8% of patients being from the poorest two quintiles compared to 69.9% from the two highest.

As later chapters will elaborate, the poor tend to rely more on informal providers since formal healthcare is more expensive. A survey of health seeking behaviour in rural communities (Ahsan et al. 2012) was able to collect enough data on health seeking in the 12 months prior to the survey to carry out multivariate analysis. Their results illustrate much of what the data presented so far have suggested: the likelihood of seeking care in the formal sector increases with age of the patient, duration and severity of the illness, education level of the head of household and non-health *per capita* consumption (both proxies for wealth) and finally, with the number of formal providers located nearby. There was some evidence of a bias against young girls in particular for accessing formal health care. Clearly, there are important socio-demographic dynamics but it is also important to remember that other factors of a practical nature influence health seeking. For example, with more acute illness episodes patients are less likely to seek formal care, which may be owing to the greater proximity of informal providers and urgency of care required.

Table 8: Inequalities in utilisation of Government services by wealth quintile

Facility type	Wealth quintile					Concentration index
	Lowest	Second	Middle	Fourth	Highest	
Outpatients						
Medical college hospitals	1.4	3.8	17.0	26.7	51.1	0.50*
District hospitals	1.7	3.3	17.0	40.6	37.5	0.43*
General hospitals	0.0	4.6	6.9	33.7	54.9	0.56*
Upazila health complexes	2.5	6.5	17.6	38.9	34.5	0.38*
Maternal and child welfare centres	0.6	4.0	8.3	28.5	58.7	0.58*
All patients	2.6	5.8	16.7	37.9	36.9	0.41*
Inpatients						
Medical college hospitals	2.7	3.0	23.0	33.7	38.3	0.40*
District hospitals	2.2	3.9	17.8	42.1	34.0	0.40*
General hospitals	0.0	11.0	16.8	31.1	41.1	0.39*
Upazila health complexes	3.0	7.8	19.4	41.5	28.4	0.35*
Maternal and child welfare centres	0.0	1.8	3.8	43.0	51.3	0.57*
All patients	2.6	5.3	17.7	37.6	36.8	0.42*

Source: Rannan-Eliya et al., 2012b

Q = quintile

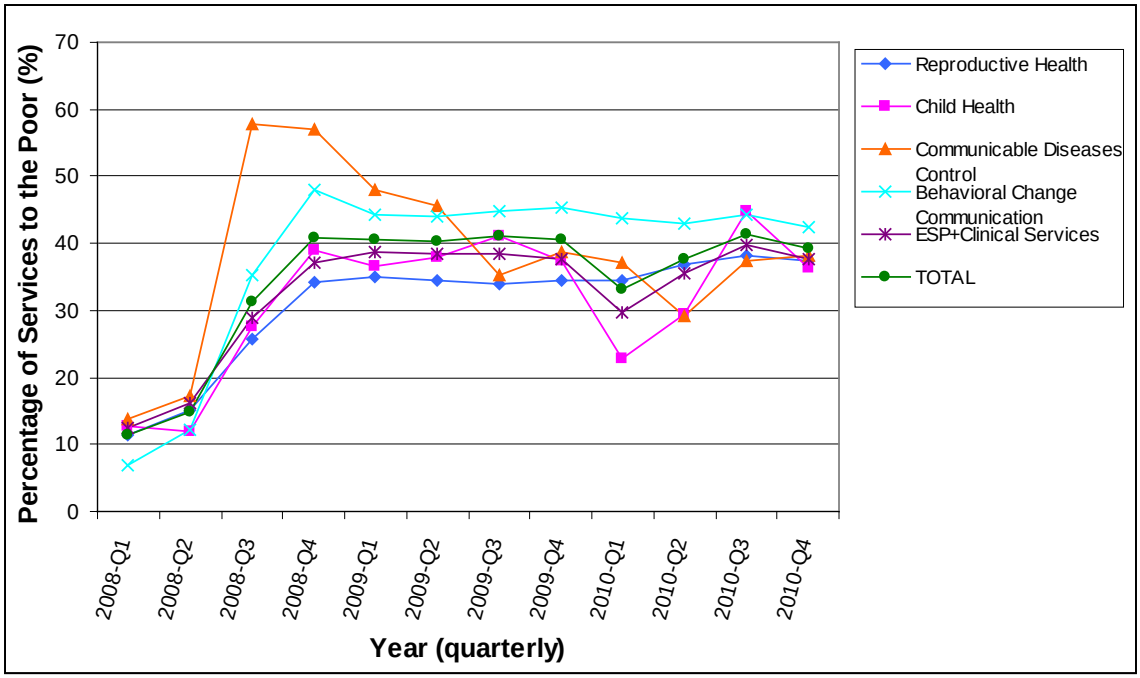
Notes: Results are weighted to represent national means across all patients. Asterisks indicate statistical significance of concentration indices: * $p < 0.001$.

The concentration index is a summary measure of overall inequality, ranging from -1.0 (complete pro-poor inequality) through 0 (perfect equality) to +1.0 (complete pro-rich inequality).

College Hospitals (MCHs) and dental college hospitals, 6 specialised and other hospitals, 10 union sub-centres, and 10 maternal and child welfare centres (MCWCs). The FES 2011 survey updated data from FES 1998, a survey conducted by Health Economics Unit in the MOHFW.

The Government's Urban Primary Health Care Project II (UPHCP II), which involved partnerships with NGOs, aimed to improve service utilisation among the poor. Poor households were identified and given red cards which gave them access to free services. The programme was judged to be successful in its aim, as the proportion of services provided to red card holders went from 4% in 2005 to 32% in 2010 (O'Connell et al. 2012). Figure 11 shows the upwards trend in the percentage of key services being used by the poor under the UPHCP II (from Chu, 2012).[8] However, one evaluation of the programmes (O'Connell et al. 2012) did note that hard to reach populations, like street dwellers and floating populations, were excluded from the red card system and so would not have benefited from improved access.

Figure 11: Average percentage of services utilised by the poor over time in the UPHCP II*



*Note: The poor are defined as patients holding a full free health entitlement card (HEC)
Source: Service component-wise service contact data from Quarterly Performance Reports (2008 – 2011)
Source: Chu, 2012

3.5 Demand-side dynamics in focus

As Figure 9 illustrated, the specific health problem influences health seeking behaviour. Thus, it is worthwhile looking at specific diseases and health issues in depth. In this chapter three specific areas of health need and demand are examined, with a particular focus on inequality in access and utilisation. Child health, maternal health and sexual and reproductive health were chosen because there tends to be more current disaggregated data on these health issues.

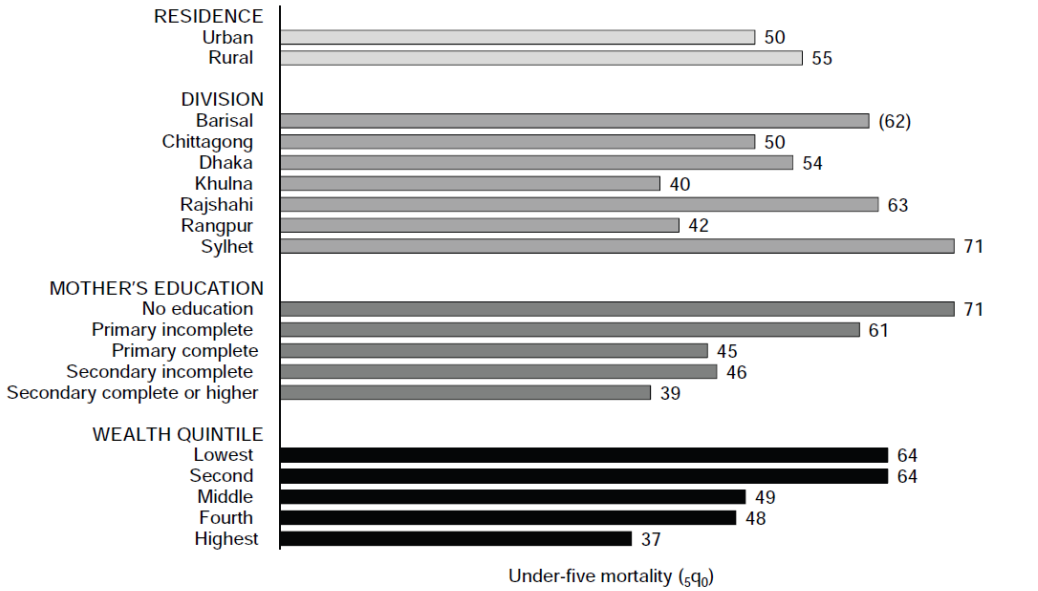
[8] The number of service contacts made by the red card holders is divided by the total number of service contacts for each category.

3.5.1 Child health

The children of the poor are still more likely to suffer premature death. However, this gap is narrowing, with mortality rates falling faster among the poor than the non-poor (World Bank, OED 2004). Recent data from the 2011 Demographic and Health Survey (DHS 2011) (NIPORT, 2013) provide an up-to-date picture of inequalities. Figure 12 illustrates aspects of inequalities for under-five mortality. While there are differences in mortality rates between urban and rural populations, the important relationships are the wealth gradient, and level of mother's education, which is related to wealth. Overall, children in poorer households, with less well educated mothers, have significantly lower chances of surviving. Other factors can improve or worsen survival rates: mother's age at birth (under 20 or over 30 represent high risks) and previous birth interval (less than two years is higher risk) are influential but are likely to be related to wealth, meaning there is a confounding effect (except for older mothers). Similar trends exist for perinatal mortality: the mortality rate (per 1000) for babies of mothers with no education was 57 compared to 43 for those whose mothers completed secondary education. It was 49 for babies in households classified in the bottom wealth quintile and 36 for those in the highest.

The DHS 2011 provides evidence of health inequalities in a number of other key areas of child health. The incidence of fever among children under five (in the two weeks prior to the survey) is negatively related to mother's education and household wealth (i.e. incidence reduces as mother's education increases). The same relationship is observed for the percentage of children under five with symptoms of ARI in the two weeks prior to the survey. These examples also illustrate the influence of socio-economic status on health-seeking behaviour as in both cases there appears to be a positive relationship between wealth and mother's education and seeking treatment from a formal health facility (i.e. a government or private clinic, not a pharmacy or traditional healer). That relationship and comparable percentages of consultations with other types of provider are shown in Figure 13. The relationship between wealth and service utilisation appears less clear in the other provider categories, and in the 'no' advice category. Socio-economic gradients for the consultation of pharmacists in particular are less clear. This may represent the fact the pharmacists are an important source of care across the board but it should also be viewed with caution. There may still be important differentials within that category, to do with the kind and quality of pharmacists being used, which are important for understanding demand-side behaviour. Informal outlets and drug vendors are relied upon more by the poor, but reliable data on informal markets are hard to come by. Such providers are likely to be under-represented in this data.

Figure 12: Under five mortality rates by socio-economic characteristics

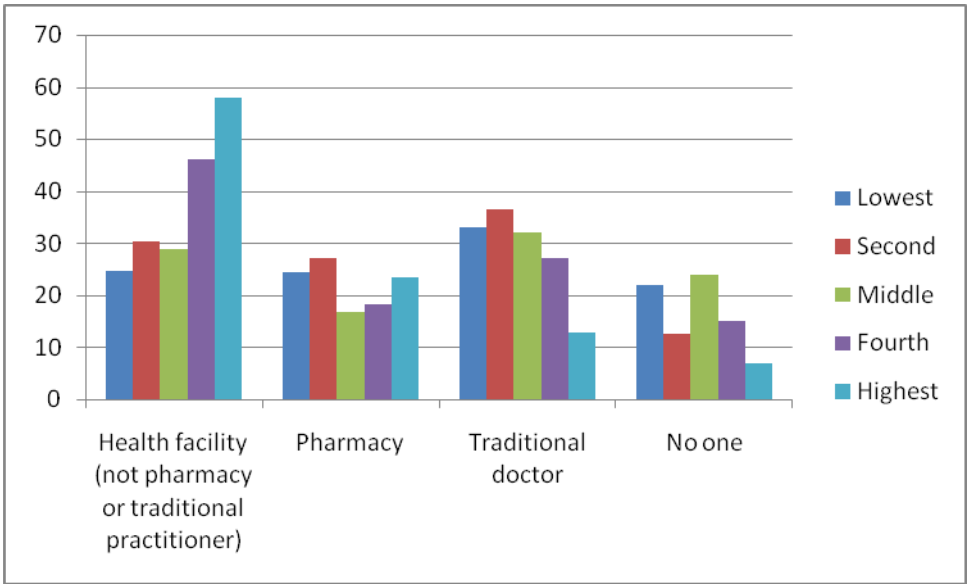


Notes: Rates are for the 5-year period preceding the survey. Figures in parentheses have 250-499 years of exposure for that group.

BDHS 2011

Source: NIPORT, 2013, p116

Figure 13: Percentages for whom advice was sought for child's ARI symptoms, by type of provider consulted and by quintile



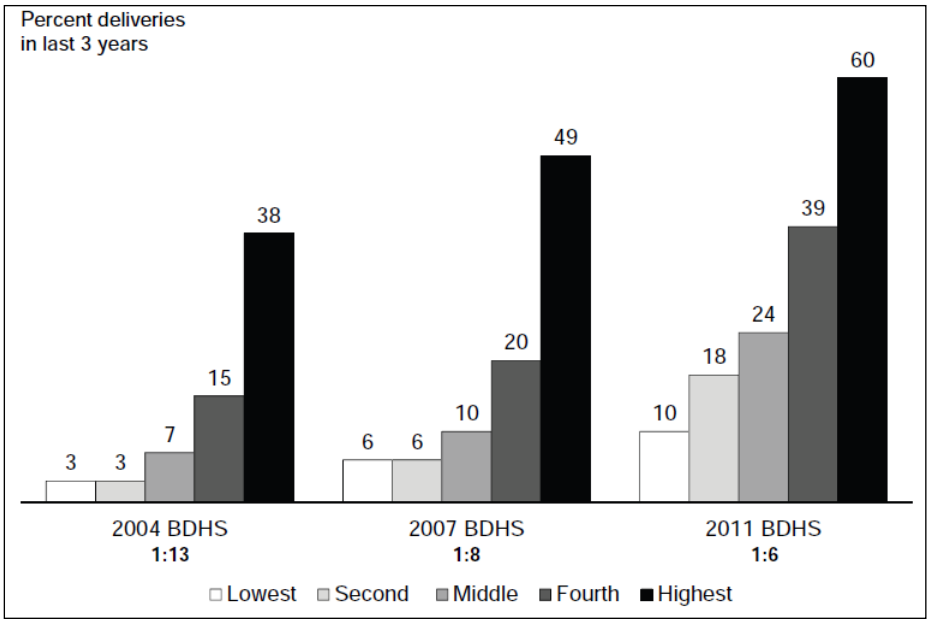
Source: DHS 2011 data

3.5.2 Maternal health

Equity issues are similarly improving in maternal health. In the 2011 BDHS, among births in the past three years, 10 percent of those in the lowest wealth quintile were delivered in a health

facility compared with 60 percent in the highest wealth quintile. This translates into a ratio of 1 to 6. The corresponding ratio in the 2004 BDHS and the 2007 BDHS among births in the three years before the survey is 1 to 13 and 1 to 8, respectively (NIPORT, 2013). The difference remains highly significant, nonetheless, as shown in Figure 14. For a 2005 World Bank study, Anwar et al. examined data from ICDDR,B's flagship Matlab site. While they found high and rising overall utilisation rates of maternal health care services compared with other areas of Bangladesh, there remained a persistent rich—poor gap. Although maternity services are free in Matlab, inequality in utilisation of emergency obstetric care was still unacceptably high (Anwar et.al. 2005). The World Bank study postulates that the reasons may be to do with indirect costs such as transport, expense of referrals, and attendants' lost time. Factors such as cultural barriers and lack of confidence in the health care system also need to be taken into account (Gwatkin et al. 2005). The authors conclude that increasing utilisation is not enough to ensure equity.

Figure 14: Percentage of deliveries in a formal health facility by wealth quintile

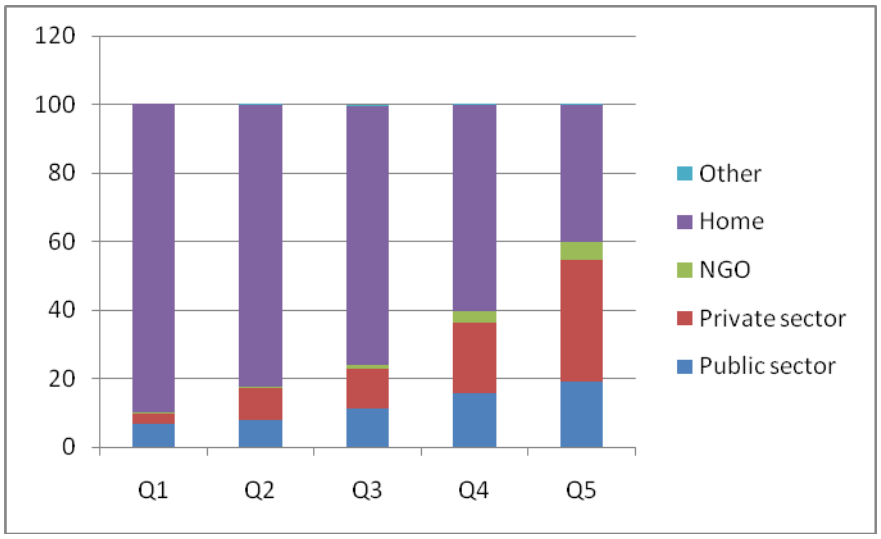


SOURCE: NIPORT, 2013

Figure 15 shows data on place of delivery from DHS 2011. Overall the percentage of institutional delivery is low, and home birth rates are high. The higher quintiles, however, make far more use of public and private sector facilities. This should be viewed in conjunction with the higher rates of child and maternal mortality for lower quintiles. The lowest quintile relies predominantly on home births and proportionally makes very little use of the private or public sector. The provider categorisations used in DHS 2011 questionnaires were as follows: 'public' included hospital/medical college, specialist medical colleges, district hospitals, maternal and child welfare centres, *upazila* health complex, health and family welfare clinics, satellite clinics, government outreach or community workers; 'NGO' sector included static and satellite clinics and field workers; 'private' sector included private hospital or clinic, qualified private doctor, traditional doctor, pharmacy, and private medical college hospital. Thus, the category private includes the qualified private providers favoured by the better off, as well as the informal, often unqualified, private providers used by the poor.

One consequence of the high proportion of deliveries without a skilled birth attendant is the persistence of a relatively high rate of neonatal mortality. Chowdhury et al. (2010) show that almost half of these deaths are due to birth anoxia, which often arises because of problems during the birth. They argue that the principal strategy for reducing neonatal mortality would be to increase the availability and use of skilled birth attendants.

Figure 15: Institutional deliveries by type of provider and quintile



Source: DHS 2011 data

In terms of antenatal care, the private sector (same classification as above) is the leading source (43%) followed by the public sector (41%), with NGOs providing 9%. This marks a change from the 2007 DHS data where the public sector was the leading provider (43%), followed by the private sector (38%) and then NGOs (17%). It is a significant development that the private sector has overtaken the public sector in the provision of this service. There is of course variation in access. Rural women make more limited use of antenatal services, with 37% of rural women receiving no antenatal care compared to 17% of urban women. Table 9 shows that, for the women who receive some antenatal care, the urban/rural bias influences the number of visits made. Figure 16 shows that there are rather different service utilisation dynamics for antenatal care than there are for deliveries. The poor make much more use of public services proportionately whereas the rich make more use of private services. Thus even though the private sector is now the main source of antenatal care, the poor are still mostly reliant on publicly provided services. DHS 2011 data showed that the number of women receiving antenatal care from a trained and qualified provider actually decreased among those without any education, those in the lowest quintile and those from Sylhet and Khulna in the years between 2007 and 2011 (NIPORT, 2013). Finally, utilisation of reproductive health care by women is related to women's empowerment.

Women who participate more in household decisions and who tend to believe wife beating is less justifiable make more use of services, such as antenatal visits (NIPORT, 2013, p223). These findings, although they may be correlated with levels of poverty, suggest that there are some

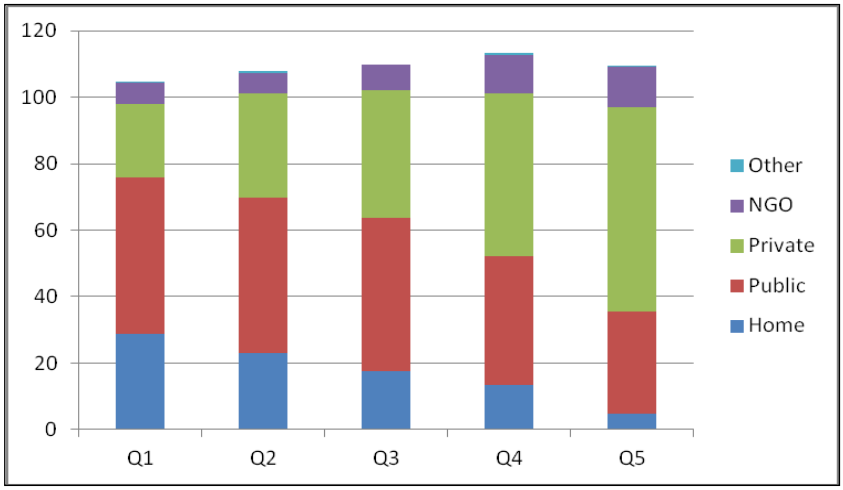
additional qualitative factors – beside cost, quality and distance – which influence women's healthcare behaviour.

Table 9: Number of antenatal visits

Percent distribution of women age 15-49 who had a live birth in the three years preceding the survey by number of antenatal care (ANC) visits for the most recent live birth, according to residence, Bangladesh 2011			
Number of ANC visits	Residence		Total
	Urban	Rural	
None	16.9	36.6	32.1
1	11.9	16.4	15.3
2	12.5	14.9	14.4
3	13.8	12.2	12.5
4+	44.7	19.8	25.5
Don't know/missing	0.2	0.1	0.1
Median number of visits(for those with ANC	4.3	3.0	3.3
Total	100.0	100.0	100.0
Number of women	1,068	3,584	4,652

Source: NIPORT, 2013

Figure 16: Place of antenatal care by quintile



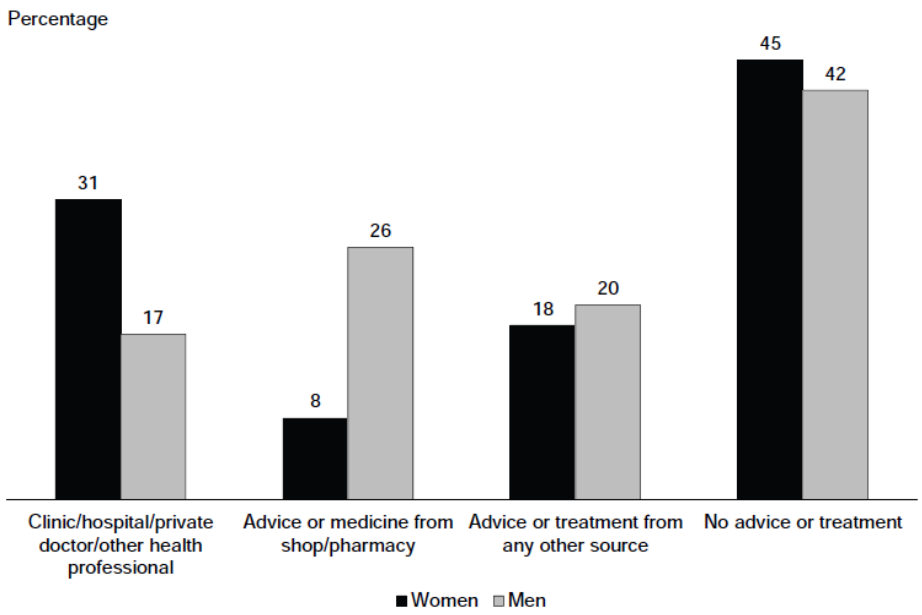
3.5.3 *Sexual and reproductive health*

Empirical studies have found major health expenditure by the poor on conditions such as maternal morbidities, sexual dysfunction and genito-urinary complaints. There are few, if any, formal services for these often stigmatised conditions and so informal markets have moved to fill the demand (Rashid et al. 2011; Standing et al. 2012). There are no checks on service quality or diagnostic competence. Empirical studies suggest that individuals of all ages and both women and men consult informal providers extensively for these problems. There is a major gap also for young people's sexual and reproductive health services.

In DHS 2011, the number of women reporting a sexually transmitted infection(STI) or symptoms of an STI in the last 12 months was 15%; that figure was 6% for men (NIPORT, 2013). Significantly, women and men seek help differently, with women making more use of clinics and hospitals and men making more use of pharmacists. However, as Figure 17 shows, the most

common response was no treatment. DHS 2011 data also showed that comprehensive knowledge of STIs, such as HIV, is more common among wealthy respondents than among poor respondents making the poor a higher risk in terms of contracting and treating STIs.

Figure 17: Providers of STI treatment for men and women



Source: NIPORT, 2013, P210

3.6 Expenditure on health services and treatment

The extreme poor are less likely to use health services than the moderately poor. A wide range of factors lies behind these different patterns of use. They can broadly be divided into supply- and demand-side issues. On the supply side, access constraints include costs of transport, understaffed or non-functioning facilities, absence of critical personnel, limited opening hours, lack of drugs and equipment, informal charging and poor quality of services (Andaleeb et al. 2007). Successive CIET Surveys on patient satisfaction for the Ministry of Health and Family Welfare's Health, Nutrition and Population Sector Programme have charted persistently low levels of satisfaction with services. A frequent complaint is also that of indifferent and disrespectful treatment (see SIDA 2009 Reality Check).

On the demand side, the poor are more likely to put up with health problems, seeing them as "normal" or low priority for expenditure. For the very poor, lack of health knowledge and awareness of treatment options, prevalence of self-care methods and cultural preferences for informal health care providers are documented as reducing utilisation of formal services (Zaman et.al. 2004). Extreme poverty and other forms of social exclusion also often carry shame and stigma – people may have ragged clothing, lack access to washing facilities or have lifestyles that are stigmatised by the rest of the population and thus be deterred from seeking services.

Low utilisation of formal services by the poor does not mean, however, that the poor do not use (and pay for) health services. The story over the last fifteen years has been of a general fall in utilisation of government facilities across all quintiles (Andaleeb et al. 2007, Rahman and

Agarwal, 2013). This has been driven by the factors already mentioned and particularly by concern over the quality of health care services in Bangladesh. This has led to a loss of faith not only in public facilities but in formal private sector hospitals as well (ibid.). Those who can afford to, now routinely travel overseas for medical care (Andaleeb et al. 2007)

The shift toward private provision began in the 1990s. In 2003, the World Bank estimated that about 70% of patients seek outpatient medical care from this sector (World Bank, 2003).The overall utilisation rate for public health care services was similarly estimated at 30% in 2004 (Ricardo et al. 2004), alongside a corresponding rise in use of non-state provided services. Since then, localised studies indicate that it has shifted even further. It is now estimated that more than 85 per cent of the population seeks treatment from informal providers, who fill the huge gap in qualified health human resources (Bangladesh Health Watch, 2008).

3.7 Relative expenditure and catastrophic costs

It is clear from a large number of local studies that poor people are prepared to pay for health services, subject to contextual factors such as gender and absolute affordability (there is, though, a substantial extreme poor population that is unable to pay very much at all). Indeed, poor people often pay substantial amounts of money for diagnostics and treatment. Even though their total expenditure may not be high, the poor tend to spend a higher proportion of their income on health, or certain aspects of health, than the rich. The survey by Ahsan et al. (2012) found that overall out-of-pocket (OOP) health expenditure was on average 4,686Taka for the year prior to the survey. This amounted to 6% of total household consumption. Although the rich spent more in absolute terms, the ratio of OOP expenditure to overall consumption was broadly similar across quintiles. However the poor spend a higher proportion of their health expenditure on drugs (69% versus 52% for the bottom and top quintiles), implying that healthcare for the poor is largely about accessing drugs. Out-of-pocket expenditure was also lower among women. For those accessing formal care, government services were found to be disproportionately financially burdensome for the poor, accounting for 7.3% household consumption, when the average was 4.9%.

Catastrophic expenditure (which they defined as being costs relating to one individual accounting for more than 10% of the total household consumption) occurred in 15% of surveyed households. Although they observed that the poor experienced higher rates of catastrophic expenditure (17% versus 15% for the poorest and richest quintiles respectively) the difference was not statistically significant. For all income groups the majority of catastrophic expenditure took place in the formal private sector and then in the public sector.

In 2005, the 'means of meeting medical expenses' reported in the HIES were as follows: 78% from regular income, 14% from household savings, 3% from selling assets, 3% from borrowing, 2% donations and 0.5% from other sources (World Bank and HLSP, 2010). Although most of the expenditure is met by regular income, the lowest income groups are at risk of catastrophic health expenditure (ibid.). Also, for many, treatment will simply not be sought.

A report for the Asian Development Bank (Rannan-Eliya et al. 2012a) found that pregnant women were especially vulnerable to catastrophic healthcare costs (defined as more that 25% of monthly income), with childbirth the most expensive: 10% of women admitted to the MOHFW facilities they surveyed reported out-of-pocket costs of more than 25% of their

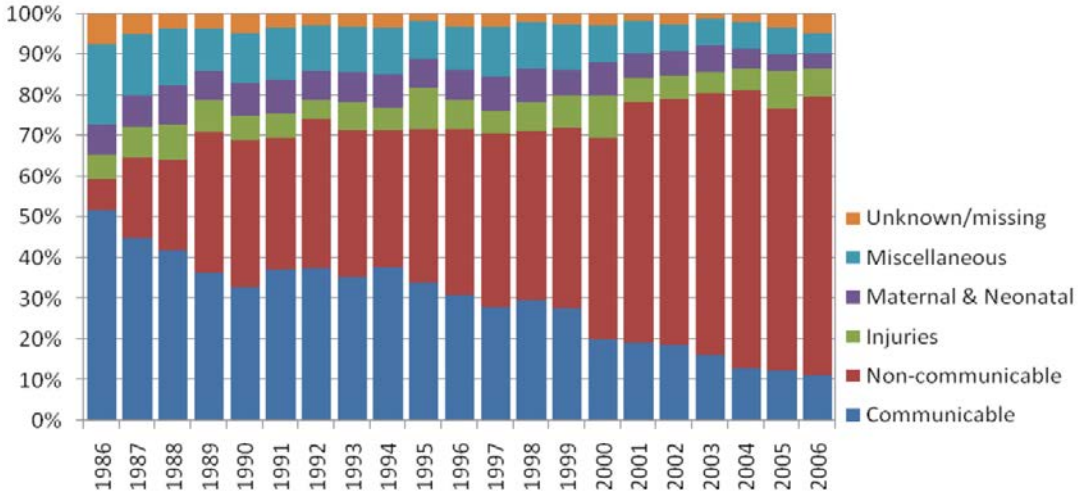
monthly income. Small sample sizes made it hard to assess differences across the different income groups, but one would expect this will be more of an issue for the poor.

Not many studies have examined willingness to pay among the moderately poor. A study for BRAC's Manoshi programme on safe deliveries in urban slums (Islam et al. 2009) examined willingness to pay and how much for delivery services. It found that the large majority of slum residents were prepared to pay a registration fee of Tk. 400 per couple. They preferred payment in instalments, with provision of waivers or a safety net for those who are not able to pay.

3.8 Emerging issues and gaps - NCDs

As the 2006 Urban Health Survey confirmed, the prevalence of NCDs such as hypertension and diabetes socially stratified with the rich suffering more. However, there is growing evidence that they are an increasing problem in rural populations (see Figure 18), with hypertension being the most common (12% in rural areas) (Parr et al. 2011). DHS 2011 reported that overall population prevalence of hypertension was 32% for women and 19% for men aged 35 and over (NIPORT, 2013).

Figure 18: Trends in non-communicable disease mortality in rural Bangladesh

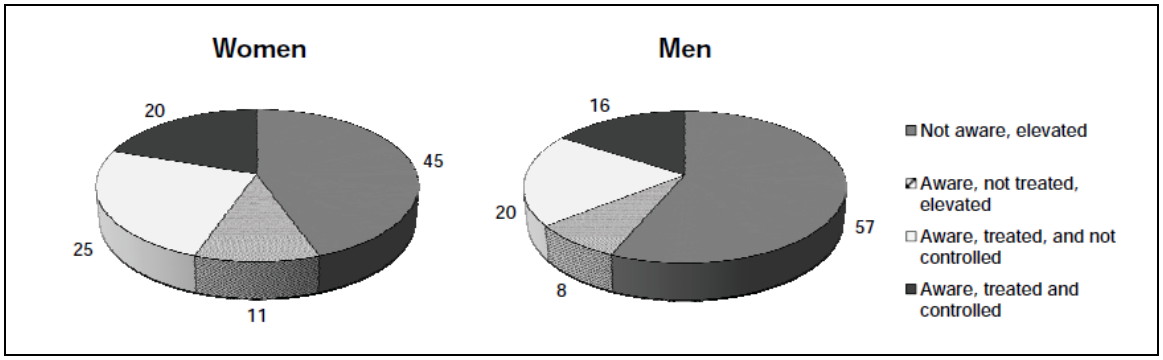


Source: World Bank and HLSP, 2010, p24, using data from Matlab

Some important patterns are emerging in the treatment of chronic disease. A study of treatment seeking for chronic disease examined which providers diagnosed and treated people's chronic ailments (Parr et al. 2011). They found that while the proportion of care received from trained doctors was higher than for some other health issues there was still a significant reliance on informal allopathic providers (IAPs) to manage these complex conditions, particularly for rural, female and poor populations. Overall, trained doctors diagnosed 88% of urban patients' chronic conditions and 60% of rural patients'. IAPs were responsible for only 8% of urban diagnoses but for 35% of rural ones. In rural areas more women (39%) rely on IAPs than men (29%) and IAPs provided more diagnoses to the very poor (57%) compared to qualified doctors (36%). Place of diagnosis and management is only half the story. It should also be noted that, awareness of chronic disease status is often very low. Figure 19 shows data from DHS

2011: 45% of hypertensive women and 57% of hypertensive men are unaware of their status. Only 20% of women and 16% of men are actively treating and controlling their hypertension.

Figure 19: Awareness of hypertension and treatment status among hypertensive women and men aged over 35 years



Source: NIPORT, 2013, p241

3.9 Summary

The review of the evidence confirms the segmented nature of the Bangladesh health system and its differential capacity to meet health needs. It also demonstrates the rapid changes underway, which include economic growth, urbanisation and demographic transition. Health indicators have improved over the past decade, but areas of significant need persist.

Rural residents and people living in urban slums rely heavily on informal providers and drug sellers for treatment of many common health problems. They also purchase food and other goods in largely unregulated markets. They could benefit greatly from measures that improve the availability of safe, effective and affordable health services, good quality drugs, safe and nutritious food and inexpensive health-related products in these markets. They could also benefit from access to reliable information on how they can protect their health and make more effective use of the goods and services available. The rapidly increasing burden of chronic, non-communicable diseases, and the risk of disability and premature death, is creating new challenges for the poor. They can benefit greatly from measures that help them improve their diet and have access to drug treatment for hypertension and diabetes.

Although both maternal and infant mortality have improved significantly, the poor still experience relatively high levels of preventable maternal deaths and neonatal mortality, which can be addressed through increased access to skilled birth attendants and easy referral to hospital, when necessary.

The review also identified particularly vulnerable groups. The ultra-poor are less able to afford to pay for goods and services in the markets. They require more targeted support from government and NGOs. The significant numbers of people with disabilities also need special support and access to affordable aids such as eye glasses, wheelchairs and so forth.

4. Non-state interventions addressing health challenges

Rigorous evidence on what works is critical in designing appropriate private sector health innovations. This chapter provides an overview of that evidence, both globally and within Bangladesh. It was informed by a structured literature review (see Annex 4) as well as a series of interviews with key stakeholders in Bangladesh to gain a more comprehensive picture of the type and scale of innovations in the local health market system.

Despite a paucity of good evidence on what works, the global review found that: 1) popular market interventions, like franchising, had mixed success – they were likely to impact positively on client volume and satisfaction but less so on quality, cost-effectiveness or equity; and 2) that the most successful interventions for capacity-building of informal providers were those that took a market-based approach and altered institutional relationships by changing incentives in some way.

The literature and the interviews began to paint a clear picture of the non-state health service providers in Bangladesh. It is clear, for example, that pharmaceutical companies – ranging from large transnational corporations to large and small national companies – strongly influence the performance of health workers and drug retailers in the country, through advertising and the work of a network of company representatives. In addition, there are many producers and distributors of other health-related commodities such as baby zinc, food supplements, sanitary products and so forth. In the context of the rapid growth in use of mobile phones and the many initiatives to use them in the health sector, mobile phone operators have become increasingly important influences on the health sector. In addition, a number of for-profit and not-for-profit companies provide health-related services through the Internet and mobile phones.

Health and access to health services has improved substantially over the past 15 years. However, as outlined in Chapter 2, there are still large inequalities between wealth quintiles in the burden of sickness and premature death and in access to safe and effective health services. We focused our analysis and key informant interviews on

Potential value-for-money interventions in delivering pro-poor health services

- Increase access to safe, effective and affordable treatment of common illnesses (such as ARI or diabetes and hypertension) in rural areas and urban slums through innovations which influence village doctors and drug sellers to improve their performance while enabling them to continue to earn a living
- Continue to reduce maternal and neonatal mortality by increasing access to services from skilled birth attendants
- Increase access to inexpensive health-promoting products such as baby zinc and micronutrients through existing distribution channels
- Increase the availability of low-cost aids for the disabled through innovation in technology and marketing
- Increase access to trustworthy health information and medical advice to the poor and people living in relatively remote areas, through the use of mobile telephones
- Reduce the risk of catastrophic health expenditure through some form of insurance.
- Increase the accountability of private providers for the safety and effectiveness of their services through changes to the regulatory framework and strengthening the role of civil society organisations.

outpatient services, which have the greatest potential to reduce the burden of ill-health at an affordable cost. We reviewed each of four health service sub-sectors: (i) m-health and e-health solutions; (ii) outreach services; (iii) low-cost technologies; and (iv) health financing. In addition to mapping the key players and their recent innovative activities, we have focused particularly on the size of the intervention and potential to be taken to scale, its sustainability and the degree to which it addresses the needs of relevant target groups. The following sections present findings on each of the subsectors.

4.1 M-Health and E-Health Solutions

4.1.1 Overview

There is a great deal of international interest in the possibilities that developments in information and communications technology (ICT), combined with the high mobile telephones coverage, are creating for improving health system performance in low- and middle-income countries. A recent World Bank report (2012) defines *m-health* as 'any use of mobile technology to address health care challenges such as access, quality, affordability, matching of resources and behavioural norms through the exchange of information'. We use the term *e-health* to include other uses of ICTs that do not necessarily rely on mobile phones, but the boundary between the two is becoming increasingly blurred. It is possible to get an idea of the wide range of applications of m-health from the categories that the Royal Tropical Institute uses in its archive of m-health initiatives[9]:

M-health is 'any use of mobile technology to address health care challenges such as access, quality, affordability, matching of resources and behavioural norms through the exchange of information'. The boundary with e-health is becoming increasingly blurred

Table 10: Different types of m-health and e-health solutions and their applications

m-Health Category	Application
Education & Awareness	Disease prevention, educational programmes, health promotion, community mobilisation
Point-of-Care Support & Diagnostics	Support in diagnostics, screening and clinical care
Patient Monitoring	Treatment adherence support, appointment adherence
Disease & Epidemic Outbreak Surveillance	Real-time tracking of cases of infectious diseases
Emergency Medical Response System	Emergency obstetric care, disaster management, accidents
Health Information System (HIS)	Supply chain management, procurement information
HRH mLearning	Distance training, continuous professional development for health workers
Health Financing	Smart cards or vouchers making use of mobile payments

Source: RTI (2013)

The Government of Bangladesh (GoB) is actively pursuing the mandate of Digital Bangladesh and the Ministry of Health and Family Welfare (MOHFW) is actively promoting e- and m-health solutions. All the leading mobile phone operators of the country provide m-health services. Specialised groups of solution service providers have also evolved, including organisations like Telemedicine Reference Center Limited (TRCL), Miaki, D-Net and mPower. Health service

[9]http://www.m-healthinfo.org/how-use-project-table

providers such as BRAC and the Diabetes Association of Bangladesh (DAB) are involved in partnerships with e- and m-health companies. A number of research institutes are developing e- and m-health innovations. Globally, several organisations are leading the research and promotion of m-health services. They include m-health Alliance, which convenes the international m-health community with the aim of sharing tools, knowledge, experience, and lessons learned.

Our findings suggest that most of the e- and m-health interventions in Bangladesh focus on one of the following activities:

- the **provision of information** through SMS messages or a website for education and awareness;
- **point of care support and diagnostics** through a medical advice line;
- **monitoring of patient behaviour**; and
- **Health management information** (MIS) to support population-based programmes.

The scoping **study team did not find m-health solutions for health financing**, although mobile financing services could be adapted for this purpose. We also **did not find applications for disease and epidemic outbreak surveillance, emergency medical response or distance education**. With a few exceptions, most of the existing m-health and e-health innovations are being undertaken as development programmes by health NGOs with technical support from private sector technical solution providers. Consequently, **there is little evidence on sustainable business models for m-health and e-health innovations in the health care sector**.

This is an early stage in the development of e- and m-health in Bangladesh. It is not yet clear how different innovations will complement each other, how they will link to the rest of the health system and how they will create stable business models. At a workshop organised by SRIJON in Dhaka in June 2013, attended by a number of e- and m-health innovators, participants said that the next phase of innovation should encourage links between innovators and service delivery organisations with the aim of moving towards impact at scale.

Key recommendation: The next phase of innovation should encourage links between innovators and service delivery organisations with the aim of moving towards impact at scale.

4.1.2 Factors influencing m-health and e-health innovation in Bangladesh

The rapid and sustained growth of mobile phone and Internet subscriptions has contributed to the attractiveness of m-health and e-health in Bangladesh. In June 2013, there were 105 million active mobile phone subscribers[10]. The number of Internet users reached 33.43 million in April 2013, 95% of whom used mobile phones to access the Internet[11], further blurring the distinction between e-health and m-health services. Currently 3G connectivity is being provided by all the leading mobile operators of the country. The three leading mobile phone operators of the country – Grameen Phone, Bangla link and Robi– have introduced health-line services that

[10] http://www.btrc.gov.bd/index.php?option=com_content&view=article&id=768:mobile-phone-subscribers-in-bangladesh-january-2012&catid=49:telco-news&Itemid=502

[11] http://www.theindependentbd.com/index.php?option=com_content&view=article&id=171715:33-million-Internet-users-in-bangladesh&catid=132:backpage&Itemid=122

include SMS and call centre based support. The call centre industry has been growing. Web and phone application developers are now using their expertise and experience from working in the global outsourcing industry to develop solutions targeting the local market. Several specialised social businesses and for-profit organisations are engaged in m-health content and solution development services. This includes Telemedicine Reference Center Limited (TRCL), Miaki, D-Net, BIID and mPower.

With funding from donors, non-state actors have already tested a first wave of innovative solutions in Bangladesh. This includes USAID-funded MAMA project (branded as Aponjon in Bangladesh) a multi-country programme that has generated wide interest, especially on partnership between NGOs and the private sector to take m-health services to pregnant women in urban and rural markets. The influence of such programmes is evident. Square Toiletries has introduced its own version, 'Super Mom,' which aims to make pregnancy-related information available to women in urban and rural areas through a mix of web-based services, call centres and engagement of community health workers through NGOs. IT companies like UY Systems Limited have ventured into health services through a web portal called HealthPrior21.com which aims to expand its services to Eastern Indian States, Myanmar, Bhutan and Nepal. The portal provides a one-stop service for patient registration, e-consultation, health information and retail of health products.

The Government published its national ICT strategy in 2009, in which it proposed a number of health sector priorities (Ministry of Science and Information and Communications Technology 2009). The Outline Perspective Plan of Bangladesh 2010-2021 includes a chapter on Building Digital Bangladesh. One of its objectives is that: "Quality healthcare will be provided to all citizens through innovative application of ICT" (Planning Commission 2010). The Government has established a Digital Innovation Award Scheme with categories for e- and m-health.

The Directorate General of MIS (DGMIS) of the MoHFW is leading the implementation of the Digital Bangladesh policy in the health sector. Since 2009, its focus has been on establishing an ICT infrastructure in public health facilities and on using ICTs to facilitate planning and build links between government health facilities and citizens (Azad 2013). It is implementing a health management information system, which collects information from all government health facilities and uses it to produce annual facility-based reports. It is developing a number of ICT applications, including a telemedicine service, an SMS-based complaint system, SMS-based information for pregnant women, use of ICTs to monitor attendance and the application of GIS for health. These initiatives are funded through the HPNSDP framework, WHO and other bi-lateral donors.

We found that young innovators and entrepreneurs in Bangladesh are strongly motivated by international and national award and grant opportunities. A team from American International University of Bangladesh (AIUB) won the Microsoft Imagine Cup 2011 People's Choice Award for developing a mobile phone application that helps blind people use a mobile phone. **However, instead of establishing a venture to market the application, the team concentrated on developing more innovations for awards.** The award and grant opportunities have contributed to the development of specialised service providers like mPower (previously click diagnostics), a social enterprise that won four international challenge funds between 2010 and 2012. These include Bill and Melinda Gates' Foundations' (BMGF) Grand Challenges Exploration Grant 2012 for a mobile cloud system for universal vaccination, Grand Challenges Canada Award for a

mobile application for women for early diagnosis of breast cancer, USAID Global Development Award and UBS Optimus foundations awards. mPower developed the technology used by BRAC Manoshi, which equips BRAC's health workers to collect data through a mobile phone application for maternal, neo natal and child health

Several international organisations support m-health and e-health interventions globally with research, content development, and communication and knowledge management services. This includes the mHealth Alliance, which convenes the international m-health community with the aim of sharing tools, knowledge, experience, and lessons learned. The mHealth Alliance is hosted by the United Nations Foundation, and includes the Rockefeller Foundation, Vodafone Foundation, UN Foundation, HP, the Groupe Speciale Mobile Alliance (GSMA) and NORAD amongst its founding partners. GSMA works with mobile phone operators and health stakeholders around the world for advocacy, research and development of m-health solutions.

The m-health and e-health domain is globally very vibrant. A review commissioned by Telenor[12] and conducted by Boston Consulting Group in 2012 reported that there are around 500 m-Health operational projects in the world. Further evidence is recorded in the report titled 'Scaling Up Mobile Health: Developing M-Health Partnerships for Scale' which was commissioned by Advanced Development for Africa (ADA). According to this report, the m-Health Alliance's Health Unbound mobile health directory lists over 300 m-Health programmes around the world, while the m-Health working group inventory of projects lists 400 m-Health projects around the world; GSMA's Mobile for Development Intelligence portal maps 376 organisations working on m-Health. USAID is reported to be funding more than 100 m-Health projects across the globe.

In conclusion, it can be said that the sustained growth of the mobile and telecommunications industry in Bangladesh and its large and growing rural market base, the adaptability of mobile and web based technologies to provide wide range of services, the growing interest and investment from the private sector on m-health innovations, learning from the first wave of innovative solutions supported by donors and the global evidence of a wide range of innovation involving mobile phones and the Internet potentially creates a fertile ground for m-health and e-health innovations.

Key recommendation: A number of awards have been used in the m-health subsector to spur technological innovations, but award schemes that encourage the foundation or scale up of sustainable social enterprises are still required.

4.1.3 Business model, its sustainability and impact on the poor

As we detailed in the previous section, innovation in m-health and e-health in Bangladesh is driven by a range of private, public and NGO sector actors. The business models of the solutions are very largely based on the type of the organisation and the scope or purpose of the solution. For instance, the solutions of mPower are developed in response to the interest of a health sector organisation like the BRAC Health Program or ICDDR,B to tackle a specific health challenge – for instance recording patient information or ensuring immunisation. In such cases, testing the viability of the m-health solution for solving the health challenge precedes the

[12] Norwegian telecommunication operator which owns the majority share of Grameen Phone in Bangladesh

business viability of the concept. On the contrary, organisations like Square Toiletries have launched e-health solutions as a tool to promote its products while positioning it as a CSR initiative. In such a case, the prospect of the e-health solution generating revenue for core business is as important as tackling the health challenge. CSR is said to be a major driving force for organisations like Grameen Phone to venture into m-health. The business models of such initiatives differ largely from those developed by mPower. Based on our correspondence with the sector experts and key informants (see Table 11), we have selected cases that illustrate the different models that exist in Bangladesh.

The scoping study team found a strong pool of innovation on point of care support and diagnostics and patient monitoring systems in Bangladesh. There is also an increasing interest in education and awareness and m-learning, though no existing initiatives in the domain. While non-state actors are still not involved in mobile-based health information system development, the government has adopted it for its own facilities. The government is also engaged in providing an SMS-based service for public health statistics. Innovation in emergency medical response systems and health financing is yet to be recorded. This might be because point-of-access support and diagnostics and patient monitoring solutions directly reach out to large number of patients or people seeking health advice. This is a larger target market than the target market for m-learning, disease surveillance and emergency medical response systems which serve primarily the doctors and other health care professionals, the government and health care service providers. Table 11 summarises some of the different m-health and e-health innovations reviewed by the scoping study team.

Table 11: Examples of non-state m-health and e-health initiatives in Bangladesh

Venture/ Initiative	Service Provider	Type of initiative	Type of Innovation	Brief description
Supermom	Square Toiletries	• CSR/ Social	• Education and awareness • Point of care support and diagnostics	Launched in August 2013, it is intended to become an umbrella service under which Square intends to provide information and consultation on pregnancy, pre-natal and post natal care to the women in Bangladesh. The service is provided through a 24 hour call centre and a web portal. The model involves partnership with NGOs for outreach and promotion.
HealthPrior21.com	HealthPrior21.com/ UY Systems LTD.	• For profit	• Education and awareness • Point of care support and diagnostics • Online retail of health products • M-learning	Launched in 2012 the portal provides services on e-appointments for patient registration, e-doctor for electronic consultation, e-store for health and wellbeing products and e-library targeting the health care providers. The revenue is primarily generated from advertisements in the portal.

Venture/ Initiative	Service Provider	Type of initiative	Type of Innovation	Brief description
Health Line	Grameen Phone	• For profit/ value added service for the subscribers	• Medical advice from registered physicians • Doctor and medical facility information • Laboratory test interpretation • Medical emergency numbers	Intended to address the health challenge of access to skilled health care professionals in times of emergency. It was launched in 2006 by Grameen Phone in collaboration with TRCL, a specialised telemedicine content and technology solution service provider. Patients can receive primary screening and health advice from a call centre operated by registered physicians. SMS based health content is also made available to subscribers. The SMS service is generally focused on information on cardiac care, diabetes and health wellbeing. Currently the call centre and the SMS service is run by Miaki, which specialises on mobile based value added services. Several other value added services were launched in between the period which includes OBD (Out bound dialling) option which was later discontinued since it affected the revenue from the call centre.
e-clinic	BIID	• Social	• Education and awareness • Point of care support and diagnostics • M-learning	E-Clinic is a framework concept developed by Bangladesh Institute for ICT in Development (BIID). It aims to provide a basket of health services to rural communities which includes general consultation through video consultation, maternal health information & primary health care service including follow up post natal health care (Information and primary health care), children's health care issues (immunisation, hygiene, sanitation, etc.), adolescence health care, continued medical education (CME) for the local health professionals etc. BIID targets to create a network of 500 e-Clinic centres (Service Delivery Points) all over the country at Upazila level by 2015 (10 by 2012) to support the government towards achieving MDG of United Nations in terms of health care facilities.
Aponjon (MAMA)	D-Net	• Social	• Education and awareness • Point of care diagnostics and support	Aponjon is the brand name of the service provided under the Mobile Alliance for Maternal Action (MAMA) partnership, which includes USAID, the mHealth Alliance, Johnson & Johnson and Babycentre. The latter, an American online community, provides the content for a series of SMS messages to pregnant women. Aponjon has Bangladeshi corporate sponsors: BEXIMCO Pharmaceuticals, Lal Teer Seed Ltd. and Rahimafrooz Superstores Ltd and five

Venture/ Initiative	Service Provider	Type of initiative	Type of Innovation	Brief description
				outreach partners (BRAC, Fair Price International, Maternal and Child Health Integrated Program, SMC and Smiling Sun Franchise). The programme sends pregnant women, who register with it, SMS messages or voice messages with useful health tips. It also offers a telephone advice line. According to the website, since its launch in September 2011, it has registered 100,000 subscribers to the messaging service. The programme is targeted towards the MDG goal of reducing maternal mortality by ensuring safe pregnancy and child birth.
M-Tikka	mPower (has also supported several other initiatives that includes mCARE, AmaderGraam Breast Care and BRAC Manoshi	• Social	Patient Monitoring	Launched in 2012 by mPower social enterprises in collaboration with Ministry of Health and Family Welfare (MoHFW), Johns Hopkins Bloomberg School of Public Health (JHBSPH) and Johns Hopkins Bangladesh. M-Tikka addresses the gap in vaccination coverage through identification of regions with limited vaccination coverage to permit community based targeted interventions. The technology used is an electronic, cloud-based system for infant registration, vaccination record keeping, incentivisation and survey of vaccination beliefs. With the application, vaccine workers can register infants at birth using low cost phones to ensure timely vaccination. The system provides real time access to children's vaccination status to family members, providers and relevant agencies. Currently the programme is being scaled up in collaboration with ICDDR,B and the Bangladesh Expanded Programme for Immunisation.
Manoshi	BRAC	• Internal operations	Patient Monitoring	Manoshi is a five year maternal, neonatal and child health programme for residents in urban slums, funded by the Gates Foundation. Under the programme BRAC equipped Shasthya Karmis with mobile phone-based data collection software to record vital patient data and assess risk on the basis of a pre-defined algorithm. The technological platform for Manoshi is developed by M-Power, a social business specializing on developing m-health solution. BRAC Health Program is also collaborating with M-Power to organise a phone hotline, where pregnant women

Venture/ Initiative	Service Provider	Type of initiative	Type of Innovation	Brief description
				can seek advice or emergency assistance.
AMCARE	TRCL/DAB	• For profit	Point of care diagnostic	In 2009 TRCL launched AMCARE in collaboration with the Diabetes Association of Bangladesh (DAB) to help people manage chronic, non-communicable diseases. It works closely with the Bangladesh Institute for Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM), which provides specialist care. The service is intended to increase consultation for diabetes management and reduce cost of service by reducing the cost of waiting time for service and the transportation cost for availing the service. AMCARE makes follow up support available through the creation of an electronic patient record, provision of a medical telephone advice line and prescribing drugs using SMS messages. According to CHMI[13] case study AMCARE is targeted towards 4.5 million diabetic patients who are not registered with DAB and are yet to receive quality treatment. TRCL also provides a service to migrant workers based outside Bangladesh. They pay a monthly fee which entitles them and their families in Bangladesh to call a doctor for advice, including prescription of over the counter medicines, referral to a doctor when necessary and appointments and scheduling with networked health facilities in the countries, where migrants work.

Source: Primary Investigation

The cases suggest that the business models of m-health and e-health solutions vary largely with respect to the business objective (for instance, for profit, public or social benefit); the source of finance (revenue from core service, grant, CSR fund or donation) and the target market (urban, rural, health group, income group etc.).

It should be noted that several of these services are outsourced to a technical solution service provider and therefore the task of innovating the solution rests with the solution service provider rather than the business, which is promoting the solution and investing in it.
Most of the existing services do not have a cost recovery model. They are either free or heavily subsidised or are used for internal operations and therefore not charged to the beneficiaries

[13]Center for Health Market Innovation (CHMI) conducted case study on the several innovative health care solutions in Bangladesh. The case studies are available on its websitehttp://healthmarketinnovations.org/

If sustainability is defined purely as the capacity of the service provider to run the business without having to depend on grant or donor fund in the longer run, the initiatives that are run fully from service fees are the most sustainable.

It is not clear to what degree the NGOs and social enterprises that are operating social initiatives can continue to run the initiatives without the extensive funding they receive from donors, charities and business corporations providing CSR funds. The scope for sustainable and commercially viable m-health and e-health initiatives depends on promoting ventures that either run on revenue from the core service or that are designed to generate revenue for other businesses that could in turn finance the operations of the m-health and e-health initiative.

An interesting aspect to note about the business models is the wide-ranging and complex partnerships between the different types of non-state actors. The AMCARE model works because it taps into the network of DAB to promote the service to a large number of registered and non-registered diabetic patients. Square leverages on the network of community health workers to market the Supermom service. D-net has successfully partnered with the private sector as well as NGOs to market the services of Aponjon. It collaborated with BRAC to market the service through BRAC's Shasthya Sebikas and Shasthya Karmis. It has also collaborated with Agora, a large supermarket chain, to raise funds and generate awareness about the service. D-Net collaborated with Lal Teer Seeds, the largest seed company in Bangladesh, to print advertisements of the Aponjon services on the pack of seeds. Potential m-health and e-health solution providers could learn from these examples to develop marketing strategies for their services that build on the capacity of the different types of actors. This will reduce the cost of marketing and ensure targeted outreach. The scope for partnership and collaboration between different actors can be understood from the example of MAMA/ Aponjon. The framework of the partnership in MAMA (Table 12) was published in a report on Scaling up M-Health: Developing Partnership for Scale commissioned by Advanced Development for Africa (ADA).

Table 12: Partnership between support service providers in m-Health innovation: The case of MAMA/Aponjon

Partners	Roles
USAID	Providing funding, strategic leadership, access to local USAID missions and expertise through MCHIP
Bangladesh Ministry of Health and Family Welfare	Providing health content review and approval; leadership of the MAMA Bangladesh Advisory Board; promotion through state media and public sector health system
MHealth Alliance	Serving as MAMA Secretariat, and providing technical m-health expertise and a forum to exchange knowledge and share best practices
UN Foundation	Providing support for communications, advocacy and public outreach, and linkages to UN organisations
D-Net	MAMA Bangladesh partnership coordinator and primary implementing agency, with its own consortium of partners, including BRAC
BabyCenter LLC	Providing adaptable messages library (both text and audio messages) and expertise
Local partners	Providing in-cash and in-kind support

While there is promise with respect to developing and promoting viable m-health or e-health solutions, its effectiveness in solving critical health challenges or reaching out to the poor is not proven. In our correspondence with the telecommunication companies we were told that it is

not feasible for the companies to analyse the demographics of the subscribers since the subscribers are not required to fill in a form. Even though the geographic dispersion and concentration could be analysed, no inference can be made on gender and economic differences.

Several studies have attempted to record health impact but the evidence base is not well established. For instance, a study commissioned by Telenor (the Norwegian company that owns a majority stake in Grameen Phone) and conducted by Boston Consulting Group reports that remote diagnostics through mobile phones could potentially save $1 billion per year (Bjornland et al. 2012).Again it emphasises the economic benefit but does not articulate the health benefit. Besides, the report does not explain the foundation for the estimation or the extent to which the savings will accrue to the poor. It is reported that m-health services provide economic benefit by cutting down the cost of transportation and cost of time for consultation. Again, the scale of these benefits is not documented. Willingness of the non-state sector to invest in m-health and e-health initiatives:

The willingness of non-state actors is high particularly because of strong national and international interest in the application of mobile technologies to mitigate development challenges and achieve the MDGs. Leading health NGOs such as BRAC and research institutions such as ICDDR,B have all launched their own m-Health ventures in collaboration with different state and non-state actors which includes the private sector. Most of the health NGOs that were interviewed by the scoping study team mentioned m-Health as a priority area for innovation and appeared to be inspired by the case of BRAC Manoshi. Specialised mobile phone content and application developers are keen to build on their learning and investment to develop commercially viable solutions.

Young innovators and entrepreneurs in Bangladesh were found to be particularly interested in m-Health and e-Health initiatives particularly because of their exposure to technology, the visibility impact and the award considerations. Our interviews with the young innovators suggest that a challenge fund might need to proactively engage them with potential investors (NGOs or private sectors) who might be interested to take their ideas to scale. The conclusion is derived from the fact that even though the young innovators proposed innovative ideas, there is hardly any evidence of a young innovator or entrepreneur taking their idea to commercial operations and scale.

4.1.4 Challenges

The initiatives reviewed by the scoping study team have similar approaches for providing access to useful information and advice directly to a mobile phone, either through SMS, voice messages, access to a website or access to a telephone advice line. They are all new and there is little systematic information on how they are used and on the degree to which poor people and residents of slums or remote rural areas use them. As already noted, there have been a number of recent global surveys of e and m health innovations. One by GSMA concluded that even though many m-health initiatives have prospered, very few have gone to scale and become commercially viable and very few have been able to demonstrate a positive health outcome. Two recent World Bank publications (Qiao et al. 2012; World Bank 2012) have analysed the challenges to be overcome in creating a viable m-health industry (table 13). None of these surveys have looked specifically at innovations aimed at providing benefits to the poor, so it is not possible currently to assess how pro-poor these innovations are, or are capable of being.

Table 13: Challenges for the establishment of viable m-health businesses

Insufficient financial resources: This is a common obstacle for m-health solutions, especially if no monetisation models have been established to clarify the relative responsibilities of patients, governments and insurance companies in bearing the costs. Yet, the most expensive part is not the development of an m-health service/product, but its integration within the health system. For example, several projects in low-income countries have been stopped once initial funding of pilot projects ended, because there was no money to replicate effective models in large-scale implementation.
Lack of sustainable business models: Sustainable business models need human resources and purchasing power on the demand side, sometimes missing in developing countries. However it seems that patients are willing to pay out of their pocket if solutions are adapted to their needs.
Difficult coordination of stakeholders: Managing diverse private, public, and non-profit actors from different sectors can be challenging. Precise roles have yet to be determined and translated into clear models. The players often have divergent goals and strategies leading to conflict and inefficiencies.
Interoperability issues: Multiple choices of platform and device create a myriad of different applications and standards. Finding and developing interoperability norms would be crucial to enable m-health services to diffuse widely.

Source: The World Bank: *Information and Communications for Development 2012: Maximizing Mobile*

At this stage, it is plausible to ask the question, why the m-health and e-health services have been ineffective in reaching out to the poor. Two recent studies provide indications of the challenges. One is a report of the preliminary findings of an evaluation of Aponjon (Chowdhury 2013) and the second is the preliminary findings from an on-going research study being conducted by ICDDR,B and the IDS. The evaluation of Aponjon found that many people valued the messages and wanted to continue with the service. However, both studies found that poor people were careful about their spending on mobile phones and the evaluation of Aponjon found that the cost per message was an important issue for many people. The study by ICDDR,B and IDS found that many people, particularly the young, have several SIM cards to benefit from "offers" such as special low tariffs. A recent paper reported a similar phenomenon in Cambodia (Bullen 2013). This means that targeting a specific telephone number may have limited impact. A second issue is the language of the text messages. Many SMS services use English or a Romanised version of Bangla, which are only understood by some users. Aponjon provides voice messages. The two studies found that women often have limited access to the family's mobile phone and this meant that some women missed messages sent by Aponjon. Of course, the significant number of people who do not have a mobile phone, or are not able to use the family's phone, are excluded from access to this source of information. We conclude that even though innovations targeting the poor exist there is a still a gap in achieving scale.

There are also some regulatory challenges that have to be solved. The DGHS has developed draft guidelines for Bangladesh e-health standards and an interoperability framework, to reduce duplication of effort and facilitate linkages between m-health initiatives. So far, the guidelines focus on data collection and management. The scoping study team found that private actors were not paying much attention to issues of interoperability. Several private actors remarked that they had not been greatly involved in the development of the guidelines and the regulatory

Illustrative Example: Regulatory Challenges on m-Health and e-Health Initiatives in Bangladesh

The scoping study team consulted Miaki and TRCL, two of the leading mobile content and application service providers in Bangladesh. According to Miaki and TRCL the combination of the level at which charges for value-added services have been set by government and the share of these charges that the mobile phone operators retain, have made it difficult to finance a telephone hotline, let alone provide lower cost services for poorer mobile customers. In addition, the only drugs they can recommend are those defined by the regulatory system as "over the counter". This limits the value of the consultations to potential users and Miaki has said that clients have expressed frustration at the number of times that the advice is simply, visit a doctor. The operators of the advice lines raised the question of a possible change in the rules to allow them to prescribe some drugs. As with the case of mobile banking, the government would need to decide whether the telecommunications or health sector should take the lead with regulation. If the telephone helplines were permitted to provide advice on the treatment of the common illnesses for which poor people largely rely on informal providers, it is possible to envisage an intervention, which could provide a valuable service to the poor. The AMCARE advice line can issue prescriptions by SMS, because it is directly linked to BIRDEM, where patients are assessed. One important challenge is whether this kind of service could be taken to scale at a lower cost for the very large numbers of people with diabetes, whom the hospital could not hope to see.

framework. They said that the lack of an agreed regulatory framework is a major constraint to the creation of stable markets. For example, there are no agreed standards on the kinds of services a company can provide, the qualifications of people providing advice, the ownership of companies (to reduce possibilities of conflicts of interest), or the pricing policies.

The Bangladesh Telecommunications Regulatory Commission plays a leading role in setting charges for SMS and for value-added mobile phone services, including health advice lines. According to an m-health company, the private sector was not consulted when the charges were set. These charges do not take into account the cost of employing doctors to provide advice and they are making it difficult to create a viable business model for the advice lines. It is not clear what role the MoHFW played in the decision-making process.

It is instructive to contrast this experience with that of the banking sector, in which the Central Bank played a leading role in developing a regulatory framework for mobile phone banking. It recommended that banks, rather than mobile phone operators, should take the lead in developing this service. A recent policy paper of the Bangladesh Bank (2012) concludes that the Bank's move in issuing guidelines for mobile financial services, which made clear the lead role of banks, had been important in enabling rapid growth of the sector. It also emphasised that the most significant issues at present concern the negotiation of mutually beneficial partnerships between banks and mobile network operators.

Besides, it is not clear whether DGHS or BTRC is responsible to monitor the quality of services that are being provided through the call centres or SMS-based value added services. One of the mobile phone operators noted that in the absence of clear regulation, the level playing field is lost since some operators are recruiting paramedics and health technicians for the health line services. Globally, mHealth Alliance has produced several policy papers which include Global Outlook on Patient Privacy in Mobile Health and State of Standards and Interoperability which can provide insights on regulatory frameworks that can play an important role in achieving scale on m-health innovations in low and middle income countries. But implementation will require agreement and action from national regulators.

Key recommendation: m-health interventions face challenges reaching scale and operating in a sustainable way in Bangladesh. The regulatory environment is not particularly conducive to innovations in the area, but this is beyond the remit of SRIJON, which should, instead, encourage innovations to overcome some of the other challenges, such as the need to link m Health to providers of services.

4.1.5 Conclusions

The e- and m-health sector in Bangladesh is very vibrant. There has been a lot of innovation in the development of new applications of ICTs. A number of for-profit and not-for-profit companies are involved in interventions. A variety of alliances and partnerships are being forged between specialised e or m-health companies, mobile phone operators, of health-related products and universities and research centres. These initiatives are funded from a variety of sources including international donors and foundations and business development or CSR funding from Bangladeshi companies. Much of the activity focuses on maternal and child health, although several companies expressed an interest in doing more to address chronic non-communicable diseases.

Now that a number of organisations have entered the e- and m-health market, **the priority is for them to find innovative approaches for making services available to the poor.** This will require:

- The **creation of partnerships** that can respond to the demand for services, at scale;
- **Linking with frontline personnel** who provide basic services to the poor;
- A strong **focus on the quality** of services and on meeting specific health needs of a defined target population
- Consideration of **interoperability** issues and consistency with national policy.

One informant suggested that we link funding for an innovation to a modest amount of support for government to arrange consultations aimed at developing an appropriate regulatory framework. The potential innovators also need to address the demand side barriers, especially in the rural markets. There is no study or evidence on the health advice that is being sought by the poor households in the rural market. The services are being developed with the assumption that the poor will use the services since they have access to mobile phones. It does not take into account the behavioural aspects of the users, their capacity and willingness to pay and their perceived benefit from the services. Besides, it is not clear whether the text format, voice format or web based video format could make it more attractive to the poor.

Sustainability of the business models and reaching the poor at scale is thus the biggest challenge for m-Health and e-Health services. The solution providers might have to invest heavily on analysing the market demand and then develop and promote the services to the target market. The development and marketing cost of the solutions is thus very high which is said to be a major deterrent for the mobile operators or other interested service providers in introducing new and innovative solutions. The mobile technology is developing fast and the cost of mobile phones, tabs, pads etc. have sharply declined. With the advent of smart phones, mobile applications have created new possibilities. But it would take time to prove the applicability of these technologies. It might therefore be more strategic for a challenge fund to invest in technologies and services that are available and could potentially go to scale through innovative business models.

4.2Outreach services

4.2.1 Overview

A limited supply of skilled health care professionals (see Chapter 5), difficulty in retaining health care professionals in remote and rural areas, unavailability of health care facilities, lack of awareness of essential health care, social stigma amongst people suffering from chronic diseases like breast cancer or HIV/ AIDS and the high cost of accessing health care services are some of the challenges that restrict access by the poor and marginalised population in both rural and urban areas to health care services. Outreach services aim at tackling these challenges through engagement of frontline health workers, provision of mobile or roaming health facilities and a combination of facility-based formal services and community based informal services.

In Bangladesh, the large number of informal health care providers who are integrated into the communities in hard-to-reach areas provided the impetus for the proliferation of variety of

outreach services. Further innovation in outreach models has meant that these health care providers have had access to training, have been better equipped to conduct health screening and diagnostics and could provide referral services to static facilities. Currently, the outreach services networks, developed by the health NGOs over the last two decades, are increasingly used to distribute health commodities and nutrition supplements, thereby opening up new opportunities in the last mile. Table 14, summarises the different types of outreach services in Bangladesh.

Table 14: Different types of outreach services in Bangladesh

Category of outreach services	Application
Engaging informal providers for MNCH and essential health care	Training and capacity building of the informal health workers and strengthening referrals for MNCH and essential health service delivery at community level; raising awareness on health issues at community level
Expanding the supply chain for health commodities and nutrition supplements	Leveraging community health market systems for distribution of health commodities and nutrition supplements
Emergency transport and care	Provision of ambulatory services for hard to reach urban and rural areas for obstetric care
Roaming health teams and health facilities	Increasing access to qualified health care professionals, raising awareness on health issues; reaching out to vulnerable and socially excluded communities, garment workers

Even though the effectiveness of outreach services in providing health care to the poor and marginalised communities has been proven and tested, these are yet to become self-sustaining and have remained largely dependent on donor funding. The high cost of delivering these services means that the poor might not be able to pay for them, if not subsidised. A sustainable business model that could have the same degree of effectiveness in delivering health care services to as large a percentage of the poor population as the subsidised model does is yet to emerge. The collaboration between health NGOs and the private sector for distribution of health commodities and nutrition supplements could strengthen the business model to make it more sustainable. It could also potentially provide income-earning opportunities for community health workers, whose earning from health service provision is low. In that context, as we show through our analysis, viable business models need to evolve through which outreach services could be effectively linked with the sale of health commodities and nutrition supplements and also with m-health and e-health solutions.

Key recommendation: Sustainable business models for resource-intensive outreach services have yet to emerge. However, SRIJON could support models that link outreach services with low-cost health commodities that could be sold by local health service personnel.

4.2.2 *Factors influencing outreach services in Bangladesh*

Outreach services are targeted towards mitigating the critical gap in access to health care due to the shortage of skilled health care professionals in Bangladesh. Despite significant public and private sector investment, Bangladesh has remained among the 57 countries with serious

shortages of doctors, paramedics, nurses and mid-wives (World Health Report, 2006). The density of formally qualified registered health care providers (7.7 per 10,000 people) is much lower than the estimate (23.0 per 10,000 people) projected by WHO as needed to achieve MDG targets. The nurse to doctor ratio is also low. There is wide disparity in access to skilled health workers in rural areas in comparison to urban areas.

Snapshot: Gap in supply of skilled health care professionals in Bangladesh

- The density of formally qualified registered Health Care Providers (HCP), i.e. doctors, nurses, and dentists, in Bangladesh is 7.7 per 10,000 population, and constitute only about 5% of the total health workforce. This is much lower than estimate (23 per 10,000) projected by WHO as needed to achieve MDG targets.
- There are around 5 physicians and 2 nurses per 10,000 population, making the nurse-doctor ratio in Bangladesh only 0.4. This falls far short of the WHO standard of 3 nurses per doctor
- Even though 75% of the population of Bangladesh lives in rural areas, less than 20% of the health workforce is reported to be available for them.
- The doctor to population ratio is 1:1500 in urban areas while it is 1:15000 in rural areas.
- Vacancy in the public health system is said to be a major cause for rural-urban imbalance in health care. 40% of the Upazila Health Complexes (UHCs) have no RMO (Resident Medical Officers), and up to 74% of UHFWCs (Union Sub-centres) have no Medical Officer.
- Bangladesh government has sanctioned 20,234 positions for physicians of which 11,300 are currently filled up, leaving a gap of 44.2% across the country

Source: Mahmood, Shadab 2013: Health Work Force in Bangladesh

One response to the shortage of skilled health workers has been the use of informal health workers and drug sellers as a first port of call by people living in rural areas or urban slums, when they feel unwell. The role of the informal providers is discussed in more detail in Chapter 5.While the informal providers have played an instrumental role in delivering a wide range of health care services to the poor in the rural areas, the NGOs in Bangladesh developed their own cadre of informal providers called community health workers especially to tackle the challenges related to MNCH. Their job was to extend or complement the services of the Skilled Birth Attendants (SBAs). BRAC for instance has a pool of 97,000 CHWs who have been trained to deliver MNCH services in both rural and urban areas. The CHWs, who are branded as Shasthya Sebikas (SS), promote the use of contraceptives by eligible couples and identify pregnant mothers and teach them about healthy living. They also refer people to nearby health facilities, when necessary and they raise awareness about child health issues. BRAC has trained some of the better performing SS to raise community awareness about non-communicable diseases, such as hypertension and diabetes.

Apart from the widespread gap in access to skilled professionals for health care, several other economic, social and geographic factors contribute to the need and therefore growth in outreach services. This includes the growth in employment of women workers as industrial labourers, the concern rising over health care for socially excluded communities like people suffering from HIV/AIDs and the difficulty in providing health care to the population in hard-to-reach areas like chars (river islets) in northern and southern Bangladesh and the Chittagong Hill Tracts (CHT).

According to industry experts the country has an estimated 2.3 million readymade garment (RMG) workers of whom 80%, are female. The poor working conditions in the RMG industry has caused widespread demand for safety, health and insurance of the RMG workers. Several NGOs have responded to the demand with innovative approaches in collaboration with private sector. This includes the partnership between HER and ACI for distribution of low-cost sanitary napkins to the garment workers and to raise awareness on menstrual regulation (MR).

Some outreach services are targeted towards Injecting Drug Users (IDUs) and people suffering from HIV/AIDS and STDs. Because of stigma these people often cannot avail themselves of formal health services. NGOs like Marie Stopes specialise on delivering health care to these communities through a mix of facility-based and community-based services that address the social barriers. Square Toiletries introduced a call centre that provides consultation on MR to women. It has also been running an activation campaign in schools and colleges called 'Breaking the Silence' to raise awareness among women to talk about personal hygiene.

To increase access to health care for the people living in the chars, Friendship, an NGO specialising in health care and livelihood interventions in remote chars (river islets) in the northern region in Bangladesh, pioneered the concept of the floating hospital. Over time the floating hospitals have been linked to satellite clinics, community medics, river ambulances and specialised health camps to provide integrated health care services.

The scope of outreach services has increased with a recent push from the private sector to expand the market to the last mile or the bottom of the pyramid. Outreach services are being increasingly used by non-state actors, especially the private sector, to distribute low-cost health commodities, like: low cost sanitary napkins, and nutrition supplements such as fortified biscuits flour and edible oil, iodised salts, micronutrient powder, and misoprostol for post-partum haemorrhage. Outreach services that were developed primarily for FMCG market, are also now being used to distribute health products. Examples include JITA, the social enterprise of Care Enterprises and Danone Communities, which has expanded the product basket of the women retailers in the rural markets to include health and hygiene products.

The distribution of health commodities through outreach service providers has created opportunities in two areas:

1) further **innovation could be fostered in low cost health commodities** since the market opens up to the last mile or the bottom of the pyramid; and

2) The challenge in **retaining community health workers for frontline services can be potentially resolved** as the distribution of health commodities could potentially provide an alternative livelihood for the community health workers.

BRAC Essential Health Care Program and the NGO Health Service Delivery Program (NHSDP) are among several of the leading NGOs and health projects that are using the community health workers for distribution of health commodities.

The extensive support from the multilateral and bilateral agencies through different development programmes has played an instrumental role in establishing the outreach services network in Bangladesh. Lately, there has also been an influx of CSR funds for outreach services,

especially on distribution of fortified food and nutrition supplements. The funds are directed towards ensuring that the informal providers are trained to deliver appropriate services and that the benefit of the services has reached out to a large number of poor households in Bangladesh. The cost of service development and service provision is thus almost completely subsidised in most cases.

The findings suggest that outreach services, which were initiated primarily by the health NGOs in response to meeting the critical gap of health care professionals, have evolved over the years to incorporate extended services that include referrals to facility based services and retail of health commodities. The extensive support and funding from donors, and lately the business corporations also, have played instrumental role in development and promotion of outreach services. In this terrain, as we further analysed in the following section, the scope of commercially viable solutions needs to be measured carefully.

Key recommendation: The large pool of existing outreach workers and facilities provide an important opportunity to reach some of Bangladesh's poorest people. In targeting hard-to-reach populations, SRIJON should seek innovations that maximise the potential of these existing services.

4.2.3 Business model, its sustainability and impact on the poor

The business model for outreach services varies with respect to the type of informal providers engaged. The business model for the engagement of the village doctors or pharmacies in rural markets is different from that used to involve community health workers. In this section, we focus on the business model in involving the community health workers. The business model pertaining to the informal providers like village doctors is detailed in Chapter 5.

The key players in outreach services in Bangladesh are the health NGOs. This includes BRAC, Marie Stopes Clinic Society (MSCS) and Friendship. Even though the programmes and services provided by these NGOs are mostly funded by bilateral agencies, these are usually undertaken as core service of the NGOs rather than as time-bound development projects. Several time bound, albeit long term, development projects are playing an instrumental role in the development of outreach services. This includes the USAID funded NGO Health Service Delivery Project (NHSDP). The DFID funded Chars Livelihood Project (CLP) runs its own outreach service programme through Partners in Health and Development (PHD). The Diabetic Association of Bangladesh (DAB) is implementing the Perinatal Care Project (PCP) funded by the Big Lottery Fund and Welcome Trust. The distribution services are being undertaken mostly by social enterprises. The largest of those is the Social Marketing Company (SMC). The services undertaken by SMC are aimed at reaching the last mile consumers with health commodities. There are several small scale but influential ventures in this category. These include JITA, the joint venture social enterprise of Care Enterprises and Danone Communities and the Info-Ladies which is being operated by D-Net.

We analysed different programmes and initiatives of low-cost health commodities already working with outreach services. WFP is an influential actor in the supply of fortified food. It runs the school feeding programme, which is the largest humanitarian programme operated by WFP

in Bangladesh. Unilever is also playing a major role in collaboration with WFP through Project Laser Beam (PLB). PLB has almost the similar scope of WFP's school feeding programme but has extended the concept to community mobilisation and awareness. Other influential players include Grameen, Danone, Renata, and BRAC.

The Global Alliance for Improved Nutrition (GAIN) operates several long-term projects in Bangladesh in collaboration with the private sector and health NGOs. The extensive engagement of GAIN in the development and promotion of fortified food and nutrition supplements and its influence on global policy for fortified food and nutrition supplements make it an important player in the segment. GAIN supports several programmes in Bangladesh in partnership with different government, non-government and private sector organisations. For instance, it has partnered with the Ministry of Industries, the Ministry of Health and Family Welfare, the Bangladesh Standards and Testing Institute, the Institute of Public Health and Nutrition and UNICEF to reach an estimated 100 million Bangladeshis with Vitamin A fortified vegetable oil. It is also collaborating with BRAC and Renata in the Bangladesh Sprinkles Program, with WFP and Unilever on Project Laser Beam, and so forth.

In consultation with the key informants, we selected several cases that involve these key players and that reflect the business models of the different types of outreach services in Bangladesh. The analysis reveals that the outreach services are mostly dependent on external funding, are highly subsidised and are designed to reach the poor in rural, urban or hard-to-reach areas. The cases reviewed include: large scale health programmes undertaken by established health NGOs (BRAC EHC), donor-funded health care projects (PCP, NHSDP, PHD-CLP), heath services undertaken by the health NGOs (Marie Stopes Mini Clinics and other services for garment workers and socially excluded communities; Friendship's floating hospitals). We have also undertaken the analysis of the distribution models of health commodities, fortified food and nutrition supplements under the outreach services because of the increasing partnership between health NGOs, international and local businesses and international agencies on the promotion and distribution of these products through outreach services. Cases reviewed include the distribution model of SMC, JITA and Info-Ladies. Table 15 provides a brief description to the cases that were reviewed.

The analysis reveals that the outreach services are mostly dependent on external funding, are highly subsidised and are designed to reach the poor in rural, urban or hard-to-reach areas

Table 15: Outreach services/ programmes in Bangladesh

Initiative	Type of initiative	Service Provider/s	Type of Service	Brief description
BRAC EHC	Public health program	BRAC Health Program	• Engaging community health workers for MNCH and essential health care • Expanding	Around 97,000 self-employed informal female health workers called Shasthya Sebikas (SS)[14] are engaged to provide basket of essential health care and MNCH services that includes early identification of pregnancy and antenatal care; conducting home delivery; postnatal care for mothers and neonates; under-five care; detection, management and

[14] http://blog.brac.net/2013/04/weve-made-staggering-progress-in-maternal-health-in-bangladesh-where-next/

Initiative	Type of initiative	Service Provider/s	Type of Service	Brief description
			the supply chain for health commodities and nutrition supplements	referral of maternal, neonatal and child health complications to hospitals[15]. The SS reaches out to 25 million people[16] in 64 districts in Bangladesh. Included among the donors for the programme is the Bill and Melinda Gates Foundation which is supporting the urban platform called Manoshi. The programme focuses on the training and supervision of the community health workers and ensures a strong partnership between local communities, NGOs, health workers, religious leaders and civil society to ensure provision of skilled care and quick referrals. BRAC has trained some of the better performing ShasthyaSebikas to raise community awareness about non-communicable diseases, such as hypertension and diabetes. BRAC also provides short term credit to ShasthyaSebikas, which they can use to purchase equipment such as blood pressure gauges and urine sugar and albumin measuring kits. Some SSs run small shops in their communities to sell basic medicine for common ailments, oral rehydration solution, vitamins, contraceptives, sanitary napkins, delivery kits and soap[17]. The ShasthyaSebika's service is voluntary, although they earn some money from some services to pregnant women. A 2008 study conducted by the Research and Evaluation Division of BRAC reported that the SS earns about TK 200 a month from the sale of health commodities. BRAC is using the network of community health workers for several other programmes. This includes the Alive and Thrive (A&T) programme which aims at behavioural change on infant and child feeding practices (IYCF) through counselling, coaching and demonstration conducted by the trained community health workers and Bangladesh Sprinkles Program (BSP) which is distributing multi-nutrient powders targeted for around 7 million infants (aged 6-24 months).

[15] http://www.bdresearch.org/home/attachments/article/nArt/407.pdf

[16] http://blog.brac.net/2013/04/weve-made-staggering-progress-in-maternal-health-in-bangladesh-where-next/

[17] http://blog.brac.net/tag/community-health/#sthash.z1C2XkS1.dpuf

Initiative	Type of initiative	Service Provider/s	Type of Service	Brief description
Perinatal Care Project (PCP)	Public Health Program	Diabetic Association of Bangladesh (DAB)	• Engaging community health workers for MNCH and essential health care	Implemented by Diabetic Association of Bangladesh (DAB) with fund from Big Lottery Fund and Welcome Trust and in collaboration with Women and Children First, Centre for International Health. Applies almost the similar model of BRAC's EHC albeit at a limited scale in 18 unions from 6 Upazilas and 3 districts. The programme, which is being implemented since 2002 has a stronger focus on institutional capacity building at community level by creating community facilitators who develop and support women groups so that they could maintain an emergency fund, arrange their own transports in case of emergency and conduct community mobilisation and awareness activities. The programme reports to cover 500,000 people in its territory.
PHD-CLP	Partners in Health and Development (PHD)	Public health programme but targeted primarily towards the beneficiaries of a large livelihood program	• Engaging community health workers for MNCH and essential health care • Expanding the supply chain for health commodities and nutrition supplements	The programme is designed to insulate the recipients of CLPs asset transfer programme from distress arising from health shocks so that they are not forced to sell the asset (primarily cow) that is being transferred by CLP. The programme operates in each CLP cluster for 18 months, which is the period for which the asset transfer support is provided by CLP. Under the programme paramedics, PalliChikitshaks (Village Health Workers) and SBAs are trained to provide door step health services. The service is free of charge and is covered through the CLP health vouchers. In addition, the paramedics sell medicines subsidised and supplied by CLP. The programme reaches out to around 65000+ CLP beneficiaries through 18 NGOs.
Friendship Lifebuoy Hospital	Friendship	Social/ Public Health Service for high subsidy	• Roaming health teams and facilities for population in hard to reach areas	Second hand and de-commissioned sea going vessels are refurbished and remodelled as floating hospitals to provide a wide range of primary and secondary health care services which include ante-natal and post-natal care, general gynaecology, paediatrics, family planning and obstetrics and eye care. Over time the floating hospitals have been linked to satellite clinics, community medics, river ambulances and specialised health camps to provide integrated health care services. Specialised health camps are also organised where prominent international and local doctors volunteer their time. The services are targeted towards people in hard to reach areas like chars (river islets) in the north and the disaster prone southern coastal regions. Friendship currently operates three floating hospitals. The operation is funded by donations, grants and sponsorship from

Initiative	Type of initiative	Service Provider/s	Type of Service	Brief description
				bilateral donor agencies, cooperative donors, sponsors and foundations. The Lifebuoy Friendship Hospital is reported to have reached around 478000 patients (40000 a year) since its inception in 2001.
Marie Stopes Mini Clinics and Mobile Vans	Marie Stopes	Social/ Public health for disadvantage and vulnerable communities	Roaming and micro facilities for the disadvantaged and vulnerable	Marie Stopes, which specialises in reproductive health care, uses outreach to complement its facility-based services. Marie Stopes' model illustrates how innovation evolves to address changing health system challenges. Slum dwellers form a major target group for services provided by Marie Stopes. They found that slum dwellers do not prioritise reproductive health. Their solution was to establish mini clinics, which could be operated by paramedics. The mini clinics also provide referrals to secondary and tertiary health care facilities. Currently the mini clinics are being operated as upgraded mini clinics with fund from DFID, EU and Marie Stopes' own fund in the major cities in Bangladesh - include Dhaka, Chittagong, Rajshahi, Rangpur Sylhet, Barisal and Khulna. To provide sexual and reproductive health (SRH) services to the homeless population, Marie Stopes introduced mobile vans that visit designated places once a week (four times a month) and provide SRH services to registered clients. Service is provided for a charge of TK 5 charged against the membership card. Male clients are served in tents set-up in a convenient place. The service is now concentrated in two locations in Dhaka (Sadarghat and Airport Railway Station) and funded by Marie Stopes from its own sources. Marie Stopes also introduced routine health care for garment workers. They reach agreement with some RMG manufacturers that they would pay TK 10 per worker per month so they would have access to health care services from the Marie Stopes team. According to Marie Stopes, the service was initially financially viable but soon the garment manufacturers began to set-up in-house health care facilities, which made the service redundant.

Initiative	Type of initiative	Service Provider/s	Type of Service	Brief description
Ad-Din Ambulance	Ad-Din Hospitals/ Akij Foundation	Social initiative	Emergency Transport	Ad-din ambulance is the most cited example of innovative ambulatory services in Bangladesh. The service was introduced in 2008 by Ad-din Hospitals Dhaka to provide emergency and affordable transportation for obstetric care. The compact size of the ambulances (1.4 m in breadth and 3.2 m in length) allows the drivers to navigate in busy and congested roads. Each ambulance is equipped with a stretcher, an oxygen tank, a mask, and two small fans. Furthermore, to ensure quick response to emergency, each ambulance is equipped with a GPS tracking device, which allows dispatchers to quickly determine which driver can reach a given patient with greatest ease and speed. The service fee has been increased over time from TK 120 per trip to TK 260. Currently there are 66 ambulances in the fleet.
SajidaBandhu	Sajida Foundation	Ancillary service for a core operation (micro finance and micro health insurance)	Engaging community health workers for MNCH and essential health care	The Sajida Foundation operates a special outreach service through its field workers called SajidaBandhu. The service is targeted at micro-credit borrowers, who are also covered by Sajida's micro-health insurance scheme. The cost of services for SajidaBandhu is thus borne within the cost of micro-credit and the micro-health insurance premium. SajidaBandhus are equipped with basic health care equipment to provide reproductive health care, including ANC, in collaboration with mPower, the Sajida Foundation has introduced an m-health platform, similar to that of BRAC Manoshi, for collection and management of patient records.
Smiling Sun Franchise Program	NHSDP	Public health at subsidised price	• Referrals system • Engaging Community Health Workers for MNCH and essential health care • Expanding the supply chain for health commodities and nutrition supplements	The NGO Health Services Delivery Project (NHSDP) is currently managing the facilities established under USAID's Smiling Sun Franchise programme. Under the franchise program, 27 NGOs operate 327 static clinics and around 10,000 satellite clinics. The project also developed a pool of 4500 community health workers who provide referral services to the static facilities and door step services to retail sanitary pads and other hygiene products. The mix of static clinics and satellite clinics has made possible the provision of door step services to approximately 20 million people in disadvantaged rural areas and urban slums. Forty percent (40%) of the client of the franchisees are targeted to be poor. The poor and disadvantaged are entitled to receive subsidised and free services. The evaluation of the programme in 2012 revealed that the

Initiative	Type of initiative	Service Provider/s	Type of Service	Brief description
				franchisees were able to recover 41% of the recurring costs through sale of health commodities and through their services to patients who are able to pay. The extensive network of the NGO Health Services Delivery Project provides an excellent platform for the distribution of low cost health commodities. Square Toiletries and ACI are among the several private sector businesses which are distributing personal hygiene products and drugs to the Smiling Sun Franchisees.
JITA	Care Enterprises and Danone Communities	Social enterprise	Expanding the supply chain for health commodities and nutrition supplements	JITA, a joint venture social enterprise of Care Bangladesh and Danone Communities, was incorporated in 2011. It was launched in 2004 as Rural Sales Program (RSP) by Care to address the challenge of informal distribution network in rural communities which deprives the poor in the rural areas in Bangladesh to have access to products like food, toiletries, apparel, agricultural inputs, and medicine. A case study conducted by Said Business School in 2009 reported that the programme started as a relatively unsuccessful programme with high drop outs (almost 50%) of rural women trained and supported to sell BATA shoes in their rural communities. Yet, by 2011, the programme was able to successfully recruit about 2640 rural women called 'Aparajitas' to sell assortment of products. The success came primarily because of its ability to attract corporate partners that include Unilever, Square Toiletries, BATA, BIC, Square, Grameen Danone Foods Limited (GDFL), Grameen Phone and LalTeer Seeds. According to JITA around 2 million 'out of the mainstream market' consumers are getting access to health/hygiene and nutritious products through JITA's inclusive business approach. It also conducts community awareness programmes and healthy, hygiene and sanitation issues in collaboration with its corporate partners. With Square Toiletries, JITA is training rural women on safe and hygienic sanitary products. In partnership with Unilever, JITA is distributing nutrition products in the Southern Region in Bangladesh under Project Laser Beam, a collaboration of Unilever and WFP, JITA receives commission from its corporate partners and the Aparajitas are entitled to profit generated from their sales. The Said Business School Case reports that the Aparajitas earn about TK 1400 per month (2009). JITA is now being scaled up with an

Initiative	Type of initiative	Service Provider/s	Type of Service	Brief description
				investment of Euro 600,000 from Danone Communities.
SMC	SMC	Social/ Public Health Program	Expanding the supply chain for health commodities and nutrition supplements	SMC dominates the market for contraceptives with several brands of oral contraceptive pill, condom, injectable contraceptive, ORS, micro-nutrient and safe delivery kit. SMC reportedly supplies 223,000 outlets across the country, of which approximately 35% are pharmacies and the rest are non-pharmacies, including grocery stores and kiosks. SMC is a partner of USAID's Bangladesh Health and Population Program (BHPP). The access to commodities supplied by USAID, access to funding from development partners, ownership of brands like ORsaline, Soma-Ject, Nordette 28, which lead the respective categories of Oral Saline and Oral Contraceptive Pills, and their country wide distribution network make SMC an influential player in the market.
WFP School Feeding Program	WFP, GoB	Public Health Program	Expanding the supply chain for health commodities and nutrition supplements	SFP is the largest humanitarian assistance programme implemented by WFP Bangladesh. It covers 10 districts and reaches out to 1.1 million children with fortified biscuits in 7500 schools across Bangladesh. The children targeted by the programme are within the age bracket of 5-11 years old. The districts that are currently covered by the programme include: Kurigram, Gaibandha, Borguna, Patuakhali, Bagerhaat, Shatkhira, Cox's Bazaar and Dhaka Urban. The schools that are registered for the programme includes government schools, registered non-government schools, community schools and schools that are operated by NGOs. Incepted in 2001, the programme is now in a new phase which started in 2012 and will end in 2016. The programme is expected to continue after 2016. The fortification is imported through DSM, a Netherland based sales agent. The biscuits are produced by 10 contracted private sector manufacturers under strict rules and regulations of WFP. The programme distributes 1500-1800 mt of biscuits per month. It costs WFP around TK 10 per pack to get the biscuits to the desk of each child. Each pack of biscuit weighs 75 grams and contains 8 pieces of biscuits. On average, each factory supplies 1500 mt of biscuits per year. Suppliers include PRAN, Masafy, Central Marketing Company, PRESCO, WASCO, etc. WFP also manages another school feeding programme for the government of

Initiative	Type of initiative	Service Provider/s	Type of Service	Brief description
				Bangladesh in 16 districts reaching out 2.4 million school going children.
Bangladesh Sprinkles Program	BRAC, Renata, GAIN	Social/ Public Health Program	Expanding the supply chain for health commodities and nutrition supplements	Bangladesh Sprinkles Program, or the Pushtikona Project, is a multi-partnership project aimed at reaching infants (6-24 month old) with multi-nutrient powders. Launched in 2010, the project aims to reach around 7 million infants by 2014. Under the partnership BRAC is supporting Renata, a private sector producer of human and animal health products to develop its capacity to produce multinutrient powders. BRAC is responsible for the marketing and distribution of the product throughout the country via its large network of community health workers. The project is designed to deliver sustainable results: retail sales of the multi-nutrient sachets for the price of TK 2.50/ sachet provides for economic return to the local producer Renata. The product is marketed through 1100 medical representatives connecting to around 50000 doctors. Involvement of BRAC provides a massive outreach to the last mile households through the 97000 community health workers engaged by BRAC. Ultra poor families are provided free sachets through BRAC's ultra poor programme.
Project Laser Beam (PLB)	Unilever, WFP, GAIN	Social/ Public Health Program	Expanding the supply chain for health commodities and nutrition supplements	PLB is a large multi-partner and multi-country initiative launched to tackle mal-nutrition through a holistic approach involving interventions on food, health, hygiene and livelihood. Interventions of the USD 50 million 5 year project include fortification of food with micronutrients, products to nutritionally supplement a child's diet, ready-to-use foods requiring no water or cooking, sanitation and hand-washing, access to clean water, deworming, immunisation, therapeutic feeding for the severely malnourished, education on the benefits of breastfeeding, nutrition education. In Bangladesh, the programme aims to improve nutrition of 500,000 children, reach more than 1 million people with life changing hygiene trainings and enhance the livelihood of 3000 ultra-poor women in rural households. WFP, Unilever, Kraft Food, GAIN and DSM are the key partners and funders for the project. The project is also being implemented in Indonesia.

The cases reveal a mix of business, social and public health approaches to service delivery:

- In the **public health approach**, the goal is to reach as many poor and disadvantage persons as possible with free or highly subsidised services. The service delivery is almost completely dependent on donor funding. Continuity of the service is therefore dependent on either the inclusion of new donors or extended grant from the existing donors. The BRAC EHC program, PHD-CLP health programme and Friendship Lifebuoy Hospital are run on this model.

- In the **social approach**, services are largely cross-subsidised from different other business and non-business sources. Marie Stopes subsidises its mini clinics and mobile health facilities from its revenue generating facility based services which reportedly recovers 200% of the cost of the service. Ad-din ambulances are operated through cross-subsidy from Ad-din hospitals and Akij foundation. It was reported that the service fee of TK 260 per trip taken from the clients could hardly recover the cost of the driver and the fuel. Cost of maintenance and development is borne solely from cross-subsidy.

- In the **business approach** the services are either linked with a core service or are provided as paid service to the patients. The service of Sajida Bandhu is free to the micro-credit and micro-insurance borrowers of Sajida. The cost of the service is borne from the revenue generated from micro-credit and micro-insurance service.

JITA has evolved over the years from being donor-driven to being a self-funded social enterprise. The service cost is paid from the commissions received from the clients for the sale of their products by Aparajitas the sales force in the rural areas. **It took more than seven years for JITA to evolve to the current model** which indicates the difficulty in sustaining a rural market through such models that require extensive investment in development and market promotion. The info-lady model of D-Net also follows a similar approach. It costs around 100,000 TK for an info-lady start-up. D-net made an arrangement with National Bank so that the info-ladies could access loan at a lower interest rate (9.5% per annum) to start their venture as an info-lady.

The Social Marketing Company (SMC) piggy backs on a continuous stream of donor funds to run a very large establishment for the distribution of health commodities at subsidised and low prices. For instance, the Blue Star programme markets Soma-Ject an over-branded injectable contraceptive provided for free by USAID. The commodity is marketed at TK 28-TK 30 per vial to the SMC Blue Star Providers who usually charge TK 35 per vial to the customers. The revenue generated by SMC is used to select, train and manage the Blue Star Providers, the graduate and non-graduate medical practitioners who undergo various screening and training process. SMC also conducts behavioural change communication (BCC) campaign to create demand for the use of the injectables. Clearly if not procured for free, the cost of Soma-Ject at the retail point would have been significantly higher and the market penetration might have been affected.

The marketing of fortified food and nutrition supplements is also heavily dependent on donor funds, which is evident from the case of Project Laser Beam and WFP School Feeding Program. In these cases, large amounts of money from CSR and fund raising campaigns lie at the heart of financial sustainability. However, a promising business model is evolving around public-private partnership which is represented in the case of the GAIN-BRAC-Renata partnership in the Pushtikona Project. Once the public funding ceases from GAIN, it is expected that the partnership between BRAC and Renata will continue as they can build on the market that has already been developed over the course of five years of the project.

From the various cases analysed, it can be concluded that **public-private partnership for funding, product development and marketing will be key to sustaining outreach for health services as well as health commodities.** Since the focus is on reaching the poor who otherwise cannot access health services or are not able to afford them, the services and commodities have to be priced low. This would scale in operations, efficiency in marketing and production operations for cost reduction and to certain degree subsidy on the end market price. Long term CSR funding might therefore be essential for sustainability of outreach for health services and health commodities. The effectiveness of the partnership will thus hold the key to sustainable business models in outreach services. Table 16 illustrates the partnership model in Bangladesh Sprinkles Program (Pushtikona Project).

Table 16: Partnership in outreach services: The case of Bangladesh Sprinkles Programme

Partners	Roles
GAIN	Providing technical support to Renata on production of the multi-nutrient. Providing fund to BRAC to train the community health workers for marketing and selling of the multi-nutrient in rural markets.
Renata	Production and distribution of the multi-nutrient. Reaches out to around 50,000 doctors through 1100 medical representatives
BRAC	Training of the community health workers. Distribution to rural market at market price. Distribution to the ultra-poor through BRAC's ultra poor programme.

Key recommendation: A range of business models has already been attempted in this sector in Bangladesh, some more successfully than others. Facilitating public-private partnerships could be a particular area of value addition for SRIJON.

4.2.4 Willingness of the non-state actors to invest

The focus of the NGOs has shifted from training and developing community health workers to integrating them into health systems, linking them to referral networks and ensuring they can earn a livelihood by selling health commodities. The private sector is also increasingly interested in this domain and has been actively collaborating with the health NGOs. Production and marketing of fortified food and nutrition supplements is expected to increase, which will further influence non state investment in engagement with community health workers. Given that the scope for further innovation on outreach services lies in the prospect of partnership between the private sector and the NGOs, it would be important for a challenge fund to facilitate dialogue between them through round tables, workshops or seminars.

Key recommendation: There is a risk that NGOs will not be accustomed to creating market-based solutions to sustaining outreach services. It may therefore be necessary for SRIJON to run sensibilisation workshops before issuing relevant calls.

4.2.5 Challenges

The cases reviewed by the scoping study team reveal that the existing models are not necessarily amenable to the mandate of a challenge fund, given the extent to which they depend on donor funds or grants and are designed to provide health care free-of-charge or at highly subsidised rates, neither of which is commercially viable. The shift from the 'public health programme approach' to 'commercial solution to public health approach' in outreach services is expected to face resistance since the latter is seen as anti-poor. Almost all the existing models achieve high pro-poor outreach and the health impact is also very strong. But the programmes are able to achieve it because of high degree of risk and interest free funding from both public and private sector donors, which helps them market the service or the product free or at very low price. Furthermore, the cases clearly highlight the importance of partnership between the public sector, the private sector and the NGOs. The organisations involved in the existing partnerships are very well known in their respective fields and have large scale operations which make them important to each other. Small scale ventures and their partnerships in this regard might not be as effective in achieving scale and sustainability as their larger counterparts are.

As there is wider interest on engaging community health workers for outreach services and distribution of health commodities, it would be important for a challenge fund to ensure that the grantees have taken essential steps to ensure skill development of the informal providers who are being engaged.

Apart from skills, administration of drugs by unqualified providers is a major area of concern. According to the National Drug Policy 2005, persons without professional qualifications or holding valid professional license are not allowed to stock, distribute or sell drugs and medicines. It is possible that the distribution of non-drug health commodities through informal providers could lead to infiltration of drugs through the same channel. It is also not clear to what degree the pharmaceutical companies engage with informal providers for distribution and marketing of drugs. Even if they refrain from actively promoting drugs through informal providers, there is a possibility that the pharmacists are channelling those through the informal providers to increase outreach. A challenge fund needs to be aware of the regulatory barriers and ensure that the initiatives that are being funded are compliant to the policies.

With regard to distribution of nutritional supplements for children, what a challenge fund needs to be very aware of is the debate on the application of Ready to Use Therapeutic Food (RUTF).Bangladesh Breast Feeding Foundation (BBFF) and Bangladesh Paediatric Association (BPA) have been actively campaigning against food products which could reduce the need for breast feeding and tend towards a food-only approach to preventing and treating malnutrition. These organisations are also generally against private sector's engagement on child health and nutrition[18].

Besides, the presence of hugely subsidised and free products in the fortified food segment is a major threat for commercially viable products. The case of WFP School Feeding Program can be cited in this context. As we noted, the programme reaches out to 1.1 million children in Bangladesh with fortified biscuits provided for free. Given the scale of operation of this program, 26 districts out of 64 in Bangladesh cannot be targeted for commercial retail of

[18] Business Innovation Facility: Commercial Home Fortification Products: Bangladesh Political Economy Mapping

fortified biscuits as it will not stand against the competition from the free biscuits supplied by the school feeding programme. The programme is a major buyer for the leading biscuit manufacturers of the country. Since the programme is expected to continue beyond 2016, these manufacturers might not have the incentive to invest in commercial manufacturing and retail of fortified biscuits. The fortification is currently imported directly by the WFP. The commercial cost of import might be much higher than that achieved by WFP.

Also, WFP maintains a stringent quality control procedure to ensure appropriate quality of the biscuits. The private sector suppliers are forced to ensure quality as WFP is the single buyer. Quality control will be a major concern for commercial manufacture and retail of fortified biscuits. The high price of the biscuits is said to be a major constraint for commercial sector retail. Furthermore, the biscuit is hard (not crispy) and contains less sugar (not tasty) so that it does not harm the children who take it daily. If not provided for free, the children might not like to eat the biscuits. Such challenges need to be tackled for any innovation to be successful on the segment of food fortification for child health.

4.2.6 Conclusions

Outreach service is a major area of interest of the non-state actors primarily because of its attractiveness to reach the poor with health services and health commodities. While the effectiveness of the services has been proven, the dependency on donor funds and CSR reduces the financial sustainability of the existing models. The frontline health workers, who are at the centre of the models, earn little from service provision and if not supported by the NGOs, could discontinue their service. The scope for innovation thus lies in supporting the models through alternative source of finance. This could come from the distribution of low cost health commodities as well as m-health and e-health services.

There is increasing interest from the private sector in the distribution of health commodities through outreach service providers and the interest could be nurtured if the private sector is further exposed to the outreach service systems developed by the health NGOs in Bangladesh. The e- and m-health solutions could also be linked with outreach services in this context. However, care must be taken to ensure that the outreach service providers continue to provide the health service which is their core mandate. There is a concern that too much push on supply of health commodities might drive the outreach service providers away from delivering quality health care. This needs to be tackled by the potential innovators by ensuring that the incentive package fosters health service delivery through the front line providers rather than taking them away from health service delivery to an auxiliary service like retail of health products or commodities.

Given the extensive investment from donors on development of fortified food and nutrition supplements it would be more judicious for a challenge fund to build on existing products which have been already field tested rather than on promoting development of new products. By focusing on developing a viable distribution model to the last mile, a challenge fund could potentially attract further investment on product innovation as the market becomes more viable. It would therefore be important for a challenge fund to ensure a proactive collaboration with organisations like GAIN and WFP which have been playing a pivotal role on production and marketing of fortified food and nutrition supplements.

4.3 Low-cost health technologies

4.3.1 Overview

Health technologies – which include medicines, vaccines and medical devices – are an essential component of effective health care systems[19].Among these technologies, medical devices play a crucial role in prevention, diagnosis, treatment of illness and disease, and rehabilitation. The world has witnessed an exponential growth of health technological development. Modern medical devices are a major cost driver of rising medical treatment costs, according to the World Health Report 2010 (WHO 2010). Despite the exponential growth of health technological development, most of the developing countries do not have adequate access to appropriate and affordable health technologies.[20]

Spending on laboratories and diagnostics services can be a proxy indicator for spending on medical technologies, as medical devices are used in diagnostic services. In Bangladesh, spending on laboratory and diagnostic services grew more than five times during 1997-2007. This spending accounted for 5% of total health expenditure (THE) and 16% of out-of-pocket expenditure by households in 2007 (BNHA 1997-2007). Rising expenditure on diagnostics leads to increasing spending on treatment, consequently making medical care unaffordable for the poor.

> Innovation in technology can be viewed as: 'a solution that has not previously existed, has not previously been made available in LMICs, is safer and/or simpler to use than earlier solutions or is more cost effective than previous technologies'.

WHO defines innovation in technology as a solution that has not previously existed, has not previously been made available in LMICs, is safer and/or simpler to use than earlier solutions or is more cost effective than previous technologies (The WHO Call for Innovative Technologies).

The following table is constructed following the definition of health technology provided in a WHO report (WHO 2012). The scoping study excludes health technology related to medicine and vaccines. The study includes only innovative initiatives related to medical devices.

Table 17: Categories of health technologies

Types	**Purpose**
Medicine (not included)	Prevention, treatment
Vaccine (not included)	Prevention
Medical device	
Artificial Limb	Rehabilitation
Orthoses	
Prostheses	
Mobility Aid	Treatment and Rehabilitation
Assistive device	Treatment and Rehabilitation
Medical Equipment	Prevention, diagnosis and treatment

[19]WHO. 2012. Local Production and Technology Transfer to Increase Access to Medical Devices Addressing the barriers and challenges in low- and middle-income countries. WHO Geneva, Switzerland

[20]http://www.who.int/medical_devices/call/en/index.html

Several resolutions of the World Health Assembly (WHA) acknowledge the importance of medical devices in achieving the internationally agreed health-related development goals including MDG and other key public health priorities. These resolutions also recognise that the challenges cannot be overcome without access to essential, appropriate and affordable medical devices (WHO 2010, WHO 2013).

As a consequence of these resolutions, the World Health Organisation (WHO) launched the Global Initiative on Health Technologies with financial support from the Bill and Melinda Gates Foundation. The initiative's goal is to make available the benefits of core health technologies at an affordable price, particularly to communities in resource poor settings, in order to facilitate effective control of important health problems. This initiative includes the development of guidelines and tools for health technology management, calls for innovative technologies, and the organisation of a Global Forum on Medical Devices in Bangkok in September 2010 (WHO 2010). Innovators from all over the world responded to the calls. WHO selects technologies that are in development stage or ready to be commercialised and shares these with stakeholders through its website.

In 2011, the International Medical Devices Regulator's Forum (IMDRF) was established to build on the Global Harmonisation Task Force (GHTF), and expedite convergence by focusing on understanding the operational challenges to harmonizing national regulations (WHO 2012).

In Bangladesh, the Government's engagement in low-cost health technologies is minimal. There are no specific regulations for medical devices that include mobility aids, assistive devices, prostheses, orthoses, or medical equipment. A handful of non-state actors are engaged in low-cost health technology innovation. The actors include the Department of Biomedical Physics and Technology, Dhaka University, BiBEAT (a social enterprise), Centre for Disability in Development (CDD), Centre for the Rehabilitation of the Paralysed (CRP) and BRAC Limb and Brace Center.

Our findings suggest **innovations in-low cost health technologies mostly focus on providing low-cost prostheses and mobility devices**. NGOs that are engaged in low-cost health technology innovations are the NGOs that focus on development programmes for people with disability. The Department of Biomedical Physics and Technology, University of Dhaka is engaged in innovation as a part of its research and development activities. Only one actor, BiBEAT, is engaged in commercial production of low cost innovative medical equipment. Due to lack of a supportive business environment the number of initiatives in low cost medical equipment is negligible.

Table 18 summarises some of the different low-cost health technology initiatives reviewed by the scoping study team.

Table 18: Examples of low-cost health technology initiatives in Bangladesh

Name of the Organisation	Type of Organisation	Type of Innovation	Brief description
Centre for Disability in Development (CDD)	• NGO	• Mobility Aid • Assistive device • Artificial limb	Health is one of the eight programme components of CDD. CDD produces and supplies different mobility and assistive devices such as wheelchairs, hand splints and visual and hearing aids under the health component. These devices are

Name of the Organisation	Type of Organisation	Type of Innovation	Brief description
			manufactured at a facility, the National Resource Centre on Assistive Technology in Savar, and are distributed through country-wide network of 350 partner NGOs. CDD collaborates with a US artificial limb producer to produce low cost limbs ensuring quality and safety. For example, a knee joint if imported costs BDT 22,000. CDD reduced the cost to BDT 2000.
Centre for the Rehabilitation of the Paralysed (CRP)	• NGO	• Mobility Aid • Assistive device • Artificial limb	CRP produces both wheeled and non-wheeled mobility and assistive devices for rehabilitation of people with disability. It produces a range or orthoses and prostheses. CRP manufactured orthoses range from the simple arch support-to-support fallen arches in the feet, to the more complication of bilateral jointed KAFOs (callipers). Prostheses include partial feet, below knee artificial limb to the complex above knee amputation replacement prosthesis. CRP designed a powered wheel chair locally which will cost around BDT 60,000 while the imported one costs BDT 200,000. Hand propelled wheelchairs, if used for a long time, cause problems in shoulders. With sponsorship from International Society for Prosthetics and Orthotics (ISPO) CRP staff received training from India and Vietnam. The International Committee of the Red Cross – Special Fund for the Disabled (ICRC-SFD) has been supporting CRP prostheses and orthoses services since 2003.
Department of Biomedical Physics and Technology, Dhaka University	• Academic Institution	• Medical equipment • Artificial limb	Dhaka University's Department of Bio Medical physics and technology is a pioneer in innovation in this area, particularly producing low cost bio-medical equipment and also producing digital diagnostic equipment. In the early 1980s, the Medical Physics Group at Dhaka University in Bangladesh began developing low cost medical equipment. An electromagnetic bone healing stimulator was their first product. The group trained students to design, develop, produce, and market innovative medical devices to suit local needs. A recent WHO report (WHO 2012) on low cost technology included one of the products (portable ECG) developed by the Department's students and faculty members.
BiBEAT	• Social enterprise	• Medical equipment	The Company limited by Guarantee within the purview of section 29 of the Companies Act 1994. It was registered with Joint Stock Companies in 2012. Some faculty members of the Department of Biomedical Physics and Technology established this company as a sister concern of the Department. The company aims to organise

Name of the Organisation	Type of Organisation	Type of Innovation	Brief description
			commercial production and marketing of useful technological products developed by the company or by others. So far, this company has produced a dynamic pedograph, a 12 lead ECG, a digital microscope, a muscle and nerve stimulator, and an anti-palm sweat device. It supplied low cost pedographs to a medical university in a south Asian neighbour (unit price BDT 600,000) and to the Diabetic Association of Bangladesh (unit BDT 300,000). The imported one costs BDT 5 million.

Source: Primary Investigation

Key recommendation: There are several on-going attempts at producing low-cost health technologies focused on prostheses and orthoses in Bangladesh, but not in many other health technologies. In addition to continuing to support these initiatives, SRIJON should consider filling this gap by promoting innovation in other technologies.

4.3.2 Factors influencing low cost health technology innovation in Bangladesh

Growing incidence of road traffic and industrial accidents and growing burden of chronic, non-communicable diseases have resulted in increased demand for assistive and mobility devices and artificial limbs. The World Health Organisation estimates that in low-income countries like Bangladesh, about 0.5% of the population are in need of prosthetic and orthotic rehabilitation services. Not surprisingly NGOs engaged in programmes around disability in development focused on low cost production of prostheses and mobility aids. Their aim is to make these products affordable to their clients/patients, particularly the poor in both urban and rural areas.

Faculty members, particularly one individual faculty member of the Department of Biomedical Physics and Technology of Dhaka University, were instrumental in innovations in medical equipment as well as artificial limbs. Recognising the necessity of low-cost technological development and commercial production of the products and making them affordable the same group of faculties formed BiBEAT, a social enterprise that was registered in joint stock companies in 2012. However, due to lack of a supportive business environment, low-cost health technologies could not be transferred from inventors to the commercial private sector, or in many cases, inventors could not succeed to be innovators.

Key recommendation: The significant burden of road traffic accidents coupled with the increasing burden of non-communicable diseases in Bangladesh suggest a strong demand for orthoses, prostheses and other health technologies if they were to be made available at low cost.

4.3.3 Business model, its sustainability and impact on the poor

The business models of the different cases were analysed with respect to the business objective, target market, source of finance or revenue, and scope for outreach. The business models of the reviewed cases vary. The Department of Biomedical Physics and Technology at Dhaka University is different from other actors. This is an academic institution that is the inventor of low-cost health technologies, i.e. medical equipment, in Bangladesh. Their target includes any

organisation interested in low-cost health technology products. It can invent a new product or design low-cost versions of existing imported products. The Department receives support mainly from international research institutes, foreign universities, private donations and some donor funding. Innovators in this area are yet to receive any international grant specified for this area. The Department was approached by a foreign company to form a partnership that required patenting of products developed by the Department. The Department refused to patent as it believes in patent-free products to benefit countries in resource poor settings.

NGOs like CRP and CDD produce low-cost medical devices as a part their commitment to holistic rehabilitation. Both NGOs have other programmes and projects that have components for the medical devices. Medical devices produced by CDD and CRP are being marketed through internal sales for other projects. Besides inter-departmental sales, CDD supplies when CRP has stock outs and vice versa. CDD markets and distributes its products through its 350 partner NGOs.

Actors involved in low-cost health technology innovation receive support mainly in two areas – product development and capacity development. Several international agencies and research institutes provide support to NGOs engaged in low-cost health technology. These organisations also receive technical support from international commercial enterprises in product development, mostly for artificial limbs. CDD collaborates with a renowned US producer of artificial limbs for prostheses development and also to ensure quality and safety. Similarly CRP also received technical support from an international producer of prostheses and mobility aids.

Table 19: Business model of low cost health technology innovations in Bangladesh

Venture/ Initiative	Business Objective	Target market	Source of revenue	Partnership	Outreach/ Scope
Department of Biomedical Physics and Technology	Low cost, appropriate and quality medical equipment	Government, NGOs, Private sector interested in low cost health technology	Funds from research institutes and universities, international agencies, CSR funds	BiBEAT, foreign research and academic institutions, donor agencies	Potential is high for product development. The products can be commercially produced and marketed through BIBEAT or other partnerships.
BiBEAT	Commercialise low cost medical equipment	Government, NGO, private and overseas hospitals and institutes interested in low cost quality products	Private donation to funding from international research institutions, agencies, CSR funds	Research and academic institutions, NGOs, private sector (for CSR), international producers of medical devices	Potential is high if it could leverage on the network of health NGOs such as the Diabetic Association. Presently collaborating with Diabetic Association which has network of hospitals and health centres. It is also collaborating with BIID to develop a telemedicine system.
CRP	To provide low cost products to clients with disability, particularly those who are poor in both urban and	Own client base through its hospital and centres, other NGOs working on disability issues	Grants from MOHFW, revenue from hospitals, donations, grants from international agencies and	MOHFW, Donor agency, foreign research and academic institutions, NGOs, private	Potential is limited. As the products require high degree of customisation the present production capacity is also limited. Subsidised appliances were provided to 216 patients in 2010-11.

Venture/ Initiative	Business Objective	Target market	Source of revenue	Partnership	Outreach/ Scope
	rural areas		charities, CSR fund	sector (importing raw materials), international producers of medical devices	
CDD	To provide low cost products to clients with disability, particularly those who are poor in both urban and rural areas	Own clients and clients of other partner NGOs	Revenue from other programmes, donations, funding from international agencies, CSR fund	Depart of Social Welfare, Donor agency, foreign research and academic institutions, NGOs, private sector (importing raw materials), International producer of medical devices	Potential is limited. As the products require high degree of customisation, production capacity is limited. Expansion needs huge investment which CDD is not able to make.

Table 20: Partnership between support service providers in low-cost health technology: The case of CRP

Organisational Level	Partners	Roles
Macro	Ministry of Health Family Welfare (MOHFW)	Provides grants to CRP
Meso	Foreign universities, research institutions	Provide funding, technical assistance in product development and training to capacity development
Micro	CDD	Collaborate to develop tilted wheelchair, provides each other mobility and assistive devices when needed

There is active collaboration between organisations engaged in innovation in low-cost medical devices. These organisations are also collaborating with the private sector and NGOs. CDD is collaborating with its partner NGOs. Recently, CRP, in collaboration with CDD, developed a tilted wheel chair for spinal cord injury victims. Both are collaborating with national companies that are importing raw materials or accessories of medical devices. CDD collaborates with a renowned US manufacturer of artificial limbs to produce low cost prostheses and orthoses. BIBEAT is collaborating with BIID to develop a telemedicine system that would help doctors in real-time diagnosis of patients. BiBEAT is collaborating with the Department of Biomedical Physics and Technology of Dhaka University. However, since some faculties are also involved with BiBEAT, separating these two entities sometimes is difficult. BIBEAT is also collaborating with the Diabetic Association of Bangladesh. The Department of Biomedical Physics and

Technology collaborates with international research organisations, overseas universities and also receives financial assistance from donor and universities. CDD collaborates with the Ministry of Social Welfare (MOSW) and CRP receives grant from MOHFW.

Prostheses and mobility aids require a high degree of customisation – one size does not fit all! Production of these devices needs to maintain certain levels of quality and safety standards for the users. The high degrees of customisation involved in manufacturing these technologies require more time and higher skills. Often there is a backlog due to this reason. Both CDD and CRP face this problem.

The findings suggest that CDD and CRP do not have a commercially viable business model. Their goal is to make health care services for the disabled affordable. Therefore, their business model depends on external funding to keep the service fees low to their target market. It is unlikely that they will change their service model in a way that would increase the cost of their services.

CDD and CRP provide mobility aid, assistive devices and artificial limbs to the ultra-poor and disabled clients either free or at highly subsidised prices. For example, a wheelchair costs BDT 11000, but CDD only charges BDT 1000 to its patients/clients. Both provided prostheses free of cost to the victims of a garment factory collapse in Savar. Both organisations serve clients from rural and urban areas. Both customise their mobility aids for rural areas to ensure durability without compromising quality and safety.

However, BiBEAT has the potential to have a commercially viable business model if it develops a network with organisations such as the government or NGOs engaged in health service delivery. BiBEAT's collaboration with Diabetic Association Bangladesh and BIID can serve as a starting point for forming partnerships with other NGOs engaged in service delivery.

Beyond orthotics and prostheses, local and international researchers, NGOs and private sector actors are working extensively on developing technologies that could address the challenge of post-partum death related to haemorrhage. ICDDR,B is currently doing a trial of Q-Mat, a birthing mat that could potentially reduce post-partum death due to post-partum haemorrhage by absorbing only a certain amount of blood to give a clear visual indication if a woman is bleeding out. Given that 70% of births in Bangladesh take place at home, the birth mats could potentially have a significant impact on reducing maternal mortality. The business model for the production, distribution and marketing of Q-Mat is yet to emerge, as it is in a trial stage. It is likely to follow the model of delivery kits which are now widely available in the market.

On low-cost commodities for at-home childbirths and reproductive health care, international experience could be of value to Bangladesh. Diagnostics for all, a US-based company, has received a grant from the Saving Lives at Birth Challenge Fund to develop two accurate, low-cost (<$0.10) postage stamp sized paper-based diagnostics for expectant mothers and newborns that can be used to detect and enable proper treatment of: (i) anaemia and hyper/hypoglycaemia and (ii) hypertensive disorders. This could potentially tackle the challenge of poor monitoring and late diagnoses of high risk pregnancies. The diagnostic can be used by minimally trained individuals in communities or clinics and the inexpensive and simple process is said to foster local/ in-country manufacturing, sales and distribution thereby making it profitable yet affordable. Also, funded by Saving Lives at Birth, JSI is testing the marketability of application of antiseptic chlorhexidine (CHX) to the umbilical cord stump to reduce newborn mortality. These

technologies could be promoted in Bangladesh and a viable model for the technology transfer and marketing could be tested.

4.3.4 Willingness of the non-state sector to invest on low cost health technology initiatives

Our discussions with CDD and CRP revealed that both are interested in new product development and scaling up current production of mobility aids. Scaling up the present engagement will require substantial investment. BiBEAT is interested in product development and scaling up its production. Each of these organisations receives CSR funding. **All these facts indicate willingness of the non-state actors to invest in this subsector.**

4.3.5 Challenges

There is no specific law regarding medical devices. There is no policy or strategy for medical devices. Recently, the Department has helped DGHS in developing a draft of policy for medical devices. It is still in a very preliminary stage. Meanwhile all these low cost medical devices are being produced in a regulatory vacuum.

Technology-based small entrepreneurs are discouraged by the processes involved in getting manufacturing license. They require space for factory, a fire brigade license, and clearance from the Department of Environment. Going through these processes, they often get discouraged by the amount of time all these processes require and governance problems.

Unfavourable tax policy acts as an entry barrier to entrepreneurs in setting up technology-based small and medium enterprises. Besides high import duties on raw materials, they have to pay 15% VAT, which increases the cost of manufacturing the technologies. To encourage this sector tax policy needs to be favourable. Further challenges underscored by the respondents include the need for high degree of customisation in artificial limbs and mobility aid which increases the manufacturing time and therefore the cost of manufacturing. There is also no account on the demand for point of care diagnostic kits or medical devices and mobility aids. Given that the production of medical devices requires substantial investment, lack of knowledge about the market demand and niches is a major deterrent for the prospective innovators. The scoping study team found that most of the NGOs that provide facility-based health services are not aware of the locally available low-cost medical equipment. Besides, the common perception is that locally made medical devices are not of international standard.

Illustrative Example: Regulatory Challenges on Low Cost Health Technology Initiatives in Bangladesh

The scoping study team consulted Prof Rabbani, the leading innovator in the Department of Biomedical Physics and Technology, Dhaka University and also the founder of BiBEAT. According to him there are many young innovators. To translate their ideas into enterprise requires entrepreneurial skills and capital, which many of them lack. In Bangladesh, technology- based entrepreneurs do not get the same media attention as agricultural based or handicrafts entrepreneurs. Most importantly, several factors act as entry barriers to new entrepreneurs in setting up small and medium enterprises in this subsector. For setting up an enterprise they need a manufacturing license which requires a space for a factory, a fire brigade license, and clearance from the Department of Environment. These involve considerable amounts of time and resources. Besides, these governance problems form a major deterrent. Unfavourable tax policy discourages the entrepreneurs. They have to pay high import duties for raw materials and VAT while importers of similar equipment do not have to pay VAT.

Key recommendation: Given the high entry barriers in this subsector, if SRIJON decides to support this area of work, consideration should be given to the feasibility of importing raw materials for the products proposed as part of the question of commercial viability.

4.3.6 Conclusions

The Department of Biomedical Physics and Technology first started innovation in 1980. Only recently BiBEAT was formed. Among the NGOs only three are found to be involved in the production of mobility aids and prostheses.

It is surprising that the government's role is minimal. The pharmaceutical sector in Bangladesh has made a remarkable achievement. The formulation of a national drug policy in 1982 paved the way for the expansion of the local pharmaceutical companies. Now, several manufacturers export medicines. Bangladesh does not have any policy or regulation for medical devices although the government procures medical devices for its network of health facilities. Almost 50% of the equipment either is not installed, not functioning or not being used. **Lack of skilled personnel to operate machines, lack of accessories, or lack of enough funds for repair and maintenance are the main challenges that MOHFW face.** MOHFW could be a potential client for locally produced low cost quality medical equipment.

BiBEAT has already supplied equipment to a foreign medical college hospital and diabetic association's hospital. If the Diabetic Association is satisfied with the quality of the product then this might influence other NGOs to become clients of BiBEAT.

Sustainability of the business models is the most critical challenge. It might be more strategic to invest in making a platform or linkage between innovators and facility-based service delivery NGOs or for the government to facilitate sharing of information about innovative and locally produced medical devices selected on the basis of health needs and health priorities. Given that the import regulation and tax policy is unfavourable for local manufacturing, a challenge fund could potentially target global manufacturers and innovators of technology to establish joint venture in Bangladesh for the promotion of the proven technologies.

4.4 Health Financing Initiatives

4.4.1 Overview

The large numbers of people in poverty, major financial barriers to access to essential health services and the prevalence of impoverishment due to health shocks and high out of pocket spending are the main factors motivating the government and non-state sector to develop innovative health financing programmes. A range of health financing interventions is being implemented in Bangladesh. These include pre-paid health cards, vouchers, micro health insurance, community-based insurance, private health insurance, buffer funds, emergency loans, and so forth. Pre-paid health cards schemes are the most prominent. NGO 'health insurance programmes' are largely prepaid health card programmes, and in most cases

insurance is a misnomer. Insurance is about shifting most of the risks from insured onto the insurance mechanism. In most cases reviewed, most of the risks are still borne by the insured.

Table 21: Categories of health financing initiatives

Category	Cases
Voucher	Government maternal health voucher scheme, voucher for eye care
Prepaid health cards	GK, Grameen Kalyan, Dhaka Community Hospital, Amader Shasthya of ICDDR,B
Micro health insurance	Nirapotta of SAJIDA, Niramoy of InM, LASP of ICDDR,B
Catastrophe loans	Buffer Fund of BRAC, Emergency loan of SAJIDA

In several policy documents, the government recognised the need for health insurance against the backdrop of high out of pocket payment for health. The Prime Minister's Office explored the possibilities of introducing health insurance. Members of the Parliamentary Standing Committee on Health visited a number of regional countries to learn from their experiences on health insurance.

As a consequence, in late 2012, the government adopted a health financing strategy for the next 20 years (2012-2032). This strategy puts emphasis on pre-payment mechanism and recommends strengthening of the tax-based system. It envisages all segments of the population (formal, informal sector and below poverty line populations) under the scope of risk pooling such as social health insurance and community based health insurance schemes. The strategy aims to reduce the out of pocket payment on health by half in the next 20 years.

The Ministry of Health and Family Welfare (MOHFW) in 2006 introduced a voucher scheme for poor pregnant women. This scheme is now being implemented in 53 sub-districts. The MOHFW started another voucher scheme for eye care services. The MOHFW is going to start health insurance for people living below the poverty line soon.

Innovations in health financing are mainly NGO driven, however. Gonoshasthya Kendra (GK), Grameen Kallyan (GrK), BRAC, Dhaka Community Hospital Trust, SAJIDA Foundation, ICDDR,B, and InM are the key players in initiating innovative health financing interventions. In the late 1980s, GK first pioneered prepaid health financing through health cards. In the late 1990s, micro credit NGOs introduced micro health insurance to their borrowers and their family members and some of these NGOs extended their health insurance services to non-members as well (Hasan RA 2007). Some non-MFI NGOs also introduced health insurance. The Institute of Micro Finance (InM) has recently started implementation of a micro health insurance scheme that involves both NGO-MFIs and a private insurance company (Ahsan and Mahmud 2012; Ahsan et al 2013).

DfID, GIZ, KfW, USAID, ILO are the leading bilateral donors engaged in health financing innovations. The Rockefeller Foundation is providing funding to a health financing pilot through the International Network of Alternative Financial Institution (INAFI).

Key recommendation: Health financing is a critical issue, especially for the poor. A number of initiatives have sprung up in Bangladesh, mainly driven by NGOs and providing micro insurance. The schemes are mostly run under donor-funded programmes or are targeted towards micro-credit borrowers. Given the high degree of involvement of donors, aid agencies, large scale micro-credit and financial institutions, it would be more prudent for SRIJON to consider a theme on health financing at a later stage only after rigorous dialogue and consultation with the national stakeholders.

4.4.2 Factors influencing health financing innovation in Bangladesh

Most of the health financing innovation is NGO driven. In late 1980s Gonoshasthya Kendra (GK) first started its prepaid health card system to reach the very poor and to cross-subsidise the poor. In the late 1990s, microcredit NGOs added health components to micro insurance as they found that many credit defaulters could not repay loans because of health problems or catastrophic health expenditures. A number of health financing schemes have been initiated as research projects, and are therefore limited in scale. Some schemes are donor driven.

4.4.3 Business model, its sustainability and impact on the poor

A number of NGOs are involved in health financing innovations. Most of these NGOs run micro credit programme and provide primary health services through community health workers and health centres. A few NGOs offer secondary and tertiary care through their own hospitals. However, some schemes hire doctors, nurses and paramedics to provide health services to members. Some refer beneficiaries to referral hospitals. Among the health financing initiatives, the health financing mechanism varies. In almost all cases, outreach services are provided free. Some charge a nominal fee. NGO services include primary, preventive, curative and rehabilitative services. Some NGOs put emphasis on MNCH services while some are engaged in controlling communicable diseases and other public health priorities. Some NGOs focus on non-communicable diseases as well.

Table 22: Examples of non-state health financing initiatives in Bangladesh

Name of the venture/ Initiative	Service Provider/ Owner	Type of Innovation	Brief description
NIRAPOTTA (earlier known as HELP)	SAJIDA Foundation	• Micro health insurance	The SAJIDA Foundation runs Nirapotta which was earlier known as HELP. It started in 2006 and is a mandatory micro health insurance scheme for its micro credit borrowers. The premium is BDT 300 for a family of 5 members for a year with BDT 40 per additional member. Currently, 100,364 households are members, covering 501,820 people in total. The plan geographically covers 54 upazilas under four administrative districts. HELP is a two tier plan. The first tier is for the insured who reside in the hospital catchment area. They get all services from the SAJIDA hospital at a discounted price. The SAJIDA hospital prices are 20% lower than those of the other comparable hospitals. Insured members get a 30% discount. Some services such as cataract operation, normal delivery, consultation by physicians are free at SAJIDA hospitals. At the second tier insured members get further cash credit once they receive treatment regardless of where they received treatment. Those who reside outside the SAJIDA hospital catchment area do not get the same benefit although they pay the same premium. Since they reside outside the catchment area they access services from outside hospitals. The quality of services from those might be inferior to the SAJIDA hospital services and they might have

Name of the venture/ Initiative	Service Provider/ Owner	Type of Innovation	Brief description
			to pay more than the SAJIDA prices but cannot claim. A total of 143,085 persons accessed SAJIDA's health services during January-June 2013. Of them, only 10% were HELP beneficiaries. The total number of health claims was 5751 in 2011-12 accounting for about 78% of total HELP claims. About 64% of health claims took 8-30 days to be settled while 31% took more than 30 days. Operation cost recovery from HELP is 102%.
Niramoy	Institute of Microfinance (InM)	• Micro health insurance	InM led micro health insurance pilot is the first of its kind – following a partner agent model. This micro health insurance scheme offers inpatient care to the micro credit borrowers of three MFI NGOs. A leading private insurance company will be the health insurer. A local private medical college hospital is the hospital care provider. It has partnership with two pharmaceutical companies to supply medicines at a much discounted price and with an IT company to help integrate a mobile health application. This is a three year pilot that envisages handing over the scheme to the private insurance company.
LASP	ICDDR,B	• Prepaid health card/ membership	LASP scheme was initiated as a test on 2 April 2012. However, with Grand Challenge Canada fund, the scheme is now in a better shape in terms of staffing benefits since 1st January 2013. Manual workers without any social protection, irrespective of institutional engagement, can be members or enrolees. Health services are provided by the Cooperative's own MBBS doctors and paramedics, contracted specialised doctors. Members are free-to-choose private, NGO and public hospitals and contracted diagnostic test centre. Up to BDT 4,000 per household per year will be reimbursed for hospitalisation and enrolee must inform scheme-office before admission or during stay in hospital.

Source: Primary Investigation

Almost all health financing initiatives are found to be dependent on external funding. Additional financing comes from revenue generated from other programmes and the scheme itself. For example, GK cross subsidises its prepaid health card scheme from the revenue generated from its commercial enterprises that include a pharmaceutical company. The SAJIDA Foundation receives a corporate grant of 51% share of Renata Pharmaceuticals. Other sources include private donations and grants from research institutions.

Only one scheme reported almost full operational cost recovery. Several schemes estimated that the enrolment of 3000 households would be their breakeven point, and that it would take five years to reach that point.

Almost all lack a sustainable business model. Only one scheme reported almost full operational cost recovery. Several schemes estimated 3000 households enrolment will help to reach break-even point. However, reaching break-even will take at least five years. It is evident that any health financing scheme targeting only the ultra-poor groups cannot be viable without government or donor support. This group can be targeted through health financing initiatives only if a broader socio-economic range of client base is included.

Table 23: Business model of health financing innovations in Bangladesh

Venture/ Initiative	Business Objective	Target market	Source of revenue	Outreach/ Scope
Nirapotta (JHELP) of SAJIDA Foundation	CSR and micro health insurance	Micro credit borrowers and their family members	SAJIDA owns 51% share of RENATA. Revenue from hospital. Premium from members	Micro credit borrowers are poor. Cost recovery is about 100%.
Niramoy of Institute of Microfinance (InM)	Research on micro health insurance	Micro credit borrowers and their family members	Fund from InM and premium from members	Micro credit borrowers are poor. The current coverage is 1000 households. It is estimated that coverage of 3000 households will enable the scheme to reach breakeven. After piloting stage, the scheme will be handed over to a private insurance company.
Labor Association for Social Protection (LASP) of ICDDR,B	Research on health insurance through Cooperative societies	Low income manual workers and their dependents	Research fund Grand Challenge Fund, premium from members	This scheme started in 2013. Beneficiaries are manual workers and poor. It needs 3,000 enrolees for reaching break-even point for the given benefit package. Potentially can be expanded to other cooperative societies of manual workers or low income groups.

The scoping study found that the most of the prepaid health card schemes of NGOs do not have effective collaboration with other NGOs. The reason is that the NGOs running prepaid health financing schemes are also the direct service providers. Some of these NGOs provide primary health care services through the trained community health workers and health centres (e.g. Grameen Kalyan, BRAC) or through hired providers specifically for the scheme (e.g. INAFI, LASP). A few provide hospital based secondary and tertiary care either through their own hospitals or referral clinics/hospitals (e.g. GK, SAJIDA, DCHT). Some micro health insurance schemes developed partnerships with NGOs, private insurance companies, pharmaceutical companies and private tertiary provider (e.g. Niramoy of InM).

The team was unable to identify partnerships between micro and macro level actors in prepaid health card or micro health insurance schemes. The recently adopted health care financing strategy recognises the importance of micro and community-based health insurance for reaching people not in formal employment. Implementation of the strategy might open avenues for further partnership between the government, NGOs and private companies.

Table 24: Partnership between support service providers in health financing innovation: The case of Niramoy of InM

Partners	Roles
InM	Financing and technical assistance
Partner NGOs	Implementing the scheme among their borrowers
Private medical college hospital	Providing hospital services
Private Insurance company	Insurance service
IT company	Provided IT services
Pharmaceutical companies	Supplying medicines at discount

Micro health insurance is exclusively offered by MFI NGOs to their borrowers who are poor and underprivileged. NGOs offering prepaid health card schemes are also targeting the poor. However, these NGO also offer services to the non-poor groups with an objective of raising revenue for cross subsidising the services provided to the poor.

Key recommendation: The high degree of dependence on external funding coupled with the long breakeven periods for these schemes make a challenge fund for innovation on health financing risky in comparison to other subsectors. There is a risk that SRIJON funding could be used by grantees to fill a gap in financing for existing or proposed insurance schemes. A theme on health financing should be considered only after further engagement with the national stakeholders to reach a conclusion on the scope for commercially viable insurance schemes in the health sector in Bangladesh.

4.4.4 Willingness of the non-state sector to invest on health financing initiatives

The scoping study found that almost all health financing initiatives have been financed by external funding sources. Micro credit NGOs are willing to introduce micro health insurance. Grameen phone and BRAC have already introduced mandatory health insurance for their employees. However, micro health insurance for ultra-poor groups alone cannot be viable. A number of recent health insurance initiatives targeting garment workers found willingness of garments manufacturers to be involved in health insurance schemes for the garments workers. A health insurance scheme for garments workers will start soon. This scheme is initiated by an academic institution, an international research institute, a local health NGO and technological solution company. A leading NGO is also trying to introduce health insurance scheme for garments workers. A donor agency is exploring the possibility of introducing health insurance scheme for garments workers under the broader framework of the health care financing strategy.

Key recommendation: While a generic health insurance scheme appears risky, there is opportunity to promote innovation on insurance schemes for specific target groups, like garment workers or migrant workers. SRIJON may decide to invite grantees on such specific insurance schemes reaching out to specific target groups.

4.4.5 Challenges

The regulatory framework for micro credit institutions was first developed in 2006. However, prepaid health card or membership schemes were introduced in late 1980s. Most of the health financing schemes flourished in a regulatory vacuum. Making adjustments in their programmes for regulatory compliance is a challenge for these NGOs. Hence the regulatory challenges need be solved either by making amendments in the existing law allowing non MFI NGOs to offer health insurance or by enacting a new law for health insurance.

Most of the NGOs cross-subsidise these programmes from their micro credit programmes. Some initiatives are dependent on external funders, such as development partners, contributions from charities and private foundations and CSR funds. Almost every scheme depends on external financing for start-up.

Most of these health financing initiatives are not commercially viable. Many micro health insurance schemes cannot meet their operational costs (Ahsan and Mahmud 2012). It takes a long time to reach the breakeven point and most start-ups find it difficult to sustain themselves for long enough.

Lack of awareness and demand remains a challenge for micro health insurance. The rural population needs to be convinced of the value of these schemes in protecting them against future health care needs. This is one reason why it takes a long period to reach the critical mass of enrolees to make the scheme commercially viable.

Another challenge is the lack of medical professionals. Some micro health schemes find it difficult to retain their medical professionals in rural areas (Ahsan et al 2013, Ahsan and Mahumud 2012, Khalily et al 2008). Most of the prepaid health schemes require substantial co-payments. This might discourage the poor to enrol or renew the subscription.

Illustrative Example: Regulatory Challenges on health financing initiatives in Bangladesh

Micro health insurance schemes have had to operate in a regulatory vacuum. Recently two laws have been enacted to regulate micro credit institutions (Micro Credit Regulatory Authority Act 2006) and institutions providing insurance (Insurance Development and Control Authority Act 2010). These acts led to the establishment of two regulatory agencies- MRA and IDRA- relevant for NGOs engaged in micro health insurance. Only MFI NGOs, cooperative Societies and private insurance companies (as a part of life insurance) are allowed to offer health insurance. Non-MFI NGOs can act as an agent of registered commercial insurers for micro insurance. Some NGOs dropped the word 'insurance' from the title of their programme while some needed to involve private insurance companies to address this regulatory barrier. It is not clear whether MOHFW has been involved in drafting these two regulations. However, the recently adopted health care financing strategy can be an advocacy tool for new health insurance law. MOHFW is going to start a health insurance pilot for below poverty line population. Hence MOHFW has to act for making the necessary amendment in the current law regarding insurance and micro insurance or enacting new law.

Key recommendation: SRIJON should consider dialogue with the regulatory agencies like IDRA and MRA as well as MOHFW to further assess the regulatory risk of health insurance in Bangladesh.

4.4.6 Conclusions

The scoping study findings suggest that sustainability of health financing initiatives for ultra-poor groups is the biggest challenge. This type of scheme needs government or donor support. However, ultra poor groups can be offered micro health insurance services if a broader range of client base is included with different income groups.

The scoping study team did not find collaboration between NGOs offering micro health insurance and NGOs running health services. NGOs with micro insurance and operating health facilities might consider establishing linkage with other MFI NGOs who offer micro insurance but do not have their own health facilities.

After the adoption of the health care financing strategy (HCFS) 2012-2032, it is not appropriate to fund any health financing scheme that does not fit in the HCFS framework. The HCFS recognised the role of health insurance schemes offered by MFI and non MFI NGOs to the population in informal sector. It might be more strategic to invest on health financing schemes for employees in the garment and other sectors.

5. Paramedical health workers

The previous chapters have documented the degree to which poor people rely on paramedical health workers for treatment of common illnesses. This chapter provides more detailed information on these paramedical health workers and argues that interventions aimed at improving access to safe, effective and affordable health services for the poor, will have to take these health workers into account. There are considerable differences between the arrangements for maternal, reproductive and some child health services and those for other health problems.

There are around 180,000 informal health service providers and/or drug sellers. They are the first port of call for poor people living in rural areas or urban slums. Although they run businesses, which are recognised by local authorities, they work largely outside the medical regulatory framework. In addition, there are 70,000 government and NGO-trained community health workers and 3,000 community skilled birth attendants, who provide maternal, reproductive and some child health services. Many of the community health workers are volunteers, but they have opportunities to supplement their income by selling commodities and/or providing some services. This makes it difficult to categorise them as either public or private. A number of the skilled birth attendants operate private practices in rural areas.

Training of these personnel has been fragmented. During 1979-1983 the government trained community health workers (*PalliChikitshok*) to provide basic services to rural residents. Since then, there has not been a large-scale programme for training this kind of cadre. Recent studies of village doctors have found that they acquire their knowledge and skills through a variety of channels, including “apprenticeships in pharmacies” and a variety of short and longer courses. In recent years, there has been a rise in the number of training institutes and training places, especially in the private sector. According to a 2012 Health Bulletin (MoHFW 2012) the total seat capacity for paramedical training (other than doctors and nurses) was: health technology: 10,657, medical assistants: 5,705. In addition, NGOs provide a number of additional long and short courses. Anecdotal evidence suggests that some village doctors are sending their children to courses to prepare for taking over the practice. The people who provide maternal, reproductive and child health services have mostly received training from government or NGOs. It is clear that the numbers of

The informal providers have tended to work as small private businesses, which rely on revenues from the sale of drugs. They have rather weak links with government health facilities and private providers. They have stronger links with pharmaceutical companies. The major challenges are to develop stronger links to the formal health system and to alter their business strategy to give more emphasis to quality of service and less to volume of drug sales.

A recent review of international literature on interventions for improving the performance of informal providers has found that training, alone, tends not to be very successful (Shah et al 2011). Two other important factors are the links to the formal sector and the incentives associated with the business model of the informal provider.

The relatively recent expansion in the number of private medical colleges could lead to a situation which favours the development of new models of private medical practice in which

doctors establish links of monitoring and referral with paramedical health workers. According to the 2012 Health Bulletin (MoHFW 2012) there are 22 government medical colleges and 54 private medical colleges with a total of 7086 seats. In 2012 there were 43,537 doctors available in the country of which 16,236 worked in the public health system. There were 5884 vacant posts for doctors in that system. This suggests that a substantial number of doctors will be looking for jobs in the non-state sector each year.

The scoping study team explored this issue with a senior official in the Bangladesh Medical Association and the Bangladesh Private Medical Practitioners' Association. He emphasised the need for regulations to eliminate dangerous practices by quacks. However, he acknowledged the great difficulty of convincing MBBS doctors to live and work in remote areas. He pointed out that a significant proportion of the projected 7,000 medical graduates a year will not find a job. This could open up possibilities for the development of innovative approaches to private practice, aimed at providing low cost services that make use of paramedical personnel or link to those already working in the community.

There are 40 government and 4 private centres training community skilled birth attendants, with a total of 5,917 graduates by August 2013. The CSBAs work for government, NGOs or work privately. The private practitioners take care of pregnant women and also provide primary health care services. One estimate is that they can earn 5,000 Taka per month.

The possibility that many new medical graduates and CSBAs will be looking for jobs is creating a new opportunity for the development of innovative approaches for establishing new types of MNCH practices, which involve skilled birth attendants and medical doctors. This could be organised by an NGO or by a new model of private practice.

The remainder of this chapter discusses the evidence with regard to informal health service providers. Section 5.2 discusses the community health workers working largely for NGOs.

5.1 Informal health service providers

The data presented in chapters 2 and 3 of this report make clear the important role of village doctors and unlicensed drug sellers as the port of first call when poor people fall ill, and as a major source of pharmaceutical treatment for common conditions. Any intervention which improves the performance of informal providers could provide substantial benefits at scale.

There is a growing international interest in the role of informal providers of health services and in effective strategies for improving their performance (Sudhinaraset et al. 2013). In many countries they have become an important source of advice and medicines for relatively poor people. They are often well-established in their community and well-regarded. Although they may have a basic knowledge of appropriate treatments for common conditions, one commonly finds problems with the supply of unnecessary drugs, weak referral links for the more seriously ill and the risk of resistance to antibiotics or anti-malarial medication due to the use of partial doses (Peters and Bloom 2011). A review of interventions for improving their performance has shown that training, on its own is not very effective, unless it is linked to measures that change the pattern of incentives these providers face (Shah et al. 2011).

One factor which contributed to the development of village doctors was the training of *PalliChikitshok*, as rural community health workers. Although this course ended thirty years ago and this cadre is no longer recognised in law, they have become an established feature of the informal health market in Bangladesh. Many people have subsequently joined this market. There have been many efforts to create links between informal providers and the organised health system, with limited success. The current strategic plan of the health sector programme HPNSDP acknowledges the important role of the informal care providers and the need to improve their practice. It proposes short training courses, to be provided by public and non-state training institutes, which cover, amongst other things, appropriate drug use and prevention of drug resistance, routine curative care management and referral of complex cases to the appropriate facilities. This has created a favourable context for interventions that complement the proposed training programmes.

5.1.1 Basic information on informal providers

Several studies and reviews have collected data on informal providers in Bangladesh (Ahmed et al. 2009; Ahmed and Hossain 2007; BHW 2008; Peters and Kayne 2003; Parr et al. 2012; Bhuiya 2009; Wahed et al. 2012; Ahsan et al. 2012; Ali et al. 2013). It is difficult to categorise the complex mix of informal providers. Ahmed et al. (2009) divide them into five groups. **Semi-qualified allopathic providers** are either para-professionals, such as medical assistants, midwives, family welfare visitors, laboratory technicians and so forth, or community health workers, who have received basic training from an NGO or the government. **Unqualified allopathic providers** are village doctors, who have attended one or more short courses and/or received on the job training in a health care facility, and drug sellers, who have had very little training, but make an income from selling drugs. **Traditional healers**, use traditional and/or faith-based health techniques following traditions such as Kabiraj, Ayurvedic and Unani. **Traditional birth attendants** may be trained or non-trained. Homeopaths also practice in Bangladesh.

A national study of the health workforce, done for Bangladesh Health Watch in 2007, estimated that informal providers constitute 95% of Bangladesh's health care providers and are used by 80% of the population (BHW 2008). Cockcroft et al. (2007) found that 60% of self-reported health care visits in the month before the survey were to unqualified informal providers. A study in Chakaria Upazila of Cox's Bazar District found that 65% of visits for health care were to village doctors (Mahmood et al. 2009). Rural residents and the poor are more likely to rely on the informal sector (Parr et al. 2011; Mahmood et al. 2009; Standing et al. 2012; Ali et al. 2013). The study by Ahsan et al. (2012) found that 60% of outpatient visits were to informal providers. They found a higher percentage in the poorest expenditure quintile and for children.

Figure 20 shows the national distribution of the informal provider groups defined above but with the addition of formally trained doctors. Although TBAs and traditional healers make up the greatest numbers, the proportion of care provided by village doctors and drug sellers make them one of the most significant groups. The average number of patients seen per day per physician, village doctor, drug vendor and traditional healer is 32, 18, 16, and 5, respectively (BHW 2008).

Table 25 shows the distribution of semi-qualified and unqualified allopathic providers in Bangladesh. Village doctors have a higher density in rural areas than in urban areas (14 versus 9 per 10,000) whereas drug vendors are more frequent in urban areas (11 versus 13 per 10,000).

There are an estimated 180,000–284,000 village doctors in Bangladesh. They outnumber certified physicians 12 to 1 (International Centre for Diarrhoeal Disease Research, Bangladesh 2009). In Chakaria, a predominantly rural upazilla in Cox's Bazar District, only 4% of the practising health care providers worked in the formal sector, the remaining 96% were informal and largely unqualified (Rasheed et al. 2009).

Figure 20: Density of healthcare providers per 10,000

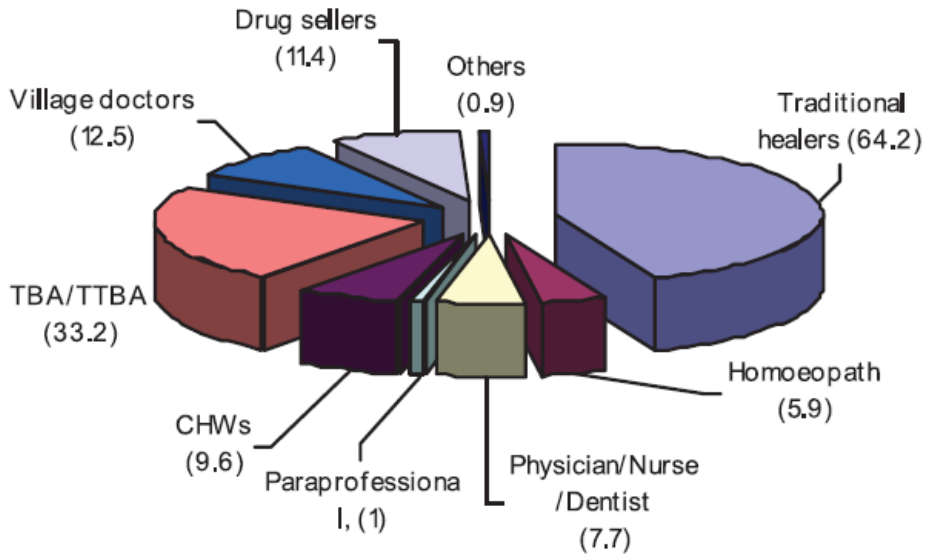


Table 25: Distribution of semi-qualified and unqualified allopathic providers, per 10,000 people

	Semi-qualified allopathic providers*				Unqualified allopathic providers		
	Paraprofes-sionals	Community Health Workers					
		Govt.	Non-Govt.(including traditional birth attendants)	All	Village doctors** (rural medical practitioners/'Palli Chikitsok' village doctors)	Dug store salespeople, drug vendors	All
Division							
Barisal	0.7	4.5	37.9	42.4	15.5	6.5	22.1
Chittagong	1.6	4.6	50.9	55.5	17.1	8.7	25.8
Dhaka	0.8	2.6	26.6	29.2	9.8	11.9	21.8
Khulna	0.6	3.0	46.3	49.9	11.3	12.3	23.6
Rajshahi	1.3	3.0	48.3	51.4	13.5	13.4	26.9
Sylhet	0.6	3.8	41.4	45.3	12.7	6.3	19.0
Location							
Rural	0.8	3.6	49.5	14.1	13.8	10.8	24.6
Urban	1.6	2.0	10.1	12.1	8.8	13.2	22.1
Sex							
Male	0.3	1.2	0.2	1.4	12.0	11.0	23.0
Female	0.7	2.0	39.4	41.4	0.4	0.4	0.9
All	1.0	3.2	39.7	42.9	12.5	11.4	23.9

*received varying length of training from formal institutions, GO or NGO.

**the Palli Chikitsok village doctors are included in this group because they are few in number, were trained on or before 1982 without any further re-training, and no different from the rural medical practitioners in practice.

Most informal allopathic providers are untrained or partially trained (BHW 2008; Bhuiya 2009). The most common routes for becoming a village doctor in Chakaria were being a trainee in a pharmacy (21.6%), assisting in a doctor's chamber (20.8%), assisting another village doctor

(9.7%) and attending short courses (42.4%). Most drug vendors and village doctors operate from their shop, or their own or their patient's home (Ali et al. 2012). Although some village doctors might advise laboratory or further diagnostic investigations they often do not have the facilities or referral networks to make that happen (Iqbal et al. 2009). They mostly rely on a thermometer, stethoscope and blood pressure machine to diagnose patients. This limits their capacity to make an accurate diagnosis.

A study by ICDDR,B analysed the drugs supplied by village doctors to clients with pneumonia, cold and fever, and diarrhoea and found that when compared with WHO recommended treatments the majority (75%) of the drugs prescribed were inappropriate or unnecessary. Only 18% were appropriate and 7% were actually harmful (Iqbal et al. 2009). Patients faced a considerable amount of unnecessary expenditure. Despite these problems, the report on the 2010 Bangladesh Maternal Mortality and Health Care Survey suggests that the 54% fall in deaths from infections in women of reproductive age and the dramatic decline in child mortality between 2001 and 2010 "may be explained by greater and effective use of antibiotics for infections", much of it supplied by village doctors (NIPORT 2012). The study by Ali et al. (2012), which found that a high proportion of village doctors prescribed antibiotics for a child with a fever, supports this hypothesis.

Studies show that people are broadly satisfied with the services received from informal providers. Village doctors are often integrated into the community and their clients asses them on whether they "behave well" in that setting. Loyalty is inspired by "good behaviour" in contrast to the rude and abrupt behaviour that is reported in government clinics (BHW 2008).

5.1.2 Business models

Most informal providers do not charge a consultation fee and rely largely on mark-ups from selling drugs (Ali et al. 2012). This creates an incentive to sell each client more drugs. They function in a highly competitive environment and rely on good relationships with their clients to sustain their business. This means that they need to take into account the wishes of these clients to limit their spending on health. It also means that they find it difficult to withhold a potentially harmful drug, if their clients request it. A recent intervention by ICDDR,B provided training on appropriate treatment of common illnesses, with the aim of reducing the amount of unnecessary drugs provided and decreasing the sale of steroids to treat a fever. It had only a modest impact (Wahed et al. 2012). Qualitative studies revealed that village doctors were unwilling to lose money from selling drugs and were afraid that people would go to another shop if they no longer sold them steroids. This experience illustrates the need for innovative approaches that enable village doctors to continue to earn a living, while improving the services they provide.

Informal providers have a close relationship with pharmaceutical companies. Medical representatives visit village doctors and drug sellers frequently (Rahman and Agarwal 2013; Ali et al. 2013). These representatives are an important source of information about drugs. They also provide gifts to village doctors, who sell a high volume of their products. The pharmaceutical companies also organise regular training workshops for village doctors.
The study team met managers of two large pharmaceutical companies, who said they maintained a database of village doctors and organised regular meetings with them. They said that the companies briefed participants on different aspects of good health care practice. There

have not been any evaluations of the impact of these meetings on the performance of village doctors. One of the companies said that they face strong price competition from small companies, who supply products of a variable quality. In fact, Ali et al. (2012) found that the drug sellers in their study sites tended not to stock products from the larger companies.

5.1.3 Challenges

The interviews with key informants identified several challenges to be addressed in order to implement changes in village doctor practice, at scale:

1. The lack of a clear regulatory framework, which acknowledges their actual practice, makes it difficult to design an accredited course on appropriate drug use and the weak links between informal providers and government health facilities, which compromise the referral network. The government's decision to include the organisation of a training course for informal providers in its current sector plan may be a step towards rectifying this problem.
2. The opposition of the organised medical profession to any measures that could be construed as recognising the right of informal providers to supply prescription drugs has been an important constraint.
3. The need to help village doctors create a new business model, which enables them to compensate for any loss of revenue from reductions in the volume of sales of unnecessary drugs with consultation fees (from clients, government or donor), or the sale of alternative drugs, tonics or health-related commodities.
4. The need to provide information to clients on appropriate drug treatment of common illnesses to reduce the demand for products, which may be harmful
5. The need to alter the incentives of medical representatives to reduce their promotion of high volumes of unnecessary and potentially harmful drugs and increase their role as sources of information on appropriate treatment practices, including criteria for referral.
6. The need to ensure that drugs meet minimum quality standards

5.1.4 Opportunities for Innovation and emerging innovations

There have been sporadic efforts over the years to improve the skills and training of village doctors. But most have foundered when programmes have been disbanded or as a result of pressure from the official medical association. The acknowledgement of the importance of village doctors in the current health sector plans may provide a more favourable context for progress.

ICDDR,B has recently been involved in several efforts to influence the performance of village doctors. It undertook a trial of a strategy for reducing child mortality from pneumonia, which involved, amongst other things, training village doctors in the appropriate treatment with oral antibiotics and when to refer a child for hospital care (Arifeen et al. 2009). They demonstrated a positive impact on health outcomes, although the specific contribution of the training of village doctors was not assessed. In another study, they undertook the training initiative described above, which had a limited impact. They are now exploring ways to use mobile telephones to link village doctors directly to MBBS doctors, based in a private medical call centre.

The study team met managers of two pharmaceutical companies, who said they were exploring ways to use their regular training workshops with village doctors to improve the services they provide. This could mean supporting efforts to ensure that the products village doctors sell meet

minimum quality standards. It could also mean using their network and regular training courses to improve prescription practices. They might aim to improve the treatment of children with fever and respiratory symptoms to reduce mortality from pneumonia or of chronic non-communicable diseases. They could undertake the latter in partnership with a service delivery organisation, such as an NGO, m-health company, or social franchise, to design a protocol for supporting people with diabetes and/or hypertension, train village doctors to take blood pressure and test for blood glucose and support a programme for managing NCDs. One challenge would be to establish a link to the formal health system, to ensure that people with serious diabetes and severe hypertension were identified and referred. Also, people would have to be convinced to pay for this service, or an alternative source of finance would have to be identified.

The Blue Star Network is experimenting with another approach for working with village doctors. Its vision is to create a network of skilled personnel, who can provide MNCH, nutrition and family planning services at the doorstep. The Social Marketing Company (SMC) has provided a 2 or 3 day training course to 4,600 "non-graduate medical practitioners" and it plans to train another 1,400. The people who successfully complete the course are entitled to brand their shop as "Blue Star". They are trained to use a number of branded products including injectable contraceptives, condoms, baby zinc tablets and sachets of food supplement powder. The intention is to provide them with a supplementary source of income, in exchange for maintaining standards expected of a member of the Blue Star Network. SMC is exploring the possibility of extending the work of its franchisees to cover antenatal care, NCDs and DOTS treatment of TB.

5.1.5 Potentially important partnerships

The village doctors are independent small businesses operating in a highly competitive environment. There may be an opportunity for a partnership for improving prescribing practices and facilitating referral links to the formal health system. This partnership might involve one of the pharmaceutical companies, which has a data base of village doctors and organises regular meetings with them. They could establish a partnership with a health service organisation to jointly work with village doctors to achieve a specified goal. The health service organisation could be an NGO, a social franchise, an m-health company or a research organisation. The goal could focus on a specific health problem, such as childhood pneumonia or the management of diabetes and hypertension. There would have to be benefits for these partners and the intervention would need to be consistent with the business models of the village doctors. Alternatively, a group of doctors could establish a new type of private practice in which they establish links with village doctors, who would provide basic care and refer patients who need to see a doctor.

6. Health regulatory Framework

All markets in Bangladesh are subject to a wide variety of regulations regarding registration of a business, payment of taxes and enforcement of contracts. In addition, in the health sector, there is a relatively complex regulatory framework aimed at protecting the public against dangerous products and dangerous practices. In Bangladesh, as in many other low and middle income countries, health related laws are primarily to regulate inputs used in producing health services (Ensor and Weinzierl 2006).In Bangladesh, regulations focus mainly on registration, price and quality of inputs and overlook issues of quality of outputs and of consumer protection. In some cases, community and civil society groups are playing a role in making the health sector more accountable to the public. In many countries, including Bangladesh, the government has only a limited capacity to enforce the rules and regulations. Ensor and Weinzierl (2006) emphasise the need to understand both the formal regulations and the degree to which they are enforced. The following review focuses on aspects of the health regulatory systems most relevant to non-state innovators in the health sector.

6.1 Regulatory Framework for HRH

Bangladesh has specific laws that govern conferring medical and dental degrees/diploma as well as registration of such providers. There are specific laws to regulate different categories of health workers and their practice.

The Bangladesh Medical and Dental Council Act, 2010 has been enacted to maintain registration of medical and dental physicians and ensure the standard of medical and dental education. This Act was first enacted in 1973, modified and re-enacted in 1980 and modified and re-enacted in 2010. It established an autonomous agency, the Bangladesh Medical and Dental Council (BMDC) to register and regulate medical (allopathic) and dental practitioners and ensure the standard of medical and dental education. No persons can claim as physician or dentist or provide treatment without registration.

The Bangladesh Nursing Council Ordinance 1983 led to establishment of the Bangladesh Nursing Council (BNC). Qualified nurses, who completed training at a nurse training centre or nursing college, are eligible for registration with the BNC. The BNC maintains separate registers for qualified nurses, midwives, family welfare visitors, skilled birth attendants, junior nurses and others with a recognised nursing qualification.

The Pharmacy Council of Bangladesh, established under the Pharmacy Ordinance 1976, registers pharmacists. There are two categories of registration, A and B. Register A is for graduate pharmacists. Register B is for people with a diploma from a recognised (mostly government) paramedical institution or a certificate from a short training course conducted by the Pharmacy Council.

The Medical Degrees Act 1916 was enacted during the colonial period to regulate the awarding of medical degrees/diplomas or certificates in allopathic medicine. The act only recognises universities and the state medical facility as competent to award medical degrees. Paramedics, such as medical assistants and health technologists, are certified by the State Medical Faculty (SMF). The SMF was established under the Bengal Medical Act 1914**,** which was later amended

in 1949. There is a proposed amendment to the present act to bring it up to date (http://www.smf.edu.bd/index.php?action=mvaccessed on 28 July 2013).

During 1979-83, the SMF offered a one-year course "PalliChikitshak", inspired by the Chinese barefoot doctors. The course was discontinued in 1983. There is no framework to regulate the work of the graduates of that course and the many thousands of people who have opened up practices in rural areas and the urban slums. This is partly due to opposition by the organised medical profession to any changes in the regulations, which would make it legal to provide services for which they have argued professional training is essential.

The Medical Practice and Private Clinics and Laboratories (Regulation) Ordinance 1982 (Amendment 1984) was made to regulate medical practice and functioning of private clinics and diagnostic centres. Under this regulation private medical practitioners who are serving the government are no allowed to practice during office hours. Private practitioners are also required to (i) maintain chambers with hygienic condition and necessary facilities for examining patients and waiting room for patients and their attendances; (ii) maintain registers for patients' names and addresses; (iii) issue printed forms which state the fees charged and with counterfoils that can be saved; (iv) display consultation fees in a prominent place. Ordinance 1982 also fixed the maximum fees for a medical consultation, which was later revoked under the Medical Practice and Private Clinics and Laboratories (Regulation) Ordinance (Amendment) 1984.

All private clinics and diagnostic laboratories are required to obtain a license from the Director General of Health Services. The license is renewable every year. Private clinics and diagnostics centres are required to maintain registers for patients' names and addresses and to display rates and charges for different services. It also specifies maximum fees for surgical operations, normal deliveries, and for diagnostic tests. It also specifies minimum floor space for each inpatient, number of full time registered doctors, nurses and cleaning staff per 10 inpatient beds, air-conditioned operation theatres, and a list of essential equipment and adequate supply of life saving and essential medicines.

A victim of malpractice or mistreatment in a private chamber or clinic cannot take the private practitioner or clinic owner to the court. The victim can only lodge a complaint with the MoHFW against the private practitioner or clinic involved. No Court will act unless it receives a written complaint from the Director General of Health Services or an officer authorised by the DG.

6.2 Regulatory Framework for health financing

Innovations in health financing were mostly in the form of micro or community health insurance. There are two regulatory agencies relevant for health financing initiatives: Microcredit Regulatory Agency (MRA) and IDRA Insurance Development Regulatory Agency (IDRA). These two agencies are governed by the Micro Credit Regulatory Authority Act of 2006, the Insurance Act of 2010 and the Insurance Development and Control Authority Act of 2010.

Micro health insurance (MHI) in Bangladesh is exclusively offered by non-for-profit NGO-MFI providers to serve the underprivileged. According to the Micro Credit Regulatory Authority Act 2006, micro credit institutions can offer different types of insurance services and other social development oriented loan facilities for the loan recipients and their family members. Micro

credit institutions also can receive deposits only from their members. The Insurance Act allows private companies to offer health insurance as part of life insurance. It is not surprising that most NGOs that offer health insurance are micro credit institutions and other NGOs have recently started involving private insurance companies to avoid this legal problem.

6.3 Regulatory framework for health technology

There is no specific law that specifically applies to health technology or medical equipment including prostheses. The present Innovation in this area has been mostly producing low cost versions of existing technological products. Low cost sometimes might lead to low quality, compromising patients' safety. Patient safety is at risk due to lack of any regulatory framework for medical equipment and devices. Recently, an initiative has been taken to draft a policy on medical device.

6.4 Regulatory framework for m-health, e-health and telemedicine

There are no specific regulations concerning m-health, e-health and telemedicine. The MoHFW is responsible for the implementation of the Digital Bangladesh policy and it has begun consultations with regard to this matter. Privacy and security and patient's medical data are two critical issues in m-health as personal health information is being collected and transmitted over mobile devices. In Bangladesh protection of medical data is protected to a certain extent. The protection of individual medical data is provided by several rules and laws relating to general privacy protection. These include the Code of Ethics of Bangladesh Medical Association (BMA), the Information and Communication Technology Act 2006, the Consumer Protection Act, the Consumer Rights Protection Act 2009. Moreover, the Constitution of Bangladesh ensures a general right of privacy in correspondence and communications that could be applicable to health related communications.

6.5 Regulatory framework for pharmaceuticals

The National Drug Policy 2005 (the first policy was adopted in 1982)The Drugs (Control) Ordinance 2006 and 1982, Drug Act 1940, Drug Rules (1945 and 1946) govern production, sale, distribution, storage, pricing and quality of pharmaceutical products. The objective of the National Drug Policy was to ensure that people get essential drugs at an affordable price and the drugs are useful, safe, effective and of acceptable quality. The Drug Control Ordinance is promulgated to implement the National Drug Policy. Directorate General of Drug Administration is the licensing authority for the pharmaceutical manufacturer, pharmaceutical products, wholesale and retail drug outlets or pharmacies. The Ordinance 1982 first brought alternate (Homeopathic, Unani, Ayurvedic) medicinal products under regulatory control. There is restriction on drug advertisement.

Production of spurious, adulterated and unregistered drugs is punishable with rigorous imprisonment and fine. The National Drug Policy and Drug Control Ordinance also provided for control of retail prices of drugs and also the prices of imported pharmaceutical raw materials.

According to the National Drug Policy 2005 persons without professional qualifications or holding valid professional license are not allowed to stock, distribute or sell drugs and

medicines. The Drug Control Ordinance requires appointment of registered pharmacists registered with PCB to supervise production and retail sale of pharmaceutical products. The National Drug Policy 2005 also requires that medicines classified as OTC could be sold or dispensed without prescription.

6.6 Gaps in the regulatory framework

In some cases existing laws are not adequate while in some cases no laws exist. The laws governing health workforce production, standards of education exist for the qualified physicians, nurses, pharmacists and paramedics. However, there are no regulations with regard to the training of the large number of paramedical personnel, who provide a very large proportion of the outpatient health services used by the poor. There are also no regulations concerning the marketing activities of pharmaceutical companies, the major source of information for many of these paramedical personnel.

Innovations in health financing areas are often in the form of micro health insurance. The existing regulations do not allow non MFI NGOs to offer health insurance. Health insurance is not a core product of even private insurance companies. Life insurance is their core product. A new law allowing health insurance by NGOs and private companies needs to be enacted.

As discussed in the previous chapter, the Bangladesh Telecommunications Regulatory Commission establishes charging rates for SMS and for value added telephone time. It has not involved the MoHFW in these decisions. The lack of a clear regulatory framework is said to be an important constraint to the development of m Health services.

6.7 Weak enforcement of regulations

Enforcement of regulations is very important to ensure quality of health services and protect consumer rights. It is difficult to achieve effective enforcement in the context of limited resources and a large and complex private sector found in many low and middle income countries (Ensor and Weinzierl 2006), including Bangladesh.

6.8 Informal regulatory processes

The formal regulatory system has been complemented by informal initiatives aimed at making providers of health services and drugs more accountable to the population. One notable initiative is Health Watch, which produces regular reports on different aspects of the health system. It has not yet produced a report on the performance of the private health sector. There have been experiments with the establishment of local health watch at district, or upazila level. An intervention by ICDDR,B found that local stakeholders were interested in looking for ways to make informal providers more accountable to the community (Wahed et al. 2012).

The rapid increase in access to the Internet is creating new opportunities for making private providers more accountable. A team at ICDDR,B is producing an inventory of all private providers in urban areas and inserting them into a mapping software, which has been put on a website. They are now exploring the possibility of providing an opportunity for users of these facilities to upload comments on the quality of services they provide.

7. The way forward

Access to health services has improved over the past decade, but there are still substantial inequalities in access to medical care and to drugs and other health-related commodities. This chapter outlines some areas where innovative approaches could make a major contribution towards addressing these gaps in the health system.

7.1 The value added of a challenge fund

During the past decade a lot of money has been invested globally in health-related innovations. A Bangladesh-based challenge fund needs to ensure that its investments add value. We conclude that it could achieve this by addressing the following issues:

Addressing persistent and emerging health and health systems challenges in Bangladesh: The purpose of a challenge fund is to address health and health systems challenges in Bangladesh. This includes the well-documented gaps in health services, such as the persisting social inequalities in access to maternal, neo-natal and child health services, the critical gap in access to skilled health care professionals, as well as emerging challenges which include the rapid rise in the burden of chronic, non-communicable diseases and mental illness.

Stimulating business innovations for health: The study team found a lot of innovation in Bangladesh. Several bilateral donor agencies and foundations are investing substantial amounts of money in health-related innovations globally and in Bangladesh. Several global challenge funds support innovations that focus on development, in general (www.usaid.gov/div), and on specific health problems (www.grandchallenges.org, http://savinglivesatbirth.net). There has been much more investment in new technologies than in organisational arrangements to provide access to these technologies. As a result, some very promising innovations have not yet led to changes in service delivery at scale. This is strikingly illustrated by m-health, where exciting developments have occurred, but where none have yet had a major impact.

The aim of a challenge fund should be to promote efforts to move beyond business as usual. The study team proposes that it focuses the majority of its investment on the adaptation of available technological solutions to specific contexts in Bangladesh and the development of business models for delivering information, products and services at scale. It should also leave a window open for testing blue skies ideas. It should not support the simple replication of an existing model for service delivery such as when an NGO replicates an existing model, but in a different community.

Given the focus on commercially viable solutions, a challenge fund will need to balance its investments in innovations that address the needs of the large numbers of relatively poor people, who spend a significant proportion of their income on health against investments in innovations that address those of the extremely poor, who rely on services provided free of charge by government or NGOs. The former innovations have the potential of achieving commercial sustainability, whilst the latter will have to rely on the continuing availability of funding to purchase services on behalf of the beneficiaries.

Facilitating partnerships: A challenge fund needs to support investments that have the potential to improve the performance of the health system at scale. This will often involve changes in more than one organisation. The study found a number of promising partnerships in the Bangladesh health sector. Participants include NGOs, for-profit companies and participants in local informal markets. These relationships straddle sectors such as health service delivery, pharmaceuticals, insurance and telecommunications. They also involve mixed models of finance, which combine government funding, international donors, corporate CSR and out-of-pocket payments by users. Many partnerships are quite new and are operating at a modest scale. However, they are creating the potential for innovative approaches for organising and financing improved access to services for the poor at scale and on a sustainable basis.

In Chapter 4, we cited the case of the Bangladesh Sprinkles Programme in which GAIN, a specialised international agency for nutrition, provided finance and technical assistance to Renata, a local pharmaceutical company, to produce and market a low cost multi-nutrient powder and engaged with BRAC to distribute and market it through their extensive network of community health workers. A challenge fund could encourage these kinds of partnership.

Nurturing young and promising entrepreneurs: In chapter 4, we highlighted the case of mPower, a social business specializing in m-health solutions. It is led by young, Harvard-educated Bangladeshis, who have continued to use their Harvard networks to bring innovative solutions to the health challenges of Bangladesh. One example is TraumaLink, hosted by the Harvard Innovation Lab, whose aim is to provide emergency responses to accident victims through a mix of community driven and call centre-based emergency services.

The South Asian Youth Society (SAYS), led by students from the North South University (NSU) in Dhaka, has organised an annual Social Business Forum since 2012, in collaboration with the Yunus Center, a global thought leader and advocate for social businesses. Its 2013 meeting attracted more than 1,400 students from 150 professional and academic institutions. The Forum organises a social business competition on themes related to the Millennium Development Goals (MDGs).

Several concepts developed by university students have received attention from the Bangladeshi and international media. One is the 'Litre of Light', a low cost solution for capturing sunlight to illuminate dark rooms in urban slums, developed and tested in the Philippines by students from the Massachusetts Institute of Technology in the USA. Some students from NSU pitched the concept to the South Asia Youth Leader's Summit in Dhaka in February 2012 and won the 1st runners-up award. Other examples include a mobile phone application that helps blind people operate their smart phones. This application won the People's Choice Award in Microsoft's Imagine Cup in 2011. The Institute of Information Technology, of Daffodil University in Dhaka, is launching an innovation lab with the aim of developing innovative solutions with the potential of being taken to scale by commercial providers.

One option for a challenge fund would be to support relevant health-related innovations. However, many young innovators may be excluded from participation in regular bidding rounds, because they do not have a formal organisation that can demonstrate a sound financial background and they do not have previous business experience. Instead of organising its own forums or competitions, a challenge fund could collaborate with the Yunus Center and SAYS to identify young innovators, who have developed and tested a concept, which has the potential for a commercial launch, with seed finance.

7.2 Potential themes for challenge fund support

Previous chapters have described Bangladesh's pluralistic and segmented health system and how poor people living in rural areas and urban slums seek health care and drugs when they fall ill. It has shown the degree to which poor people rely on front-line health workers with very little training and often working outside the regulatory framework to manage common health problems. The data presented in Chapter 3 show that access to health services has improved substantially over the past decide. Nonetheless, there are still substantial inequalities in access to medical care and to drugs and other health-related commodities.

Poor people in rural areas and urban slums face several barriers to access to safe, effective and affordable health services. The first concerns the quality of health-related goods and services available in the large informal markets. The second is related to the high cost of services provided by facilities staffed by licensed doctors and also to the long distances people need to travel to use these services. The third is related to problems that clients and providers of health services have in gaining access to reliable and trustworthy information. This chapter outlines areas where innovative approaches could make a major contribution towards overcoming these barriers.

Chapters 2, 4 and 5 describe the complex markets in which poor people in rural areas and urban slums seek health services. There are considerable differences between the arrangements concerning MNCH and other services. In the case of the former, the paramedical personnel trained and supervised by government or NGOs play an important role. For the latter, informal service providers and drug sellers are dominant. The performance of paramedical personnel and informal providers is influenced by the financial incentives they face, their partnerships and their links - or lack of them- with the formal medical system. Innovations are needed to improve their performance through measures to alter their business model, build partnerships for better health care and strengthen their monitoring and referral links with trained doctors. We are proposing seven thematic areas, as summarised in Table 26.

Table 26: Proposed Thematic Areas for a Bangladesh-based challenge fund

Theme	Demand- and supply-side barriers addressed	Focus area	Scope	Business model
New practice models for doctors and community skilled birth attendants	Demand side: - Addressing financial and physical access barriers for the rural poor, particularly remote and difficult to reach areas Supply side: - health human resources mal-distribution - health worker sustainable livelihoods - referral mechanisms	- Maternal, neonatal and Child Health	There are big shortages of medical doctors in rural areas and most rural residents have very little access to competent medical advice. The substantial increase in the training of medical doctors and community skilled birth attendants is creating opportunities to establish new kinds of practice model with links between paramedical personnel and trained medical doctors. These practices could also establish links with informal providers to increase their coverage and also attract more referrals. Mobile based solutions could potentially link the community skilled birth attendants with trained medical doctors or health facilities. The practice could be part of an existing network, it could be associated with an NGO or it could be a self-standing enterprise led by an experienced doctor (chapter 6).	The business model would depend on the type of organisation proposing an innovation. Private doctors, franchised clinics or NGOs could organise this kind of service. Mobile phone companies could earn from corporate partnership with health facilities that are connected to community skilled birth attendants through mobile applications.
Improve the performance of informal health workers	Demand side: - Addressing poor quality of health care for rural and urban poor - Reducing OOP spend by the poor on low quality or	- Maternal, neonatal and child health - Non communicable diseases	The vast majority of people living in rural areas and in urban slums seek advice and purchase drugs from “village doctors” and drug sellers. There is evidence that the easy availability of inexpensive drug treatment for common illnesses has contributed to falls in mortality. But there are many problems with poor quality	The informal providers are already earning a living, but they need a business model that encourages improvements in their provision of safe, effective and appropriate treatment of common conditions. Pharmaceutical companies would benefit by reducing problems with

Theme	Demand- and supply-side barriers addressed	Focus area	Scope	Business model
	unnecessary interventions Improving the quality of health information accessed by poor people Supply side - Improving provider knowledge and behaviour in respect of diagnostics and treatment - Changing incentives for market based providers away from over-prescription - Developing monitoring and supervisory arrangements for local providers		drugs, supply of inappropriate drugs and delays in referral. A number of pharmaceutical companies have ongoing links with these local drug retailers through visits by their representatives and the organisation of "training" workshops. These links have not been used to achieve clearly defined public health benefits. Several service delivery organisations have worked with village doctors in small scale health interventions. However, there is a need for models of intervention that can improve treatment of defined health problems, such as childhood pneumonia or hypertension and diabetes, at scale. These models could employ one or more of the following: treatment guidelines (already produced by ICDDR,B), innovative packaging of drugs to ensure quality and use of the correct dosage, leveraging of the marketing infrastructure of the drug companies and links to doctors through an existing network and/or with mHealth applications (chapter 6).	low quality products and by building their reputation for social responsibility. Other partners will need to create a financially viable business, cross-subsidise these services from other revenue sources, or create a low cost model for service delivery which can compete for government and donor funds. NGOs managing the trainings and workshops could be sponsored by pharmaceutical companies as well as health commodity suppliers for the training; however such models need to be approached with caution to avoid the pushing of sales of commodities to the poor and thereby increasing their out of pocket health expenditure .
Strengthen supply chains for low cost commodities	Demand side: - Addressing Financial and physical access	- MNCH	A number of low cost commodities have been developed, which could provide benefits to relatively poor people. These include food supplements, treatment of	This theme is directly linked to the ones above and the sustainability considerations are the same.

Theme	Demand- and supply-side barriers addressed	Focus area	Scope	Business model
	and purchasing barriers for specific rural and urban poor target populations, e.g. girls, pregnant women, people with disabilities Supply side: - Addressing health worker livelihoods - Improving Product and service quality for low cost, mass market products		common conditions and sanitary products. Several large NGOs are distributing these products through their networks. Large scale businesses (both local and MNCs) are increasingly targeting rural markets for distribution of health commodities. This has created scope for additional income to providers of front-line health services. However, large numbers of providers of front-line health services do not have opportunities to supply these products. One way to ensure that community health workers stay in post will be to identify supplementary sources of income, which do not detract from their commitment to provide a service for pregnant women and for children. Also, informal drug sellers could supply these products as an alternative to sales of unnecessary drugs. This would involve a partnership between an organisation, which monitors and supervises the performance of these health workers, and an organisation which can provide additional opportunities to generate revenue from providing additional services, supplying information and/or selling health-related commodities.	
Mobilise ICTs to support service	Demand side: - Reaching	- MNCH - Emergency care	A number of companies have created a variety of ICT applications, but, with one	The mobile phone application developers could earn directly by

Theme	Demand- and supply-side barriers addressed	Focus area	Scope	Business model
delivery at scale	populations that are underserved due to remoteness, lack of competent services/providers - Addressing digital exclusion on the basis of gender and other markers of exclusion - Improving access to public health information for specific target groups, e.g. pregnant women, people with NCDs. Supply side: - supporting innovations in reaching the poor through improved provider training, diagnostics, referrals, information systems,		or two exceptions, they have not demonstrated impact on the provision of safe and effective health services for the poor. Furthermore, only basic and emergency health care information can be provided through ICT channels that include mobile phones and the internet. Partnerships between specialised application developers, mobile phone companies, call centres and service delivery organisations could increase outreach and subscription to ICT services for improved knowledge and awareness on MNCH, non-communicable diseases, mental illness and so forth. It could also support emergency response to accidents, foster community discussion on sexual and reproductive health, improve access to skilled health care professionals and improve capacity of informal providers to deliver better health care services.	selling their application to telecom operators, health NGOs, pharmaceutical companies or health commodity suppliers. Telecom operators could earn from subscription fees. Advertisements could also help generate revenue for the service providers.

Theme	Demand- and supply-side barriers addressed	Focus area	Scope	Business model
	emergency responses, etc.			
Ambulance services for emergency obstetric care	Demand side: - Addressing the "second delay" in maternal health – geographical and/or financial inability of poor households to access EOC Supply side: - Reducing maternal and neonatal morbidity and mortality	- MNCH	Even though lack of access to ambulance services is a major challenge for obstetric care, the issue has remained largely unaddressed. Some NGOs have promoted community based solutions. But these solutions never reached territories beyond the communities in which they have been tested. Viable and scalable solutions might require health NGOs to partner with health facilities, community health workers, community representatives and transportation service providers to develop a network for fast and efficient mobilisation of ambulance services.	The service could be paid for by the users. However, since the service is for the poor and vulnerable communities, who are unable to pay for health care, the cost could be borne through CSR funds or foundations created to operate such service.
Help poor people manage NCDs	Demand side: - Lack of information, knowledge and locally available diagnostics for both rural and urban poor - Reducing cost barriers to access of NCD services Supply side:	- Non-communicable diseases (NCDs)	A significant proportion of poor people have hypertension and/or raised blood sugar, which can lead to serious and disabling illness. The present health system was designed to help people cope with acute infections and reproductive and maternal health. This means that people have to find their own way to cope with these problems. One option would be to train informal providers to monitor blood pressure and blood sugar on a regular basis and provide the appropriate drug treatments. This would	Pharmaceutical companies would benefit by reducing problems with low quality products and by building their reputation for social responsibility Other partners will need to create a financially viable business, cross-subsidise these services from other revenue sources, or create a low cost model for service delivery which can compete for government and donor funds; community radios could earn from advertisements by

Theme	Demand- and supply-side barriers addressed	Focus area	Scope	Business model
	- Developing innovative diagnostic and treatment models for the growing NCD disease burden		involve training, provision of treatments in appropriate packages and links to doctors for patients requiring medical advice. There is also a growing awareness of the very large burden of mental illness on poor people, and the lack any support from the health system. This causes a great deal of distress, disability and even premature death. Provision for specialised counselling centres or sessions, for instance through community radios, could help tackle these challenges.	the sponsors of the programme.
Health services for migrant workers or people working in the garment and other industries	Demand side: - High cost and poor quality of occupational and reproductive health care for workers in essential industries - Improving knowledge and information on essential health issues Supply side: - Creation of health	- MNCH - Occupational health	Migrant workers and garment workers constitute the largest population of formal sector workers in Bangladesh. Many are women, who are vulnerable to occupational hazards. Their knowledge and awareness about reproductive health care has been reported to be low. Partnerships between health NGOs, pharmaceutical companies, sanitary product manufacturers, associations of the garment exporters (BGMEA, BKMEA), associations of the medical practitioners (BMA, BPMPA etc.) may foster scalable and sustainable solutions reaching the garment workers and migrant workers. Besides, such partnerships may also support provision for innovative health insurance schemes linked to a reliable	The cost of service could be borne by the health commodity suppliers, pharmaceutical companies. Garment factories and all other industries having more than 100 workers are required to have an in-house medical doctor as per the amended labour law in Bangladesh. Insurance service providers could develop solutions in partnership with BGMEA, BKMEA to market schemes that are partially funded by the garment owners.

Theme	Demand- and supply-side barriers addressed	Focus area	Scope	Business model
	protection packages for key groups of workers		provider or effective and affordable services. In the case of garment workers, the employers may be willing to contribute to a health care benefit package.	
Innovations for accountability and regulation	Demand side: Address poor accountability of providers and services to users/consumers Supply side: - Absent, ambiguous or unenforced regulation	- Citizen groups and regulatory authorities		Could use start-up funds to develop local health watches and fund partnership development on regulatory challenges.

7.3 Prospective Grantees and Partners

The prospective challenge fund grantees range from large-scale established organisations to small start-ups. Their level of operations may vary from international to national to very local. The scope of business is also diverse. They might include social enterprises, NGOs, for-profit organisations, research organisations and professional bodies. While the range and diversity of the prospective grantees promises variety in innovations, it also increases the complexity of programme management. We propose that a challenge fund proactively reach out to a list of priority organisations that were found to be relevant as prospective grantees and partners under the different themes. Table 27 lists the different types of organisations that could potentially apply for the grants or become partners or mentors for the grantees.

Table 27: Types of potential innovators and partners under the proposed themes

Theme	Potential innovators and partners
New practice models for doctors and community skilled birth attendants	- NGOs with health programmes - Pharmaceutical companies - Individual practitioners or social franchises - Medical schools and trainers of CSBAs - M-health companies
Improve the performance of informal health workers	- Service delivery organisations (for profit and not for profit) - Research organisations - Hygiene and sanitary product manufacturers and distributors - Nutrition supplement manufacturers and distributors - Pharmaceutical companies - M-health companies
Strengthen supply chains for low cost commodities	- Hygiene and sanitary product manufacturers and distributors - Nutrition supplement manufacturers and distributors - Service delivery organisations (for profit and not for profit), which work with providers of front-line health services - International agencies specializing on nutrition supplements
Mobilise ICTs to support service delivery at scale	- M-health application developers - Telecom operators - Telemedicine service providers - Health NGOs - For profit health facilities - Universities/ research institutions - Young innovators - International agencies and alliances
Ambulance services for emergency obstetric care	- Health NGOs - Young innovators - Social enterprises
Help poor people manage NCDs	- Pharmaceutical companies - Health service delivery organisations - Research organisations - M-health companies - Community radio service providers
Health services for migrant workers or	- Health service delivery organisations (NGOs or for profit),

people working in the garment and other industries	- Insurance companies - Garment owners' association - Medical practitioners' associations
Innovations for accountability and regulation	- NGOs - Research organisations - Citizens' groups

7.4 Issues to consider in the selection of innovations for investment

A challenge fund will need to keep the following in mind in assessing proposals:

Target population or market segment
Proposals should specify the population for which the innovation is intended and demonstrate how it will reach that population.

Quality of services
Proposals will need to demonstrate how they will ensure the quality of services in terms of the qualifications of staff and defined standards for their performance

Capacity to go to scale
Going to scale will often involve packaging several innovations and creating a variety of relationships and partnerships between organisations. One big challenge is to find a way to leverage the large number of basic health service providers, who have direct contact with the target population.

Regulation
Each proposal will need to specify the relevant regulations and identify potential problems. In some cases, such as m Health and low cost technologies, there are inadequate regulatory arrangements or the regulations are a constraint to success. One option might be to support an innovation and explore ways to work with government to strengthen the regulatory arrangements. In some cases, the innovation may be unrealistic.

Accountability
Another approach for improving access to health-related goods and services is to improve the capacity for people to make informed choices and/or make the providers of these goods and services more accountable. Recent investment in producing an inventory of all provide health service providers in urban areas and inserting them into maps has created a platform for making this kind of information available. Although innovations for improving accountability are unlikely to be commercially viable, they could play an important role in improving the performance of health markets in meeting the needs of the poor.

Sustainability
Each proposal will need to outline an approach for financial sustainability. Where several partners are involved, each will need to specify how their inputs will be financed. In some cases, the provision of a good or service can be financed on a fully commercial basis in the market. In other cases, some resources will need to come from other sources. This can include cross-subsidisation between a fully commercial good or service and one with a social element. It can also include funding from a development partner and/or from the CSR budget of a commercial enterprise. In these cases, the proposal will need to show how they will demonstrate value for money and potential funders of the service.

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Annex 1 – Objectives of the scoping study

1. Summarise the available evidence on the structure, organisation and performance of private health markets in Bangladesh;

2. Document the context within which these markets are embedded including the legal and regulatory framework and the key actors that influence their performance;

3. Identify systemic constraints and underlying causes of underperformance in key health market systems;

4. Prioritise sub-sectors and thematic areas (priority health issues) which can benefit from innovation;

5. Identify constraints to the adoption and implementation of health market innovations that can substantially improve access by the poor to safe, effective and affordable health services;

6. Identify entrepreneurs, NGOs, development projects and potential partners and mentors interested in pro-poor health innovation and understand the interest, needs and capacity of these various actors.

Annex 2 – Informants interviewed

Organisation	Name of respondent	Type of organisation/activity
BPMPA (Bangladesh Private Medical Practitioner's Association)	Dr. Jamal Uddin Chowdhury, Secretary	Health education/ private sector
BRAC	Dr Mushtaque Chowdhury	NGO/Key Informant
BRAC	Dr Akram Islam	NGO/ Health program
BRAC	Dr Adib Hussain	NGO/Health Program
BRAC Health Innovations Program	Hossain Ishrat Adeeb,	NGO /Micro health insurance
BRAC International	Faruque Ahmed	NGO/ Key informant
BRAC Manoshi	Dr Kaosar Afsana	NGO/ Health program
BRAC University SPH	Dr Sabina Faiz Rashid	Health research and education
BRAC University SPH	Enam Hasib	Health research and education
BRAC University SPH	Afzal Aftab	Health research and education
BRAC University SPH	Antora Khan	Health research and education
Center for Disability in Development	A H M Noman Khan, Executive Director	Disability/ NGO
Centre for the Rehabilitation of the Paralysed	Md. Shofiqul Islam, Executive Director	NGO service provider/ Low cost Health Technology
Daffodil University (winner of Bangladesh digital innovation award 2011)	Professor Dr. Syed Akhtar Hossain, Head of CSE	Health innovation/ young innovator/ health technology/ mobile application/ academia/ researcher
Dakdiye Jay Pirorpur	Dr.Shahjahan Gazi, Executive Director	NGO/ Health service delivery/ MCH
DH MIS/ DGHS	Professor Azad	m-health/ e-health/ government
d-net, Aponjon	Arzu Zahidul Amin, Dr. Fida Rahman	M-health/ social enterprise/ health project
Engender Health	Dr. Abu Jamil Faisel, Country Representative	NGO/ Health service delivery/ MCH
Grameen Phone	ASM Rofiqullah, Head of Content Development	m-health/ telecom/ private sector

Organisation	Name of respondent	Type of organisation/activity
Health Prior 21. Com	Farhana Rahman (Managing Director)	e-health/ private sector/ young entrepreneur
	Dr Alayne Adams	Health research and implementation
ICDDR,B	Dr Abbas Bhuiya	Health research and implementation
ICDDR,B	Dr Shams el-Arifeen	Health research and implementation
ICDDR,B	Dr Emdadul Hoque	Health research and implementation
ICDDR,B	Dr Tanvir Huda	Health research and implementation
ICDDR,B	Sk Masum Billah	Health research and implementation
ICDDR,B	Shumona Sharmin Salam	Health research and implementation
ICDDR,B	Amed Ehsaneer Rahman	Health research and implementation
ICDDR,B	Dr Sabrina Rasheed	Health research and implementation
Jaago Foundation	Korvi Rakhshand	Child education/ social enterprise/ young entrepreneur
Marie Stopes	Dr. Reena Yasmin	Health Project/ NGO/Health Service Delivery/ Skill Development
Miaki	Taro Araya, CEO	m-health/content developer/ telecom/ private sector
mPower	Mridul Chowdhury, CEO	m-health/ technology/ private sector
NHSDP	Farhteeba Farah	NGO/ Project/ Health Service Delivery
Partners in Health and Development	Md. Abdus Salam, Executive Director	NGO/ Health service delivery/ MCH
PHD-CLP	Dr. Mohibullah Khondoker	Health Project/ NGO/Health Service Delivery/ Skill Development
POPI Kishoreganj	G.M. Morshed, Executive Director	NGO/ Health service delivery/ MCH
Renaissance Consulting	Parveen S Huda, Managing Director	Consulting/ health innovation/ private sector
Save the Children, SNL (Saving New born lives)	Dr. Syed Rubayet, Project Director	INGO/ Health service delivery/ MCH
Sesame Workshop Bangladesh	Anwar Hossain, Country Representative	Child Education/ NGO
SMC	Dr.Asheq Ahmed, In charge, BlueStar Program	Low cost commodity supply/ social enterprise

Organisation	Name of respondent	Type of organisation/activity
Square Toiletries	Malik Mohammad Sayeed, Head of Marketing	Low cost hygiene products/ private sector/ marketing
Team Rapture (winner of Microsoft Imagine Cup 2011)	Avishek, Lecturer, American International University (AIUB)	Health innovation/ young innovator/ health technology/ mobile application
TRCL	Sikder Zakir	m-health/ private sector
Tx Pro	Affan Chowdhury, CEO	Young innovator/ e-health/ private sector
UNDP-CHTDF, Sajida Foundation	Dr. Abdus Sabur	Health Project/ NGO/ Health Insurance/ Health Service Delivery/ Skill Development
UNOPS/ Access Health International	Dr. Nadira Sultana	Key informant on non state health sector innovation
Water Aid	Dr. Khairul Islam, Country Representative	Key informant/INGO
Young Powering in Social Action (YPSA) Sitakunda	Md. Arif, Executive Director	NGO/ Health service delivery/ MCH
The Acme Laboratories Ltd.	Snehashis Roy, in Charge Prodct Development	Acme NGO collaboration with ICDDR,B(Baby zinc) and Marie Stopes (misoprostol)
Microinsurance, Poverty and Vulnerability Project, Institute of Microfinance (InM)	Syed Abdul Hamid, Project Coordinator	Niramoy micro health insurance
Prof. Shaeena Islam	Chairperson, Department of Educational and Counselling Psychology, Dhaka University	Innovation in Mental health services
Taskina Huq	Senior Private Sector Relations Officer WFP Bangladesh	Project Laser Beam within WFP school feeding program
Jahangir AM Khan	Head of Technical Support Team of LASP	ICDDRB for LASP health insurance
Abbas Uddin Chowdhury	Executive Director Porbat Association for Human Resources and Assistance (PAHRA)	Rangamati- Outreach services in hill tracts

Organisation	Name of respondent	Type of organisation/activity
Dr Aung Sajai	GRAUS	Bandarban - Outreach services in hill tracts

Annex 3 – Consultation meeting report

SRIJON Health Market Outlook
Scoping Study Presentation – 20 June 2013
Report

Background

On 20 June 2012, SRIJON – Innovating for Health brought together a diverse group of stakeholders to present the preliminary findings of a scoping study whose purpose is to:

1. Summarise the available evidence on the structure, organization and performance of health markets in Bangladesh;
2. Document the context within which these markets are embedded including the legal and regulatory framework and the key actors that influence their performance;
3. Identify systemic constraints and underlying causes of underperformance in key health market systems;
4. Identify constraints to the adoption and implementation of health market innovations and potential mechanisms for overcoming them
5. Prioritise sub-sectors and thematic areas (priority health issues) which can benefit from innovation;
6. Identify existing, planned or potential future health market innovations that can substantially improve access by the poor to safe, effective and affordable health services; and,
7. Identify entrepreneurs, NGOs development projects and potential partners and mentors interested in pro-poor health innovation and understand the interests, needs and capacities of these various actors.

The event was organised by SRIJON – Innovating for Health, a partnership led by GRM International and comprising of Innovision Consulting Bangladesh, the Institute of Development Studies at the University of Sussex and the International Business Leaders Forum. The Scoping Study team is lead by Dr Gerry Bloom.

The implicit objectives of the meeting were to:

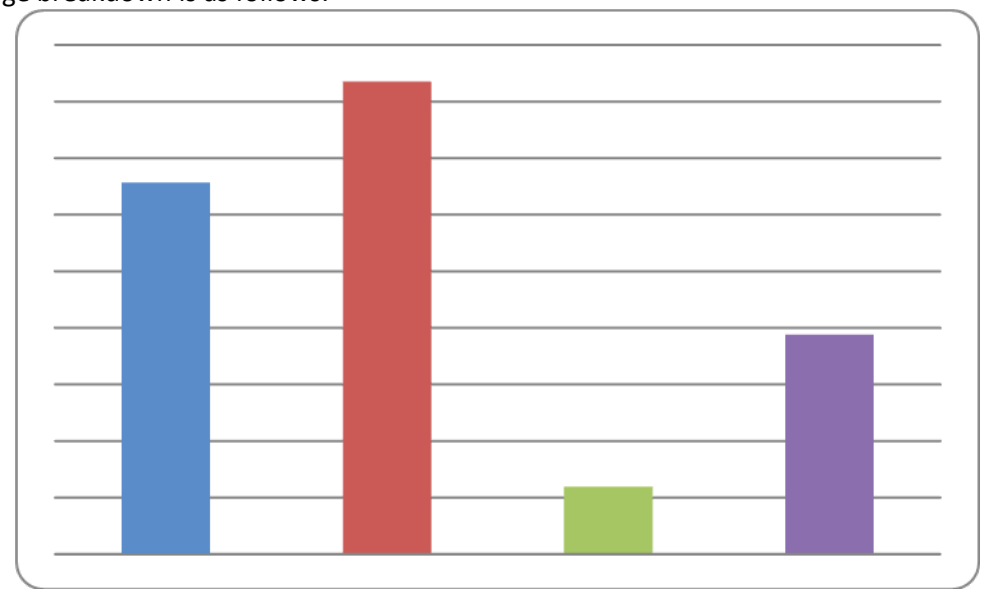
1. Present the initial findings of the scoping study
2. Receive feedback from the participants on the findings of the scoping study
3. Elicit from the participants what they are currently doing in the way of innovations, or know of being done
4. Encourage participants to think creatively around what solutions to intractable health problems in Bangladesh might be, regardless of the visible constraints

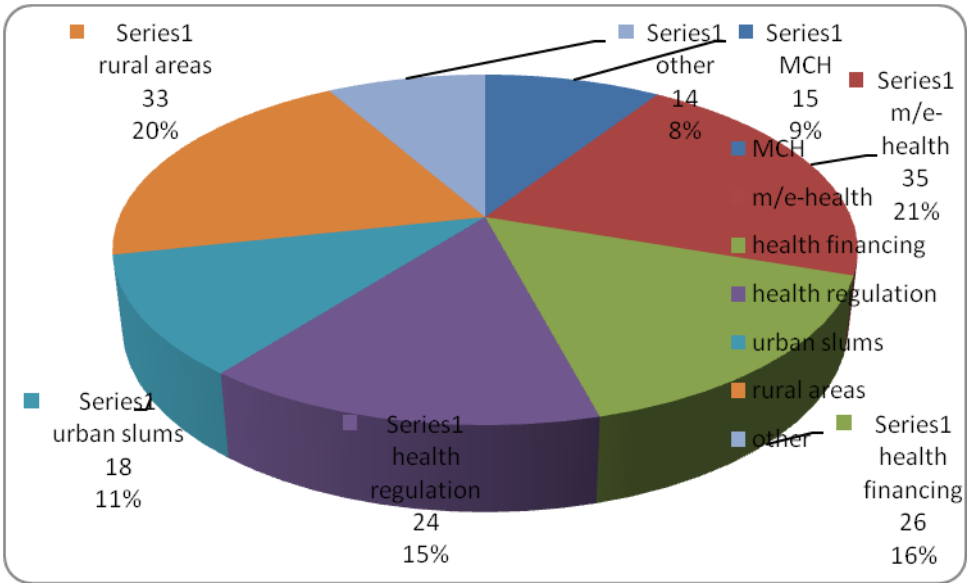
The explicit objectives of the meeting were to:

1. Envision participants of the opportunity that SRIJON presents
2. Deepen participant's understanding of the Bangladesh Health Market System
3. Describe how participants can become involved in SRIJON.

Participants

The event had 67 participants, not including the DFID team (5 people) and the SRIJON team (11). The percentage breakdown is as follows:





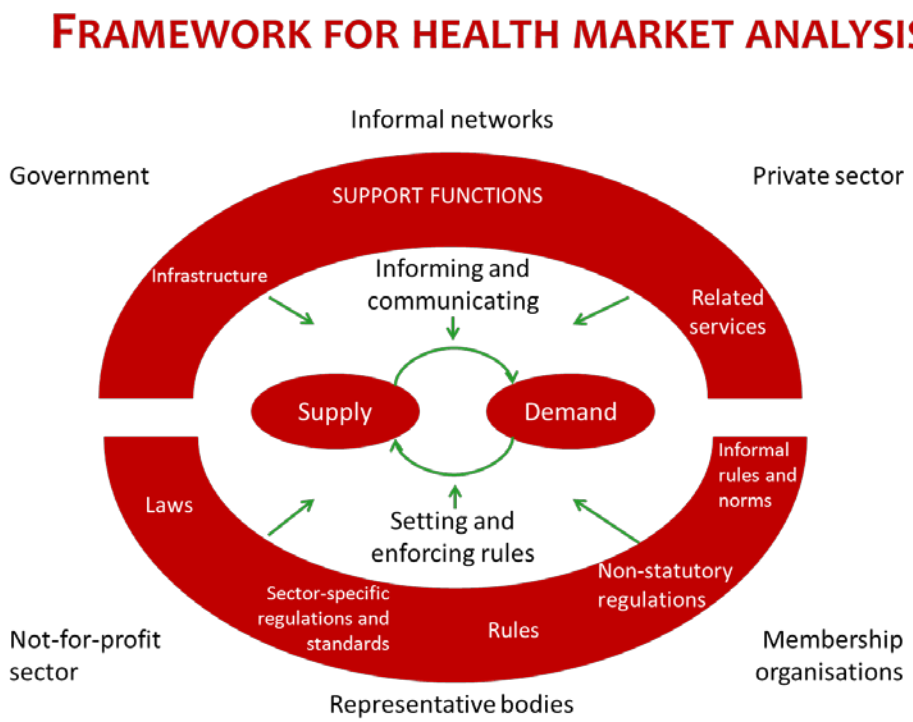
Of those attended, interests listed were in terms of percentages was as follows:

The Program

Following a welcome from Mr Joost Verwilghen, the GRM International Regional Manager, SRIJON Team Leader Sheila Ryan introduced SRIJON and outlined the day. Dr Gerry Bloom then led the presentation of the initial findings of the scoping of the health market system in Bangladesh (presentation attached at Annex 1).

The framework for the health market analysis is depicted in Figure 1.

Figure 1: Framework for Health Market Analysis



Key messages from the presentation included:

- 88% of health care is provided outside of the public sector
- There was a 12.7% annual increase in total health expenditure between 1997-2007
- 66% of out-of-pocket expenditure is on drugs and commodities
- Very large reliance on informal health providers with over 40% of outpatient services being provided by drug sellers and a very large cadre of informal health providers consisting of unregistered pharmacies, village doctors, traditional healers and homeopaths
- Groups identified as needing particular attention are:
    - The extreme poor
    - People living in remote areas
    - Under five children
    - Pregnant mothers
    - Vulnerable industry workers
    - Urban slum dwellers
    - People with mental health issues
    - People with disabilities

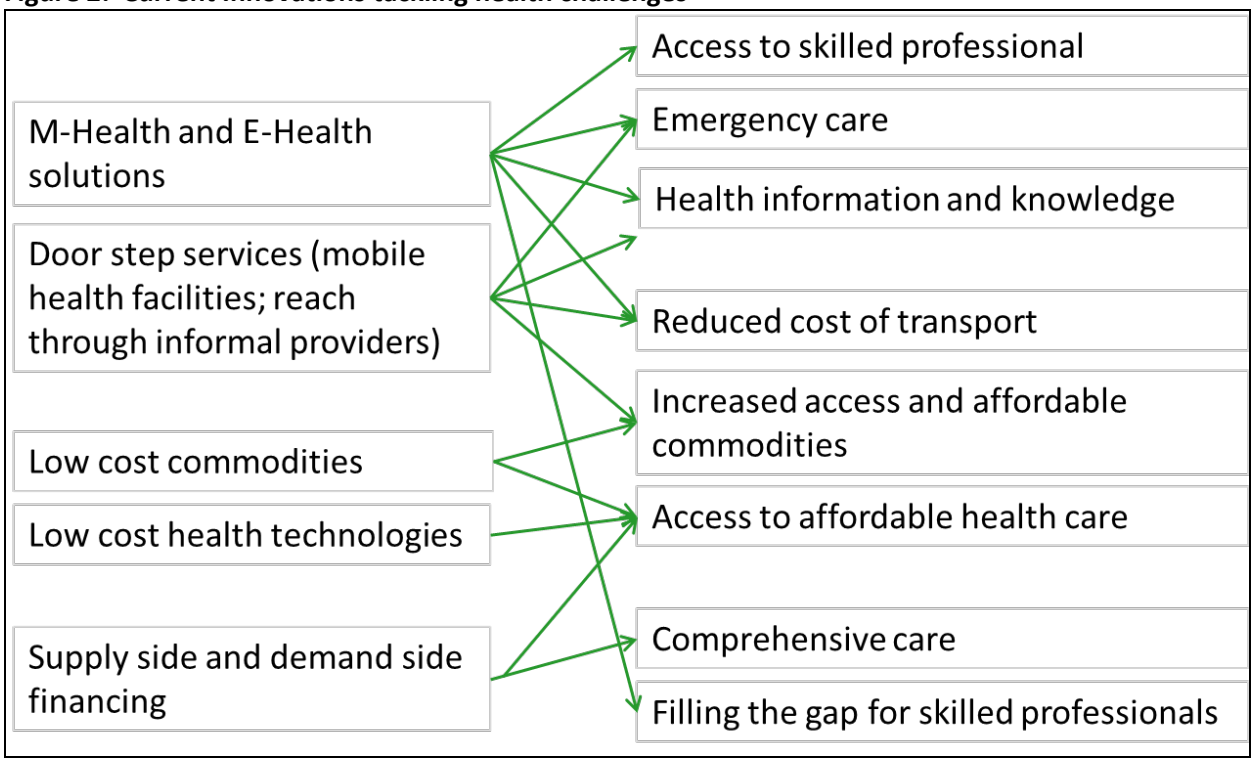
Current and emerging innovations centre on:

- M-Health and E-Health

- Doorstep Services
- Low-cost health services
- Low-cost commodity supply
- Health financing

These tackle the current health challenges in the manner described in Figure 2.

Figure 2: Current Innovations tackling health challenges



Overarching challenges currently impacting on the success of innovations include:

- Translating ideas to action
- Commercial viability
- Competition
- Market awareness and readiness

Emerging ideas included:

Maternal and Child Health

- Support for community-based skilled birth attendants (SBAs) to earn a living while providing a service.
- New models of practice for MBBS doctors

Meeting priority health care needs of the poor

- Scale up access to low cost aids, e.g. prostheses for disabled people, birth mats
- Leveraging the large network of informal village doctors to provide access to low-cost management of diabetes and hypertension
- Upscaling interventions for improved services using media and e- and m-Health innovations (including in chars)

Improving accountability of health services

- Expand scope and use of urban interactive mapping tools to enable policy makers and users to monitor performance and quality
- Involve citizen groups in monitoring the performance of informal providers

Following the presentation, a plenary session, chaired by SRIJON TL Sheila Ryan, invited responses and feedback on the presentation. Questions included:

1. In the presentation it was stated that there is about to be a surplus of clinicians, particularly doctors, in Bangladesh, but there is an obvious shortage at the moment, as evidenced by the number of empty posts, how is this being addressed?
2. Are e-health innovations being developed for all populations in Bangladesh, or are they only being targeted for specific segments?
3. There is a huge informal sector of health care providers in Bangladesh as was stated in the presentation – is the scoping study team in contact with these informal sector providers and taking the challenges and opportunities provided by these providers into account?
4. What does the scoping study feel should take priority in terms of health market system innovations – geographic areas or specific target populations?
5. Over the recent past there have been a number of low-cost commodities identified and developed that save lives but are not currently available in Bangladesh. Will SRIJON consider funding the introduction of these commodities into Bangladesh?
6. The scoping study presentation did not contain information on the large number of the ultra poor who have had to sell property or otherwise put themselves in debt to cover catastrophic health costs. Will SRIJON consider supporting health insurance schemes with this issue in mind?
7. Is the scoping study team going to undertake some analysis of what challenges are inherent in the demand side of the health services equation, with specific regard to what the primary motivators for health services demand are e.g. what takes primacy; cost or effectiveness? Or cost and effectiveness? Other factors?
8. Is the marriage between market systems and public health sustainable?
9. The scoping study should also cover the supply side, which is not as yet sufficiently covered by the presentation today.
10. There are many skilled providers providing health services in Bangladesh at present, but will the scoping study provide any analysis or recommendations on how to create viable business models using these skills?
11. Will the scoping study consider the Health Population Nutrition Sector Development Plan and how potential innovations will integrate with the strategic objectives of the HPNSDP and complement the work being done in the public sector?
12. There has been considerable discussion of both the supply and demand sides of the health services market, but will the scoping study also detail and analyse the enabling environment e.g. regulatory, cultural?
13. There appear to be many 'innnovations' currently being implemented or trialled in Bangladesh, and yet there are still very obvious challenges that are not being met. Will the scoping study look in more depth at why the current innovations (e.g. community clinics) are not being as successful as initially hoped?
14. The funds available to SRIJON are comparatively small, and the time for the innovations to be implemented and evaluated very short. How will SRIJON ensure that the priority areas where change can be affected by relatively small investments in a short amount of time are targeted?

15. Technological innovations, particularly those developed abroad, are very expensive and therefore less likely to be sustainable. Are there local technological innovations being developed and manufactured here to reduce the costs of introduction and the potential for success?

Slides 47-53 of the attached presentation (Annex 1) address how these questions are being taken into account, along with other input from the participants at the presentation, for refining the next phase of the scoping study

Mining the participants for current and future Innovations

After the presentation, participants were broken into three groups with between 15 and 20 participants per group. Each participant was asked to write down a current innovation they were either involved in or knew of, and also to write down an idea for the future, again with reference to challenges that would need to be overcome in order to actualise the innovations. Facilitators guided the group and Rapporteurs took notes (Annex 2) and presented a synthesis of each group's discussions to all the participants.

All three groups were clear in their articulation of the main areas of current and future innovation, and the details of this can be found at Annex 2. The summary of the ideas from each group appears below.

Group 1 Summary

The group identified existing innovations in the following areas:

- M-health / E-health
- Service provision in remote areas by private health care providers
- Health Insurance
- MA/MR and harm reduction

Main issues discussed with regard to existing innovations were around scaling up of what seem to be successful pilot initiatives (Blue Star, Tarsan, etc.), whereby increasing the number of skilled providers is just one consideration. Larger initiatives require robust management structures in order to ensure compliance with minimum standards and to perform quality control functions. This is not only an issue with private providers, but also to some extent with the Government.

The group agreed that there is a lot of scope for innovations using E-health / M-health
The notion that poor people don't have the money to pay for services was not shared by all participants. Many of the services that are currently being provided for free do cost money in terms of people have to spend money on travel and taking time out from work. Even when visiting a government facility many patients have to pay for services.
The group identified new potential innovations in the following areas:

- M-health / E-health this has already been identified as an existing innovation (see above)
- New Partnerships
    - For scaling up existing pilot innovations (e.g. social franchising)
    - For Quality Assurance and Compliance
    - Expanding the scope of services
- CSR/Tax to support provision of health services in rural remote areas
- Targeting emerging and forgotten health issues

For the new potential innovations, it was not very clear how viable these would be. Partnerships were considered to be an important mechanism to initiate and/or scale up some of the new initiatives. The main challenges were around quality assurance, compliance and staff retention (for direct service provision in remote rural areas).

Group 2 Summary
Participants discussed that most of the existing innovations largely centred around:

- e-health,
- m-health,
- mobile health services, and
- Health financing schemes such as health insurance and health loans.

While there are number of pilot schemes for e-health and m-health, still they are mostly providing health awareness, first aid tips, health service information and referral. Innovative schemes to develop health workforce are yet to be tried. In most cases common challenges identified for innovation were getting government and regulatory approvals, retention of trained workforce, funding and self-sustainability of the scheme. In terms of future innovations, although a number of potential areas were identified, it was not very clear how they are going to be implemented.

Suggested innovations ranged from very general such as undertaking an intervention to very specific such as selling a specific product. Participants felt the need for more discussion and partnerships with appropriate organisations to come up with specific, viable plans. The challenges again included policy and regulation, co-financing, developing the right product or solution at an affordable price, and going to scale on a sustainable basis. Participants believed that the SRIJON grant could be a good catalyser to encourage people to test some of the innovative ideas for viability.

Group 3 Summary
At present there is excellent work being undertaken, much of which is innovative or was innovative when it was instituted, but mostly these initiatives are not financially sustainable – nor were they designed to be so – but they are also facing challenges of technology, cultural acceptance (clinical and consumer side) and the regulatory environment.

Current initiatives include outreach, mobile clinics, and training, but in this group were mostly technology based – mobile phone apps, e-clinics, video conferencing consultations, and the use of locally developed and manufactured technologies. However, ways of financing health services for the poor also figured, including subsidising health services for the poor through charging higher fees to those that could afford it, selling products to enable sustainable access to health information and services, and the provisions of small health insurance schemes

Future initiatives discussed were also predominantly technology based, for example providing a Procurement and Supply Management Chain integrated into HIS and GIS with a front end mobile app, and providing online access to doctors.

Other technology-based innovations included expanding or refining mobile clinics through the use of remote consulting, developing standardised online records for a number of uses, developing health specific, clinically capable apps, building specialized websites for specific target populations (expectant or new mothers were specifically noted), and the development and manufacturing of equipment to integrate with m-health and e-health capacities.

The major challenges noted were in most cases in a sense quite easily overcome – language barriers, HR constraints, technology bottlenecks; but overarching all of this were issues relating to the regulatory frameworks governing – or not governing – so many of the potential areas of innovation. The group felt that there was a need to influence policy or work closely with other agents to support

them to influence policy as the regulatory environment came up time and time again as the major barrier to successful innovation implementations.

Professor Hilary Standing summarised these three group's collective discussions as follows:

- First and most obviously, it is very apparent that Bangladesh is a country of innovation, the amount and extent of innovation going on in the health sector in Bangladesh is amazing.
- However, there is a problem – ad hoc nature of the innovations – ad hoc is fine in many cases, but poses many challenges as well – evaluation is not standardised – not a lot of sharing of evaluative knowledge – problem particularly problematic given the increasing need to provide substantial and credible evidence base in order to indicate success or not.
- Lots of small scale, lots of medium, and some big things – to be successful in terms of scale up and sustainability there will be a need to link these initiatives into larger packages – and need to link to more clearly defined target groups and audiences – everyone knows broadly that women and children need to be targeted more successfully, those who are very poor and/or from minority groups, the aged, others who are difficult to reach for whatever reason – the big question is how to fit the packages of innovation to the target groups in a more systematic way - what can be done with particular groups – and what enabling environment is needed and what can be made financially sustainable – because the more we know the more we understand that targeting the ultra poor is not possible without things like health financing initiatives, cross subsidising, other donor funding - government has to come in, other donors – the projects to be funded under SRIJON will need to tread the fine line between what is a great idea and what can be done sustainably and in a scalable manner.
- Human Resources – all groups identified this as an issue – the informal providers need to be harnessed – what can be done with and for this massive resource?
- M Health and E health is becoming the major discourse for health innovations in this country – another set of discussions would be RE What is it?, Who is it for?, regulatory environments, technology, affordability and quality.

These points are summarised in slide 54 of Annex 1.

Optional Afternoon Session

25 participants stayed for the optional afternoon session which included a presentation on the SRIJON Grant Architecture and a Q&A session following the presentation (Annex 3).

Annex 4 –Evidence on the impact of non-state involvement in health

This annex provides information from a review of the available evidence on different innovative approaches for the organisation of financing and delivery of health services by the non-state sector.

1. Summary of evidence

- A huge number of non-state interventions are being implemented in Bangladesh by a range of actors including NGOs, private for-profit businesses and research organisations.
- The evidence base is patchy. A review of published evidence found that there are many publications on community health workers, training interventions and strategies for arsenic control but not many relating to market-based innovations.
- The Center for Health Market Innovations lists 54 programmes in Bangladesh but, of the small sample selected for further review, a search for evidence found that evaluations were not common (or at least were not available).
- Most research studies or project evaluations look at service indicators and do not regularly assess health outcomes or long-term impacts.
- This review of evidence in Bangladesh was not comprehensive or systematic but its findings can be viewed in conjunction with systematic reviews of market/non-state interventions conducted previously, which have found weak evidence on popular service delivery strategies or private sector involvement in health services.

2. Methods

A systematic review was not possible given the scope of the area of interest and the time allocated. Instead, a scoping search was conducted to identify non-state interventions and to assess the evidence on their impacts. The search strategy took three approaches:

1. Consultation with experts on the health system in Bangladesh to identify specific interventions and relevant grey literature,
2. Review of published academic literature using citation indexes, and of existing systematic and scoping reviews,
3. Internet searches, including a selective review of interventions listed on the Center for Health Market Innovations.

Team members with considerable experience of Bangladesh's health system provided overview reports and other grey literature. However, evidence relating to specific interventions was sparse. Thus, Web of Knowledge was used to search citations across a number of databases to assess the published evidence base.[21]

Search strategies using terms related to private, NGO, non-state innovations and interventions in health in Bangladesh were developed[22]. Search strategies are provided in Appendix 1. A total of 524 records were identified, abstracts were reviewed and 104 were identified as being potentially relevant.

[21] Including: Web of Science; BIOSIS Citation Index; BIOSIS Previews (up to 2008); Current Contents Connect; Derwent Innovations Index; Journal Citation Reports; MEDLINE; Zoological Record; Chinese Science Citation Database; Data Citation Index

[22] Results from searches 6 (n= 237) and 9 (n=428) were imported into Endnote (n=665). Duplicates (n=141) were removed leaving a total of 524 records to be reviewed for inclusion/exclusion.

Inclusion criteria:

- Description of a project/intervention/innovation in health service delivery or technology
- Intervention carried out by non-state providers, or as part of a PPP
- No methodological requirements at this stage
- Interesting – and with potential to scale up/diffuse
- In Bangladesh
- Published between 2000-2013

Exclusion:

- Planned and carried out primarily by public sector actors

Due to time constraints, the expansive subject material and the need to draw upon material that would not necessarily meet strict inclusion criteria, a systemic review was not undertaken based on the results of these searches. This review prioritised interventions and innovative programmes judged to be most applicable. Descriptions of the programmes (Annex 2) come from a selection of the 104 published papers, those mentioned in grey literature and by colleagues, and from the 54 listed on the Center of Health Market Innovations website. Efforts were made to find evaluations of these interventions but it was not possible in many cases (though searches were limited). In total, 20 programmes in Bangladesh are reported on individually (a summary of Bangladesh Health Watch's 2011 evaluation of a number of local health insurance schemes is also included).

Conclusions of relevant systematic reviews are summarised first, followed by an overview of the programmes in Bangladesh.

3. Overview of review evidence on non-state interventions/strategies

A systematic review by Patouillard et al. (2007) looked at the impact of health interventions delivered by the for-profit sector on increasing utilisation among the poor. They found 52 impact evaluations of interventions using techniques such as social marketing, vouchers, pre-packaging of drugs, franchising, training, regulation, accreditation and contracting-out. Their aim was to assess the ability of the private for-profit sector to deliver equitable outcomes in health but only five of these studies reported on relative equity improvements in service utilisation. Results were inconclusive. Two of the five used vouchers to provide free or subsidised insecticide treated nets (ITNs) and found strong evidence in favour of increased equity. However, they were small scale with questions about sustainability and scale up. Three others which used franchising models had mixed results, which echoes the findings of Koehlmoos et al. (2011) discussed below. The authors do point out that many of the 52 studies were found to be effective, and though most did not report outcomes on socioeconomic scales, the interventions were often in poor areas and so pro-poor impacts can be inferred. The fact the poor make extensive use of the private sector is not generally debated, but their ability to reach the very poor and marginalised is questionable. Overall the authors, like others, caution that the quality of the evidence is not strong. No studies of Bangladesh appear to have been included.

A systematic review (Beyeler et al. 2013) of the impacts of 'clinical social franchising' on health in LMICs found 23 studies for inclusion. Overall, the evaluations they reviewed tended to measure quality and health service utilisation but not health outcomes. The results of these evaluations were mixed. Franchising seemed to impact positively on client volume and satisfaction but less so on quality, cost-effectiveness or equity. The conclusions of this review should be viewed with some caution as they are based on a limited number of studies, many of which were of low quality and came from the same country/region. No studies in Bangladesh were found.

Other reviews report a paucity of good evidence. Koehlmoos et al. (2009) found no studies that had a robust enough design to be included in their systematic review of social franchising. In a 2011 (Koehlmoos et al. 2011) scoping review on the same subject, the inclusion criteria were relaxed and 12 studies were included. Still, the authors concluded that the evidence to support social franchising was weak on account of poor study design. As with the Beyeler et al. (2013) study, the results were mixed. Increases in client volume and improvements in quality were not clearly associated with franchises. Neither did franchises appear to have a positive impact on equity; the presence of franchises in low-income areas did not mean those communities were accessing services. The small number of studies included in this scoping review makes drawing conclusions difficult. Again, no studies in Bangladesh were included.

Another 'comprehensive' (but not systematic) review (Shah et al. 2011) of interventions working with informal private providers found 70 studies that met their inclusion criteria. Most studies (77%) provided training to these providers but the review found that the most successful interventions were those which took a market-based approach and altered institutional relationships by changing incentives in some way. Usually these approaches consisted of a combination of interventions, rather than just capacity building or training. Study design meant the strength of evidence was weak; also, results were based on indicators of knowledge and behaviour rather than health outcomes. The findings of this review echoed an earlier review on private sector involvement in sexual and reproductive health (Peters et al. 2004). There, once again, evidence on the effectiveness of strategies for intervening in their activities was limited. Most interventions in sexual and reproductive health have been training based and the study quality is weak: cross sectional designs and short term effects are the norm, as opposed to controlled or comparative studies on longer term health outcomes. Both of these two reviews did include studies on Bangladesh though. Their conclusions – that training by itself is not effective – are not necessarily unique to private sector interventions

Taken together, these reviews show that there is very limited evidence on the effectiveness of a number of the strategies widely adopted, by both state and non-state actors, to improve health services. Assumptions about improvements in utilisation and quality brought about by private sector-type models based on branding or increased competition are also not supported by a strong evidence base. Effects on health outcomes are not extensively measured and should be considered unknown territory.

4. Overview of evidence on Bangladesh

Our searches yielded a large number of interventions and papers. We focused on relatively large-scale interventions involving the non-state sector attempting an innovative approach to the provision and/or financing of basic health services for the poor. Of the 104 published studies on interventions, many were not of immediate interest. Nevertheless, this is an indication of the large volume of projects being set up in Bangladesh. Annex 2 details some of these. Some conclusions from this rapid review of the evidence are:

- Financing is often unsustainable; donor funding is still subsidising a lot of NGO activity, and sustainability and scale up is unclear.
- Cross subsidisation of services or products for the poor is the objective of many programmes, but there does not appear to be good evidence of this in practice.
- Some interesting new projects, such as AMCARE and MAMA, are still in very early stages so there is little information on effectiveness.

- Private-Public Partnerships (PPPs) show some promising signs of delivering services to hard-to-reach populations (e.g. GIZ work with shipbuilders and rickshaw pullers, also TB treatment in garment factories) and in the Urban Primary Health Care Project (UPHCP II).
- Targeting of hard-to-reach populations can be effective in general, as in the UPHCP II, but if the methods of identifying and giving the populations are too complicated (as in the red card scoring system for the UPHCP II) the most vulnerable may still be excluded.
- Voucher schemes reported increased service utilisation but, tellingly, in the Population Council study (which aimed to increase use of qualified providers for maternal health care) some of the results suggest that the increases were due to people switching from one trained provider to another (the one covered by the voucher) as opposed to increasing the overall number of women receiving care from qualified providers.
- Evidence of impact on service delivery and health outcomes is weak.
- Long standing programmes such as the Lamb Hospital, Dhaka Community Hospital and the Social Marketing Company appear to be supporting themselves, but more research would be needed to compare if and how their models were more effective than others, and why.
- Scope and uptake of insurance schemes is limited: risks are not pooled adequately and the benefits are not always recognised by the poor. Furthermore, supposed benefits do not always materialise due to the limited nature of the care provided in some of the schemes.
- There are no obvious candidates for scale up.

5. What is not included in this review

We have not included the extensive 'back catalogues' of organisations such as BRAC or ICDDR,B. It was considered more productive to ask interviewees for key evaluations. The websites of donors such as USAID, World Bank have been checked for specific programmes (like those mentioned on CHMI website) but they have not been searched extensively for other programmes. Large numbers of studies about community health workers or training interventions were also excluded as being of limited relevance. Appendix 2 lists interventions which have not been included due to time constraints.

6. Conclusion

Although this literature review was not comprehensive, when combined with the existing systematic reviews mentioned earlier, we can comment on the general state of the evidence. The evidence on the effectiveness of non-state intervention in Bangladesh is weak. Many of the most innovative projects do not appear to have evaluations or, at least, they are not readily available. This is not necessarily unique to non-state interventions; rather the evidence base for complex novel interventions is likely to be limited in general.

Annex 5 – Information on a sample of non-state interventions/programmes

Table 1: Characteristics of non-state interventions/programmes and evidence of their effectiveness

Intervention/programme (including actors involved)	**Description** -General description (challenge addressed, innovative idea, type of intervention) -target population (or target market if applicable) -Size/scope -financing -governance -business model -other	**Evidence/Evaluation** -Have there been evaluations of the intervention? -What evidence is there for effectiveness (study design and indicators)? -Quality of the evidence? -What failed and why -Lessons learned
1) 'Demand-Based Reproductive Health Commodity project' (RTM Int, ICDDR,B, & Population Council)	*Description:* Population Council report they are running a number of 'demand-based reproductive health' interventions. The projects include: • voucher scheme for poor rural women (discussed here) • improving quality of family planning services in urban slums • increasing access to family planning for men • increasing rational use of contraception (See http://www.popcouncil.org/projects/235_Demand-BasedRHOverview.asp) -Voucher scheme described in Rahman et al (2009): to address high rates of maternal mortality and low rates of skilled birth attendance a voucher system was proposed. Supply side interventions have had limited success and cost of treatments and transport (among other factors) have been identified as reasons that women do not attend facilities with trained providers. Vouchers for transport	*Evaluation:* Published evaluation of voucher scheme (Rahman et al., 2009) involved pre- and post-test design where impacts were measured in two groups: service providers and pregnant women. • **Providers**: same survey administered to providers pre and post intervention. Measured on knowledge about maternal health care and service quality. • **Pregnant women (clients):** a random sample of poor women measured on knowledge and behaviour (regarding last pregnancy) which was compared to a post intervention survey on a random sample of women who had received vouchers. Knowledge indicators were about life-threatening complications during pregnancy, delivery and after delivery, Sources of ANC, delivery and PNC services, Knowledge of required number of ANC visits , intake of vitamin A capsules, and Knowledge on breastfeeding. Behaviour indicators were utilization of ANC, delivery and

	and maternal health care offered to poor rural pregnant women to increase service utilization – coordinated by regional and community committees, with technical support and management from RTM international and Population Council, and collaboration with MOHFW. -Identify private and non-government organization facilities to provide services (the report says 1 NGO and 1 private provider were identified). -Capacity building of providers offering antenatal care (ANC), delivery and postnatal care (PNC) services – in the form of training about ANC, PNC and safe delivery, referral, also about the vouchers and behaviour change communication. - Vouchers included 3 antenatal care visits; management of pregnancy and delivery complications; delivery care; postnatal care; medicines; transport. *Target group:* poor rural woman. *Scope*: interventions were in two unions of Nabiganjupazila of Habiganj district. 580 pregnant women received vouchers, from 55 villages *Finance & governance*: funded by Canadian International Development Agency, with technical assistance from the United Nations Population Fund and coordination from the National Institute of Population Research and Training (NIPORT). There were a number of implementing partners: Population Council identified and developed service delivery models; RTM International responsible for capacity building and behaviour change communication; JSI Logistics Services (?) responsible for strengthening the	PNC services ,Sources of ANC, delivery and PNC , Visits to a health facility for management of complications, Physical and medical examinations during an ANC visit, Immunization, Intake of iron tablets/syrup and vitamin A capsules, and Breastfeeding. *Results:* Fieldworker knowledge reported to have increased (percentages not statistical tests reported). Women's knowledge also reported to have increased but no mention of significant tests. Some increases are fairly marginal e.g. at baseline 90% of women were able to report at least one life-threatening complication, which rose to 93%; 28% could name three life threatening complications, which rose to 37% percent. -Service utilization increased, but again no significance tests. Women receiving ANC went from 79% to 89%. The proportion of which was from trained providers increased from (about) about 50 to 100 percent. At baseline, trained providers attended only 5.5% of births, whereas post-intervention this rose to 22%. The proportion of deliveries at health facilities increased from 2.3% to 18%. Percentage of women receiving post natal care also increased, of which the proportion of which was from trained providers went from 25% to 100%. In terms of research quality this was not a controlled test and some methods and results are not well reported so inferences need to be cautious. That said, the services for which vouchers were offered do

	reproductive health logistics management system; and ICDDR, B, responsible for M&E. Also: "According to the guidelines, a certain portion of the funds allocated for consultation fees should remain as a seed fund that can be used to ensure smooth implementation of the project, i.e. for purchasing necessary logistics for providing maternal health care services, providing salary for accountants to maintain the financial records, and to support voucher recipients that may require some additional discretional funds..... Taka 436,540 were allocated from the project for covering the costs of delivering the services covered by the voucher book. Over the course of the project, approximately 78 percent (Taka 341,052) of these funds were spent on consultation fees, blood and urine tests, medicines, and transportation, and the remaining 22 percent (Taka 95,488) were deposited in the seed fund. From the seed fund, Taka 46,066 was spent purchasing logistics and paying salaries of the accountants, leaving Taka 49,422 unspent in the seed fund. It is estimated that, on average, Taka 667 (US$9.70) were spent for each of the 580 women using the vouchers."	appear to have had increased utilisation. However, some of these increases may be the transfer/displacement of people who used trained providers anyway. For instance in the ANC figures for Bausha, the baseline survey reported that 20% of women went to a qualified doctor and 7.3% to a nurse or paramedic. The endline figures for these providers were below 1% whereas consultations with a Family Welfare Visitor (who were promoted by this intervention) had gone from 14% to 99.5%. This suggests that the increased utilization of trained providers – a key outcome – may be more limited than is suggested. Lastly, the study does not report/measure long term outcomes, or health outcomes. Sustainability and real improvements in health cannot be assumed. Issues about implementation are not explored but some telling reasons for not delivering at a health facility/accessing PNC/using voucher were reported: no problems; labour pain started suddenly; no-one to accompany them to the facility; fear; not sure how to use voucher system; and providers were reluctant to provide services.
2) Western Marine Shipyards health and safety	*Description:* a pubic private partnership between Western Marine Shipyards, the MOHFW and GIZ to improve employee health and safety, and also to improve healthcare of workers and for the surrounding community. Ship building industry of growing importance in Bangladesh but unsafe working conditions can be a trade barrier (GIZ, 201?). Developed systems for workplace safety and successfully sought international	-The budget included money for M&E but can't find a public evaluation. The project is reported to have concluded in 2011. Their fact sheets report success on setting up a clinic and developing an occupational health policy. -Lack of resources in government health care (i.e. staff) was mentioned as a reason for clinical services being

	safety certification for the company/site. Also provided improved health care services to ship yard employees, including a survey to define their needs and health promotion activities. A primary care clinic was set up, with MOHFW providing staff. The clinic is open to surrounding community as well. -*Target population* primarily the shipyard employees -*Scope:* there are approx. 3500 formal and informal workers. The health centre is open to all: in 1 year (not sure which year this is) the health centre was visited by more than 11,000 patients. -*Governance/business model:* very little detail on the model except that the health centre is PPP and that Western Marine Shipyards put in 44% of budget (primarily for construction costs) and GIZ put in 56% (for coordination, technical consultants and M&E). MOHFW to provide health care staff. Reported in GIZ factsheets (GIZ, 201?, GIZ, 2011b)	limited (GIZ, 2011b). Also noted lack of co-ordination between the government partners: the MOHFW and Ministry of Local Governance, Rural Development & Cooperatives. -Not sure what evaluation has been done but a drop in accidents at work is reported: a drop of 99% from the baseline data "i.e. from more than 1000 to less than 10 per month" (GIZ, 201?). -Implications for industry growth and international trade as certification by international standards helps competitiveness and removes (one) trade disincentive. -No evidence as to whether this has had an impact on health or business, as is intended.
3) Vocational social protection schemes. Rickshaw pullers (GIZ)	Reported in (GIZ, 2010/2011) *Description*: a PPP to increase access to health services for rickshaw pullers in Rajshahi. A social protection/insurance fund made up of public and private money (41% from Rajshahi City Corporation (RCC), 26% from GIZ, 33% from rickshaw pullers themselves) to finance healthcare for rickshaw pullers who are members of the scheme. They would have a membership card to access services, and service providers would be reimbursed by the central fund. Initially, the fund was to be maintained through	Had a pilot project ending in Dec 201? but evaluation report not identified. No evaluation reported but a feasibility study is mentioned with some interesting results. There were difficulties about developing a sustainable model of micro insurance because many of the rickshaw pullers were unlicensed and did not belong to the rickshaw pullers association. Contributions for the protection fund were to come through these memberships so the

	private contributions from annual rickshaw registration and licensing (feasibility study found some issues here – see evaluation). Also health promotion activities about HIV and substance abuse. *Target pop:* rickshaw pullers in Rajshahi (a hard to reach group) *Scope:* the fact sheet reports that by April 2011 10,000 rickshaw pullers will be covered, though it is not clear if this is a projection or actual count. *Governance/model:* PPP between GIZ, Rajshahi City Corporation (RCC), rickshaw pullers association, and the drivers themselves. Later, substance abuse detox providers and health NGOs (like Smiling Sun) were brought into the partnership to provide free or capped services. The model was explained: "The original agreement required GIZ and RCC to make an initial lump sum contribution to set up the social protection fund. Rickshaw owners and rickshaw pullers to make mandatory contributions to the fund through an additional levy collected on top of the basic registration fee (paid by rickshaw owners) and license fee (paid by rickshaw pullers). It is proposed that RCC will continue to provide funding during 2012 (30% of income from the basic fee for new manual and battery operated rickshaw registrations) until the central fund generates adequate revenue (through license fee levy collection) to be self-sustaining."	large numbers of informal rickshaw puller operators represented a limitation. In response the Rajshahi City Corporation agreed to increase their contributions to the fund. No evaluation of health or service delivery outcomes. Also no clear indicators as to the size of the fund and its membership.

	A local NGO, Sajeeda Foundation, is mentioned as possibly taking over the administration.	
4) Health Peer Education for tea estate workers,	(GIZ, 2011a) -*Description*: Peer Education to improve healthcare, knowledge and practices relating to common health problems amongst tea estate workers. Used a PPP approach to improve the health knowledge and status of a marginalized population (tea workers) whose health needs are currently under-served (often supplied by company on tea estate). Also opportunity to encourage corporate social responsibility. Peer educators from workforce selected and trained and existing health workers in the region also receive training from GIZ. -*Target population*: tea workers in Sylhet (working for M. Ahmed Tea & Lands Company Ltd). -*Scope:* initially piloted in 2 of the estates run by the company, with a total population of 3630, including 1028 children. 140 peer educators trained (10% of workforce), also existing health providers. -*Financing/Gov*: PPP – with 41% from M. Ahmed Tea & Lands Company Ltd and 59% from GIZ (from German Federal Ministry of Economic Cooperation and Development –BMZ) GIZ responsible for tech support and monitoring (which they contracted out to ICDDR,B)	-This was a project factsheet - not research or evaluation. -Factsheet mentions a KAPB baseline study (done by ICDDR, B) and a planned post-intervention survey to evaluate programme. I have not found these so cannot comment on the evidence for this programme.
5) *Shasthya Sebikas* (BRAC)	(Ahmed, 2008) -*Description*: to enhance access to health care for rural poor and reduce their vulnerability to costly health shocks. Achieved with the delivery of Essential Health Care activities by a female Community Health Volunteer in conjunction with micro-credit-based village interventions. Delivers basic and preventative curative health services,	-Ahmed (2008) provides a description of the programme and not an evaluation. There is no information on health outcomes. The model is described in favourable terms but with no actual evidence (although BRAC may have some in grey literature). One problem is drop-outs of SSs. Economic incentives are often the main reason for taking on the

	including TB (DOTS). Programme consists of: 4 weeks basic training (and regular updates/refreshers); extra training for specific programmes (DOTS, maternal health etc); supervision and field trips from paid BRAC staff; each SS covers approx 250 households, visits 1/month. They are supposed to refer cases they cannot deal with on to public or private health facilities. -*Target pop*: rural poor -*Scope:* 70,000 SS actively providing services to about 90+ million people in the rural areas of Bangladesh -*Finance/governance*: not reported, donor or from BRAC revenue? -*Business model*: the SS is not paid by BRAC and is considered a volunteer. They are given a start up fund to buy health goods and are allowed to sell them at a small mark up.	SS a role but the limited opportunities to make money is also the main reason for drop-outs. This represents a clash in the conceptualisation of the project's model with implications for quality and sustainability (though the programme has been running a long time).
6) ZUZY Example of PPP – including research into effectiveness and also well planned scale up activities.	(Larson et al., 2008, Larson et al., 2012) *Description:* the Scaling Up Zinc for Young Children (SUZY) project, launched by ICDDR, B in 2003. Aimed to provide zinc to all children under 5 suffering from diarrhoea (past point of observed cure, and without displacing ORS use). -Scale up organised around 5 key activities: "(a) registration, production, and distribution of zinc tablets, (b) promotion among healthcare providers and mass media campaign, (c) training of professionals and introduction of zinc treatment into public, private and NGO delivery systems, (d) formative and operations research in support of scaling up, and (e) knowledge transfer from Project findings." (Larson et al., 2008) - Scale up involved partnership and engagement with MOHFW and private sector/informal providers: taking into account the fact that approx 90% of consultations for	Evaluated with repeat impact surveys: stratified household surveys of families with a child aged less than 5 years who had reported diarrhoea episode lasting 48 hours within past 2 weeks (described in Larson et al. 2009). Measured: -changes in caretaker awareness of zinc as a treatment -use of zinc to treat childhood diarrhoea -use of ORS Increases in awareness observed: by year 3, approx 90% of urban and over 70% of rural caregivers aware of zinc treatment. Although usage increased in all groups (city slum, city non-slum, municipal and rural) it appeared to level off and in no group reached more than 35%. There were also differences between groups: rural populations used zinc less (at all times

	childhood diarrhoea are in the private sector. (Larson et al., 2012) -Private sector investment encouraged by demonstrating demand: conducted pricing and willingness to pay studies – also social marketing to educate parents and help information/product diffusion. -Training for government sector providers in all Bangladesh upazilas. Also to approx. 6,000 informal providers (village doctors and drug vendors). Trainers supplied by MOHFW and ICDDR,B *Target population:* all children under 5 and their parents – irrespective of income and location. *Scope:* intended to reach 100% coverage, with widespread training and marketing/promotion activity (n.b. see evaluation) *Governance/model:* Use of a Project Performance Framework (PPF) to identify and track progress on major components required for scale up. These were: "(1) the zinc formulation to be scaled up, (2) implementation research in support of the scale up of zinc treatment, (3) product/intervention promotion, (4) public and private health care delivery systems, and (5) knowledge transfer and the dissemination of project findings." (See Larson 2012). - Project Technical Interest Group was created including representatives of the MOHFW, UNICEF, WHO, Bangladesh Paediatric Association and the private sector. They met quarterly.	below 15%) whereas 30% of non-slum city group used it at times, but the city slum group only used it approximately 20% of the time. Thus a comprehensive and even scale up was not achieved and was less successful among the more vulnerable populations (rural poor and city slum populations). But this project is about more than outcomes, there are also process lessons about implementing complex and large scale up activities. Some lessons: -Importance of getting buy-in from key stakeholders: overcame resistance by forming an advisory committee. Private sector driven but high level policy support needed within government: advisory committee got zinc recommended and approved – and then included in the national Integrated Management of Childhood Illness programme. -Using a framework to track and identify stages – helps understand the contextual factors and constraints which influence process – and generalisability. -Use of a consistent message in marketing -Coordination and cooperation from researchers, producers, advertisers and government regulators. Demonstrated the benefit of working with informal providers but doing so in a way which was appreciative of the dynamics between them and the formal sector - and people's health seeking behaviour: e.g. the project identified a 'decision making cascade' and targeted actions based on it: people get most of their diarrhoeal

	-Overcame resistance (i.e. concerns about safety) from decision makers in government and private sector by creation of a project advisory committee with representatives from these stakeholders (e.g. those on diarrhoeal disease control programme and district health managers) <u>*Finance*</u> US $0.25 a treatment. The SUZY Project provided subsidized zinc to government health facilities (only possible if demand at government facilities remains low.) Otherwise zinc is purchased from private providers	care from informal providers. But informal providers indicated that they would only use zinc if it was seen to be the approved treatment of the formal sector. Thus, the project started working with leading paediatricians to get their approval so it could filter through to informal sector who would be main providers. -Benefitted from Bangladesh's well established local pharmaceutical industry – able to manufacture product but also had extensive links for its distribution – including drug vendors and village doctors (though apparently not general retail outlets – which limited over-the-counter introduction of zinc).
7) Micro health insurance – review in BHW 2011	Bangladesh Health Watch's latest report (BHW, 2011) reviewed a number of micro health insurance providers, including: -Ad-din -BRAC -Dhaka Community Hospital -GK (n.b. included above – separate evidence available) -Grameen Kalyan -Sajida Foundation Tables 2, 3 and 4 show the key features of their programmes. A selection of which are described in more detail below. - The health insurance market for the poor in Bangladesh is run exclusively by NGOs and micro finance institutions (MFIs). They tend to provide the services as well as the insurance	The BHW 2011 report makes a number of points about the sector: -There is limited 'risk shifting' and even with membership the poor must often pay considerable out of pocket expenses. -Also many schemes are high cost and inefficient due to limited numbers of members to pool risk/cost -there are variations of coverage between location (and providers). Rural areas are generally more limited which makes membership for the rural and the very poor less beneficial. -Referral systems (onto external providers when the schemes provider cannot provide sufficient care) are not in place, or are ineffective. Radermacher and Dror (cited in BHW 2011) report that less that 1% of scheme members have ever been referred. -Cost recovery rates are mostly very low - Sajida and Dhaka Community Hospital are the only ones who

	For the purposes of the report, BHW define insurance as: "the pre-purchase of a membership card for a fee in exchange for the promise of some services (either free or on a co-payment basis)". The kinds of 'insurance' schemes operating in Bangladesh do not entail as much risk-shifting as insurance schemes usually entail. Promoted as a way of dealing with 'health shocks' – catastrophically high costs of health products/services relative to income – which are experienced, particular by the poor, if health services are paid for out of pocket.	manage to get high levels of cost-recovery (as much as 100%) -There is limited demand and awareness among poor populations BHW concluded that none of the models are ideal candidates for scalability.
8) Gonoshasthaya Kendra health insurance scheme	From (Islam et al., 2012). Have not been on GK website as it appears to have been hacked! *Description:* GK runs micro health insurance (MHI) schemes in rural areas. Started in 1975 to ensure the poor had access to health services. In practice, access to the scheme is open and voluntary; membership can be of an entire household. Scheme allows access to tertiary hospital (Dhaka district); health centres (secondary hospital), sub-centres (mini-clinics) at the union level; home visits by health workers; Referral services to public hospitals. Type of services covered: curative care; delivery; preventive care and family planning *Target pop:* the rural poor. 65.5% of members are destitute, ultra-poor, or poor *Scope:* 16 upazilas, across 11 districts. They have a presence in 592 villages/31 unions. Coverage is different in each area; there is extensive coverage in the rural areas	*Evaluation:* Islam et al (2012) report on a cross sectional survey into ANC service utilization to examine the impact of being a member of the MHI scheme. They looked at rates of utilization between members and non-members (in different areas) and then within the members group they looked at service utilization by socio-economic class. -Results are that MHI members use ANC services more than non-members but that within the members the 'ultra poor' did not use ANC services as much as their higher socio-economic status counterparts. This suggests that MHI is not effective at increasing the use of ANC among the very poor but that it might be among the rural middle income and poor populations more generally. *Quality:* However the evidence is weak (plus the study is confusingly written). It is just a cross sectional survey. With no pre-and post comparison causation is

	of Dhaka district. (n.b. BHW 2011 reports some slightly different figures on this) *Business model:* Revenue generation from premiums and hospital profits; Subsidies from commercial GK projects; International donations. Members are stratified by social status/income. There are five socioeconomic categories with banded premiums and copayments set on sliding scales to protect poor people.	hard to infer. Also the outcomes are only of ANC utilization, no information on the use of other health services or longer term health outcomes.
9) Ad-din BHW 2011	(BHW, 2011) *Description:* health insurance scheme, run by a health/social/education focused NGO. Scheme covers those on their microcredit programme. Members receive 10% discount on medicines purchased from ad-din, other services are offered at half price. Ultra poor get treatment free of charge. *Target population:* poor *Scope:* in 2009 14,520 received healthcare free (so ultra poor populations) as part of the scheme, including 452 operations at a cost of BDT 1.4 million. 6,229 received discounted health services (so non-ultra poor populations) as microcredit scheme members, including 3,305 outpatient and 2,924 inpatient services.	BHW (2011) found no evaluation – or not sufficient information to assess the schemes financial model or sustainability. Noted that the ultra poor members seem to outnumber the regular insurance members.
10) BRAC insurance	(BHW, 2011) *Description:* BRAC runs a health insurance scheme - small in comparison to their other health activities (e.g. Essential Care Programme reported to cover 16-17 million households). Discounted health care services offered for members between 10 -50%. Also limited cash payments for referrals to other providers. Different fees for those	In 2009 Renewal rate reported as 25%, and operational cost recovery as 39%. Both low – not breaking even or growing. BHW 2011 concluded that BRAC haven't made insurance a priority as they have the coverage and engagement to have made more of a dent into the

	who are already a member of NGO and those who aren't (poor v non-poor?): BDT 150 or 250. Another pre-paid scheme for pregnancy related care (fees of BDT 100, or 150). *Target population:* 1,210 households covered on regular scheme, with 695 paying premium rate. 514 on pregnancy scheme. Scheme(s) have 2 doctors, 6 nurses, 1 lab tech, and 3 admin staff at their disposal. Between Feb 2008-April 2009 there were 2,865 treatment episodes recorded. *Scope:* district of Narsingdi (poor)	insurance market if they had wanted to.
11) Grameen Kaylan – insurance scheme	*Description:* began in 1996, an insurance scheme with two membership fees: 200taka for Grameen Bank card holders and 300 for non Grameen bank members. Intention is to cross-subsidize members. With membership, a range of primary and secondary health services can be accessed (either free or at discounted rates). *Scope:* BHW 2011 say they have 53 clinics in 16 districts *Business model: BHW* (2011) notes that that GK are (partly) funded by interest from an interest free loan of USD $42million from Grameen Bank.	BHW (2011) report that their membership has fallen significantly. Retaining doctors in rural areas is cited as a major challenge with the number of doctors serving their 53 health clinics reported to have fallen from 21 to 15. Cost recovery rates have fallen from approx 83% in 2008 to 55% in 2010.
12) Health promotion through pharma reps	This is the abstract of (Sarma and Oliveras, 2011). Did not have access to the full article but have included the abstract in full as the approach was novel. **"Objective** The authors conducted this study to assess the effectiveness of using a public health detailing approach by medical representatives of a private pharmaceutical company to disseminate sexually transmitted infection (STI) counselling information to non-formal providers	**"Results** A significantly higher proportion ($p<0.05$) of mystery clients in the intervention area received advice that was consistent with the national STI counselling guidelines compared with the mystery clients in the control area. No mystery clients in the control area were told to use condoms while the STI lasts compared with 44% (95% CI 28% to 62%) in the intervention area. Likewise, more than twice as many clients in the

	(NFPs) to improve their STI counselling services. **Methods** An intervention was developed that included developing STI counselling guidelines and training medical representatives to disseminate the counselling guidelines to NFPs. To assess the effectiveness of this intervention, the authors conducted 67 mystery client visits to compare the counselling provided by NFPs in intervention areas with counselling provided in areas where the intervention was not implemented."	intervention area were advised not to visit sex workers (53% vs 23%; p=0.014). **Conclusion** Public health detailing of medical representatives is a feasible mechanism to improve STI counselling services of NFPs in Bangladesh. Private sector companies provide a potential avenue for reaching the vast number of NFPs with basic information that they can share with their clients. The immediate improvements seen in this study suggest the strong potential of public health detailing as a training tool for NFPs"
13) PPP for TB detection and management in factories	This is the abstract of (Ullah et al., 2012). Did not have access to the full article but have included the abstract in full as the approach was novel. "OBJECTIVES: To implement and evaluate a public-private partnership model involving garment factories to reduce the tuberculosis (TB) burden in this workforce. DESIGN: We used operational research to develop and evaluate a mechanism for effective and sustainable TB control in workplaces in three areas of Dhaka, Bangladesh. Strategies, protocols, guides and tools were developed with stakeholders. We assessed the impact of the project using quantitative and qualitative measures: changes in TB outcomes were calculated using standard indicators based on factory and DOTS centre records; changes in TB care-seeking behaviour were assessed using qualitative in-depth interviews with factory managers and medical personnel, and focus group discussions with factory workers, including TB patients"	"FINDINGS: The project brought positive changes in knowledge, attitudes and practices of managers, workers and health care providers on TB care and control. During 2008-2010, a total of 3372 workers from a workforce of 69,000 were referred for sputum microscopy and 598 were diagnosed with smear-positive TB, 145 of whom received care at their workplace. The overall treatment success rate was 100%. CONCLUSION: It is feasible to engage factories in TB control activities in Bangladesh, and thereby increase case notifications and improve treatment outcomes"
14) KUMUDINI	Sources:	No evaluations found

	http://kumudinibd.com/Home http://healthmarketinnovations.org/program/kumudini-hospital-bangladesh *Description:* Private hospital in Dhaka. They also do outreach programmes – including training of TBAs and residents of rural areas about other aspects of basic healthcare. Started in 1938-44 by a wealthy business man, it is now owned by the Kumudini Welfare Trust of Bengal (BD) Limited, a not for profit organisation. *Scope:* 750 bed hospital, 100< staff, 150,000 patients a year *Target group*: Poor and lower middle class *Business model/governance*: They charge a small fee for outpatient (?) services. Inpatient care is free according to the CHMI. The Kumudini website also states that they run income generating projects such as: jute baling, garment industry, handicrafts, pharmaceuticals and river transport etc.	
15) Lamb Hospital	Sources: http://www.lambproject.org/ *Description:* A religious health organisation involved in a number of activities (employees approx 1000 staff overall): **Training**: they have 12 regular trainers running 26 courses including: • Preventative Health Education for community health workers and volunteers	No evaluations found

	• Preventive health and clinical care for community paramedics • Community Skilled Birth Attendant for community midwives • Hospital clinical (doctor, nurse, medical assistants) and laboratory • Training and supportive supervisory skills They use these courses to train their own staff and also government and NGO workers. **Clinical services:** they run a 150 bed hospital, which sees approx 60,000 out patients per year; approx 10,000 in-patients per year and approx 4,000 babies delivered a year. They also have 28 community health clinics. **Health system policy/advocacy/community health work/mobilisation:** 31 core staff members work on their community health programme, with approx. 700 others contracted to work on aspects of it. They work in districts of Dinajpur, Rangpur, and Nilphamari. Activities include: health promotion, service provision, community midwifery facilitation, resource mobilisation, capacity building and advocacy *Target group:* the poor, especially women and disadvantaged. *Governance and finances:* LAMB budget is US$ 2.5 million per year. 21% from patients for fees; 53% from institutional donors; 20% from private donations. Poor	

	patients receive subsidies which are paid for by these private donations. More information on their website about finances and donors – if needed	
16) Smiling Sun Franchise	*Description* The Smiling Sun Franchise Program (SSFP) is USAID's largest health programme in Bangladesh. 28 local NGOs are licensed to use the smiling sun brand to deliver standardised and high quality health services, with supervision from a franchise management organisation. It is funded under a contract between USAID/Bangladesh and Chemonics International, which provides technical assistance and sub-grants to 28 local NGOs. SSFP offers family planning, maternal, newborn, and child-health services. Began in 2007, first round finished in 2011. The USAID website says that a new round of funding has been agreed). *Target population:* Services are open to all, but the aim was also to subsidize provision of services to the poor. *Scope:* Smiling sun franchises provides services in 61 of Bangladesh's 64 administrative districts. 28 local NGOs receive funding and are included in the franchise. They run 320 static clinics (286 "vital" clinics offering a basic service package and 34 "ultra" clinics that add emergency obstetric care) and approximately 8,500 satellite clinics held one or more days/week by rotating staff. NGOs combined staff approximately 7,000 paid staff and 6,200 volunteer community service providers. They work in urban and rural areas. *Business model/governance:* To be sustained by user fees,	*Evaluation* There was a mid-term evaluation which is detailed and in depth. Yet this was an evaluation of the programme and it focuses on sustainability, business model and service utilization but not on health impacts. The evaluation was done in 2010. There may be something more up to date but nothing was found on the USAID website. The mid-term evaluation found that their business model was not sustainable; particularly the targets of 70% cost recovery and cross subsidization for the poor. Financially, the programme did not perform well. USAID'S costs increased rather than declined in the first 2 years (suggested reasons by the contracted partner, Chemonics, were inflation, salary rises to retain staff, insufficient revenues). -They found that service provision indicators (especially in family planning and post-natal services) had increased. However the SSSP did not sufficiently address some key causes of preventable mortality such as: childhood pneumonia, unsafe deliveries/newborn care. The report suggested some of the service limitations were due to overlap with government services in some areas/services -To overcome limitations in access they recommended more collaboration with the informal sector. They used the example of BRAC to highlight the benefit of

	and development of a franchise to improve demand for quality healthcare – licensing under brand of 'smiling sun'. The mid-term evaluation (USAID, 2010) summarised the programme's objectives and model thus (p3): "Sustainability is pursued through (i) user fees, and (ii) a franchising model under which clinics providing standardized, quality-controlled services are permitted to use the Smiling Sun brand and are monitored by and receive technical and marketing support from a centralized FMO. The intent is to associate Smiling Sun clinics with courteous, high-quality services and thus attract paying customers. Resultant revenue is expected to (i) ensure the sustainability of services, with higher-income clinics financing themselves and subsidizing lower-income clinics; (ii) subsidize the provision of services to the poor who remain, as under previous programs, the main target group for SSFP; and (iii) finance the operation of the FMO...It was expected that the SSFP NGOs would become independent of USAID support by late 2011, while expanding the provision of health and family planning services, especially to the poor." *Finance:* Currently funded by USAID but the initial aim was that by the end of the programme in 2011 USAID'S costs would decline and the SSSP would be financed by revenue from clients (and third party payers?) and would be able to offer discounted services to the poor. However, in 2013 USAID had announced a further round of funding: USD $55 million for 4 years. See http://www.usaid.gov/bangladesh/press-releases/sun-will-keep-smiling-usaid-launches-ngo-health-services-delivery	building up effective referral systems with entry level providers, especially in rural areas. -26% of service contacts reported to be with poor but the evaluation says this may be due to previous programmes rather than SSSP specific strategies. They suggest that the programme is unable to cover the poor and also meet their 70% cost recover target. -No data on communication strategy but the evaluation team conclude that is has been underutilised and not coherent. (N.B. a previous study found a multi-channel communication strategy for 2001-2003 to be cost effective and to increase service provision (Hutchinson et al., 2006). However that was a while ago). The mid-term conclusions are summarised here: "The team concluded that there has been only limited progress in establishing a franchise. Problems have included recruitment and retention of qualified staff; insufficiently targeted and at times poorly executed training; a non-functional franchise board of directors; insufficient attention to marketing and communication; and inadequate buy-in to the franchise concept by NGOs, which see it as imposed by USAID and do not perceive benefits from membership equal to the eventual cost thereof. Although SSFP has a reputation for quality services and its management information system (MIS) is superior in terms of data provision, quality-assurance and supervision activities often are largely pro forma, and problems persist in the use of data. International experience suggests that

	This is an indication that the project did not achieve its sustainability objectives – which was a concern of the mid-term evaluation (see evaluation section next)	establishing a viable franchise is a long-term task, and it was perhaps unreasonable to expect Chemonics to accomplish it completely in the four years allotted for SSFP. But time aside, both international experience and SSFP's record in cost recovery to date indicate that, franchise or no franchise, it is not feasible to recover through user fees the costs of (i) an FMO, (an eventual substitute for technical assistance provided by USAID) and (ii) a service-delivery program focused on the poor (financed by USAID). The assessment team believes that the design of SSFP, prompted primarily by USAID budget imperatives, was fundamentally flawed in this respect." (USAID, 2010, pv) Recommendations included: • Scale down or stop attempts to establish the franchise • Let the NGOs take more control of the SS brand. • Abandon the unreasonable 70% cost recovery target and focus on nonfinancial aspects of sustainability • Place more attention on preventable mortality • improve communication • Develop more well targeted training • Improve access and services for the poor by restructuring inefficient rural clinics and increasing satellite sites – also work more with informal providers.
17) Blue Star/Smiling Sun franchise	Source: http://healthmarketinnovations.org/program/bluestar-bangladesh	*Evaluation* There do appear to be evaluations on their website

	http://www.smc-bd.org/about.html *Description:* Launched in 1998, a social franchise established by the Social Marketing Company working with private providers. Major programmes are on reproductive health, child and maternal health. Products include family planning products, ORS, zinc, safe delivery kits, and micronutrient powders. SMC also operates a reproductive health telephone advice line. SMC distributes their products through approved private providers. They deliver training to these providers and also monitoring and support. *Target population:* general population, but aiming to provide to the poor as well. *Scope:* served over a million clients in total (as of 2012). CMHI website says 3,791 pharmacies are selling their products, 81% rural and 19% urban. The SMC website reports 750 core staff, and says they supply 220,000 retail outlets annually. Large market share for some products (see evaluation section) *Governance/business model:* Not for profit. Donor funding from USAID, but also revenue from out of pocket expenditure to buy their products. The use social marketing strategies to make products available to different income groups at different prices cross subsidized discount products for the poor.	though we have not been through them all. http://www.smc-bd.org/publication.html http://www.smc-bd.org/research.html One article, posted on their website, reports the "success story". Not hugely independent but does demonstrate their high market share. Examples reported in Rahman and Khan, (2008) include: • Figures from BDHS which show that 35 percent contraceptive used are from SMC. • "According to the Consumers Retail Audit, SMC brand condoms have 81 percent share of the retail market while SMC brand OCP have 90 percent of retail market share (AC Nielsen, 2008)"
18) AMCARE Telemedicine Reference Center Ltd. (TRCL),	Source: CHMI: http://healthmarketinnovations.org/program/amcare-diabetes-management-bangladesh	No evaluations found, but apparently a PhD student will be doing an evaluation of the programme.

Diabetic Association of Bangladesh	Also, http://www.amcare24.com/badas.php *Description:* a virtual portal, based on cloud computing, for the management of chronic disease, especially diabetes. A membership programme launched in 2009 and now being scaled up. Members have access to a diabetes call centre where they can talk to registered doctors and nurses. There are also adherence and monitoring services. Described as "hospitals in the cloud" (Dr Zakir, Geneva, June 2013). *Target pop:* Diabetics, all incomes *Scope:* 1,920 clients (CHMI website) *Governance/business model:* private company, the Telemedicine Reference Center (TRCL). Funded by membership/subscription fees. The AMCARE service platform is owned by TRCL. Membership fees go from USD $0.60 TO $20	CHMI website reports that "1,920 patients participated in the pilot phase of this project: (1) 77% of diabetic patients had mobile phones; (2) all patients under the pilot had java enabled mobile handsets; (3) 11% were irregular; (4) among the irregular patients, 62% improved their compliance to treatment following home monitoring and education; (5) most importantly, 61.2% reduced doctor/hospital visits from 5-6 to 1-2 per year."
19) Ad-din ambulance service	Source: CHMI website and Ad-din website *Description:* Launched in 2008. A low cost ambulance service for women in need of obstetric care. Cost of transport to hospital can be a barrier, man options are also uncomfortable or inappropriate so dedicated and cheap ambulance are provided to increase the attendance of women to hospital for obstetric care. *Target pop*: pregnant women *Finance/Business model*: out of pocket. also Donor, Other	No evaluations found

	3rd party (e.g. debt, equity), Revenue (e.g., interest on loans) *Scope:* 66 ambulances running in Dhaka, clients served = 93,924, employs 50-99 people	
20) Aponjon (aka MAMA Bangladesh)	Source: http://aponjon.com.bd/Content.php?MId=35&SubMId=53 Also CHMI *Description:* Aponjon (aka MAMA Bangladesh) was launched in 2012. It is a PPP created by USAID's Mobile Alliance for Maternal Action (MAMA). Pregnant women and new mothers receive behaviour change messages via a subscription text service. There is also a service for husbands. When signing up, the baby's due date is registered and then text messages are tailored to the stages of pregnancy. The service also attempts to link the families up to local qualified providers. *Scope*: as of May 2013 the website reports 59,520 subscribers. Text and voice services are available on Grameen Phone, Banglalink, Robi, Airtel and Citycell networks. *Target population:* women, poor *Governance/finance:* PPP, funded by USAID. Implementing partner DNet (an ICT social enterprise). The cost is 2 taka per message. They aim to provide a free service to the poor (about 20%).	No evaluations found – but it is very early. (Alam et al., 2012) report on scoping and feasibility research but not on impacts.
21) Urban Primary Health Care Project II	*Description* The UPHCP is a PPP aiming to improve the health status of the urban population, especially the poor,	Two large evaluations: (Chu, 2012); (O'Connell et al., 2012).

(UPHCP II)	and women and girls. The first UPHCP began in 1998, the second in (UPHCP II) in 2005. The UPHCP II has four objectives: • To strengthen and expand provision of primary health care services • To strengthen urban primary health care infrastructure • To build capacity of city corporations municipalities and partners (NGOs) in managing provision of primary health care services in urban areas • To improve project implementation and conduct operationally relevant research. <u>*Governance*</u>: The Ministry of Local Government, Rural Development and Cooperatives (MOLGRDC) is the executing agency. Coordinated and managed by a management team within the Local Government Division, supported by implementation teams in within health departments of the six city corporations and five Pourashova (municipalities). <u>*Scope*</u>: 12 NGOs are contracted to deliver services, along with the Chittagong City Corporation, in 24 partnership areas. Target population of over 9.41 Million people. <u>*Finance*</u>: Total budget of USD $91m. Co-funded by Government of Bangladesh (grant USD$18.0m), ADB (loan USD$30.0m, grant USD$10.0m), DFID (grant USD$25.0m), SIDA (grant USD$5.0m), UNFPA (grant USD$2.0m) and ORBIS International (grant $1.0m).	Overall evaluations noted a general trend for increased service provision, increased utilization of key services, improvements in quality indicators and a reduction in the cost of services. But against the four objectives there was variable success and, aside from the increased access figures, there were qualitative and organisational problems which meant the project was rated 'B' as having 'moderately' not met expectations (O'Connell et al., 2012). (Key results from this evaluation are included in the last section of bullet points below.) *Pro-poor targeting, by* introduction of 'red cards' was very effective as was use of satellite clinics and outreach to bring services nearer to vulnerable populations. The pro-poor target of providing 30% of services to red card holders was met. An important achievement is that this represents the start of a process whereby prioritising services to the urban poor are institutionalised and channels for the combined efforts of government and NGOs have been laid down. However, there is evidence that not all NGOs could provide the services and that some groups were still being excluded. The system for allocating red card (a scoring formula) was found to be inflexible to the complexity of poverty for some groups (i.e. transient hard to reach populations). Also the system was complex and so it could not be updated which means that it could not respond appropriately to changes in beneficiary populations. A simpler, more responsive approach is recommended. Constraints to even/equal coverage were:

		• "different time involvement of local government bodies and partner NGOs in implementation • relative lack of experience of some partner NGOs • complexity of criteria for targeting the poor • lack of clear policy direction with regard to annual updates of the list of eligible poor for entitlement of service • absence of clear policy guidelines for service entitlement of those who at some point have moved out of the catchment area but were otherwise red card holders • in-attention to effective monitoring of coverage to the poor from the start up of the project and lack of adequate incentive to PANGOs to exceed 30 percent coverage" (O'Connell et al., 2012) Adoption of PPP approach was deemed innovative and demonstrates the possibility of GOB to work with private-NGOs to deliver social services. Some problems about perceptions of each partner's motivations which would need to be addressed/aligned (government workers think NGOs were self interested and wanted higher salaries and NGOs felt Gov staff were driven by career advancement etc. causing tensions). Overall, it was found to be a quick way of increasing access to services which would not have been possible if only using public sector providers. A limitation was the short contract and bidding system used to contract

		providers did not give NGOs the incentives to make lasting commitments to providing the services and working in partnership with the GOB. The competitive bidding process meant bidders sacrificed quality at times- also the capacity to ensure projects are implemented properly was lacking. Overall there is a need to strengthen and refine procedures involved in partnership working. There was actually under-spend on budge because of delayed budget reviews and implementation. Inclusion of *behavioural change communication* (BCC) (and its routine monitoring) as a major component in the project was an innovative way of stimulating demand in tandem with the provision of services – evaluation concludes this should become best practice (O'Connell et al., 2012). MAIN FINDINGS FROM O'CONNELL ET AL. (2012) ➢ PPP through the contacting of NGOs is achieving increased access to Primary Health Care, including Emergency Obstetric Care to increasing numbers of urban dwellers, including the poor, females and girls, allowing for quick scale-up. ➢ Strategies to ensure that the quality of care is maintained need to employed, especially the retention of trained and qualified staff. ➢ High utilisation of services by the poor that hold entitlement to free services through a Red Card is demonstrating that fees are a barrier for access by

		the urban poor, there is need to review and revise how this entitlement is assessed and is provided on an ongoing basis,. The current system still excludes segments of the extreme poor, e.g. street dwellers, floating populations, etc. ➢ There is evidence that the UPHCP is helping to strengthen the role and responsibilities of the City and Municipal Health Departments within ULBs towards delivering their mandate for the provision of urban PHC, but this is limited due to lack of decentralised authority and the need to restructure ULB health departments ➢ The UPHCP is yet to strengthen the role and responsibilities of the LGD towards delivering its mandate for the provision of urban PHC due to there being no permanent structure for Urban Health in the LGD ➢ The current system of 'procuring' partnerships with NGOs through contracts is not helping to build strategic partnerships for the long-term delivery of urban PHC. The finite terms of contract and lack of other longer-term partnership commitments between GOB and NGOs does not provide incentive for NGOs to invest in building their own institutional capacity to work in urban health. ➢ The policy and strategic framework for urban health still needs to be strengthened through full adoption of the urban health strategy, the current focus on urban health is mainly restricted to PHC and activities of NGOs, it should encompass all elements of urban health and needs to address the diverse range of actors, e.g. tertiary hospitals,

		private-for-profit health providers, pharmaceutical outlets, etc. ➢ The current governance arrangements to provide oversight and coordination for urban health amongst major stakeholders needs further strengthening. ➢ The financing of urban PHC services needs to be regularised into the LGD and ULB budgetary system and allocation and release of funds needs to be monitored for growth. ➢ Current coordination at the operational level of urban health services is weak and fragmented around donor funded projects, resulting in areas of overlap and gaps in the provision of services. ➢ Division of roles and responsibilities between MOH&FW and MOLGRDC needs further clarification and elaboration, especially in the area of regulation and stewardship. ➢ Urbanisation and health in Bangladesh is dynamic and needs to be studied continuously and there is need for more operational research to inform policy makers and planners.

Table 2: MHI Premium and benefits (from BHW, 2011)

Organization	Insurance Product Name	Premium Rate (BDT)		Discounts			
		Member	Non-Member	Consul-tations	Medicine	Pathology	Hospitalization (Referral Benefits) (BDT)
BRAC	General Package	150	250	50%	10%	50%	500-1000
	Prepaid Pregnancy	100	150	Included	Free Iron Tablets	n/a	200-500
	Equity Package	0	0	Free	80%	80%	500-1000
Gonoshasthya Kendra (Rural/Urban)	Destitute	5/15		2/Free	Free/77%	n/a	n/a
	Ultra Poor	6/20		3/Free	Free/33%	n/a	n/a
	Poor	10/40		5/Free	75%/25%	n/a	n/a
	Middle Class	50/70-200		10/15-25	MRP/20%-MRP	n/a	n/a
	Rich	80/400		12/30	MRP	n/a	n/a
Grameen Kalyan	Micro Health Insurance	200	300	60%	10%	30-50%	50%, max 3K
Dhaka Community Hospital (DCH)	Family Health Insurance Programme	20					
	Rural Health Insurance Programme	20		BDT 5	10% discount on general services		
	School Health Programme	n/a					
	Industrial Health Insurance Programme	n/a					
SAJIDA Foundation	Health Card	Old: 600/family New: 150 per person		Free	10%	30%	No referrals since 2009, but discounted inpatient services
	HELP *	250	n/a	Free	10%	30%	Discounted inpatient services, PLUS cash rebates

Note. HELP Programme includes: Loan & Life Insurance, Health Insurance, Disaster Insurance, Education Scholarships & Legal Support)

Sources: http://www.brac.net, http://www.dchtrust.org , http://www.gkbd.org, www.grameen.com, http://www.sajidafoundation.org.

Table 3: MHI membership and sources of finance (from BHW, 2011)

Organization (Date)	Insurance Product Name	Number of Households Insured	Number of Patients Treated Annually	Total Premium Collected (BDT)	Operational Cost Recovery (%)	Source of Funding
BRAC (April 2009)	General Package	695	2, 865	140, 620	39	External Support from ILO, BRAC's own fund, Member Contributions
	Prepaid Pregnancy	514				
	Equity Package	1				
Gonoshasthya Kendra (June 2011)	Destitute	710	232,265	1,260,346	73	Member Contributions, non-state subsidies, donations and cross subsidization from other development programmes
	Ultra Poor	4,460				
	Poor	113,230				
	Middle Class	42,250				
	Rich	760				
	Total	169,000				
Grameen Kalyan (June 2011)	Micro Health Insurance	37,776 (2008) 23,794 (2009) 13,066 (2010)	323, 495 (2008) 247,328(2009) 214,847 (2010)	5,590,725 (2008) 1,852,609 (2010)	83 (2008) 55 (2010)	Grameen Bank Endowment Fund, Donor Funds, Member Contributions
Dhaka Community Hospital (DCH)	Family Health Insurance Programme	100,000 persons	Not available	Not available	100%	DCH subsidy, Partner NGO subsidy, Donor support
	Rural Health Insurance Programme					
	School Health Programme	13 schools				
	Industrial Health Insurance Programme	24 factories				
SAJIDA Foundation	HEALTH Programme	681	5,382 (first 5 months in 2011)	408, 800 (2008-9)	85%	Dividend earnings from Renata Ltd, Cross Subsidization from MF Activities, Member Contributions
	HELP	94,311 (May 2011)	9,510 (first 5 months in 2011)	23, 577,750 (2010-11)	102%	

Sources: http://www.brac.net, http://www.dchtrust.org, http://www.gkbd.org, www.grameen.com, http://www.sajidafoundation.org.

Table 4: MHI coverage (from BHW, 2011)

Organization	Working Areas	Health Facilities	Number of Staff	Services Offered
BRAC	Madhabdi, Narsingdi	1 upgraded center	12	Health Education, Pharmacy, Primary & Secondary Health, Diagnostic and Pathological testing, ANC, PNC, Caesarean Delivery, Normal Delivery, Minor Surgical, Menstrual Regulation, Post Surgical Care, Immunizations, Family Planning, Nutrition.
Gonoshasthya Kendra	Savar, Sherpur, Gazipur, Manikgong, Serajgonj, Chapai, Nawabgonj, Feni, Pabna, Cox's Bazar, Bhola, Dhaka, Gaibandha & Kurigram	5 Hospitals 39 Static Clinics	400	Preventive Care & Health Education, Out-patient Care, Hospital Treatment, Midwife Services, Medicines, Referrals.
Grameen Kalyan	Tangail, Manikgonj, Munchigonj, Savar; Narayangonj, Keraniganj, Mymensingh, Comilla, Chandpur, Rajshahi, Gazipur, Pabna, Bogra, Shirajgonj.	53 Health Centres (16 districts) [15 MBBS Doctors: 2010]	433 (2009) 398 (2010)	Primary and Preventive Care, Diagnostic Services, ANC, PNC, Satellite Camps, Normal Delivery, Minor surgeries, Eye Disease & Diabetes & Geriatric Management, Cataract Surgery, Mobile Health Programme, Community Cardiology & Nephrology & Dentistry, Out-patient Care, School & Adolescent Health Programmes, Immunizations, Hospital Treatment, Medicines, Consultations, Referrals.
Dhaka Community Hospital (DCH)	Dhaka, Rajshahi, Pabna, Munshiganj, Patuakhali, Sylhet	30 Primary Health Centers [10 owned by DCH] A 250-bed modern hospital in Dhaka	Not available	Primary and preventive care, inpatient, outpatient, referral, emergency, consultation and other general services

Sources: http://www.brac.net, http://www.dchtrust.org, http://www.gkbd.org, www.grameen.com, http://www.sajidafoundation.org.