THEMATIC REPORT

# The Global Campaign for the Health Millennium Development Goals 2011

## INNOVATING FOR EVERY WOMAN, EVERY CHILD

**The Global Campaign for the Health Millennium Development Goals** was launched at the Clinton Global Initiative by Prime Minister Jens Stoltenberg of Norway and a group of world leaders in September 2007. The campaign brings together actions and initiatives with the common aim of fulfilling the promises for development – the eight Millennium Development Goals – made by world leaders 11 years ago.

This thematic report, Innovating for Every Woman, Every Child, is published in support of the Every Woman, Every Child joint effort initiated by United Nations Secretary-General Ban Ki-moon. It is the first thematic report in a series from the Global Campaign that is intended to be both practical and inspirational. It has been produced in co-operation with the Innovation Working Group created by the Secretary-General in April 2010 to support the Global Strategy for Women's and Children's Health announced at the United Nations special session in September 2010.

Oslo, July 2011

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# 1: FOREWORDS

Ban Ki-moon, Secretary-General of the United Nations

The articulation of the Millennium Development Goals (MDGs) has focused sustained, much-needed global attention on the health needs of developing countries. An unprecedented discussion on the policies, investments and initiatives that strengthen health systems has generated life-saving commitments of time, money and other resources. At the same time, we must recognize that too many of the most pressing needs remain. Efforts to achieve Goals 4 and 5, on maternal and child health, are not on track.

That reality underpinned the launch, in September 2010, of the Global Strategy for Women's and Children's Health. The Strategy emphasizes partnership, innovation and accountability. Already, it has demonstrated that building bridges among the public, private and non-profit sectors can help tear down barriers to equitable service delivery. And it has generated success stories such as the delivery of lab results via mobile telephones to prevent mother-to-child transmission of HIV, the use of retail distribution networks to bring vital medicines to underserved communities, and private sector training of factory workforces to offer effective, cost-saving peer health education. Clearly, innovating to address the urgent health needs of the poor can be the aim of enterprises that seek profit, social impact or both.

Yet innovation alone cannot solve the persistent problems of global health. Just as important is the context in which innovation takes place – an environment created largely by government, multilateral agencies and other development actors. The long-term objectives of these stakeholders – to save lives and build healthy populations – demand strategies that promote an open, creative and competitive marketplace. The private sector, for its part, is beginning to find that sponsoring innovation in the health systems of developing countries serves its long-term interests by spawning new industries or yielding new generations of healthy consumers.

Innovation requires hard work; when low-hanging fruit have been picked, we must reach for the higher branches. Such is the case today with global public health. This report seeks to guide us in accelerating implementation of the Global Strategy over the next four years. My hope is that the full spectrum of actors striving to achieve the health MDGs – from a Minister of Health marshalling substantial resources to a villager with a clever idea – will find information and inspiration in these pages. The report's contributors have shown what is possible; the rest of us must now actively rise to this global call to innovate.

***Ban Ki-moon***

The United Nations 2010 Summit on the MDGs and the Secretary-General's special session to launch the Global Strategy for Women's and Children's Health marked a turning point for health in developing countries. The commitments that emerged from diverse stakeholders were extraordinary in providing the means to achieve Goals 4 and 5. The special session built on President Barack Obama's Global Health Initiative, launched in 2009; Prime Minister Stephen Harper's G8 Muskoka Initiative and the African Union Summit, both in 2010; and the efforts of The Network of Global Leaders.

Economic development is at the core of overall development. Improving the health of women and children contributes extensively to economic development, which in turn contributes to better conditions for women and children. Economic development is also dependent on both the public and private sectors. The private sector can make large contributions to countries' development in innovation, risk-taking and capital investment. It can increase access to goods and services and create new tools for improving the health of women and children at the national level.

Mobile phones and broadband Internet access for new health-care services are excellent examples. Two out of every three new mobile subscribers are women. Mobile services at scale represent a unique opportunity for their social and financial inclusion and, as shown by our own experience in Norway, an area of vast potential for growth. I welcome the incorporation of the private sector into the Global Strategy and the Secretary-General's initiative to realize its potential for promoting women's and children's health.

Just over a decade ago, when we signed the Millennium Declaration and set the MDGs, more than 3 billion people lived in low-income countries. Today that figure has been reduced by two thirds to just over 1 billion because of a constant stream of low-income countries moving into the middle-income group. This trend is continuing. The resources of low-income countries are in demand, and even the poorest people are getting connected to the global economy. In the midst of this progress, the private sector has become a major contributor to the infrastructure that will support growth in the future.

These new developments create opportunities to accelerate progress toward all the MDGs, and in particular the health-related Goals 4 and 5 that are lagging furthest behind. Innovation is fundamental to capture these opportunities fully, and collaboration between the public and private sectors will be important to realize this potential. This is why we decided to produce a special report on Innovation as part of the Global Campaign for the Health MDGs. I hope it will contribute actively to tapping innovation as a unique resource of our time for the benefit of women and children.

***Jens Stoltenberg***

Jens Stoltenberg, Prime Minister of Norway

# 2: A NEW ERA IN DEVELOPMENT

Richard Klausner, Managing Partner of The Column Group

We are at a transformational time in global development. Dramatic changes in the economic outlook for many parts of the developing world and the resulting changes in poverty rates are forcing us to reconsider long-held assumptions about the challenges, even hopelessness, of development. At the same time, democratizing technology has spearheaded an explosion of connectivity, of redefining who is on and who is off the great grid of true development.

With this new narrative, an equally dramatic and fundamental change in our approach to development interventions must emerge. This change is not a response to the long-standing arguments about whether traditional aid and assistance programmes work or not. Rather, it is a fundamental reframing of our expectations about development programmes. It is time to confront the profound difference between development and assistance.

## A CHANGE OF MINDSET

There are three accepted pillars in current thinking about development interventions:

- **Small-scale programmes must work.** The world is filled with wonderful pilots and proof-of-concept solutions that provide the basis for accountable programmes with measureable outcomes – a worthy and necessary condition for the financiers of these programmes, who are generally the public sector or philanthropic donors.

- **These pilot programmes must then be scaled up.** The challenge of scale is often viewed as one of the great challenges of assistance, shrouded in mystery and generally accompanied by the call for a multiplication of donor finance to replicate the successful pilot.

- **These programmes must be sustainable.** Usually, the issue of sustainability comes down to the question of how to guarantee that donors return to the table year after year.

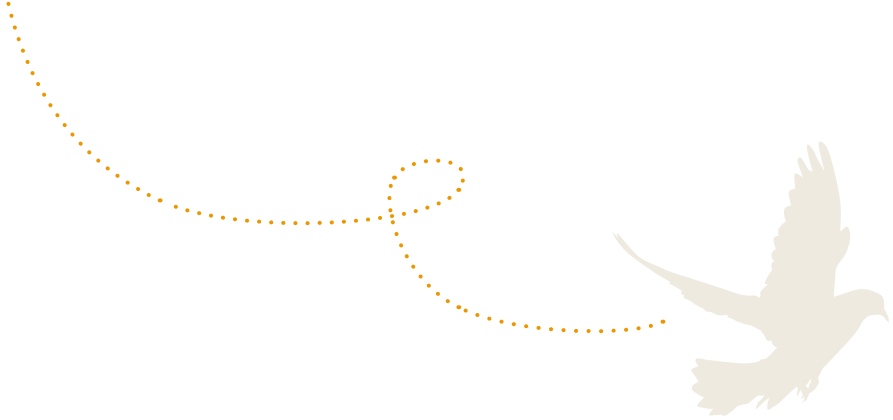
These pillars do not guarantee real development; they do not ensure a persistent change in people's living standards. Instead, they are the basis for a model of continuing assistance. To move from an assistance model to a development mindset, these new pillars must be adopted:

- **Sustainability must be, as far as possible, self-sustainability.**
- **Self-sustainability is both the prerequisite for and the engine of scale.**
- **The nature of self-sustainability is to use market uptake to demonstrate success.**

Clearly, the current approach must be turned on its head.

## THE CASE OF THE MOBILE PHONE

This report is full of exciting examples of the transformative nature of mobile communication for global health. But beyond these examples lie powerful lessons for the difference between assistance and development, the relationship between sustainability and scale, and the nature of the partnership between the provider of services and programmes and their customers, even among the planet's poorest people.



Mobile phones and SIM cards are proliferating rapidly among the world's poor. The mobile services that are spreading are self-sustaining; they are services that people want and need. Mobile applications that attain scale will be the ones that create value for both providers and customers, and thus can sustain themselves.

This mobile revolution poses a question: do inequities result from a failure of supply alone (lack of vaccines, drugs, schools, roads, energy grids, clinics, etc.) or from a more profound failure of demand? Aid on the supply side is often essential in emergencies, and it can be important at other times as well. But supply alone will not produce growth, wealth or real development. Only demand can drive the self-sustainability that characterizes real development. As the mobile phone shows us, the uptake and scaling of supply will not happen without demand.

Demand creation implies respect for, and autonomy of, the customer. There is a profound difference between the gratitude of a recipient of aid and the satisfaction of a customer. The process of engaging customers in demand creation and then generating supply to fill that demand will lead to innovative local partnerships that know their customers and serve them effectively. Combining innovation and respect for the customer results in real development:

- **Tapping local entrepreneurial energy.**
- **Bringing new faces, especially young people (who are most naturally risk-takers) and women, into the economy.**
- **Promoting a meritocratic economic system that respects individual rights.**
- **Creating employment as it succeeds.**

**New roles and new partnerships**

The need to find and enable self-sustaining business models at the core of successful development will require new understandings and new partnerships between six groups:

- **government**
- **donor agencies**
- **civil society**
- **the private sector**
- **the entrepreneurship community**
- **the customers.**

That all are engaged in many, if not all, aspects of this requires that partnerships evolve with a very clear sense of the necessary contributions of each group and their various limitations. The very best partnerships maximize the value that each partner brings and minimize the transactions costs created by working together.

The launch and success and spread of development projects as discussed here also demand a fluidity of partnership whose actors and roles and responsibilities are not only distinct but evolve over time with the success or failure of the programme. Managing that evolution of roles, rather than maintaining the fixed "ownership" of a programme, is a new paradigm for these development partnerships that will need to be incorporated into the business plan itself.

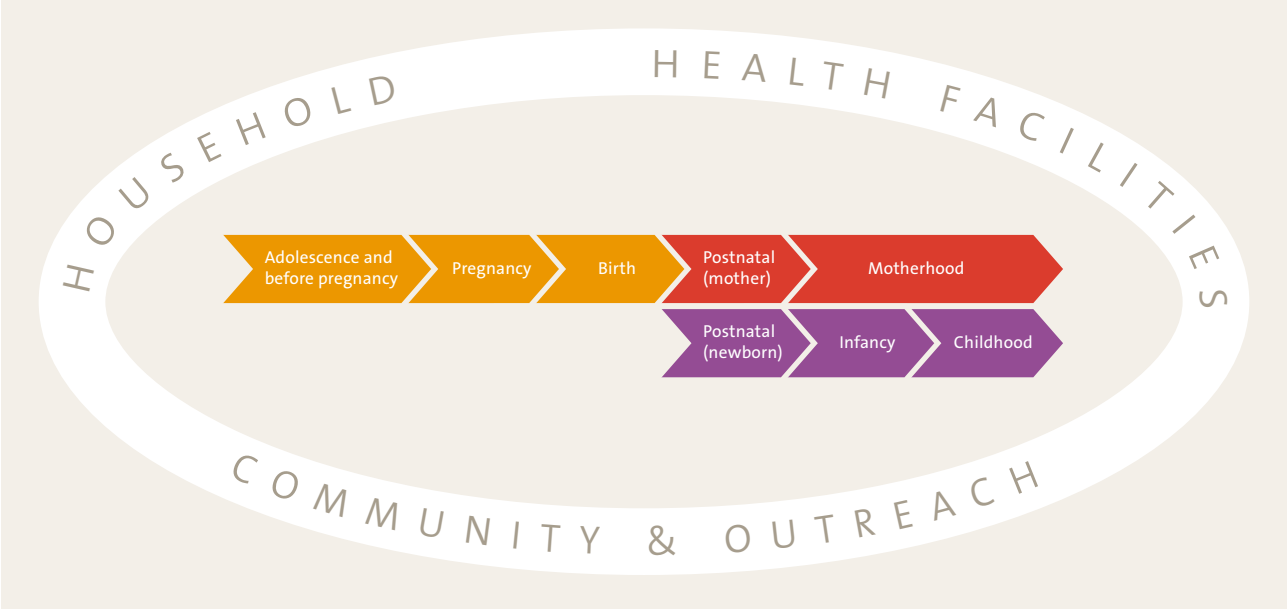
## A NEW CULTURE OF RESPECT

For donors, the assistance urge is about many things: altruism, national and organizational branding, stability, security, commerce, influence, etc. But to succeed in enabling true development requires a deep culture of respect. There is no greater manifestation of this respect than enabling people to become the masters of their own fates. A fundamental transformation of assistance projects into precursors of self-sustaining development will embody this respect, which must be the banner under which development in the 21st century takes place.

***Richard Klausner***

# 3: HEALTH NEEDS OF WOMEN AND CHILDREN

FIGURE 1: The Reproductive, Maternal, Newborn and Child Health continuum of health care




PMNCH (2011). Adapted from: WHO (2005) - Make every mother and child count.

Women and children in low- and middle-income countries suffer shortfalls in health care and face a high risk of mortality across a continuum that begins in women's adolescence and stretches into the early years of their children's lives. Figure 1 shows the continuum for reproductive, maternal, newborn and child health (RMNCH):

*"Though we know what is needed to save lives, these interventions are unattainable for many women and children in low- and middle-income countries, in large part because of health systems' constraints and issues of human rights and equity."*

CAROLE PRESERN, PARTNERSHIP FOR MATERNAL, NEWBORN & CHILD HEALTH

At every stage in the continuum, the needs are stark. Only about 50% of women in low-income countries complete the recommended series of four antenatal care visits[1] with a doctor or nurse to detect risk factors and manage problems. About 40% of women in developing countries give birth without a skilled attendant, such as a midwife, on hand. And although most maternal and newborn deaths occur during childbirth or in the immediate postnatal period, fewer than 40% of women have a postnatal visit by a skilled health worker.[2]

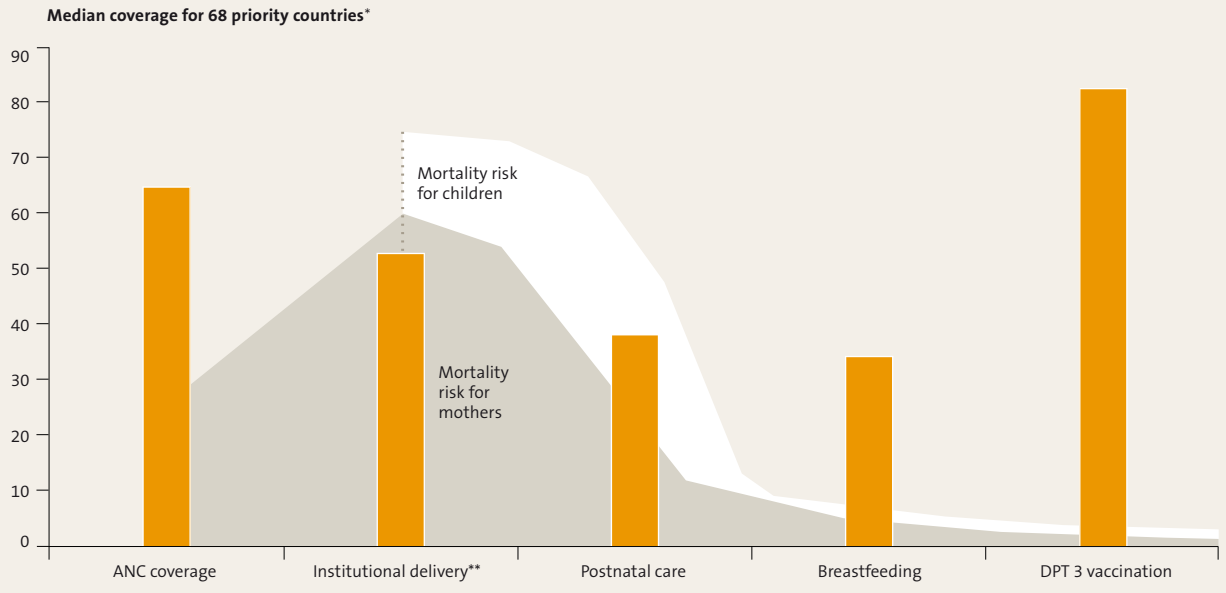
1 World Health Organization. Countdown to 2015 Decade Report (2000-2010): Taking Stock of Maternal, Newborn, and Child Survival. Report, 2010.

2 Ibid.

These shortfalls, shown in more detail in Figure 2, are in part a result of the constraints providers of health services face as they try to bring the right people with the right skills and the right resources together in the right place to deliver essential interventions. In many low- and middle-income countries, the shortfalls are exacerbated by social and economic barriers that also exclude women and children from receiving life-saving care. Providers of health services in developing countries will have difficulty reaching more women and children in a sustainable way until proven, cost-effective interventions are brought into the mainstream of care and prevention.

In part because of these shortfalls, more than 350 000 women die each year in the developing world from complications of childbirth and pregnancy.[3] As many as 2.6 million babies are stillborn annually, and 3 million of the more than 8 million children under five who die each year succumb in the first month of life.[4] Most of these deaths are avoidable, but preventive measures and treatments simply do not reach poor and rural populations or are not designed in a way that makes them easy to use in underserved communities.

FIGURE 2: Mortality risk for mothers and children over the continuum of care



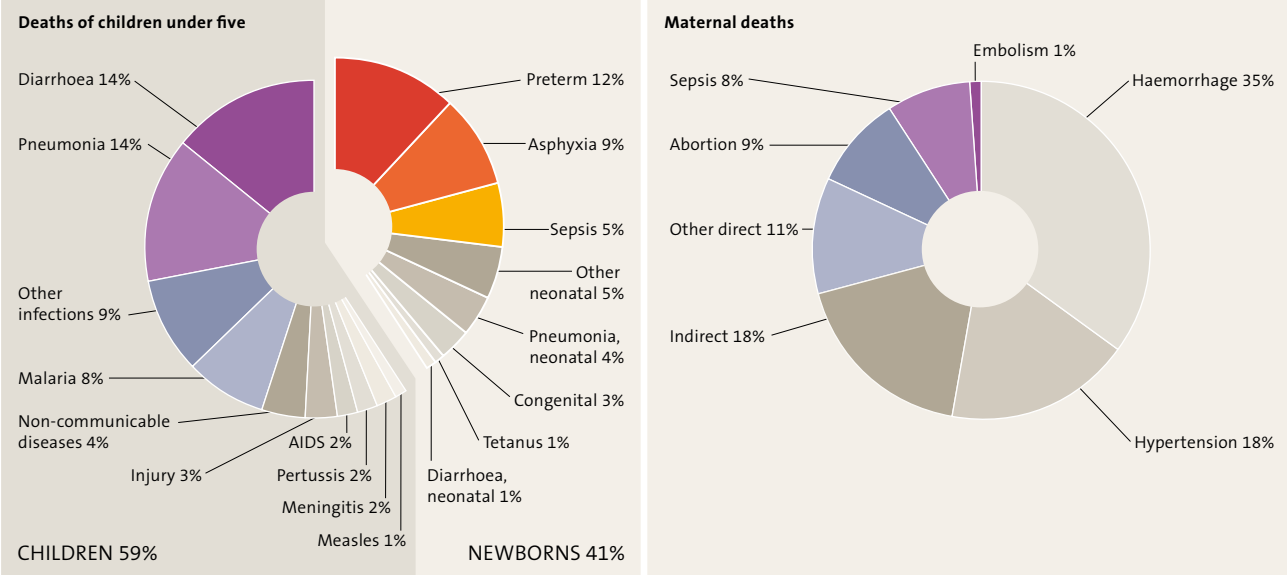

*Data compiled for 68 priority countries for the 2010 Countdown Report
**Births occuring in the health facilities

Sources: Coverage data; Countdown to 2011, decade report (2010). Data for mortality distribution based on 1) for mothers; Li, XF, IJOG, 1996; for children; DHS survey data where available for 51 selected countries

3 World Health Organization, UNICEF, UNFPA and the World Bank. Trends in Maternal Mortality: 1990 to 2008. Report, 2010.

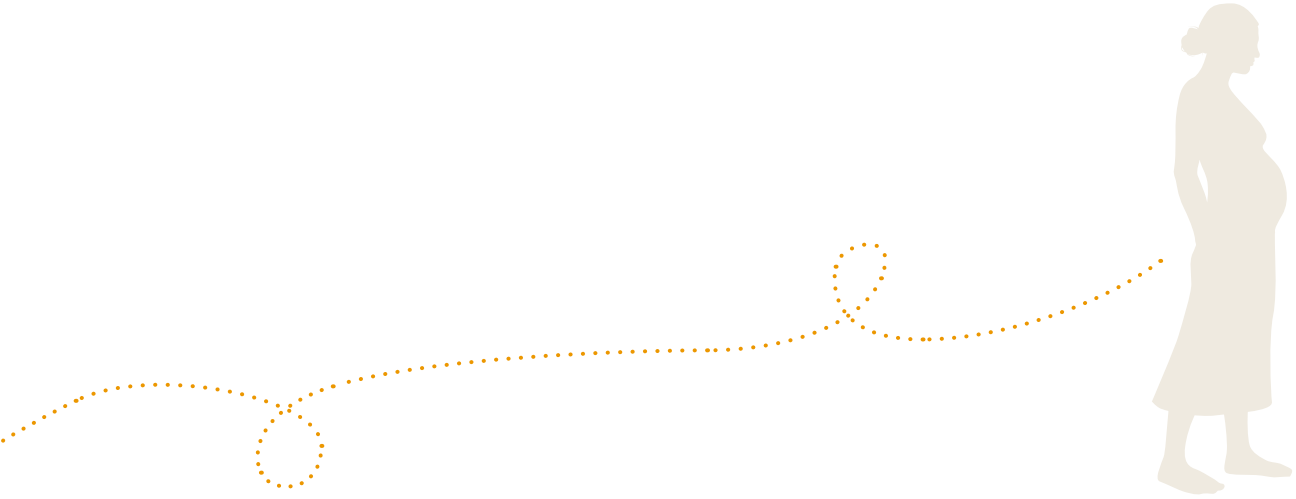
4 Multiple authors. The Lancet series on stillbirths, 2011; and statistics collected by the United Nations Inter-agency Group for Child Mortality Estimation.

FIGURE 3: Causes of maternal deaths and deaths of children under five




Adapted from: Countdown to 2015, 2010

Mortality for women and children is shown in Figure 3 (produced by the Partnership for Maternal, Newborn & Child Health), which details their most common causes of death. Figure 2 tracks the mortality risk over the continuum of care that begins in the antenatal period; the highest risk to mothers and children is in the first month beginning with birth. More information on this topic, including a mapping of the countries with the greatest needs, is available at portal.pmnch.org.



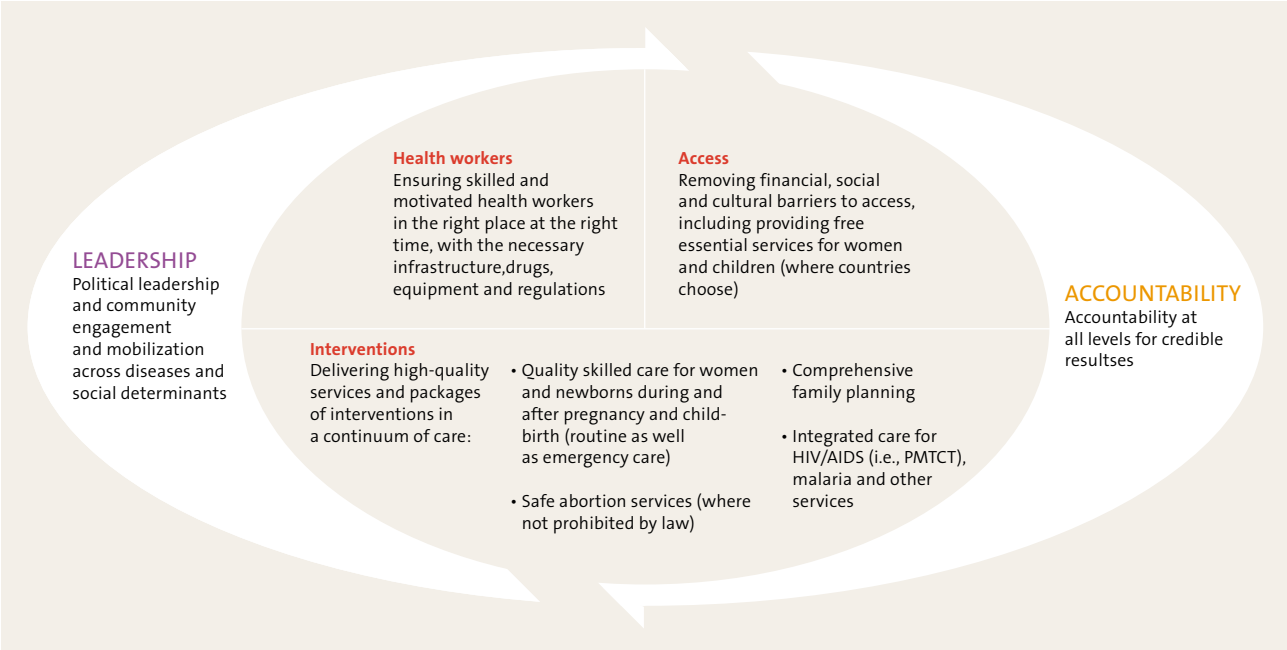
The Global Strategy for Women's and Children's Health has set the broad priorities for closing the gaps behind these high mortality rates, as described in Figure 4 and at greater length at www.everywomaneverychild.org. Innovations that contribute to packages of services for women and children that are integrated with care for other health problems, including both communicable and noncommunicable diseases, fall squarely under these priorities. So do innovations that strengthen providers of health services and build the skills and capacities of their workforces. More on these priorities is available in the documents that underpin the Global Strategy for Women's and Children's Health, at www.who.int/pmnch/activities/jointactionplan.

*"These countries will not grow themselves out of inequality, especially in the provision of health care."*

JULIO FRENK, HARVARD SCHOOL OF PUBLIC HEALTH

The most effective initiatives to improve women's and children's health will be based on rigorous, country-specific research and supported by local policies. Heeding differences between countries is especially important, especially since improvements in access, interventions and the health workforce are not needed only in the least developed countries. In fact, there are more poor people living in middle-income countries, where inequality in socioeconomic status usually corresponds to inequality in access to health care.

FIGURE 4: Priorities of the Global Strategy for Women's and Children's Health



# 4: EXAMPLES OF INNOVATIVE BUSINESS MODELS

Any organization delivering a product or service has a business model. Though definitions vary, the model may imply six main components:

- **Value proposition** – how customers will benefit from the intervention or product.
- **Definition of the market** – who the beneficiaries and payers will be, and their willingness and ability to pay.
- **Distribution channel** – how the intervention or product will be delivered to the customers.
- **Resources required** – what is needed to supply the intervention or product.
- **Organizational format** – who will have what role, including both staff and partners.
- **Long-term plan for viability** – how will costs be covered or profit generated.

Thus an intervention – even a successful one – does not by itself constitute a viable business model; these other components are necessary to ensure that the intervention can be delivered at scale.

This report categorizes business models according to the direct beneficiaries of their interventions or products. Some interventions are aimed directly at households, such as SMS messages for expectant mothers. Others are targeted at government health systems, and a final set of business models are designed to serve private companies inside and outside the health sector.

*"Paying for services is one thing, but if you're trying to engineer behavioural change, someone else needs to pay."*

KATHERINE DE TOLLY, CELL-LIFE

The distinction between sources of demand and beneficiaries is important; who pays for an intervention may not be the same as who receives it. For instance, business models that deliver interventions directly to households may have a variety of funders, since the interventions could be in the interest of social welfare. The same goes for business models that work with government health systems; donors may provide the initial funds to pay for interventions where governments cannot do so easily themselves. By contrast, business models that serve private companies are usually financed by them as well; they are the source of demand and the beneficiaries.

This chapter includes 10 case studies of enterprises and projects serving a variety of markets that have either proven the viability of their business models or promise to do so in the near future. The annexes at the end of the report briefly describe a much larger set of enterprises and interventions, some of which also have case studies available online at www.norad.no/globalcampaign/innovation.

## 4.1: HOUSEHOLDS

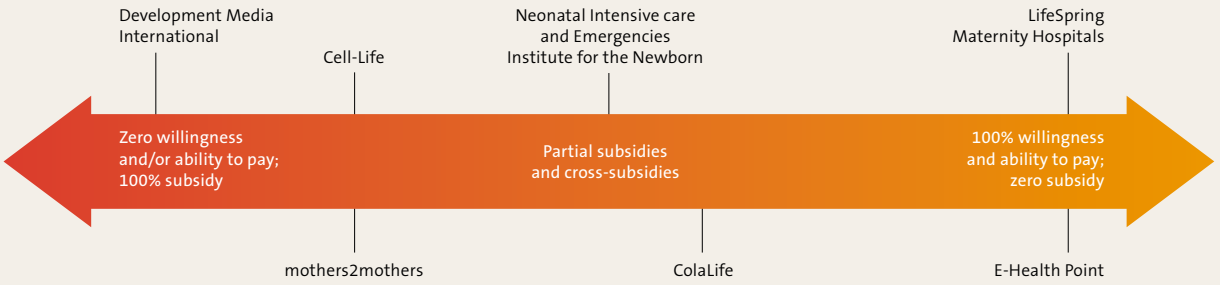
Even in the poorest communities, households have some willingness and ability to pay for health care. Still, delivering interventions for women and children often requires a subsidy from the government or other funders. For example, a subsidy is usually necessary when the usefulness of an intervention is not immediately obvious to the beneficiaries, as in the case of programmes that change behavioural norms; here, willingness can be the binding constraint. Cell-Life, whose case study appears on page 12, offers one such intervention for new mothers. A subsidy would also be needed, however, if the social benefit of an intervention exceeded its beneficiaries' ability to pay, regardless of their willingness. This is the case for mothers2mothers, a mentoring programme profiled on page 18.

As the required subsidy reaches 100%, the market for the intervention could be said to be the government health system rather than households. In this case, the intervention is likely to be a public good with benefits to society that far exceed the benefits perceived by the individuals who receive it.

*"People are willing to pay, even at the bottom of the pyramid. Right now they're paying the quacks."*

NARAYAN SUNDARARAJAN, GRAMEEN INTEL SOCIAL BUSINESS

FIGURE 5: Households' willingness and ability to pay for various interventions (illustrative)




Sometimes the subsidy can be an explicit part of the business model; an enterprise might offer a basic, subsidized service to poor customers and a premium service to customers with a greater ability to pay. Figure 5 shows a spectrum of innovative interventions (all described in the case studies following this section or in Annex A) and the subsidies they may require.

The modality for delivering a subsidy can vary widely and even exclude the public sector, as in SMS-based services that receive low rates from mobile network operators in return for carrying their advertising, or Mikkel Vestergaard-Frandsen's strategy of financing free water filters for poor families through carbon credits generated by their reduced use of stoves for boiling water.[5] The innovative business models that deliver products and services directly to households so far fall into these categories:

**Remote delivery of services.** Providers can now offer health services outpatient treatment, coordination of care and some preventive measures via communications technology. One such provider is E-Health Point, profiled briefly in Annex A.

**In-person delivery of health care and advice.** Delivering care face-to-face continues to be a challenge for health-care systems in developing countries and can be especially important in areas where people are not accustomed to using technology. Innovators have found ways to reduce the costs of providing health care dramatically, though. An example is LifeSpring, a chain of maternity hospitals whose case study appears on page 16.

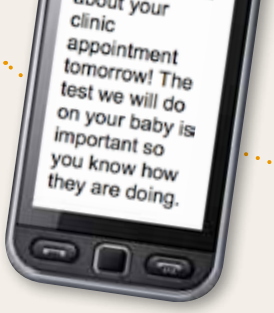
**Health insurance.** Conventional health-insurance plans designed for the base of the pyramid and micro-insurance plans are becoming more common, especially as arms of existing for-profit enterprises. An independent insurer that works with multinational corporations is Naya Jeevan, whose case study is online at www.norad.no/globalcampaign/innovation.

**Novel distribution strategies.** Using existing supply chains, logistics systems and distribution networks to distribute health-care commodities can reduce the costs of setting up a new intervention, though obtaining access to these networks may be difficult for a small enterprise. Companies are also finding ways to use networks in underserved communities to serve consumers at the base of the pyramid; ColaLife, whose founder describes its approach in a case study on page 14, is one enterprise that will soon bring this model to market.

Annex A offers more examples of enterprises using all of these business models.

5 For more information on the Carbon for Water programme, see www.vestergaard-frandsen.com/carbon-for-water.

# CELL-LIFE




CELLPHONES4HIV

**Problem** Mothers lost to follow-up in prevention of mother-to-child transmission programmes in South Africa, resulting in missed appointments, babies lacking preventive medication, HIV-positive babies failing to receive antiretrovirals, and unnecessary anxiety on the part of mothers whose babies do not in fact have HIV.

**Solution** A 10-week programme of text messages delivered by bulk scheduling to HIV-positive mothers.

**Impact** A randomized controlled trial (still under-way) suggests that mothers in the SMS programme are significantly more likely to bring their infants to clinics for HIV testing. Results are still being evalu-ated to determine whether receiving the text messages makes mothers more likely to return to the clinics to retrieve their babies' test results. Exit interviews offer strong evidence for a psychological benefit from the programme as well.

**Sustainability** Sending the text messages costs less than US$1.50 per mother, and receiving them costs the mothers nothing. Because the programme is designed to change behavioural norms, however, willingness to pay is likely to be negligible until word of its benefit spreads. As a result, the pro-gramme will rely on outside funding from govern-ment or donors.

*When it comes to mothers with HIV, those who live in South Africa should be among the lucky ones*

Unlike their counterparts in many poorer countries, most of them have easy access to treatments that prevent mother-to-child transmission of the virus (PMTCT). Yet AIDS-related illnesses still account for 40% of deaths of children under five, because so many mothers either fail to seek treatment or drop out of treatment programmes. How can an already overburdened health-care system ensure that HIV-positive mothers come back for their appoint-ments and get their babies tested for HIV?

Enter mobile phones. Roughly 80% of South African adults have access to them, with little gender disparity in phone ownership. Recognizing the opportunity presented by this high level of mobile penetration, we at Cell-Life got together with the Empilweni PMTCT clinic in Johannesburg to see whether mobiles could be harnessed to keep mothers in touch with the health-care system. We wanted to find a way of retaining mothers that was cheap to implement, didn't place an additional burden on health-care workers, was free for mothers and could work across all types of mobiles.

**Proven reductions in untested babies**

Together we settled on SMS as the right medium for reaching the new mothers. Using knowledge gleaned from health workers' daily interactions with mothers in their clinics, we developed a 10-week SMS programme to give the mothers help-ful tips and remind them to attend their appoint-ments, administer their babies' medications and stick to their breast-or-formula feeding choices. To protect the mothers' privacy, we prepared two versions of the messages. One version included words like HIV and AIDS, and the other did not. If mothers were afraid of accidentally disclosing their HIV status, they could select the second version.

In a pilot experiment, we randomized which mothers would join the SMS programme. The total pool contained 738 mothers, of whom 323 received text messages via a bulk scheduling programme. The results were encouraging: more than 90% of mothers in the programme brought their infants in for HIV testing, compared with only 78% in the group that did not participate. In other words, the share of non-compliant mothers dropped by more than half. Among women who were newly diagnosed with HIV at the time of their deliveries, more than twice as many came in for follow-up testing in the group receiving text messages.

**An unanticipated psychological benefit**

But this was not the only benefit of the programme. Interviews with mothers who participated suggested that the SMS programme, over and above reminding them to bring their babies to the clinic, offered important psychological support.

For example, one mother who was asked why she would recommend the SMS programme responded: "Because it feels like whatever heavy you carried on your shoulders, that it actually becomes and feels much lighter." Another mother said that the messages were reassuring and that the programme helped her to maintain a positive attitude: "It made me believe that all will be okay." One of the mothers commented: "Having a new baby is very stressful, but by getting these SMSs it always made me excited." And another recognized the intended value of the messages: "The information they give makes you to understand HIV better."

In the future, we hope that additional funding will allow us to create a mechanism by which mothers may opt into the SMS programme automatically by sending a text message themselves. This change would reduce the operational costs associated with initiating the service. We also want to scale up the service, as it's easy to implement and has clearly demonstrated benefits that save the health system money in the long term.

***Katherine de Tolly*** *works for Cell-Life as an mHealth Project Manager and Senior Researcher. She was involved in Web communications for over 10 years, with a particular emphasis on government, research and HIV-related communications. She has been working in mHealth for three years. She has an undergraduate degree in statistics and economics and earned a masters degree in informatics with a thesis that examined the role of technology in digital stories as tools for social change.*

# COLALIFE

*If bottled cola drinks can reach the remotest communities in the developing world, why can't simple medicines?*

It was in the 1980s in remote Zambia when I first put this question to my wife, Jane, and anyone else who would listen. But in those days the concept of corporate social responsibility (CSR) was just developing, and I could get no traction. Fast-forward 20 years and, to my surprise, no one had successfully opened this distribution channel, despite the fact that as much of 40% of medicine costs stem from transportation. Meanwhile, children were still dying from simple-to-treat ailments like diarrhoea.

As a social-media expert, I decided to get my message out in May 2008 with a Facebook group called "Let's Talk to Coca-Cola about saving the world's children." This was, I thought, a modest proposition. I never imagined it would lead to Jane and me giving up our jobs to dedicate three years to painstaking stakeholder development involving four of the world's biggest corporates across three continents. I've listened and talked to literally thousands of people – many of them global experts who have given their time freely – whilst Jane, through hundreds of hours of research, has become a kind of lay expert in supply chains, child health and business models. We quickly realized that no global drinks giant could do this alone. A concept like ColaLife needs cross-sector partnerships – unlikely alliances – and our first job was to build one.

**Building partnerships through a strong value proposition**

Early on in our interactions with potential partners, we established a set of principles that have guided our work. We wanted to have a climate of open innovation where everyone felt free to challenge and improve our ideas, but we didn't want to duplicate or re-invent existing interventions. We also wanted all of our innovations to be based on local knowledge, experience and needs.

We knew that we would have to demonstrate benefits all across the value chain through the distribution of a new commodity in order to bring all the necessary partners into our project. We saw the project as the next generation of CSR, and we also wanted to create an identifiable "win" for all of our partners. We would have to cultivate trust, too, since this project would need long-term relationships to be successful.

**Innovation with design at its heart**

Taking full advantage of the cola drink supply chain required a breakthrough in design. Our AidPod rests in unused space in the crates used to transport drink bottles. It is self-contained and, with its distinctive shape, lends itself to separate branding. It can be water-proofed, tamper-proofed and tracked via SMS technology. In the secondary supply chain, each Coca-Cola crate collected by a rural retailer can carry five AidPods between the bottles.

We are currently working on the AidPod as an anti-diarrhoea kit for children under five. It will carry oral rehydration salts, supplements, soap, water treatment tools and educational materials designed to match recommendations from the World Health Organization and UNICEF. Their 2009 report gave us confidence in our ideas: that every mother should have a kit and be educated in its use, and that har-nessing market forces was the key.

Making the kit a desirable and affordable commod-ity for rural mothers and carers at the base of the socioeconomic pyramid is just one of the many challenges for the first trial of the ColaLife concept, which will start in Zambia in late 2011. Creating demand may require social marketing, affordable pricing, e-voucher systems and even cross-subsidies among consumers until local mass production can lower costs or incomes rise sufficiently.

Already, however, the learning is significant. We knew that although ColaLife might answer the "how" of distribution, it was vital that the five Ws – what, where, when, why and who – feature in discussions with local agencies. They have the long-term local responsibility for public health and must adopt and adapt the concept.

To make the AidPod and its distribution a reality, we have created a partnership between SABMiller (the local Coca-Cola bottler in Zambia), UNICEF, government agencies, non-governmental organiza-tions in health, a global pharmaceutical company and a mobile technology company. We have found that investing time is more important than a rush for funding; plans move to the timescales of the slowest, most cautious and most risk-averse partners. A trusted third party can be invaluable – someone who doesn't mind asking the seemingly simple questions can interpret and share answers and insights across sectors and will protect confidentiality. This is how we sought to position ourselves and ColaLife.

colalife

building unlikely alliances to save children's lives

**Problem** As many as 20% of children in the developing world die before age five, many from easily treatable diseases such as diarrhoea, because of poor awareness and scant local availability of simple medicines and cheap, home-based water disinfection.

**Solution** An affordable anti-diarrhoea kit, piggy-backing on the secondary Coca-Cola supply chain to reach "the last mile" in underserved rural areas.

**Impact** A trial in Zambia will test impacts on distribution, access, awareness and health issues. The model has the potential for scale and replication for other products and supply chains.

**Sustainability** The business model is designed to harness existing distribution channels, with profit motives and training for the small-scale local entre-preneurs who carry and sell the kits. Demand could be generated via social marketing and a number of subsidy programmes.

***Simon Berry** is the visionary behind ColaLife and brings a lifetime's experience in cross-sector stakeholder relations, rural development, open innovation and new media. He has managed innovative projects around the world since 1984, when he was commissioned by the British Over-seas Development Agency to manage a politically sensitive co-operation project at Alexandria University in Egypt. Recently he managed a cross-departmental Ministerial Task Force for the Department for Environment, Food and Rural Affairs, winning a national Compact Award for excellence in cross-sector working.*

# LIFESPRING

*Like many social businesses, the genesis for LifeSpring began with a simple belief: "There has to be a better way."*

I was working at the time in the contraceptive social marketing programme of HLL Lifecare Limited, a Government of India company that manufactures and markets contraceptive products. While working in the family-planning clinics of private and government hospitals in Hyderabad, India, to promote family-planning services, I was continually disturbed by the conditions in which low-income women were delivering their babies. The government hospitals I saw were under-resourced and overcrowded, leading to difficult conditions for both patients and doctors. There were not enough beds, doctors or space to cope with the number of people needing care. Pregnant women would wait in long lines outside the hospital, often having to pay bribes for minimal services.

Then there were the private hospitals offering services that were of high quality but priced out of reach for lower-income families. Since it was this type of health care that they preferred, however, low-income women would often sell assets or borrow money at high interest rates to finance deliveries in private hospitals. LifeSpring was thus born to fill the gap between the existing options: a hospital that could serve poor women with affordable, dignified health care. I knew, however, that financial sustainability was crucial for a scalable model.

**A model based on economic efficiencies**

In 2005, we launched our first hospital as a pilot. Women would pay a low, all-inclusive price for a complete delivery package and would receive high-quality health-care services. We would also focus on customer care, recognizing the women as empowered customers as opposed to recipients of charity. LifeSpring offers services that cover the whole range of a woman's pregnancy, as proper antenatal care is essential to minimizing complications during delivery.

Our low-cost model is based on the following main characteristics: service specialization, a no-frills set up, high asset utilization and para-skilling (breaking down a complex process into simpler tasks that less-skilled professionals can perform repeatedly). Our prices are one-third to one-half of the prices charged at other hospitals offering a similar quality of services. A normal delivery in our general ward can cost as little as US$90.

An additional innovation of our model is the way we apply frameworks from the private sector to our work. Extensive data are collected at LifeSpring, for example, from our customers and operations. We use these data to streamline operations, keeping costs as low as possible, and we analyze our customer socioeconomic data and feedback to better understand their health-care needs.

Our first hospital reached operational profitability in 18 months, ahead of our business plan assumptions. In 2008, LifeSpring received joint equity funding to scale up our model. Our investors are Acumen Fund (an American social venture fund) and HLL Lifecare Limited. With their US$ 3.8 million in equity, we were able to grow from one to six hospitals in our first year as a private limited company.

**Drawing on research**

LifeSpring has also benefited very significantly from a partnership with the Cambridge-based Institute for Healthcare Improvement. Their expertise and support has helped decrease our rates of maternal and neonatal morbidity, improve protocol adherence and strengthen a culture of safety.

In addition to helping women to deliver their babies in a safe and affordable way, LifeSpring's operations have indirect effects as well. We are reducing the burden on resource-constrained government hospitals by attracting patients to our hospitals and, by influencing the quality of other providers, we are catalyzing an improvement in the quality of care being offered by the wider market.

LifeSpring Maternity Hospital
Safe · Clean · Affordable

**Problem** The lack of affordable, high-quality maternal health care for low-income families in India, who make up the majority of the population.

**Solution** A chain of low-cost hospitals that offer core maternal health care to urban women who earn roughly US$3 to US$6 a day.

**Impact** More than 10 100 deliveries have taken place in LifeSpring hospitals to date. There are currently nine hospitals in operation, and another six to be completed by the end of 2011. Among our custom-ers, 52% had previously delivered at home or in a public hospital, and 48% have husbands who work in the informal sector.

**Sustainability** LifeSpring is a private, for-profit company. Following the success of its pilot hospital, LifeSpring's business model was designed such that each hospital could become operationally profitable within 18 months. This allows us to expand the model without depending on grant funding.

***Anant Kumar** launched the first LifeSpring Hospital in December 2005, while working in Hindustan Lifecare Limited (HLL), a Government of India enterprise and one of the world's leading manufacturers of contraceptives. He has held various leadership positions in the social marketing departments of both HLL and its affiliated trust, HLFPPT. He has a post-graduate diploma in Rural Management from the Institute of Rural Management, Gujarat, and a post-graduate diploma in Health Care and Hospital Management from Symbiosis Institute, Maharashtra. He received his BA from Delhi University.*

# MOTHERS2MOTHERS

*Mother-to-child transmission of HIV is almost entirely preventable – yet every day 1000 babies in Africa are born with HIV.*

Without treatment, half of all children infected with HIV will die before age two.

Paediatric HIV/AIDS has been virtually eliminated in the developed world. In some regions of Africa, however, there is limited knowledge of how to prevent transmission of HIV to newborns. Stigma and discrimination surrounding HIV prevent many women from being tested and seeking medical care. In addition, patients often encounter health-care environments in which there are too few doctors, nurses and health-care providers to deliver the increasingly effective, yet complex, medical interventions that contribute to the best possible outcomes for mothers and babies.

**Mentors making a difference**

We hire mothers living with HIV in nine sub-Saharan African countries, train them, and then send them to their local clinics to help women who are pregnant and diagnosed with HIV. They're called Mentor Mothers, and they work side-by-side with doctors and nurses, helping to prevent mother-to-child transmission of HIV by supporting and educating women about how to take their medicines and take care of themselves and their babies. In providing education and support to mothers with HIV, Mentor Mothers create a dynamic with nurses, and in health facilities, that clearly enhances the quality and reach of care.

Mentor Mothers are paid as professional members of health-care teams that are often understaffed. All the mothers are trained and retrained every year, so that they are up-to-date about available treatments and guidelines.

**Problem** Hundreds of thousands of children infected with HIV annually despite the existence of effective treatments to reduce mother-to-child transmission from 30% to less than 2%.

**Solution** An innovative, scalable solution to the challenge of providing services that prevent mother-to-child transmission (PMTCT) in resource-constrained settings: recruiting, training and employing mothers living with HIV who have personally been through the PMTCT process.

**Impact** The mothers2mothers (m2m) model has gained wide acceptance and currently operates in more than 700 sites in nine countries, enrolling approximately 275 000 HIV-positive pregnant women last year.

**Sustainability** m2m's success has led to our incorporation in official government guidelines about PMTCT, and initiatives are underway to develop the national scale-up of m2m's programmes in multiple countries. We are in the process of developing new models for delivering Mentor Mothers services, including capacity building for local NGO and government partners to implement Mentor Mothers programmes independently, creating sustainable programming for long-term health-system strengthening.

A simple model is at the core of mothers2mothers: a woman talking to another woman. But this simple idea is radical. We are implementing a solution to large-scale social problems on a small scale every day. And it's replicable, scalable and cost-effective.

**Proven results**

A pilot study by the Population Council of our programme in KwaZulu Natal, South Africa, found statistically significant improvements in the behaviours of mothers who had two or more contacts with Mentor Mothers, versus those who had none. The pregnant women and mothers in our programme were more likely to be aware of the risks of HIV transmission, receive and take drugs to prevent mother-to-child transmission of HIV, avoid breast-feeding (which is one means of transmission) and have their blood tested for viral loads after birth. They also reported being more empowered to take care of their children and less overwhelmed by the situation they faced.

Our program is extremely cost-effective for health systems. A recent study found that the cost of preventing mother-to-child transmission of HIV is roughly US$ 1150 for programs operating at scale and according to guidance from the United Nations. Our intervention costs about US$ 6.50 per interaction, with only a few interactions per mother needed to achieve the results described above. Because of our strategically centralized and operationally decentralized model, our program can be scaled easily, fixed costs are controlled, and we can maintain standards throughout the organization.

These results have led to several exciting and innovative opportunities, including the first national commitment to adopt the Mentor Mothers programme. In Kenya, we are working with the government to support the development and scale-up of a national model. We are also exploring the use of technologies that will increase access to, and retention in, care for mothers and their babies, such as cell phones and improved databases.

We're always moving forward, and we've always challenged ourselves: do more, better, faster. With support from governments, corporate partners and private donors we continue to expand our work and to get closer to the goal of eliminating paediatric HIV.

***Gene Falk** is the CEO and co-founder of mothers2mothers (m2m). He helped to develop m2m while working as a senior executive in the media industry, then left a long career in New York to move to South Africa and oversee m2m's roll-out and expansion. Immediately prior to working with m2m, Gene was a Senior Vice-President at Showtime Networks. He also has a long-standing history of activism for HIV/AIDS and gay and lesbian civil rights, as a founding national board member of GLAAD, the Gay and Lesbian Alliance Against Defamation. He holds a BA cum laude from Williams College and an MBA from the Wharton School at the University of Pennsylvania.*

## 4.2: GOVERNMENT HEALTH SYSTEMS

Public health-care systems have a variety of needs that go far beyond the direct provision of health care to households. By working with the private sector, they can save time, lower costs, streamline processes and deliver health services in new ways.

Though governments run these health systems, they are not the only funders. Foreign donors, foundations, non-governmental organizations and the private sector can also demand interventions for use by government health systems. To date, business models have fallen into these categories:

**Health information systems.** Ministries of Health can save time and money by using technology to simplify the collection and administration of health information. An example of a commercially viable offering in this area is the Clinton Health Access Initiative's SMS printers programme, profiled on page 22.

*"Among pharmaceutical companies, pharmacies, drug wholesalers and distributors, mobile operators, and investors, the private sector is the major, if not exclusive, actor in most countries across the globe, including those where care is largely delivered by the public sector."*

DANIELLA BALLOU-AARES, DALBERG GLOBAL DEVELOPMENT ADVISORS

**Support for health workers.** Giving health workers portable tools that carry useful knowledge, guidance for treatments and incentives for performance can make them more efficient and improve outcomes. Among the successful interventions are the D-Tree mobile system for monitoring childhood nutrition and the Grameen Intel Social Business maternal care software. Their case studies appear on pages 24 and 26, respectively.

*"There's a lot that the public and private sectors can learn from each other. It's not about the private sector helping out the beleaguered public sector."* SIMON BERRY, COLALIFE

**Supply chain management.** Maintaining tight supply chains with minimal waste and lean inventories is a challenge for any large organization, including Ministries of Health. A commercially viable intervention in this area is the Novartis Foundation's SMS for Life programme, profiled on page 30.

**Health financing.** At the macro level, innovative financing mechanisms are marshalling billions of dollars in addition to standard forms of development assistance to improve health outcomes. Information about the most prominent mechanisms is available from the Leading Group on Innovative Financing for Development at www.leadinggroup.org.

**Production of health commodities.** Government health systems purchase an enormous variety of commodities, from preventive tools and medicines to needles and linens. In addition to the classic invention of a new product that solves an enduring problem (such as the polio vaccine or the coronary artery stent), finding innovative ways to lower prices, including by engaging the base of the pyramid, can also lead to sustainable business models. A prominent example is MenAfriVac, a low-cost meningitis vaccine whose development was supported by PATH. A case study appears on page 28.

This last category contains perhaps the biggest areas of opportunity for innovators in the private sector. Governments in the developing world have committed to ramp up their spending on health in the coming years; some have pledged to double it or reach levels more common in advanced economies by 2015. As a result, billions of dollars more will be spent on interventions, with an emphasis on those that save time and money.

Diagnostic and treatment devices will be among the leading areas of investment, along with medicines, skilled health workers and preventive measures. Ample demonstration comes from huge demand for low-cost, point-of-care diagnostics for global epidemics. This demand has led to innovative products such as the Zyomyx CD4 test for HIV/AIDS, developed through a partnership led by Imperial College, London.[6] The opportunities will be especially great in maternal and child health. Only one new class of drug has been licensed for obstetrics, for example, in the last two decades.[7]

Governments and other funders are also making large commitments to mobile applications that can extend the reach of government health systems while lowering costs. Donors such as the United States Agency for International Development and the X PRIZE Foundation are committing tens of millions of dollars just to develop these "mHealth" applications.[8]

*"Point-of-care diagnostics are in the midst of a revolution. The leading edge of a similar revolution in mobile diagnostic devices is also clearly visible. Production of these value-creating products can attract demand from both public and private health-care providers and form the basis for a viable enterprise."*

AL HAMMOND, ASHOKA

Annex B includes examples of business models spanning these categories. In addition, an annex provided online at www.norad.no/globalcampaign/innovation summarizes funders' commitments to the Global Strategy for Women's and Children's Health; these commitments give some idea of the size of the market created by government health systems in developing countries.

6 See the CD4 Initiative at www3.imperial.ac.uk/cd4.

7 Fisk NM and Atun R. Market Failure and the Poverty of New Drugs in Maternal Health. PLoS Medicine, vol. 5, no. 1, January 2008.

8 See Wireless Health Strategies at www.wirelesshealthstrategies.com/funding.html.

# CLINTON HEALTH ACCESS INITIATIVE

*Infants born with HIV are at high risk of illness and death, but the risk drops by more than half if they are diagnosed early and put on antiretroviral therapy immediately.*

The introduction of dried-blood-spot (DBS) collection as a testing procedure has allowed a vast decentralization in the collection of samples for early infant diagnosis (EID) testing, since DBS samples are more stable than liquid blood and can be transported in batches. The problem is that many infants' caretakers are not receiving test results in a timely fashion.

In 2010, through UNITAID, we supported more than 375 000 EID tests in 8000 health facilities across 25 sub-Saharan African countries. But with a sample turnaround time of more than six weeks, results are either not ready by the time patients return for their routine immunizations, or patients never return for results. Patients are forced to make return visits when results have not yet arrived, and there is a high loss to follow-up. The initiation of HIV treatment is either delayed or missed altogether. The disease progresses particularly rapidly in the youngest, most vulnerable patients, so every extra week's delay before the initiation of treatment could be life-threatening.

**From inspiration to engineering**

In 2009, CHAI saw an opportunity to use mHealth solutions, specifically printers operating on GSM mobile networks, to deliver test results more quickly to community clinics. Our inspiration came from the Ministry of Health in South Africa, which had installed mobile-enabled printers at clinics to facilitate the direct transmission of test results for drug-resistant tuberculosis from central reference laboratories to remote clinics. CHAI worked directly with two engineering companies to modify the existing printers and make them more commercially viable. Results print directly in the clinic, eliminating the delay incurred by the logistics of transporting documents back to the clinic.

The printers are small, battery-operated devices equipped with a GSM radio, an internal antenna and a thermal printer. The only consumable needed to operate the printer is a roll of widely available thermal printing paper. Following an encounter at the 2010 meeting of the Clinton Global Initiative, CHAI started working with HP to develop a database application that would improve efficiency of sample flow and testing at the labs, analyse EID data and automate the sending of results back to the clinics.

Today, lab scientists and/or data entry clerks are taught how to enter EID test result information into the software program and to use the modem to send this information to the GSM printers at EID collection facilities. Each collection site receives test results only for those samples that were sent from their site. In some countries, the printers retransmit the information to a central system for interpretation of the data using proprietary software.

CHAI has developed enhancements to the basic program in response to requests from teams in different countries: more robust two-way communication between the printers and the sending or receiving nodes, automated transfer of results data from analysers to the proprietary software program, the ability for printers to send results to multiple receiving nodes, and a "please call" button.

### Saving time and saving lives

In our pilots across 11 countries from 2009 to 2011, the time for results to be returned from labs to clinics was significantly reduced. In Nigeria, for example, median turnaround time was reduced to 14 days from 33 days, thereby expediting eligible infants into treatment. Nigeria is now rolling out the project nationwide, with 60 printers serving four labs so far and another 200 printers expected to be installed over the coming months. The printers cost between US$300 and US$495, depending on the supplier.

SMS printers greatly improved turnaround times and solved a major challenge in our efforts to care for HIV-exposed and HIV-infected infants. As mobile phone network coverage is continually and rapidly improving across sub-Saharan African countries, it has become an obvious resource that maximizes the impact of the printer intervention. But this is just the beginning. Mobile technology will allow many more kinds of results and data to be efficiently transmitted between centralized labs and decentralized service providers. Governments are steadily increasing their investments in the printers, and they are also developing software to transmit new kinds of test results.

CLINTON HEALTH ACCESS INITIATIVE

**Problem** Delays in returning results of critical blood tests for HIV-exposed infants, resulting in patients dropping out of care and treatment programmes.

**Solution** SMS-driven printers that connect referral laboratories to community clinics via GSM mobile networks and a simple database application.

**Impact** The printers have cut turnaround time to enable faster delivery of results, for example from an average of 33 days down to 14 days in participating clinics in Nigeria. As a result, thousands of infants will benefit from the timely initiation of antiretroviral treatment.

***Zach Katz*** *is the Director of Diagnostic Services at the Clinton Health Access Initiative. He also served as the organization's Country Director in Cambodia and Deputy Regional Director for South-East Asia. He has a Master's in Public Administration from the Robert F. Wagner Graduate School of Public Service at New York University.*

# D-TREE

*Malnutrition threatens the lives of children throughout the world, contributing substantially to neonatal and childhood mortality.*

In Zanzibar, part of Tanzania, 6% of children have acute malnutrition and 20% to 30% of children with severe acute malnutrition (SAM) died despite treatment. If children with SAM are treated according to the WHO/UNICEF standard treatment recommendations, case fatality rates can be reduced to as low as 5%. Yet guidelines for treatment of acute malnutrition are relatively complex and require the health worker to navigate through pages of information to determine appropriate regimens. The Ministry of Health & Social Welfare has been seeking innovative ways to improve adherence by health workers to these guidelines, and thereby improve the quality of care.

Last year a contact in the World Health Organization connected us with UNICEF and the Ministry's nutrition unit in Zanzibar to discuss this challenge. In July 2010, with funding from UNICEF, we began work on a pilot project to help health workers implement the guidelines using interactive software on a mobile phone. The software also helps the health workers calculate target weights and correct dosages of medications, as well as supporting effective communication with mothers.

**Supporting health workers with technology**

This project exemplifies our vision of utilizing mobile technology to deliver health protocols to front-line health workers at the point of care, and utilizing electronic patient records to provide customized treatments for each patient. The emphasis is not just on collecting and transmitting data but on helping health workers to provide evidence-based medicine. Earlier, we had worked to improve the quality of care of clinicians utilizing Integrated Management of Childhood Illness (IMCI) protocols, which have been shown to improve childhood survival in Tanzania. As a framework for our projects, we developed an on-device Electronic Medical Records System (EMRS), exploiting the same data model as OpenMRS, the widely used open-source EMRS. Then we integrated the EMRS with a "protocol engine" – software that supports the encoding and execution of the decision logic in health protocols and guidelines. Finally, we wrote a synchronization algorithm that can run on both phones and on an OpenMRS server, which makes it easy for health workers to share data. The result was a framework that we call Android/OpenMRS, and we used it as the base for the application in Zanzibar.

The framework's features mean in practice that the phone is able to help structure not only single interactions with children but can also maintain patient records. It supports the extended period of care clearly described in the guidelines as being necessary to ensure effective management of malnutrition for a child. Most importantly, the patient record permits the health worker to review, at each visit, the progression in the child's weight and provides alerts (following rules defined in the guidelines) when the child needs referral for inpatient treatment, or can be discharged from the programme.

**Rapid results**

So far, our programme has rolled out in two facilities in Zanzibar, and we are already seeing a significant reduction in errors in screening children for enrolment, prescribing the proper doses of ready-to-use therapeutic food and, crucially, proper calculation of the child's target weight. According to the 2007 joint statement of the World Health Organization, UNICEF, and the World Food Program on management of acute malnutrition, correct treatment can reduce mortality from about 50% to 5%. Ancillary benefits have included improved recordkeeping, as the phone system is always available – in contrast to paper client cards and registers, which are sometimes misplaced or out of stock. Because of reductions in the prices of mobile phones, the cost of the program will soon

be reduced to about $120 per health worker, or about $1.33 per child at an average treatment site.

There is considerable evidence that severe and moderate malnutrition contribute substantially to childhood morbidity and mortality. If we are to make progress towards reaching Millennium Development Goal 4, we must identify a low-cost way to treat malnourished children. This approach using mobile technology reduces treatment error and saves time by making correct treatment protocols available at the point of care for the busy health worker. In addition, it reduces time needed for reporting, since all data are entered as the child is seen by the health worker.

We anticipate that the successes of this programme and its associated cost savings will lead to inclusion in the basket funding available to local council health plans. We believe that this technology can be part of a bundle of services carried on mobile phones that will assist in: the treatment of nutrition, child health via Integrated Management of Childhood Illness, neonatal care, maternal care, the treatment of chronic disease and many other things. Further, as the price of phones drops, we anticipate the marginal costs of this intervention will be small compared to the savings and benefits that will accrue from its use.

***Steve Ollis*** *is the Deputy Country Director for D-Tree International in Dar es Salaam. He is a project manager with more than 14 years of experience in management consulting, information technology and public health.*

***Tom Routen*** *is a supporting party of D-Tree International and Managing Director of Things Prime, based in Basel, Switzerland. After studying philosophy, he researched logic programming and taught artificial intelligence, computer science and psychology at universities in England.*

D-Tree International

**Problem** Complex decision logic, numerous calculations and tracking of patient data required during health workers' visits for the proper treatment of childhood malnutrition, inviting potential for error that could result in misdiagnosis and ultimatelydeath.

**Solution** Tools to support health workers' decisions and carry patient records on a simple-to-use mobile phone that guides workers through screening, examination, counselling and treatment.

**Impact** Improved quality at the point of care will reduce the impact of severe malnutrition on child and infant mortality; parents seeing successful treatment may encourage others to participate in this programme.

**Sustainability** Reducing treatment error, saving time for the busy health worker and improving reporting will lower the cost of treatment of mal-nourished children as well as improve the care. The successes of this programme and its associated cost savings should invite funding from local govern-ments and manufacturers of ready-to-use therapeutic food products.

# GRAMEEN INTEL

*Rukuna, a young Bangladeshi woman who lives in a two-room home in a small, rural village, was eight months into her first pregnancy when she lost her baby.*

After she recovered, Rukuna made the long trip into Dhaka, a distance of some 12 miles, to find out what went wrong. A doctor at an urban medical facility there advised her that she should go in for regular prenatal visits during her next pregnancy. But Rukuna knew she couldn't afford expensive prenatal visits. Besides, the clinics near her home had no licensed doctors, and she didn't have time for more all-day trips to Dhaka.

Rukuna's circumstances aren't unique, and all too often pregnancies like hers end even more tragically. Every year in Bangladesh, an estimated 12 000 women die from complications related to pregnancy or childbirth – about 30 deaths every day, or 35 deaths per 10 000 women. Lack of access to basic health care and poor nutrition during pregnancy are major causes of the country's high maternal mortality rate.

At the Grameen Intel Social Business, we view those numbers as unacceptable. We believe that women like Rukuna deserve a better chance at health, life and happiness, and we are convinced that the power of information and communications technology (ICT) offers the means to a sustainable solution.

**Pilot project targets risky pregnancies**

With this mission in mind, we came up with a new way of using technology to reduce maternal mortality. In collaboration with Grameen Kalyan, the health-care wing of Grameen Trust, we launched a pilot maternal care project in Bangladesh that covers clinics in five rural townships: Balia, Pakutia, Kusura, Madhabpur and Shaharial.

Each of the clinics serves several outlying villages within a radius of about five miles, and covers a population of 20 000 to 30 000 people.

Community health workers (CHWs) equipped with cell phones visit the homes of pregnant women, many of whom live in small, remote villages where they have limited access to health care. Using simple software tools that we developed in collaboration with Dimagi, and adapted to local conditions with the help of Grameen Intel, the CHWs screen pregnant women for a variety of risk indicators. These include age, length of time since their last medical check-up, number of past pregnancies, C-sections and stillbirths, and any history of heart problems, hip problems or diabetes.

The CHWs send the information they collect over the Internet to central clinics. Once it has been analyzed, it is presented to the doctors at the rural clinics as well as at headquarters in a very user-friendly web interface. They can provide immediate remote feedback using low-cost, ruggedized computers at the rural clinics and the headquarters. Pregnant women who are identified as having a high-risk status are referred for follow-up diagnosis or treatment, including ongoing prenatal care at a village clinic or referrals to specialized health-care providers at larger medical facilities.

So far, CHWs using the solution have determined that close to 50% of the pregnant women who registered for the assessment were at high risk. The ability to track risks helps the health system's administrators to allocate resources and inventories and provide education and training modules to the pregnant mothers based on their risk factors. The technology also enables tracking of the performance of the CHWs and doctors in the rural clinics.

Putting such pregnancy care solutions in place permanently – and in additional clinics – would help to detect and address more potential problems early on, before they become severe enough to jeopardize the life of the woman or her baby, as well

as improving the overall efficiency of the system. To that end, we intend to expand the pregnancy care pilot to 53 Grameen Kalyan clinics by the end of 2012 with the goal of reaching 10 000 women for high-risk pregnancy assessment.

**Moving to sustainable business models**

We are now designing a financial product that builds on our pilot maternal health-care project in Bangladesh. We envision a pregnancy care micro-insurance package offered through Grameen Kalyan that would cover prenatal care (and, in the future, 18 months of infant care) and delivery, including home visits by health-care workers, referrals for complications, nutritional supplements and vaccinations. We will be exploring the development of technology-enabled pregnancy care kits with low-cost hardware and Continua-compliant peripherals such as blood-pressure cuffs, weight scales and glucometers, along with educational and training applications relevant to antenatal care. We will also pilot a business model in which CHWs and female entrepreneurs use these kits to offer basic pregnancy care services, with the support of both government and private doctors for referrals of higher-risk cases.

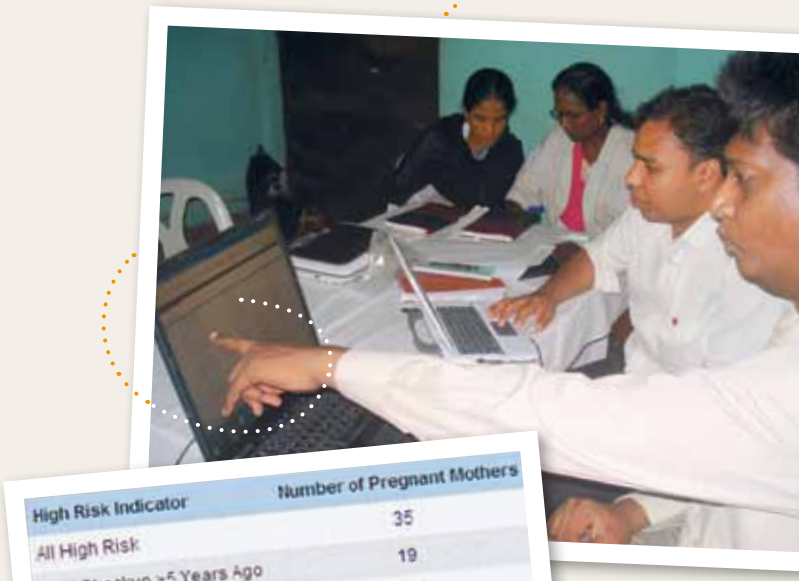
***Narayan Sundararajan*** *is the Chief Technology Officer of the Grameen Intel Social Business. He oversees technology development, strategy and direction for the company, with sustainability and social impact as the key drivers. He is also a core member of the emerging markets health-care team at Intel. Educated at the Indian Institute of Technology (BTech) and Cornell (MS, PhD), he holds 17 patents issued, with 50 pending. Narayan is also a freelance documentary and film-maker.*

**Problem** High maternal mortality due to a lack of prenatal care in rural Bangladesh.

**Solution** Laptop-based software for identifying high-risk pregnancies, tracking patients, allocating resources and training community health workers.

**Impact** Increased coverage of pregnant women with prenatal care; half of assessed women to date have high-risk pregnancies.

**Sustainability** Technology-based packages for pregnancy care may become a "business in a bag" for community health workers and women entrepreneurs; micro-insurance may offer prenatal services.



| High Risk Indicator | Number of Pregnant Mothers |
|---|---|
| All High Risk | 35 |
| Last Checkup >5 Years Ago | 19 |
| 18 or Younger | 11 |
| Previous C-Section | 10 |
| Previous Newborn Death | 3 |
| Hip Problems | 3 |
| Height 150cm or Less | 2 |
| Heart Problems | 1 |
| | 1 |

# PATH

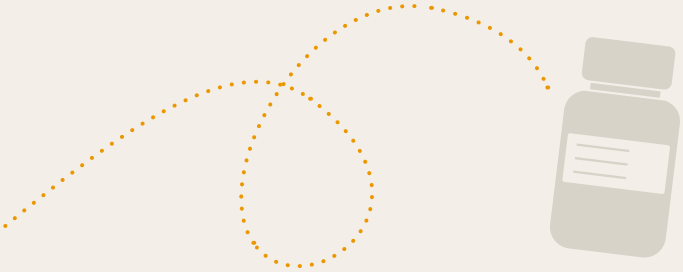
*For more than a century, a particularly destructive strain of bacterial meningitis – an infection of the thin lining surrounding the brain and spinal cord – has swept across sub-Saharan Africa, killing thousandsand disabling many more in each epidemic wave.*

After the largest meningitis outbreak in African history hit the "meningitis belt" in 1996-1997, claiming the lives of 25 000 people, African ministers of health decided that something needed to be done. A network of global health leaders came together to discuss developing a new, more potent vaccine – one that could provide long-lasting protection against meningitis in Africa and could be used preventively.

In 2001, the Bill and Melinda Gates Foundation provided a 10-year grant to establish the Meningitis Vaccine Project (MVP), a partnership between PATH and the World Health Organization (WHO). The partnership led to the development, testing, licensure and widespread introduction of a conjugate vaccine with the promise of protecting millions from group A meningococcal meningitis – the strain of the disease most destructive to people living in the meningitis belt.

MVP negotiated the raw materials and technology transfers from SynCo Bio Partners and the US Food and Drug Administration to the Serum Institute of India Ltd, a vaccine manufacturer. This led to the development of a vaccine against group A meningococci, the most important cause of recurrent meningitis epidemics in the meningitis belt. MVP nurtured collaborative arrangements with European, American and African scientists, epidemiologists, vaccinologists and public health officials to ensure that the strategies that were being followed were sound ones. Clinical trials were carried out at collaborating centres in India, the Gambia, Senegal, Mali and Ghana.

Together with the Serum Institute, MVP found a way to produce a conjugate vaccine for meningococcal A for less than US$0.50 per dose – the price



that African health officials had identified as affordable. The team put together an innovative product development plan for MenAfriVac™ where the raw materials came from one source, the technology from another and the manufacturing capability from a third. The cost of developing the vaccine through this partnership was less than one-tenth the cost of developing a typical new vaccine. These breakthroughs created an affordable solution for millions of Africans who each year fear the threat of dangerous and deadly group A meningococcal epidemics.

In December 2010, people across Burkina Faso, Mali and Niger began receiving the MenAfriVac™ vaccine in the first nationwide vaccination campaigns, predominantly funded by the Global Alliance for Vaccines and Immunizations and the countries' ministries of health. To date, more than 19.5 million people have received the vaccine. Though the vaccine is currently licensed for individuals from one to 29 years of age, MVP is conducting further clinical trials in Africa to obtain licensure for infants under one year. This would allow the vaccine to be integrated into the routine infant vaccin-ation schedules of the World Health Organization's Expanded Program on Immunization. MVP hopes to achieve licensure for MenAfriVac™ use in infants by December 2013.

The MenAfriVac™ vaccine signifies many firsts for the region: the first time a vaccine has been specifically designed for Africa, the first vaccine introduced in Africa before reaching any other continents, and the first time mothers will not have to live in fear of a meningitis epidemic taking their children and destroying lives.

PATH

**Problem** Death and severe debilitation suffered by more than one in three people infected by group A meningococcal meningitis in sub-Saharan Africa.

**Solution** A safe, affordable and long-lasting vaccine called MenAfriVac™, designed specifically for Africa.

**Impact** 19.5 million people in Burkina Faso, Mali and Niger have received the vaccine thus far.

**Sustainability** Due to its low price – less than US$0.50 a dose – the vaccine is affordable for ministries of health across the meningitis belt that stretches across the midsection of the continent, from Senegal to Ethiopia. With more than 450 million people at risk, demand for the vaccine has justified investments in development and production.

**F. Marc LaForce** *is director of the Meningitis Vaccine Project, a partnership of PATH and WHO funded by the Bill and Melinda Gates Foundation. Before joining PATH, Dr LaForce held academic and administrative positions at the University of Colorado and the University of Rochester schools of medicine. He also served on immunization advisory committees for the US Centers for Disease Control and Prevention and for the American College of Physicians.*

# SMS FOR LIFE

*Maintaining adequate supplies of effective anti-malarial drugs at the health facilities in sub-Saharan Africa can be exceptionally challenging, especially in remote, rural communities.*

In many health systems, the managers simply don't know how much inventory is stored at each facility, and stock-outs are the inevitable result. I had been trying to solve this problem since 2006, when I first heard about the "last mile" problem from Silvio Gabriel, Executive Vice-President of Novartis Malaria Initiatives. At the end of 2008, I decided to commit 100% of my time and effort to an initiative to solve the supply-chain problem, and in January 2009 I embarked on this new adventure.

It was a few days after a US Airways pilot had successfully landed his plane in the Hudson River after birds flew into the engines. I thought about the pilot, who did such a fantastic job landing that plane in the Hudson River, and I remember him saying afterwards that he felt his whole life, everything he did, all his training, was preparing him for this one moment. I can really relate to that, and I felt that this project was something that would allow me to utilize all the skills, training and experiences I had gained from 40 years in IT. I was tremendously motivated. I was excited. I felt inside that this was a problem I could solve. If I could apply all that learning to solve this one major and longstanding problem, this would be just magic.

**A partnership of technology heavyweights**

Initiated and led by Novartis, a public-private partnership was established with the Roll Back Malaria Partnership, IBM, Vodafone and the Ministry of Health in Tanzania. This unique partnership developed an application using mobile phones, SMS messages, Internet and mapping technology to visualize weekly inventories of artemisinin combination therapy (ACTs) and quinine injectables in 129 health facilities and 226 villages. A first in the developing world, the application was designed from the start to be scalable and operate in an environment with little infrastructure and support from the health system.

In the course of one year, the team designed the information system, created a data repository, trained staff and implemented the application in a 21-week pilot across three districts in Tanzania: Ulanga, Kigoma Rural and Lindi Rural. These districts are located in three different regions, all supplied by different storage facilities that cover a total of 1.2 million people.

The results were extremely positive. Stock-count data were provided by local facilities in 95% of cases. Data accuracy, based on surveillance visits to health facilities, was 94%. District stock reports were accessed on average once a day by managers.

The proportion of health facilities with no stock of one or more anti-malarial medicine fell from 78% at week 1 to 26% at week 21. In Lindi Rural district, stock-outs were eliminated by week 8 with virtually no stock-outs thereafter. At the start of the pilot, 26% of all health facilities had no malaria medicines of any dose type. By the end of the pilot this stock-out rate had been reduced to just 0.8%, almost full availability. No additional anti-malarial medications were purchased by the Tanzanian government; the inventory problems were resolved entirely by redistributing existing stocks among the health facilities involved in the pilot or by requesting supplies from zonal medical stores.

**Built for scale**

Our application was designed and built as a service that is totally scalable and can be expanded to any number of products, any number of health facilities and any number of countries. Rather than creating a prototype for a pilot that would need to be replaced in order to scale-up the project, we created an application that is already capable of operating at the national level. We believe that the SMS for Life system has the potential to alleviate shortages of anti-malarial drugs and other medicines in rural or under-resourced areas.

***Jim Barrington** is the Global Programme Director of SMS for Life. Previously, Jim was the Chief Information Officer of Novartis, where he was accountable for all Novartis information systems, information technology and infrastructure worldwide. Prior to joining Novartis, Jim worked with ABB in Zurich, Switzerland, where he was Senior Vice-President and Group CIO. Before this, he spent five years in Italy as Vice-President of IT with the Whirlpool Corporation with accountability for all IT in Europe, Middle East and Africa, Asia-Pacific, India and China. He also worked with Gillette for 10 years in the UK and Germany, and spent four years with Eli Lilly in Ireland. Jim was born in Ireland and holds an MBA from Kingston University.*

## "SMS for Life"

Improving medicine access through innovation

**Problem** Local shortages of anti-malaria medicines at health facilities in sub-Saharan Africa because of poor inventory systems with no visibility of stocks.

**Solution** A combination of mobile phones, SMS messages and electronic mapping technology used to track weekly stock levels and the distribution of inventory by district medical managers.

**Impact** The SMS for Life system provided visibility of accurate anti-malarial stock levels at the health facilities, and district management reacted with a significant reduction in stock-outs. At the start of the pilot, 26% of all health facilities had no malaria medicines of any dose type. By the end of the pilot this stock-out rate had been reduced to just 0.8%, almost full availability.

**Sustainability** The application is being offered ona commercial basis to support future viability. Because of this approach, country scale-up is fast and affordable, and the application can be easily expanded to collect data on any medicines or health events.

## 4.3: PRIVATE COMPANIES

Established private companies will work with innovative enterprises in the two ways described below when doing so helps their bottom lines:

**Health value chain.** Making the health value chain run more smoothly lowers costs and can improve health outcomes. Business models can target companies ranging from private hospitals (which need services and commodities just as government hospitals do) to pharmaceutical companies. One innovator in serving drug companies is Sproxil, mentioned in Annex C, which helps to protect legitimate brands from being undermined by counterfeits.

*"Large health-care providers can build partnerships with non-profit organizations in creating and delivering need-based innovations to common people."* SHIVINDER MOHAN SINGH, FORTIS HEALTHCARE

**Health within companies.** The health of employees matters to all companies, since it affects the productivity of their workforces. Promoting health can be a cost-effective aspect of the workplace, as BSR's HERproject, profiled on the next two pages, has shown in its work with multinational companies.

Annex C offers an example of each type of business model.

# HERPROJECT

*The global economy has brought millions of women between the ages of 16 and 25 to work in exporting factories all across the developing world.*

Because many of these women are migrants working long hours, they are often isolated from traditional support networks that help them with health care and other social services. Yet their presence in global supply chains offers a unique opportunity to improve the welfare of these women, many of whom are entering the formal economy and earning cash wages for the first time.

In 2005, BSR conducted a study with the Packard Foundation to find out what the implications of this large-scale migration of young women would be for reproductive health. The study, which examined six countries, found an enormous need among female factory workers for basic information about their general and reproductive health. Our research also found that very few female factory workers participated in local health programmes set up by non-governmental organizations.

On the basis of these findings, the BSR team started to reach out to our members, drawn from a network of more than 280 companies including more than 50 consumer product brands and retailers. We were surprised by a very positive response and an eagerness to get involved. Around the same time, we became aware of some exciting research: a USAID-funded programme called Extending Service Delivery (ESD) had found a 3-to-1 return on investment for a factory-based women's health programme in Bangladesh. Having identified a clear health need and local service gap, as well as business relevance, we began to piece our programme together.

BSR | her project

**Problem** Poor awareness of general and reproductive health issues among women working in factories.

**Solution** Use of peer educators and factory-based health services to meet expanded demand.

**Impact** HERproject has benefited more than 100 000 women in more than 70 factories in Bangladesh, China, Egypt, India, Mexico, Pakistan and Vietnam. More than 10 000 female factory workers have had their health assessed, and more than 3000 peer educators have been trained.

**Sustainability** Factory managers who see the value of investing in women's health should implement the model as a driver of lower costs and increased revenue; research in Pakistan and Egypt is investigating the magnitude of this added value.

**A peer-to-peer model for health education**

We launched HERproject (Health Enables Returns) in 2007 in China with support from the Packard Foundation and participation by BSR member company Nordstrom. Today HERproject is also active in Bangladesh, Egypt, India, Indonesia, Kenya, Pakistan and Vietnam in factories belonging to Abercrombie & Fitch, ASDA (Wal-Mart), Columbia Sportswear, HP, J.Crew, Levi Strauss & Co., Li & Fung, Marks & Spencer, Microsoft, Primark, Talbots and Timberland. The project trains factory workers, line supervisors, clinic nurses and human resources staff to teach their peers about topics including nutrition, hygiene, reproductive health, pre- and post-natal care, family planning, sexually transmitted infections and other infectious diseases, malaria and harassment and violence. Peer educators pass on information during scheduled small-group training sessions

and new-worker orientations, and casually during work, lunch and travel to and from the factory.

We strive to work within the business environment by limiting interference with business activities. For scheduled training sessions, managers work together with peer educators and clinic nurses to avoid costly disruptions in production. For example, in one factory in India, workers are taken for training during "style changes" – times when the production process shifts from one garment to another.

The HERproject model emphasizes local ownership. International companies and factories pay local NGOs directly for the local costs of project implementation, and BSR's global programme management is funded by the Swedish International Development Cooperation Agency and the Levi Strauss Foundation. In some cases, factories may struggle to provide health information or services on their own. To address this need, we help them to find local partners that can deliver high-quality, low-cost programmes in the future. Factory programmes also include efforts to link raised awareness to health services, whether by improving factory-based clinics or creating links with government hospitals and private women's clinics, mobile and otherwise.

**Health results and business benefits**

With more than 70 completed programmes, HERproject has now reached more than 100 000 women. More than 10 000 women have been surveyed on their health needs, and more than 3000 women and men have been trained as peer educators. So far, the cost of the 12-month training program has ranged from US$5000 to US$7000 per factory, paid entirely by participating companies to the local non-governmental organizations that implement HERproject.

We have been careful to evaluate the results of our programmes. At factories in Vietnam, for example, 97% of women (compared with 59% in a control group) knew to use condoms to prevent sexually transmitted infections. In Pakistan, safe pre- and post-natal care knowledge greatly improved; the number of women who knew to get a tetanus toxoid immunization during pregnancy increased to 83% from 30%, and the number of women who learned the importance of post-natal check-ups rose to 92% from 50%.

These improvements in health are money-savers for factory owners. In Pakistan, women who improved their menstrual hygiene as a result of increased awareness were 36% less likely to report difficulty meeting production targets during their menstrual period, and the share of women taking sick leave during their period fell to 13% from 18%. Initial return-on-investment analyses suggest that women in the factory worked an average of 2.5 more hours per month during the project, representing an additional 615 days of work per year. These studies are being conducted in partnership with the USAID-funded Extending Service Delivery project, and will be published in July 2011.

*As HERproject manager, **Racheal Yeager** oversees the implementation of programme activities in Bangladesh, China, Egypt, India, Indonesia, Kenya, Pakistan and Vietnam. She manages programme alignment, communications, development outreach and private-sector recruitment. Racheal also leads related research with the International Finance Corporation on programmes and policies that support women's equality and empowerment in special economic zones around the world.*

# 5: FACILITATING SUSTAINABILITY

Innovations aimed at improving women's and children's health have proliferated in the past several years, but very few have become self-sustaining. Pilot programmes and prototype projects are still the rule. Only in a few cases – including RapidSMS in Rwanda (case study online), the Health Management and Research Institute in Andhra Pradesh (mentioned in Annex A) and the Clinton Health Access Initiative's SMS printers in Nigeria (profiled on page 22) – have government health systems adopted or pledged to adopt the innovations throughout their coverage areas.

*"We need to demonstrate something innovative in a short period of time, but at the same time we have to demonstrate results with rigorous evaluation."* STEVE OLLIS, D-TREE

Barriers to sustainability can be manifold. Superficially, the main barrier often seems to be an enterprise's inability to attract sufficient funding, either at the start-up/pilot stage or to finance operations at scale. Yet this situation is usually a symptom of other deeper problems:

**Internal barriers (problems in the business plan)**

- Vague articulation of the business model for the innovation.
- Poor or no evaluation of results.
- Organization built only for the pilot stage of operations.
- Lack of understanding of what scale-up requires.

**External barriers (problems in the environment for innovation)**

- Lack of information flow between innovators and potential partners/funders.
- Absence of an interface between government and the private sector.
- Poor coordination between innovators.
- Difficulties negotiating with large partners in the private sector.
- Little demand to support a market for interventions.

Innovators do not have to solve all of these problems on their own. The public sector, private companies, donors, non-governmental organizations and research institutions all have the capacity, and often an incentive, to help them, so that the most productive innovations can become viable in the long term.

## 5.1: SOLVING PROBLEMS IN THE BUSINESS PLAN

**Developing the business model.** This is usually the first step in drawing up an overall business plan. It is generally required for obtaining start-up funding, especially as part of a "request for proposals" contracting process, but the case should still be valid for business plans implying larger scale in the long term. Starting with the needs of providers of health services is one important way to ensure that a new intervention creates value. Another way is to engage with the customers – the users of the intervention – as it is being developed.

*"The differences between organizations provide the basis for partnerships, since you need things that you don't have."* SYBIL CHIDIAC, CARE

These customers might be individuals, companies or the government health system. If a major public or private provider of health services is not invested in a project, then its chance of becoming a mainstream part of health-care administration or delivery will be small. Another way to guarantee that innovations truly create value is to encourage leadership by people in their own communities, as opposed to foreigners who come in with money and expertise but lack local knowledge.

**Rigorous evaluation.** Once a business model is up and running as a start-up or pilot, evaluation becomes important for taking the next step. Attracting demand requires that an intervention have a positive, measurable and cost-effective impact on potential customers' objectives: better health outcomes, smoother functioning of the government health system or, in the case of for-profit companies, potentially a variety of contributors to the bottom line.

*"We can open doors for the innovators and entrepreneurs whose ideas deserve further study by organizing forums and meetings of stakeholders. From there, we can connect them with the people in the public and private sectors who can turn small-scale ideas into large-scale reality."* TEGUEST GUERMA, AFRICAN MEDICAL & RESEARCH FOUNDATION

Metrics for impact could therefore include lives saved per dollar spent, quality-adjusted health years added per dollar spent, hours of health workers' or administrators' time saved per dollar spent and a simple rate of return. To bolster the rigour of their evaluations, innovators may wish to work with specialist non-governmental organizations such as Innovations for Poverty Action or research institutions such as the World Health Organization.

**Multi-stage planning.** With a rigorous evaluation in hand, attracting new demand becomes a possibility. Then the question is whether the innovator's organization is ready to grow – typically, from the founder plus a few other co-workers to an enterprise of 50 or 100 people. Answering this question is not easy without a comprehensive, long-term business plan. To be truly comprehensive, the business plan may encompass one business model for reaching the pilot stage and another for scale. For example, an enterprise might solicit a one-time grant from a foundation to demonstrate its innovation in a small setting, with the hope that the government health-care system would become its customer on the strength of that pilot.

### 5.2: SOLVING PROBLEMS IN THE ENVIRONMENT FOR INNOVATION

**Sharing information.** A fundamental problem for innovators is that the decision-makers who could provide the demand for their interventions may not know about them. Non-governmental organizations involved in health can advocate for innovators, serving as bridges to major organizations in the public and private sectors. They can also convene groups of innovators to share experiences – a particularly important opportunity for those who are new to the health sector or have not run small enterprises in the past. For them, it can be useful to find out in advance what is entailed in creating a robust business plan and scaling up an organization.

*"We can cultivate leadership from countries for these projects; it's an investment worth making."* NEAL LESH, DIMAGI

In addition, research institutions including universities and the World Health Organization can bring the most promising innovations to the attention of decision-makers. They can also help to evaluate and synthesize the evidence-base generated by the innovators and their partners. By creating long-term relationships with leaders in the health sector, knowledge-brokers working within the research institutions can build trust and help more useful innovations to become part of the mainstream.

**Public-private interface.** In many low-income countries, there is no policy framework under which the government health system can work with or incorporate the efforts of the private sector. To promote useful partnerships, this interface needs to be much more than a series of informal conversations. The government health system may be unable to form working partnerships without new laws that establish working norms, new departments to manage the relationships and new funding windows for pilots and scaling up successful interventions in cooperation with the private sector.

*"When we're in a competitive space, evidence becomes increasingly warranted for making claims of validity of one approach."* GARRETT MEHL, WORLD HEALTH ORGANIZATION

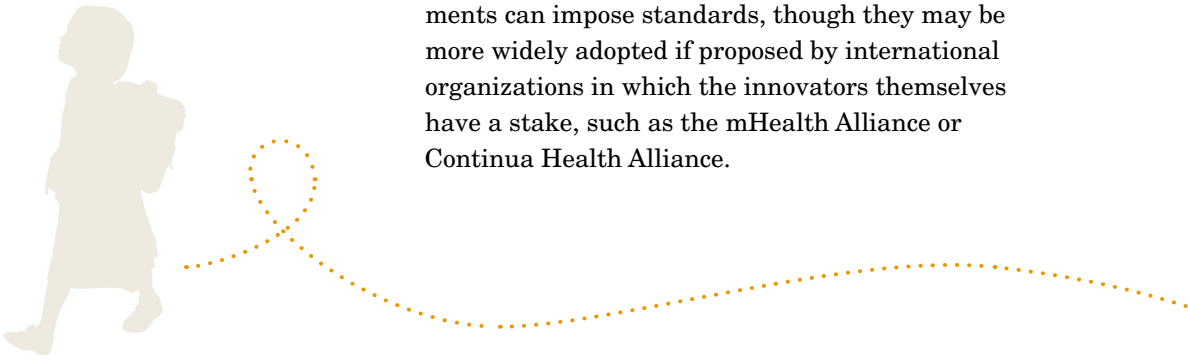
Ministries of Health that lack an effective interface can work with external partners in the private and non-profit sectors to replicate successful policies and practices from other countries. International organizations such as WHO can help to guide this process by researching best practices and fostering cross-border cooperation between ministries. Additional guidance for establishing the roles of partners in a successful collaboration is available in publications such as the 2011 report of the Africa Progress Panel, The Transformative Power of Partnerships.

*"Governments and the private sector talk informally all the time; communication breaks down when they get into the nuts and bolts of creating a partnership."*

SANIA NISHTAR, HEARTFILE

**Coordination between innovators.** Coordination allows innovators to work together and avoid duplicating each other's efforts. Working together can add value in ways that make scale easier to attain: bundling interventions to offer a package of services to providers (as CommCare, profiled online, aims to do with timesaving tools and medical guidance for health workers), co-developing interventions to take advantage of differences in expertise (as PATH has done with a variety of partners) and integrating interventions to increase their usefulness (such as the combination of mobile-based medical records and health insurance plans based on mobile money platforms). Forums such as the Center for Health Market Innovations, Health Unbound and the Business Innovation Facility can serve as clearing-houses for information and online forums where innovators can meet each other.

Coordination can also go beyond individual collaborations to cover a whole class of innovators, as in the case of national and international standards. Standards for medical treatment, transmission of personal information and software architecture ensure that innovators do not reinvent the wheel as they create new interventions. Governments can impose standards, though they may be more widely adopted if proposed by international organizations in which the innovators themselves have a stake, such as the mHealth Alliance or Continua Health Alliance.



*"A bundled set of services can potentially lower administrative costs and increase access to the basic preventive, chronic and emergency services the average person needs."*

CLAIRE PIERRE, INTERIM HAITI RECOVERY COMMISSION

**Negotiating with partners.** Innovators are usually at the head of small for-profit or non-profit enterprises, but to succeed they often need to work with partners in the private sector that are much larger. Business models that use mobile technology for health, for example, may require concessionary rates for SMS or calls to be viable in the long term. Yet it is hard for a small enterprise to negotiate head-to-head for these rates. Start-ups can band together in order to deal with mobile network operators – or to approach the public sector in hopes that government would mandate lower rates or some other subsidy. In doing so, it can be helpful to have the support of a large multilateral group or non-governmental organization, such as the International Telecommunication Union or the GSM Association.

*"As you're creating new applications or building a new business model, without a set of standards it becomes much more of a jungle."* ZACHARY KATZ, CLINTON HEALTH ACCESS INITIATIVE

The same goes for enterprises that hope to use distribution or logistics systems run by much bigger companies. In this case, however, the companies may find it in their interest to keep their doors open; innovators with truly sustainable business models will be able to propose some kind of benefit to the companies in return for their partnership.

**Creating demand.** New and stronger markets are the key to ensuring the sustainability of innovative interventions, especially those based in the private sector. The public sector can support the creation of demand by engendering a favourable environment for local entrepreneurs; this helps to raise living standards and allows buyers and sellers to find each other more easily. Governments can also provide a source of demand by selecting and expanding projects whose potential to improve women's and children's health is supported by rigorous research and evaluation.

*"Respect for difference is what allows you to partner with someone in an even-handed way."*

NKOSANA MOYO, AFRICAN DEVELOPMENT BANK

# 6: NEXT STEPS

In the work we do for the Innovation Working Group (IWG), we have been impressed by the interest shown from around the world in innovation for women's and children's health. Just this spring, the IWG received 50 proposals for catalytic support of innovative projects in a matter of two weeks; Saving Lives at Birth: A Grand Challenge for Development, led by the United States Agency for International Development, received close to 600 proposals in just three months.

These demonstrations of interest have revealed:

- **Strong demand** for catalytic support.
- **An extensive pipeline** of products, from more comprehensive approaches at an early stage of development to simple single-type interventions already scaled up in some places.
- **The need to capture experiences,** good and bad, and identify bottlenecks to build the knowledge base for effective action.
- **The urgency of engaging untapped constituencies** of entrepreneurs that have great potential for being game-changers, with young people and university students being the most obvious examples.

In order to create the enabling environment to address these factors, the IWG will join other partners to facilitate the establishment of:

- **Programmes** that can provide catalytic support over a period of 3-5 years, with the target of bringing 5-10 sustainable innovations to scale every year.
- **Marketplaces** where individuals from different constituencies can meet virtually, nationally and globally.
- **A network of knowledge centres** ("solution analysis centres"), often university-based, which will also nurture entrepreneurs.

The IWG has given a priority over the last year to mobile health innovations because of their enormous and immediate potential. For the coming year, the IWG plans to devolve much of this area to the mHealth Alliance and other partners. Its new priorities will be medical devices and commodities and the exploration of new sectors such as finance.

Innovators and entrepreneurs have many other avenues open to them, too. Several of the governments, donors and large companies mentioned in this report are open to direct communication and interaction with innovators, and many of the innovative organizations profiled here are themselves open to partnerships. There are also several international meetings over the next year at which innovators can make contacts, learn about new funding windows or announce their commitment to the Every Woman Every Child joint effort; meetings like the UN General Assembly, the mHealth Summit and the World Economic Forum. Those seeking to improve women's and children's health in a sustainable way will find a wealth of resources and advice awaiting them.

*The Innovation Working Group of the Every Women, Every Child initiative is co-chaired by Tore Godal and Scott Ratzan*

***Tore Godal** is Special Advisor to the Prime Minister of Norway for Global Health*

***Scott Ratzan** is Vice-President for Global Health, Government Affairs and Policy at Johnson & Johnson*

# 7: SUMMARY

## THE CHALLENGE OF INNOVATION IN THE HEALTH SECTOR

There is a new narrative in the social and economic development of countries around the world: it is a narrative of empowerment and hope. It relies not solely on the supply of assistance from generous donors in wealthy countries, but more on generating demand amongst people in developing countries. This demand will form the basis for sustainable business models that will deliver the goods and services people need to raise their own living standards. Tapping that demand begins with innovation; the widespread adoption of ideas that create value.

*"Instead of designing a solution and going to look for problems, the more effective approach is understanding a problem, defining it well, and then designing solutions that address that problem. If you design solutions that can be highly adaptable and can be applied to similar problems, then you can get scale."*

PAUL ELLINGSTAD, DIRECTOR OF GLOBAL HEALTH IN HP'S OFFICE OF GLOBAL SOCIAL INNOVATION

This is true in the promotion of women's and children's health as it is in every other critical area of development. Here, an important component for creating value is relevance to the needs identified by United Nations Secretary-General Ban Ki-moon's Global Strategy for Women's and Children's Health. Studying these needs can provide the foundation for a sustainable intervention. Building upon that foundation typically requires partnerships as part of a business plan that will guide the new enterprise – be it for-profit or non-profit – through its pilot or start-up stage and onward to a level of scale at which it becomes self-sustaining. Along the way, monitoring and evaluation will help to gauge the balance between value created and costs, as well as the need for any course corrections. They can also provide the evidence base for further funding or demand from potential customers.

### BUSINESS MODELS FOR INNOVATORS

This report describes business models that innovators have used with success, as well as case studies of some of the most powerful and ingenious innovations in women's and children's health. They fall into these categories:

- **Business models serving households** – remote delivery of services, in-person delivery of health care and advice, health insurance and novel distribution strategies.
- **Business models serving government health systems** – health information systems, support for health workers, supply chain management, health financing and production of health commodities.
- **Business models serving private companies** – health value chains and health within companies.

In each of these areas, the right model for a given innovation may be for-profit, non-profit or a hybrid, and the source of demand could come from individuals (depending on their ability and willingness to pay), private companies (in the health sector or not) or government health systems (or their external funders).

## FACILITATING SUSTAINABILITY

Mainstreaming innovations – allowing them to reach the scale that gives them maximum impact and financial viability – is a difficult but attainable objective for innovators and providers of health services. At present, too many interventions with the potential to save lives are stuck in their pilot or start-up stages. Taking the next step requires

a package of actions, and not just on the part of the innovators themselves.

For innovators, the primary concern is solving problems in the business plan:

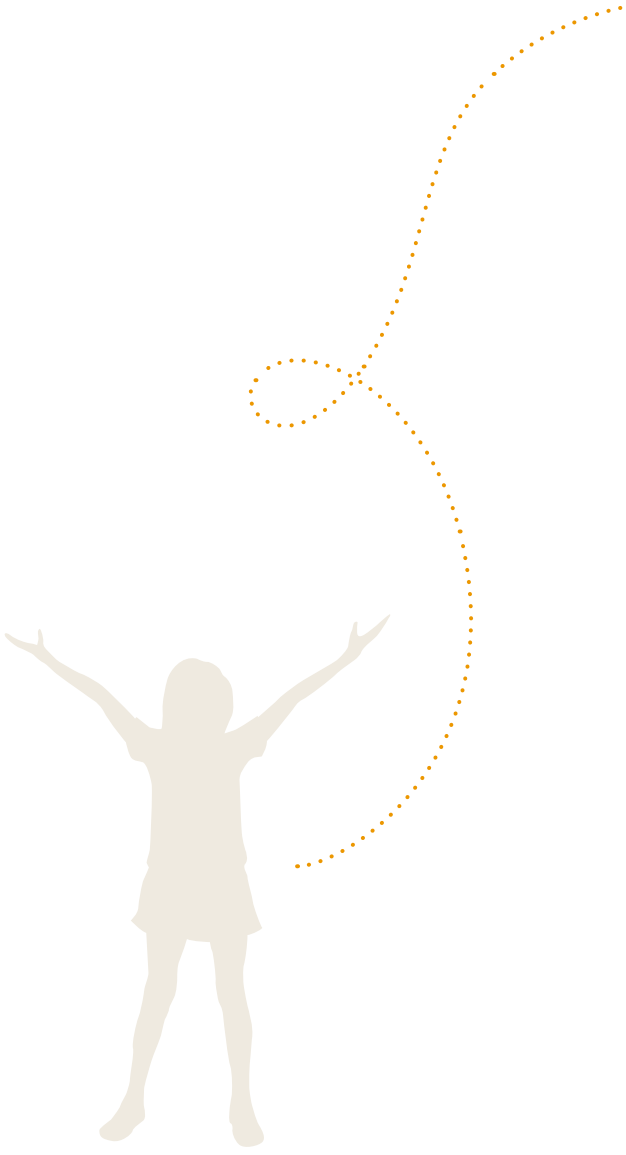
- **Making the business case** in a way that demonstrates its relevance to the needs of women and children.
- **Rigorous evaluation** to show the relationship of costs to health outcomes in a way that can be compared to other interventions.
- **Multi-stage planning** with the potential for different business models for proof-of-concept, pilot and self-sustaining scale.

For other actors in the public, private and non-profit sectors, the priority is solving problems in the environment for innovation:

- **Sharing information** so that innovators and decision-makers can match their respective capacities and needs.
- **Public-private interface** that creates processes for innovators from the private sector to work with government health systems.
- **Coordination between innovators** to avoid duplication of effort and agree on standards that allow interventions to be bundled and integrated.
- **Negotiating with partners** either as coalitions of innovators or with the aid of advocacy groups and independent agencies.
- **Creating demand** to support valuable interventions in a sustainable way.

Further perspectives on the innovation process, as well as useful links and additional case studies, are presented at the end of this report and online at www.norad.no/globalcampaign/innovation.

The guidance in this report is intended to empower and inspire tomorrow's innovators – to go from best practice to next practice. The Millennium Development Goals for Health and the objectives of the Global Strategy for Women's and Children's Health will not be achieved without them.



## **ANNEX A:** BUSINESS MODELS DELIVERING INTERVENTIONS/PRODUCTS TO HOUSEHOLD

| CATEGORY | MODALITY | EXAMPLE | COUNTRY | STATUS | BUSINESS MODEL |
|---|---|---|---|---|---|
| Remote delivery of services | Subscription-based health messaging | mDhil | India | For-profit | Users pay a daily fee for subscriptions to SMS messages on avoiding health risks; operating expenses covered by subscription revenue<br><br>www.mdhil.in |
| | | MOTECH (Grameen Foundation) | Ghana | Public | New mothers receive voice messages on their mobile phones with health advice; expenses paid by donors; scaling up depends on funding and partnership with network operator<br><br>See case study online |
| | | Cell-Life | South Africa | Non-profit | New mothers receive advice and appointment reminders via SMS; expenses paid by funders/donors<br><br>See case study p. 12 |
| | Telemedicine | E-Health Point | India | For-profit | Patients receive treatment by physicians via video links between remote site and central clinics; costs are reduced by efficient use of physicians' time and low-cost diagnostic techniques and devices<br><br>www.ehealthpoint.com |
| | Call centres | 104 Advice (Health Management and Research Institute) | India | Non-profit | Health advice for outpatient conditions is available via a 24-hour call centre, with most calls received from mobile phones; costs are paid by the state government and a foundation<br><br>www.hmri.in |
| | Media campaigns | Development Media International | Burkina Faso and others | Hybrid | Governments and other funders pay for multimedia public-health campaigns, which may be more cost-effective in saving lives than other interventions<br><br>See case study online |
| | Self-directed diagnosis and care | Patient safety tool for mothers and babies (World Health Organization) | Pilots planned for India and Ghana | Public | New mothers use a mother/baby checklist to ensure safe discharge from skilled care and perform self-checks in the first seven postnatal days. A combination of voice and SMS are used to remind mothers to perform self-checks dependent upon pre-assessed levels of literacy. Upon identifying a danger sign, a mother's call is connected to an interactive voice recognition system to arrange for emergency care. Development expenses are to be paid by funders while scale will be supported through partnership with local phone companies<br><br>www.who.int/patientsafety/patients_for_patient/mother_baby/en/index.html |
| | Bundled services | Kenya Integrated mobile Maternal, Newborn and Child Health information platform | Kenya | Public | Pregnant women register and receive timely health advice through voice and text messages to their mobile phone; m-vouchers to pay for delivery at performing clinics of their choice; and improved monitoring and service delivery from community health-care workers linked to this platform; KimMNCHip will be scaled up to the national level by a private-public non-governmental consortium |
| In-person delivery of health care | Cross-subsidized treatment | Neonatal Intensive Care and Emergencies Institute for the Newborn | India | Non-profit | Treatment for critical newborn cases is charged on a sliding scale to cover costs; some capital costs borne by government and a foundation<br><br>www.nicefoundation.in |

■ At scale or scaling up ■ Pilot not yet complete ■ Successfully piloted

| CATEGORY | MODALITY | EXAMPLE | COUNTRY | STATUS | BUSINESS MODEL |
|---|---|---|---|---|---|
| | | Aravind Eye Care System | India | Non-profit | Eye care from basic exams to surgery charged on a sliding scale, with a premium service for wealthier patients<br><br>See case study online |
| | Prepaid treatment packages | LifeSpring Maternity Hospitals | India | For-profit | New mothers receive a bundle of antenatal and maternal services for a fixed fee, which covers operating expenses<br><br>See case study p. 16 |
| | Voucher system | Reproductive Health Output-Based Aid | Kenya | Public | Private care providers redeem vouchers used by new mothers to pay for antenatal and maternal services; expenses paid by government/donors |
| | Conditional cash transfers | Interactive Research & Development | Pakistan | Non-profit | Conditional cash transfers are used to give health workers an incentive to detect new cases of tuberculosis, and to give parents an incentive to bring their children to health facilities for timely immunizations; success of the programme has led to discussions of a roll-out to all of Karachi, a city of 18 million<br><br>See case study online |
| | Health mentoring | mothers2-mothers | Nine sub-Saharan countries | Non-profit | Mothers living with HIV are trained to advise other mothers on healthy living and avoiding mother-to-child transmission of the disease; expenses are paid by funders<br><br>See case study p. 18 |
| Health insurance | Employer-provided plans | Naya Jeevan | Pakistan | Non-profit | Companies in the supply chains of multinational corporations offer subsidized health plans to their employees, who pay a minority share of the premiums; premiums cover operating expenses<br><br>See case study online |
| | Self-paid plans | Salud a Su Alcance (EPSS) | Guatemala | For-profit | Families purchase basic health plans designed to meet their ability to pay; premiums cover operating expenses<br><br>www.saludasualcance.net |
| | Self-insurance | Changamka Microhealth | Kenya | For-profit | Individuals purchase smart cards to which they can add value using mobile money accounts; stored value can be used to purchase outpatient services<br><br>www.changamka.co.ke |
| Novel distribution strategies | Base of the pyramid distribution | Comunidad Más Saludable<br><br>(Pfizer) | Venezuela | For-profit | The company employs people from the base of the pyramid who can access retail points in underserved communities inaccessible to traditional distribution networks<br><br>www.pfizer.com.ve/Comunidad+Saludable |
| | Existing commercial distribution networks | ColaLife | Zambia | Non-profit | "Aid pods" filled with products for health and sanitation are carried in unused space in crates on Coca-Cola distribution networks; revenue from sale of the pods is shared throughout the distribution chain<br><br>See case study p. 14 |

## **ANNEX B:** BUSINESS MODELS DELIVERING INTERVENTIONS/PRODUCTS TO GOVERNMENT HEALTH SYSTEM

| CATEGORY | MODALITY | EXAMPLE | COUNTRY | STATUS | BUSINESS MODEL |
|---|---|---|---|---|---|
| Health information systems | Electronic medical record generators | ChildCount+ (Millennium Villages Project) | Kenya | Non-profit | Community health workers use mobile devices to generate health records for young children, leading to early detection of health problems; expenses are paid by donors<br><br>www.childcount.org |
| | Communication of diagnostic information | SMS printers (Clinton Health Access Initiative) | Pilots in 11 countries; scaling up in Nigeria | Hybrid | SMS printers receive results of tests for infant HIV and other conditions at remote sites, increasing likelihood of successful treatment; governments purchase printers from for-profit companies; software is donated<br><br>See case study p. 22 |
| | | Project Mwana (UNICEF) | Zambia, Malawi | Non-profit | SMS-based systems alert mothers to keep their post-natal care appointments, and expedite the delivery of HIV test results via secure mobile data connections; improvement in outcomes may justify investment for government health systems<br><br>See case study online |
| | Surveillance of public and individual health | RapidSMS/ mUbuzima | Rwanda | Public | Community health workers use mobile devices to record health information and send it to central servers for government health system administrators; costs of open-source software are paid by the government<br><br>See case study online |
| | | Grameen Intel Social Business | Bangladesh | Hybrid | Community health workers use mobile phones to send information about pregnant women to central facilities; the information is processed and presented to doctors to identify high-risk pregnancies; this mechanism will be linked with a pregnancy micro-insurance package whose vendors will be CHWs and independent female entrepreneurs<br><br>See case study p. 26 |
| | | Mailafiya (Intel and Government of Nigeria) | Nigeria | Hybrid | Mobile medical teams use netbooks and open-source software for data collection and guidance in drug dispensing, treatment follow-up and referrals; computers were donated by Intel for a large-scale pilot via the government health system in the Nigerian Federal Capital Territory<br><br>www.fctmdgmailafiya.org |
| | | Netbooks for Auxiliary Nurse Midwives (Vidya Pratishthan Institute of Information Technology et al.) | India | Non-profit/ public | Auxiliary Nurse Midwives in Baramati are equipped with netbook computers to simplify and improve record-keeping by the government health system and help to track patients' risks, diagnoses and treatments; scale-up would require government funding justified by these efficiencies<br><br>See case study online |
| | Information delivery for accreditation processes | Clinton Health Access Initiative | Liberia | Non-profit | Personal digital assistants with global positioning system capabilities are used to identify the latitude and longitude coordinates of health facilities in the Ministry of Health's accreditation process to create an accurate mapping; the low cost of new technology implementation, flexibility within severe infrastructure constraints, quick uptake by users and successful outcomes may justify future expenditures on this kind of programme |

■ At scale or scaling up ■ Pilot not yet complete ■ Successfully piloted

| CATEGORY | MODALITY | EXAMPLE | COUNTRY | STATUS | BUSINESS MODEL |
|---|---|---|---|---|---|
| | Information gathering for health system management | Clinton Health Access Initiative | Rwanda | Non-profit | A District Health System Strengthening Tool assists district health managers with data from annual surveys of all 500 public health facilities in Rwanda, accessed directly from a web-based front-end linked to the Ministry of Health in Kigali; efficiency gains from the programme may justify future funding by the government health system and donors |
| | | openXdata (University of Bergen and others) | Worldwide | Hybrid | An open-source tool offers a variety of applications for replacing paper-based record-keeping, all governed by a hybrid business model made up of commercial providers, research groups, non-profits and government<br><br>See case study online |
| Support for health workers | Treatment guidance | Android/ OpenMRS (D-Tree) | Tanzania | Non-profit | Community health workers use mobile software to diagnose childhood malnutrition, prescribe treatment regimens and track patients' progress; gains in efficiency and error reduction may justify government expenditure<br><br>See case study p. 24 |
| | | CommCare (Dimagi) | Tanzania | For-profit | A case management tool operating on inexpensive mobile phones decreases the workload and improves the efficiency of health workers while supplying data about workers' activities to administrators; gains may justify government expenditure<br><br>See case study online |
| | Information for appointment follow-ups | Clinton Health Access Initiative | Malawi | Non-profit | Messages delivered to mobile phones via FrontlineSMS supported community health workers at four of 23 sites in the district of Machinga in Malawi in follow-up with patients who either missed an appointment or needed to return to a health facility to receive laboratory results; preliminary pilot results reflected significantly more follow-ups for the SMS-based facilities, representing potential cost savings to the government health system |
| | Training | IMCI Computerized Adaptation and Training Tool (Novartis Foundation and World Health Organization) | Indonesia, Peru, Tanzania and Zambia | Non-profit/ public | Health workers use a computer to train in Integrated Management of Childhood Illness (IMCI), with adaptations for local circumstances and new developments in treatment; the Novartis Foundation funded the distribution of the system to 75 countries implementing IMCI<br><br>www.novartisfoundation.org |
| | Bundled services | Integrated Mobile Health Platform for Maternal and Child Health (Handheld Solutions & Research Labs) | India | For-profit | A platform based on openXdata for field data collection targeted to any low-cost Android smartphone is being designed to help community health workers meet the needs of pregnant women and will help in tracking and follow-up throughout the cycle, through antenatal checkups, delivery in an institutional setting and post-delivery follow-up of both the mother and the child; the platform will be marketed to government health systems and other providers<br><br>www.handsrel.com |
| | | Telemedicine in Ghana (Novartis Foundation) | Ghana | Non-profit | Implementation of a knowledge system for treatment referrals with complementary infrastructure will reduce unnecessary transportation and ensure resource availability; health-care personnel will also be inducted in the use of mobile technologies and teleconsultation for health<br><br>www.novartisfoundation.org |

| CATEGORY | MODALITY | EXAMPLE | COUNTRY | STATUS | BUSINESS MODEL |
|---|---|---|---|---|---|
| | | DHIS2Mobile (University of Oslo) | India | Public | An open-source application for low-end mobile phones is distributed to all nurses in the state of Punjab, who are trained to report data to the central health system administration; they can also obtain technical support and communicate with colleagues and people under their care<br><br>See case study online |
| Supply chain management | Automated inventory systems | SMS for Life | Tanzania | Hybrid | A mobile-based reporting system monitors stocks of anti-malaria drugs and facilitates the transfer of inventory between facilities to eliminate stock-outs; the model was developed as a public-private partnership but is being offered on a commercial basis<br><br>See case study p. 30 |
| Health financing | Innovative financing mechanisms | UNITAID | Various | Public | Small taxes collected on sales of airline tickets are pooled to fund treatments and preventive measures for HIV/AIDS, malaria and tuberculosis; more than US$1.5 billion have been collected so far<br><br>www.unitaid.eu |
| | Standardized funding platforms | Health Systems Funding Platform (Global Alliance for Vaccines and Immunisation and others) | Worldwide | Public/ non-profit | A universal platform incorporating national health strategies and assessments of these strategies by major international donors facilitates applications for and disbursements of funding for health interventions; the platform saves time and reduces bureaucracy so that more resources can be used to deliver interventions<br><br>See case study online |
| Production of health commodities | Low-cost manufacturing of existing products | Aurolab (Aravind Eye Care System) | India | Non-profit | Purchases of intellectual property permit the large-scale manufacturing of eye-care commodities in a low-cost environment; products are sold around the world |
| | Low-cost replacements for existing products | MenAfriVac (PATH) | Burkina Faso, Mali, Niger | Hybrid | The Bill & Melinda Gates Foundation financed the creation of a low-cost meningitis vaccine; funding for mass purchases from the Serum Institute of India (a for-profit company) comes from governments and the Global Alliance for Vaccines and Immunisation<br><br>See case study p. 28 |
| | | Global BioDiagnostics | Worldwide | For-profit | The company manufactures a variety of low-cost diagnostic tests for dengue fever, malaria, influenza and other diseases for sale on global markets<br><br>www.globalbiodiagnostics.com |
| Multiple categories | Multiple modalities | Mobile Health Platform (NetHope) | Kenya, Mozambique, Zambia | Non-profit | MHP aims to utilize "cloud-based computing" and enterprise architectures to bridge the gap between published software solutions and fully operational mHealth solutions. MHP will enable solution developers to service NGOs and Ministries of Health, private foundations and donors by dramatically reducing the time of systems implementation<br><br>www.nethope.org/common/docs/NetHopeMobileHealthPlatformRFP.pdf |

## **ANNEX C:** BUSINESS MODELS DELIVERING INTERVENTIONS/PRODUCTS TO PRIVATE COMPANIES

| CATEGORY | MODALITY | EXAMPLE | COUNTRY | STATUS | BUSINESS MODEL |
|---|---|---|---|---|---|
| Health value chain | Anti-counterfeiting measures | Sproxil | Various | For-profit | The company sells a verification technology to pharmaceutical manufacturers and distributors that allows consumers to use mobile phones and special labels to check medicines' authenticity; revenue covers operating expenses<br><br>www.sproxil.com |
| Health within companies | Health promotion for workers | HERproject | Various | Non-profit | Multinational corporations pay local non-profit organizations to train the corporations' factory workers to give health education to their peers; costs are recouped through higher worker productivity and lower absenteeism.<br><br>See case study p. 33 |

■ At scale or scaling up

## **ANNEX D:** USEFUL LINKS FOR INNOVATORS

| HEALTH NEEDS AND PROVISION OF HEALTH SERVICES | BUSINESS MODELS, REFERENCE MATERIALS AND DESIGN GUIDELINES | FORUMS FOR INTERACTION |
|---|---|---|
| World Health Organization Health Systems portal<br>www.who.int/healthsystems<br><br>The Global Strategy for Women's and Children's Health<br>www.un.org/sg/globalstrategy<br><br>Partnership for Maternal, Newborn & Child Health<br>www.who.int/pmnch<br>portal.pmnch.org<br><br>Countdown to 2015: Tracking Progress in Maternal, Newborn and Child Health<br>www.countdown2015mnch.org | Center for Health Market Innovations<br>www.healthmarketinnovations.org<br><br>mHealth Alliance<br>www.mhealthalliance.org<br><br>Business models for eHealth<br>(RAND Europe/Capgemini Consulting)<br>ec.europa.eu/information_society/activities/health/docs/studies/business_model/business_models_eHealth_report.pdf<br><br>Business Model Generation online resources (Osterwalder/Pigneur)<br>www.businessmodelgeneration.com | Health Unbound<br>www.healthunbound.org<br><br>Mobile Active<br>www.mobileactive.org<br><br>Business Innovation Facility Practitioner Hub<br>www.businessinnovationfacility.org<br><br>Partnership for Innovative Healthcare Delivery<br>www.innovativehealthcaredelivery.com<br><br>ict4chw Google Group<br>groups.google.com/group/ict4chw |

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**Every Woman, Every Child**
www.everywomaneverychild.org


## PHOTO CREDITS

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Innovation requires hard work; when low-hanging fruit have been picked, we must reach for the higher branches. Such is the case today with global public health.
Ban Ki-moon
Secretary-General of the United Nations
Improving the health of women and children contributes extensively to economic development. ... Collaboration between the public and private sectors will be important to realize this potential.
Jens Stoltenberg
Prime Minister of Norway
The process of engaging customers in demand creation and then generating supply to fill that demand will lead to innovative local partnerships that know their customers and serve them effectively.
Richard Klausner
Managing Partner of The Column Group
I was continually disturbed by the conditions in which low-income women were delivering their babies. I knew, however, that financial sustainability was crucial for a scalable model.
Anant Kumar
Life Spring Maternity Hospital
Respect for difference is what allows you to partner with someone in an even-handed way.
Nkosana Moyo
Vice President, African Development Bank Group