mHealth for NCDs

Fighting the global health burden through new technology
The following four types of NCDs - cardiovascular diseases, cancers, chronic respiratory diseases and diabetes - make the largest contribution to mortality and overall disease burden in the majority of developing countries and in those economies currently undergoing growth or shrinkage. These diseases are largely preventable if effective steps are taken to reduce four common lifestyle risk factors, namely: tobacco use, unhealthy diet, physical inactivity and excessive alcohol consumption.

The socio-economic impact is staggering. All countries in the world, regardless of GDP, are concerned with saving money in the health sector. This is due to structural debt, the recent global financial crisis as well as the high costs spent on health in all countries and the rise in elderly populations and in chronic disease. This has led to a major push in all countries to find innovations that save money within this sector.
Harvard University now estimates that the cumulative lost output in developing countries associated with NCDs is US$7 trillion over the period 2011-2025 through health-care costs and productivity losses in most developing and developed countries.

The cost of scaling up NCD prevention and control is also now well understood - the average yearly cost for all low- and middle-income countries is estimated to be US$ 11.4 billion (an overall cost of US$ 170 billion over the period 2011-2025). This represents an annual investment of under US$ 1 in low-income countries, US$ 1.50 in lower middle-income countries, and US$ 3 in upper middle-income countries. Expressed as a proportion of current health spending, the cost of implementing such a package amounts to 4% in low-income countries, 2% in lower middle-income countries and less than 1% in upper middle-income countries. There are also now recent figures from the World Economic Forum and Harvard University on the cost of inaction: globally US$ 500 billion per year in output loss due to NCDs.
Most low- and middle-income countries are now facing a double burden of communicable and non-communicable diseases. In recognition of this global threat, the UN General Assembly arranged a High-level Meeting on NCDs in September 2011, at which Heads of State and government officials participated and adopted a wide-ranging agenda for the prevention and control of NCDs.

The Political Declaration adopted by the General Assembly acknowledged that NCDs constitute one of the major challenges for development in the 21st century and requested WHO to lead and coordinate global action against NCDs.

Following from that meeting, a meeting of UN agencies was convened in December 2011 to agree on next steps for the UN. At that meeting, it was agreed that UN agencies could enter into joint work-plans with WHO to focus on the NCD agenda. WHO and ITU, the UN health and telecoms agencies, have decided to come together in a groundbreaking new partnership, with governments, NGOs and the private sector to focus on mobile technology for NCDs.
Mobile communication offers an effective means of bringing healthcare services to developing-country citizens. With low-cost handsets and the penetration of mobile phone networks globally, tens of millions of citizens that never had regular access to a fixed-line telephone or computer now use mobile devices as daily tools for communication and data transfer. A full 64% of all mobile phone users can now be found in the developing world. Furthermore, estimates show that by 2012, half of all individuals in remote areas of the world will have mobile phones. This growing ubiquity of mobile phones is a central element in the promise of mobile technologies for health.

This figure illustrates that developing world citizens have plentiful access to mobile phones, even while other technologies and health infrastructure are scarce. This explosion of mobile phone usage has the potential to improve health service delivery on a massive scale. For example, mobile technology can support increasingly inclusive health systems by enabling health workers to provide real-time health information and diagnoses in rural and marginalized areas where health services are often scarce or absent altogether.
A recent analysis from Cisco shows that mobile devices will soon outnumber humans. What an amazing infrastructure that is for public health in the world.
Recent technological innovations are therefore changing the healthcare and health-management context for NCDs, and providing the global community with new opportunities for prevention and control. Mobile technology has already been successfully used in the communicable disease and maternal/child health fields to improve access to health services, to train health workers, to ensure treatment compliance, in monitoring and surveillance, and in the management of chronic diseases, etc. We are now taking all this knowledge and expertise and applying it to a new initiative focused on NCDS.

A team from WHO and ITU have been mapping out the opportunities for the last year, they have carried out literature reviews looking at the evidence and lessons learnt from mHealth projects, particularly in the communicable and maternal child health domain. They have developed three focus areas for the new NCD initiative as these are the areas where we believe we can have the most impact. These are the areas of prevention, treatment and policy enforcement. I will talk in more detail about these areas later in the presentation.
The global adult tobacco survey is a WHO surveillance mechanism using mobile phone and handhelds to look at the levels of tobacco use in the world. This is being carried out in 31 countries and has been already completed in 17 countries, this is the first time that we have comprehensive data on tobacco prevalence and usage covering a good part of the world – it is the world’s largest tobacco use study and it is being done using technology.
What we saw with this survey was that governments were quick to replicate the experience for other NCD areas. This therefore is a really promising tool for surveillance in the world.
Quitting tobacco is not easy as tobacco dependence is a cluster of behavioural, cognitive and physiological phenomena. Very few tobacco users can successfully quit the habit in their first attempt. Traditional methods to quit smoking are based on brief advice through counselling and possible the use of nicotine replacement therapy and prescription medicines.

In a recently published study in the Lancet, mobile cessation, or mCessation as it is known, was shown to be at least two times more effective, and sometime up to six times more effective than traditional methods in increasing quit rates. The study concluded that "smoking cessation support delivered via mobile phone text messaging .... is effective in all socioeconomic groups and in younger and older smokers". These results were significant in how they demonstrate that mobile-technology-based interventions can be effective in changing behavior that can lead to other risk factors for NCDs.

Text messaging has been used, with and without additional incentives, to increase the use of sunscreen, to improve compliance in the management of diabetes and to encourage and increase the use of condoms, among many other behavioural change initiatives. Examples of other mHealth NCD interventions range from applications that allow individuals to monitor their diabetes and to plan their treatment programs.
Published studies on mobile phones to monitor vegetable and whole-grain intake and provide daily individualized feedback through food diaries and support have been shown to lead to significantly greater increases in vegetable servings, as well as a trend towards greater intake of dietary fiber. Other studies use innovative methods like mobiles to read calorie counts in supermarkets and to help keep food diaries to track food intake.
mHealth Projects in the literature also focus on physical activity and awareness raising about dangers of starting smoking as forms of mAdvocacy.
There is a noted gap in the knowledge on NCD control at the health workers level across the world. We need to bridge this gap and we also see great potential in the area of mTraining – using mobiles to train and educate doctors, healthworkers and the community in general.
In the area of enforcement we are looking at opportunities to help governments enforce existing policies for NCDs, for example ensuring that laws on sales of alcohol and cigarettes to minors are being respected. One promising area in this domain is geotagging.

Geotagging can help users find a wide variety of location-specific information. Geotagging has been picked up by the marketing and advertising industry. In many countries when you enter or drive near a shop or a garage you are automatically sent an SMS about their services.

One project we are looking at with CERN would combine geotagging/geofencing as well as “citizen mapping” to create images of smoke free cities on the internet for people to be able to update.

Maps created through this tool could be used by citizens and governments to ensure that they are correctly reporting on smoke free environments. The maps would also be useful for tourism purposes, for example showing restaurants and hotels that are really smoke free. Geotagging can also be used to give us clearer information about the behaviour of smokers, we can pick up on where and when people are smoking to track their smoking habits.
Another project we are looking at is Illicit Trade. Illicit trade of tobacco is linked to organised crime and increases the accessibility and affordability of tobacco products, thus contributing to the spread of the tobacco epidemic; it is a global problem with serious consequences for health. It also undermines national economies and the tobacco-control policies of governments.

Use of mobile technology in Illicit Trade tracking project is intended for customs officers who will carry a bar code reader mobile phone with an application that reads the bar codes on the cigarette packs and cross checks with the database to identify smuggled cigarette packs. The project can be piloted in a region of known illicit trade and can be evaluated with the illicit tobacco products found vs overall measured.

One of the challenges for us in this mHealth initiative, is not to constantly reinvent the wheel. The technology developed by a company called SPROXIL to monitor counterfeit anti malarials in Ghana could potentially be used to monitor counterfeit cigarettes.
So in conclusion we see a great potential to link mobile to NCD control and prevention.

mHealth is a great mechanism to use the mobile infrastructure for out-reach and save significant funds in the health sector.
Last month the WHO Director General and the ITU Secretary General signed an MOU to create a new WHO ITU Initiative in this area.

With a global coverage of 7.4 billion mobile phones, this initiative will harness mobile technology to provide sustainable, scalable and cost-effective solutions for the key NCD risk factors, and to improve treatment and diagnosis of the common NCDs.

Mobile phones have already been successfully used in the communicable disease and maternal/child health fields to improve access to health services, to train health workers, to ensure treatment compliance, in monitoring and surveillance, and in the management of chronic diseases, etc. In the non-communicable disease field there is good evidence for disease management using mobile applications. A number of countries have also used mobile technology to deliver health promotion messages on the NCD risk factors, to survey the epidemic, to persuade users to change unhealthy behaviours and to help countries implement national laws on NCDs.

This new initiative will take these successful pilots to the world stage through a new global UN, private sector and government partnership focused on providing mobile solutions for NCDs.
WHO ITU joint agreement on mHealth for NCDs

- The Agreement is signed by DG WHO and by SG ITU
- The initiative will be launched at:
  WORLD TELECOM 2012 (Oct 17th, Dubai)
- The launch will call on supporters to join the initiative.
- WHO-ITU joint team continues to reach out to bilateral donors and philanthropists to support this work
- WHO and ITU have already received requests from low and middle income countries for this work.

The initiative will be launched at the World Telecoms Event in Dubai, October 2012.

Will possibly be attended by ADG, MOH, MOTelecom, First Lady of Zambia, CEOs private, Philanthropies, Academics
The initiative aims to create an enabling environment and convening platform globally, regionally and at country level to develop cost effective, sustainable and scalable mobile NCD projects.
WHO/ITU initiative on mHealth for NCDs, will harness the best technology available in the world building on existing successful pilots and scaling them to a population level and make it available to all member states to fight NCDs.
The mHealth interventions will be presented in a “juke box structure”, meaning that countries can pick and choose those interventions that best suit their needs. Mobile solutions will be primarily sms or apps based and will include a range of services including mAwareness, mTraining, mBehavioural change, mSurveillance, mTreatment and mDisease Management.
Prevention will look to address issues related to

Training of health workforce on addressing and preventing NCDs in the public using mTraining solutions,

mSurveillance which is across the prevention, treatment and enforcement, will continue to be used for better and faster data for various policy areas

Similary wellness, advocacy and social media through mobile technology are aimed at spreading awareness and other relevant areas
**Treatment** : will focus on provide care and treatment advise and support for disease management through mobile technology for diabetes patients, people seeking cessation services to quick tobacco or alcohol.
Enforcement: will help Member States on ensuring higher surveillance and better enforcement through advanced tools such as Geo-tagging, heat maps generated using mSurveillance data, tools will also assist Member States in better enforcing legislations through better tools and public reporting.
**The structure**

The initiative will have a global platform supported by country platforms. A small secretariat at WHO and ITU headquarters in Geneva is considered important to support overall coordination and implementation in target countries, to document and disseminate lessons learned, to mobilize stakeholders and resources at global level and to link with other NCD mobile Initiatives. This small secretariat will reach out via numerous partners and other mHealth initiatives in order to achieve the workplan objectives.

Country operations will be run at country level through a national platform composed of various stakeholders who are responsible for the initiation, implementation and supporting of country operations.

A steering committee and advisory committee will provide guidance to the secretariat and will approve successful NCD mHealth interventions to be used.
The initiative will work with partners at all levels. At the global level, partners will be able to support the secretariat, share knowledge and lessons learnt and technical expertise to help develop the standard operating procedure for each mHealth intervention and provide funds. Specific countries will be able to act as sponsors and patrons of the initiative, while others will be able to become part of the advisory committee to the initiative. At the country level, partners will help roll out the operational projects, provide products and technical know-how as well as funding support. This initiative will showcase the synergy between UN agencies, the private sector and government institutions. In the current financial climate, a major challenge for all sectors is to ensure that they are focusing on cost-effective solutions. As mobile technology is now so cheap and with the focus on the WHO best buys for NCDS, which have been chosen for their cost-effectiveness, this initiative will be economical for all sectors involved.
The initiative will critically measure each intervention through a standard measurement framework

**Expected Outcomes**

Enhanced country capacities to strengthen health systems to address the growing NCD burden through effective use of mobile technologies and communication channels.

Improved environment and increased opportunities for collaboration between different health, ICT and technology actors in the mobile ecosystem, at the country level.

Empowered citizens with greater access to information relevant to address their health needs arising out of NCDs.

Better understanding of challenges in the use of ICT/Mobile technologies in the most sustainable and scalable manner for NCD interventions.

Widely disseminated principles, guidelines, Standard Operating Procedures, recommendations and “best” practices etc. for the employment of innovative approaches to health system strengthening using mobile technologies to support NCD goals.

**Expected Impact**

Improved health promotion and protective behaviours (including healthy eating, exercise), and reduced risk behaviours (including tobacco and alcohol use)

Projected cost savings, through early/timely interventions, reduced health cost burden and greater productivity, on averting future NCDs

Improved adherence to chronic disease management/treatment compliance for NCDs
So let me invite you all to join hands in supporting Be Health Be Mobile: WHO – ITU joint initiative on mHealth for NCDs