BE HE@LTHY, BE MOBILE

Annual Report 2018

World Health Organization

ITU

Contents

Foreword

Preventing disease is the most sustainable way of improving population health. It may, however, be difficult to reach people with the right information in order to stop the development of avoidable conditions. This can be solved by using a technology that most people have in their pockets – just by using what already exists.

This is the aim of Be He@lthy, Be Mobile. This award-winning initiative, run jointly by the World Health Organization (WHO) and the International Telecommunication Union (ITU), has worked with governments since 2013 to improve disease prevention with mobile technology. The initiative provides access to evidence-based information to protect people from the diseases that kill the largest numbers worldwide: noncommunicable diseases (NCDs). The initiative is available in 11 countries and has received expressions of interest from more than 90 others, indicating a huge demand for such services.

The approach is designed to be scalable: instead of promoting specific products, it provides cross-cutting health information and technical support for incorporation into other applications. It also develops the broader systems for national mHealth programmes, helping to ensure that they are integrated into other health services. Thus, each programme becomes a sustainable part of the health system, helping to promote health and well-being.

Be He@lthy, Be Mobile has reached over 3.5 million people with its mHealth programmes. Over 2.1 million people are registered in India's mTobaccoCessation service, and over 8.5 million messages have been sent through the mDiabetes programme. Over the past 5 years, more than 370 000 people have enrolled in annual diabetes campaigns during Ramadan in Senegal. In Zambia, more than 1 million messages were sent to raise awareness of cervical cancer, and the Government is developing the programme as a model for the continuum of care for this cancer.

In 2018, Be He@lthy, Be Mobile continued playing its role in achieving Health for All. The initiative works to increase the number of people it supports and the variety of diseases it addresses and also participates in global discussions on the future of digital health. This year, Be He@lthy, Be Mobile was part of the management team of the Focus Group on Artificial Intelligence (AI) for Health with ITU, began discussions on partnership with Google Fit and supported development of the WHO digital health strategy. The initiative is also working on the first European mHealth knowledge and innovations hub to scale up of mHealth and digital health programmes throughout Europe.

The global community increasingly recognizes the transformative power of digital technology and its potential to improve health service delivery globally. During the Seventy-first World Health Assembly in May 2018 in Geneva, Member States unanimously passed a resolution for the advancement of global digital health *(1)*, which commits WHO to provide technical assistance and normative guidance to Member States for scaling-up and integrating digital health into their health systems.

We are proud to present our 2018 annual report, humbled by the challenges and opportunities that lie ahead and eager to take them up with our partners.

Doreen Bogdan-Martin
Director of the Telecommunication
Development Bureau, ITU

Dr Svetlana Axelrod
Assistant Director-General for
Noncommunicable Diseases
and Mental Health, WHO

Be He@lthy, Be Mobile
Scaling up digital solutions
for a healthier world
▼

https://www.youtube.com/
watch?v=Uf1Snc-m29M

Overview

Handbooks

Handbooks are the basis for planning large-scale digital health programmes. They are comprehensive, evidence-based documents that provide guidance to governments and policy-makers for developing, implementing and evaluating mHealth programmes to prevent and control NCDs and their risk factors.

Countries

Countries scale-up digital health programmes, supported by Be He@lthy, Be Mobile in all regions, for all income groups and disease priorities. Teams from WHO headquarters and regional and country offices meet country priorities and requests by providing technical support for programmes ranging from raising awareness about cervical cancer to helping people quit tobacco use.

Innovations & hubs

Innovations prepare for the future.
Digital innovations that can improve health care comprise a broad range of technologies that are less conventional than SMS, such as smartphone applications, wearables, AI and machine-learning technology. With partners and collaborators, Be He@lthy, Be Mobile is investigating how best to deploy such digital health solutions at scale.

Partnerships

Partners add value and reach. This unique initiative has partners in many sectors globally and nationally, engaging national partners and governments to ensure success. We understand the value of collaboration and have partnerships with organizations that share the vision that digital technology can help protect people from NCDs.

ACHIEVEMENTS in 2018

Geneva, Switzerland

1. Results of mDiabetes and mTobaccoCessation evaluations published in *BMJ Innovations*

1. Health insurance meeting
2. World Health Assembly: Digital health resolution passed

1. mAgeing handbook published
2. mBreatheFreely – mHealth for asthma and chronic obstructive pulmonary disease handbook published

1. First meeting of the ITU Artificial Intelligence for Health focus group
2. Groupe Spéciale Mobile Association (GSMA) "Big data for TB" joint case study published

Senegal

1. 180 000 users registered for mDiabetes (mRamadan) during Ramadan

1. Results of mDiabetes published in *BMJ Innovations*

Tunisia

1. Reached over 70 000 users with mTobaccoCessation
2. mDiabetes (mRamadan) launched and reached 20 000 participants during Ramadan

Boston, USA

- Be He@lthy, Be Mobile won the Green Electronics Council "Catalyzing Disruptive Innovation" award

Stanford, USA

- mActive workshop

Europe
Selection of European Union mHealth hub hosts completed

France
Expertise France

Montpellier, France
Global mOralHealth workshop

Italy
Italian Agency for Development Cooperation

India
1. Results of mDiabetes published in *BMJ Innovations*
2. Results of mTobaccoCessation published in *BMJ Innovations*

Philippines
Launched mTobaccoCessation programme "mReady2Quit", with over 10 000 users interacting with the Facebook platform

THE YEAR 2018 in review

January

mDiabetes
launched in Tunisia

February

Be He@lthy, Be Mobile at the
Mobile World Congress to
discuss GSMA's Big Data for
Social Good initiative

May

(d) AI for Good Global Summit, Geneva, Switzerland

(e) World Health Assembly: resolution on digital health passed!
(page 4)

World Health Assembly: preparation for the third high-level
meeting on NCDs (agenda item 11.7)

(f) World Health Assembly: side-event on digital health
organized by one of our partners, the NCD Alliance

WHO global investment case on NCDs, "Saving lives,
spending less", published

First meeting of the WHO Civil Society Working
Group on the third high-level meeting
on NCDs, Geneva, Switzerland

May

Jan   Feb   Mar   Apr

March

(a) mActive workshop, Stanford
University, USA

April

(b) WHO Dialogue on Partnerships for Financing on
NCDs, Denmark Geneva Health Forum

(c) Be He@lthy, Be Mobile retreat at UNITAID,
Geneva, Switzerland

(a)

(b)

(c)

(d)   *(e)*   *(f)*

June

Meeting of the WHO independent high-level commission, Geneva, Switzerland

WHO workshop on guidelines for digital health interventions

Selection of European Union mHealth hub hosts completed

mRamadan in Senegal reached 180 000 people in its fifth year (page 18)

mRamadan in Tunisia reached nearly 20 000 people in its first year

Jun   Jul

(g)   *(h)*

July

Interactive hearing on the high-level NCD meeting, USA

(g) Summer school on the Sustainable Development Goals (SDGs) (page 32)

(h) Meeting on health insurance, Geneva, Switzerland (page 38)

Young Leaders for Health Social Entrepreneurship Challenge on eHealth, Germany

Results of mDiabetes and mTobaccoCessation evaluations published in *BMJ Innovations* (page 29)

Be He@lthy, Be Mobile at forum on Innovations and Actions against NCDs at the Asian Development Bank

(i)

August

(i) Be He@lthy, Be Mobile mission to Sudan to provide technical support for integrated mHealth programmes

Google Fit–WHO collaboration announced
Be He@lthy, Be Mobile won the Green Electronics Council "Catalyzing Disruptive Innovation" award!

National workshop on digital health, Brazil

Aug   Sep

September

12th Asia Pacific Conference on Tobacco or Health, Indonesia

High-level meeting on NCDs, USA

(j) GSMA "Big data for TB" case study published

(k) Broadband Commission report on digital health for NCDs published

(l) First meeting of ITU focus group on artificial intelligence for health, Geneva, Switzerland

ITU high-level meeting on building on the first 4 years of collaboration and scaling up our work

(j) **Big data for TB case study**
▼

(k) **Broadband Commission report**
▼

(l) **Focus Group on AI for Health**
▼

GSMA™

October

(m) World Cancer Congress, Malaysia

Discussion panel at "Taking transformative action to change the course of Alzheimer's disease. Going digital", Geneva, Switzerland

(n) Launch of TobaccoSpotter pilot project (page 35)

mOralHealth workshop, University of Montpellier, France

mActive meeting at the International Society for Physical Activity and Health, England

Launch of "Doh quit first!" campaign, Philippines

(r)

(m)   *(n)*

December

Review of the EU mHealth Hub project, Belgium

Meeting on the elimination of cervical cancer initiative, Geneva, Switzerland

(r) Mission to Sudan to provide technical support for integrated mHealth programmes

Oct   Nov   Dec

(o)   *(p)*   *(q)*

November

Second focus group meeting on "AI for health", USA

(o) Meeting on cervical cancer, Mongolia

(p) Meeting on health insurance, Belgium

mYoga experts meeting at the International Yoga Conference in India

4th International Congress on Gerontology and Geriatric Medicine and Asia Pacific Geriatric Medicine Conference 2018, India

(q) Philippines launched mTobaccoCessation programme "mReady2Quit" on Facebook Messenger

Workshop on capacity building for digital health leadership, Lesotho

01 SPOTLIGHTS

01.1 Green Electronics Council Catalyst Award 2018!

The Catalyzing Disruptive Innovation award recognizes organizations that have used technology in a way that could lead to exponential gains in sustainability. The Be He@lthy, Be Mobile initiative was selected by the judging committee for its commitment to helping people access evidence-based information to protect against NCDs, its focus on scale and its strong global network of partnerships.

◄

Gini Arnold (WHO), Ursula Wynhoven (ITU) and Sameer Pujari (WHO) receiving the Green Electronics Council Catalyst Award at the Connected Health Conference in Boston, USA.

01.2 World Health Assembly resolution on digital health
Clayton Hamilton, WHO Regional Office for Europe

On 25 May 2018, Member States at the seventy-first World Health Assembly in Geneva, Switzerland, unconditionally supported a proposed resolution for the advancement of global digital health. The item was presented to the World Health Assembly together with a short report by the WHO Secretariat.

The main intent of the resolution is to evoke action from the highest levels of government on implementing digital health for strengthening national health, to contribute to the achievement of the United Nations for Sustainable Development Goals (SDGs), in particular SDG 3: Good health and well-being. The resolution gives WHO an increased mandate to support countries and align efforts by the United Nations and partners for digital health. Practically, this means mobilizing resources and funding to assist governments in accelerating action for the digitalization of their health systems and doing so

systematically, rather than through small initiatives. It also means that greater outreach and intersectoral action will take place in advancing digital health – it is not something the health sector can or should do in a vacuum.

Key health decision-makers in countries are grappling with a plethora of factors that influence health security and the quality and performance of their national health systems. Such factors include increasing costs of health care, demographic change and population ageing, changing profiles and burden of disease, concerns about health workforce sustainability and growing patient demand. These challenges are driving broader health system concerns of affordability and sustainable financing for health care, adequate human resources for health and the ability of health systems to continue to provide timely, quality care to citizens.

While it's no secret that digital health, in all its forms, is disrupting the delivery of health care, up until now, the focus on its use in meeting the above public health challenges has been lacking. As a result, global progress in digital health adoption (and benefits realization) within and between countries has been uneven. Those countries and marginalized populations who could benefit most from digital health initiatives are sadly the least likely to receive them. Progress in digital health adoption on a wide scale in these environments continues to be extremely slow. This resolution will hopefully change this.

Without being overly idealistic, the resolution has the potential to improve millions of lives. In the pursuit of achieving universal health coverage, digital health can extend the scope, transparency and accessibility of health services, widen the population base capable of accessing these services, facilitate training of the health workforce and offer massive efficiency gains in the performance of health systems. This equates to millions more receiving affordable timely, quality health care.

Through this resolution, countries have spoken very clearly in support of digital health and it is it up to WHO and its partners to deliver it. This is our collective opportunity to make a real difference in advancing digital health for the public health agenda. Let's make the most of it together.

◄ Representatives of WHO Member States and staff with copies of the draft resolution on digital health at the World Health Assembly in Geneva, Switzerland.

02 HANDBOOKS

Be He@lthy, Be Mobile handbooks contain content and operational guidance for planning and implementing national mHealth programmes.

Most programmes are for NCD prevention and provide information to:
- raise awareness about the risks for a condition;
- encourage and support behaviour change to protect people from risk factors, such as tobacco smoking; and
- inform people about the availability of a local service, such as screening.

COMPLETED	IN PREPARATION
• mTobaccoCessation	• mTobaccoCessation (version 2)
• mDiabetes	• mDiabetes (version 2)
• mCervicalCancer	• mActive
• mAgeing	• mOralHealth
• mBreatheFreely (mHealth for asthma and chronic obstructive pulmonary disease)	• mYoga
• mTB-Tobacco	• mHypertension

The handbooks cover five main areas:

Operations management — **Content development and adaptation** — **Promotion and recruitment** — **Technology specifications** — **Monitioring and evaluation**
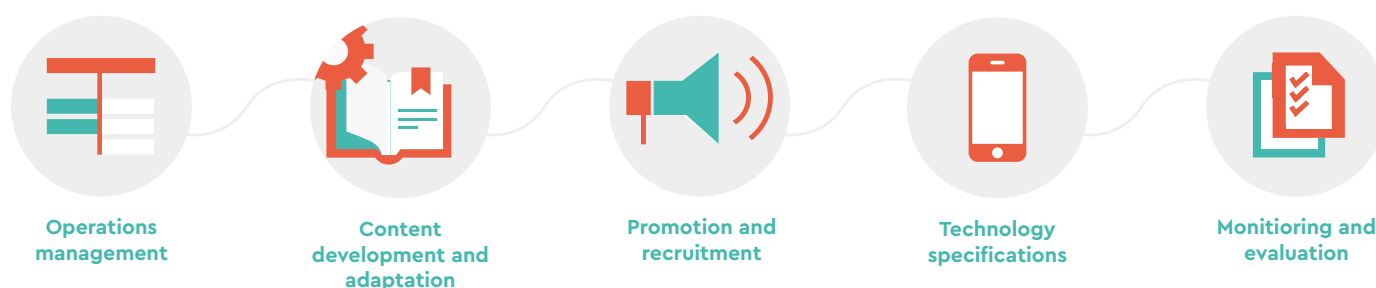
The first step in deciding on the content of a handbook is formative research on clinical trials, global guidelines or existing programmes. Be He@lthy, Be Mobile and stakeholders then host a workshop to convene international experts, governments and implementers and incorporate their experience into the design, content and delivery mechanisms for an mHealth programme. These workshops are the basis for a global handbook on mobile solutions for the health condition of interest and country implementation of the mHealth programme. Once the content is developed, it is adapted to the country context, which includes revising messages to ensure their cultural appropriateness for the target audience.

Preparation of handbooks is a continuous cycle, allowing lessons from the field to be considered by WHO and ITU and for emerging evidence to inform new content, programme recommendations and handbook revisions.

02.1   mActive (mHealth for physical activity)

Physical inactivity is a leading risk factor for NCDs, including cancer, heart disease, stroke and diabetes. Globally, one of four adults and four of five adolescents are insufficiently active *(2)*. In March 2018, experts in physical activity, behaviour change and mHealth met at Stanford University, USA, to design an mHealth programme for promoting physical activity.[2] Using behaviour change theory constructs, the group drafted messages to be delivered through a mobile-based phone intervention. The content of the mActive handbook is being finalized for publication.

02.2   mOralHealth

Major oral diseases share modifiable risk factors with the leading NCDs, including tobacco use, harmful use of alcohol and unhealthy diets. In the Global Burden of Disease Study in 2016, it was estimated that oral diseases affect half the world's population and disproportionately affect populations in low- and middle-income countries, where they are considered to be the most common NCDs *(3)*. In October 2018, a global mOralHealth workshop was held at the University of Montpellier, France. Over 3 days, 25 global experts, country representatives and partners discussed the potential of mHealth and other digital health programmes for improving literacy about oral health, training front-line health workers and oral health professionals and early detection of oral disease. Use of "representative personas" challenged participants to think about the users of an mOralHealth programme and identify the principles and aspects that should be included in each section of an mOralHealth programme.

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03 COUNTRIES

03.1 India

mTobaccoCessation

According to the 2016–2017 Global Adult Tobacco Survey, 10.7% of adults (99.5 million) smoke tobacco. In January 2016, the Ministry of Health and Family Welfare of India, with WHO and ITU, launched the mTobaccoCessation programme, which now has over 2 million self-registered users. The Ministry of Health is preparing a strategy to extend the programme, add other languages and enhance the content with an interactive voice response system.

The mTobaccoCessation programme achieved a 19% self-reported quit rate (defined as not having used tobacco in the past 30 days) as compared with an estimated baseline population quit rate of around 5% *(4)*. Of the current tobacco users who subscribed to the programme, 66% reported having tried to quit, and 77% reported that the programme was helpful or very helpful in quitting tobacco (see page 30 for details).
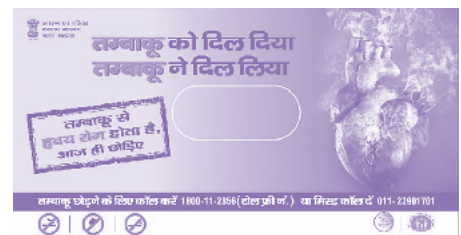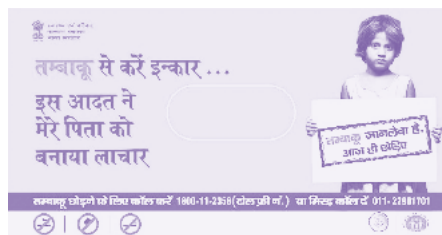
mDiabetes

The mDiabetes programme, launched in July 2016, had 107 000 registered users as of December 2018. The programme is available to the entire country, with customized algorithms for specific groups such as elderly people and people with diabetes and at risk of type 2 diabetes. An evaluation of the programme in 2017 showed that 57% of the registered participants followed a healthy diet, 72% followed advice on physical activity, 52% were screened for diabetes, and 67% checked their glycaemic status *(5)*. Participants suggested the inclusion of an interactive voice response system for registration and motivation. The study demonstrated the feasibility and acceptability of mHealth in a large population for disseminating information on diabetes, a healthy lifestyle and improving health-seeking behaviour. The recommendation of the evaluation will result in scaling-up of the programme (see page 30 for details).

03.2 Senegal

mDiabetes (mRamadan)

According to the International Diabetes Federation, an estimated 135 600 adults in Senegal have diabetes. Since 2014, Senegal has been implementing an mDiabetes programme with support from the Be He@lthy, Be Mobile initiative. The programme consists of regular awareness-raising short message service (SMS) campaigns for people who have signed up, for free, to the

mDiabète programme. During the annual mRamadan campaign, 180 000 new users registered, including 10 000 health care professionals. "Safe Fasting" motivates users to learn more about diabetes, glycaemic control and nutrition. A biometric evaluation demonstrated that mDiabetes interventions were associated with improved glycaemic control in people with type 2 diabetes *(6)*, indicating the potential of mobile phone technology to reduce complications of diabetes. With the high penetration rate of text message services in low- and middle-income countries where medical resources are scarce, health interventions with mobile phone technology will facilitate exchanges among people with diabetes and health care professionals (see page 30 for details).

03.3   Zambia

mCervicalCancer

Cervical cancer is the most prevalent cancer in Zambia, with an incidence rate of 58 per 100 000 and a mortality rate of 36 per 100 000 women *(7)*.

An evaluation from the mCervicalCancer programme in Zambia found that 5.7% of cervical cancer screenings at health facilities within the intervention site were attributable to the SMS messages from the programme.

The Ministry of Health will now integrate the programme into the continuum of care by adding features that will make it easier for women to access screening and treatment, such as appointment reminders and follow-up after screening. The Ministry also intends to expand the mHealth platform by integrating messages to raise awareness of other NCDs, including diabetes and hypertension, and risk factors such as tobacco and harmful use of alcohol. The programme receives funding from the African Development Bank.

03.4   Tunisia

mTobaccoCessation (*Yakfi*)

According to the Tobacco Atlas, over 11 100 Tunisians die annually as a result of tobacco-related diseases, and over 7000 children and 1.8 million adults continue to use tobacco every day *(8)*. The mTobaccoCessation programme in Tunisia, called *Yakfi*, was launched on 27 December 2017 by the Minister and senior members of the Ministry of Health, the Ministry of Communications, telecom operators and partners. The programme was disseminated by two-way text messaging algorithms and has reached more than 70 000 tobacco users. The Government plans to invest more resources into media and advocacy of the programme to all 24 regions of the country, to build the capacity of health care workers and to raise awareness in the general population. The content is offered in French, and an Arabic version will be released soon.

mDiabetes (mRamadan)

In recognition of the potential of this programme, the Ministry of Health launched the mDiabetes programme in January 2018. Between 1 May and 20 June 2018, the Ramadan period, 20 000 participants with diabetes or their family members joined the programme. The Government plans to build the capacity of health care workers and raise awareness in all 24 regions of the country.

03.5   Egypt

mDiabetes

The International Diabetes Federation lists Egypt among the 10 countries in the world with the most people living with diabetes, estimated at 8.22 million adults in 2017. Over 86 000 deaths in Egypt are attributable to diabetes each year. The mDiabetes (mRamadan) programme was launched in 2016; a subsequent evaluation indicated that 41% of tested users had improved glycaemic control, and 70% found the mDiabetes programme useful. The programme is being expanded into a more comprehensive mDiabetes programme as part of the President's "100 million healthy lives" initiative, which aims to screen for NCDs and risk factors, and prevent or manage these diseases through mobile technology. Everyone with diagnosed diabetes or at risk of diabetes will be offered registration in the programme.

mTB-Tobacco

Preparations are under way for pilot-testing of an mTB-Tobacco programme to help tuberculosis patients quit tobacco use and help them manage the disease.

03.6   Burkina Faso

mTobaccoCessation

According to the Tobacco Atlas, over 4800 deaths in Burkina Faso each year are due to tobacco-related diseases. It is estimated that over 12 000 children aged 10–14 years and 896 000 adults (≥ 15 years) use tobacco daily *(8)*. The Be He@lthy, Be Mobile initiative finalized a partnership with Expertise France, the French agency for international technical expertise, to implement a national mTobaccoCessation programme, which is expected to begin in early 2019.

03.7   Philippines

mTobaccoCessation

According to the 2016 Global Adult Tobacco Survey, nearly one in four adults in the Philippines currently smokes tobacco. The Department of Health launched a tobacco cessation campaign in October 2018 and then re-launched it nationally in November 2018 as "mReady2Quit!". The launch coincided with the Revolution Smoke-free campaign of the WHO Regional Office for the Western Pacific to encourage tobacco smoke-free workplaces. As part of the campaign, 20 companies have signed a pledge to recruit and encourage their employees who smoke tobacco to enrol in the "mReady2Quit!" programme. Under the new campaign, tobacco cessation services are delivered through the Facebook Messenger app. As of December 2018, the programme had more than 10 000 users registered on the Facebook platform.

03.8 Sudan

mDiabetes

According to the International Diabetes Federation, 10.9% of the adult population in Sudan has diabetes *(9)*. The Italian Agency for Development Cooperation entered into a partnership with the Be He@lthy, Be Mobile initiative to support a national mDiabetes programme to increase awareness about prevention of diabetes and certain components of diabetes management.

mCervicalCancer, mBreastCancer

Breast cancer and cervical cancer account for 36.6% and 7% of new cancer cases in women in Sudan, respectively *(10)*. In November 2017, the African Development Bank Group and the Government of Sudan invested in a project to improve health access and systems strengthening. One component of the project is use of mHealth through text messaging on mobile phone technologies to improve early screening for cancer, mainly cervical cancer. The Be He@lthy, Be Mobile initiative is providing technical support to the Ministry of Health and the WHO Country Office in Sudan for preparing a plan and identifying actions.

03.9 Norway

mBreatheFreely

Be He@lthy, Be Mobile activities are integrated within the national programme for continued chronic health care, which includes services for chronic obstructive pulmonary disease.

The programme began in 2014 with special incentives for 31 municipalities. In Oslo municipality, the number of days spent in hospital had decreased by 39.1% and outpatient clinic visits by 41.8% after 4–6 months.

03.10 Costa Rica

mTobaccoCessation

According to the 2015 Global Adult Tobacco Survey, 9.1% of the population of Costa Rica uses tobacco. In 2013, the Government launched a national mHealth programme, mTobaccoCessation. Discussions are under way on scaling it up and on use of the mHealth platform for other priority diseases.

Case Studies

03.12

Philippines

According to the 2015 Global Adult Tobacco Survey, nearly one in four adults in the Philippines (23%) currently smokes tobacco. The majority of smokers (77%) expressed an interest in quitting, which was 27% higher than in 2009. To meet this demand, the Department of Health, with the support of the WHO Country Office, relaunched its "mReady2Quit!" smoking cessation programme in November 2018 within the mHealth programme. The initiative is led by the Knowledge Management and Information Delivery Service of the Department of Health, in collaboration with the Philippine Economic Zone Authority, telecom operators and technical support from the WHO Be He@lthy, Be Mobile initiative. The mHealth platform and service delivery module for mReady2Quit is on the Messenger app of Facebook Philippines – an innovative Government model for digital outreach for tobacco cessation. The Knowledge Management and Information Delivery Service hosts the platform locally, and Quitline Philippines manages Facebook enrolment.

As of January 2019, the initiative had reached more than 384 000 people in the Philippines, over 35 000 of whom have interacted with the programme. The next steps are to increase the functionality of the system by introducing AI functions that are more powerful than chatbots and making the system more responsive to users' needs. Discussions are also under way for expansion of mHealth services to include mHealthyMind for mental health and mAddiction for substance abuse.

By venturing into the Facebook platform, we have a better chance of realizing our goal of reaching more Filipinos – not just the smokers who want to quit, but also their families and friends who can provide support in their journey. Through this convergence of efforts of the government and the private sector, services are made more accessible to those who need them and an environment is created where people are informed and empowered to avail of the services they so urgently need.

Francisco Tiongson Duque III,
Secretary, Department of Health,
Philippines

▲

Hon. Joel Alangsab, Baguio City Councillor (representing the city Mayor); Dr Amelita Pangilinan, Regional Director, Department of Health; Dr Charito Plaza, Director-General, Philippine Economic Zone Authority; Dr Gundo Weiler, WHO Representative, Philippines; and Atty. Rene Joey Mipa, BCEZ Zone Administrator pledge their commitment to the Revolution Smoke-free campaign. Photo credit: WHO/M. Dela Cruz

Sudan

Over 2.2 million adults in Sudan have diabetes *(9)*, and breast cancer and cervical cancer are the first and second most frequent cancers among women, respectively *(10)*. In November 2017, the African Development Bank Group, Be He@lthy, Be Mobile and the Government of Sudan invested in a project to improve access to health care and to strengthen the health system. One component of the project is mobile interventions to raise awareness and promote screening for cervical and breast cancer. The Italian Agency for Development Cooperation will support implementation of a national mDiabetes programme.

The Be He@lthy, Be Mobile team conducted two missions to Sudan in 2018 to meet relevant stakeholders in the Ministry of Health, the Ministry of Information and Communication Technology, the WHO Country Office, civil society and academia, to draft a work plan for each mHealth programme, build the capacity of the Ministry of Health and the WHO Country Office to manage the programmes and prepare for operationalization of the activities in each work plan. This platform will give the Ministry of Health the capacity to develop and deliver digital health services beyond those in the initial programme.

Senegal

According to the International Diabetes Federation, in 2017, 425 million adults globally had diabetes, over 90% of whom had type 2 diabetes. In Africa, over 15.5 million adults have diabetes. With support from the Be He@lthy, Be Mobile initiative, Senegal has implemented an mDiabetes programme since 2014, consisting of regular awareness-raising SMS campaigns for people who have signed up for the free programme known as "mDiabète". The programme has supported nearly 370 000 diabetic patients, their family members and health care providers since its launch. The 6-week programme providing advice before and during Ramadan is the most popular.

In February 2017, an independent evaluation of the programme conducted to assess its impact on patients found that it was associated with improved glycaemic control in people with type 2 diabetes. The study showed that health interventions through mobile phone technology facilitate exchanges among diabetics and health professionals. As text messaging services have high penetration, particularly in low- and middle-income countries where medical resources are scarce, they could reduce the complications of diabetes. Senegal also plans to identify high-risk groups and provide personalized coaching to prevent severe complications.

► Number of users in each of the annual mRamadan campaigns in Senegal

SUBSCRIBERS

200 000				
150 000				
100 000				
50 000				
0				
2014	2015	2016	2017	2018
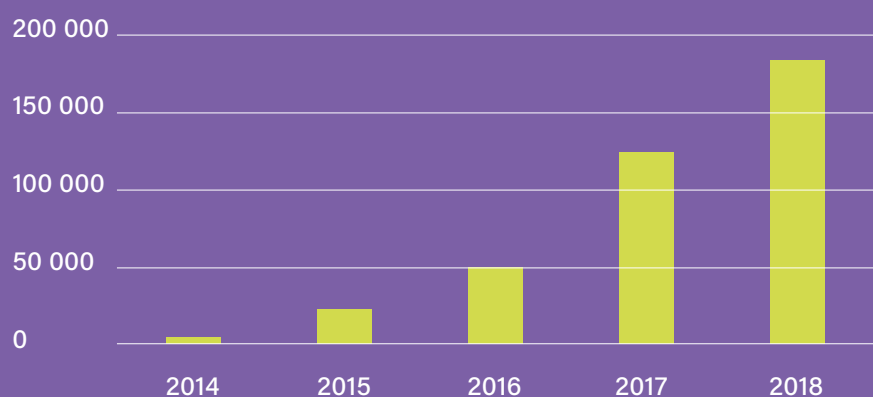
The programme is also building capacity with respect to other diseases. In September 2014, at the height of the Ebola virus disease epidemic, the Government of Senegal used the programme to send 4 million SMS to raise awareness, demonstrating the potential of this technology to promote systemic, long-term change and support for national health services.

"

When I deliver medications for diabetes I encourage the patient to sign-up for mDiabetes. I can see the impact on knowledge and stress reduction.
A pharmacist

Every evening I wait for my son to come home and ask him: "Do we have a new message?" I do my best to control the disease. My mother was amputated, I am very afraid.
An elderly woman

03.13   Country investment in
Be He@lthy, Be Mobile programmes

Government involvement and investment have been critical in ensuring that Be He@lthy, Be Mobile programmes have an impact and are cost-effective and sustainable. Whether in the form of bilateral financial support, domestic government ownership or integration of mHealth programmes into national health strategies, Member States and the international community have repeatedly demonstrated their commitment to digital health.

Country investment

Each country implementing a Be He@lthy, Be Mobile mHealth programme commits financial and human resources, as well as political will to ensure the programme's success. In India, the Government bears the cost of both the mTobaccoCessation and mDiabetes programmes and has engaged other Government bodies to provide technical support, including the Ministry of Health and Family Welfare, the Ministry of Communication and Information Technology, the Prime Minister's office's MyGov platform and the National Informatics Centre.

In 2014, Egypt's Ministry of Health and Population established a central NCD unit to accelerate the response. The following year, this Ministry and two others – the Ministry of Communication and Information Technology and the Ministry of Scientific Research – initiated a collaboration with Be He@lthy, Be Mobile and three local mobile network operators to support implementation of mDiabetes in Egypt.

Senegal's Ministry of Health was one of the earliest partners in mDiabetes and has negotiated a business model for delivery from national telecom operators of a programme that has been shown to improve glycaemic control at a cost of just US$ 3.10 per person. An independent evaluation published in the journal *BMJ Innovations* concluded that "mHealth is both a cheap and effective tool for the therapeutic education of people with diabetes" (6).

Bilateral Investments

Beyond government leadership and multisectoral partnerships, such as with national telecom operators, several Be He@lthy, Be Mobile programmes also benefit from bilateral investments from other Member States or multilateral finance institutions. In Sudan, the African Development Bank has included Be He@lthy, Be Mobile programmes targeted to breast and cervical cancers into the Bank's "Improving health access and systems strengthening" project. WHO and the Federal Ministry of Health will receive nearly US$ 1 million to co-invest in mCervicalCancer implementation and mBreastCancer research. At the same time, the Italian Agency for Development Cooperation is supporting development of Sudan's mDiabetes programme. Zambia's mCervicalCancer programme was launched in 2016, also with financial support from the African Development Bank. The programme has since been integrated into the national cervical cancer strategic plan and will be funded by the Global Fund as it enters its second phase.

Be He@lthy, Be Mobile also benefits from investment by the European Commission's Horizon 2020 programme into a European Union knowledge and innovations hub. The aim of the hub will be to build the Region's capacity for research and implementation of national mHealth programmes. Be He@lthy, Be Mobile programmes have therefore found several successful business models for scaling up and sustaining digital health programmes.

04 INNOVATIONS & HUBS

The initiative's innovation is its emphasis on scale. It is the first United Nations initiative to use population-wide mHealth prevention services at scale and is the largest mHealth initiative for NCDs in the world.

A small work track is exploring how the scale-up model of Be He@lthy, Be Mobile might be applicable to other digital innovations for NCDs, such as WhatsApp and voice-based technologies, to provide alternative means for accessing health information. It is thus positioning itself as a vehicle for sustainable innovation that is not pegged to a single product but to digital health as a whole. Innovation is adding value to ideas, concepts, products or services by taking a novel approach to a traditional method. Digital health and mHealth often disrupt the status quo but provide new opportunities for improving access to health services and information. Be He@lthy, Be Mobile brings innovation to country programmes through its approaches to technology, infrastructure, systems and services.

Innovation starts by identifying where it is needed and how it could add value for stakeholders. In 2018, Be He@lthy, Be Mobile continued working on a "talking book" in collaboration with Arm Ltd, a partner of the initiative. The talking book delivers simple play-back messages, allowing users to search content stored on the device. This innovative approach gives illiterate populations and populations without mobile phones access to information and messaging. It also allows health messages to be delivered to groups rather than just individuals. Arm Ltd is also developing a prototype low-cost, robust tablet with a long battery life, which would meet the needs of development health care workers globally. In this project, funded by the United Kingdom Department for International Development and Arm Ltd, Be He@lthy, Be Mobile is responsible for specifying the requirements of the device, while Arm Ltd provides the network and technical expertise.

One of the challenges for the initiative is to serve more countries and adapt services to local and regional contexts. This includes establishing regional knowledge and innovation hubs to collate research on mHealth and identify best practices for implementing programmes.

The initiative is setting up the first European regional hub, through a Horizon 2020-funded European Union project, to service more countries in the region. In 2018, Be He@lthy, Be Mobile focused on solicitation and selection of a consortium. The new European mHealth hub will be announced once it has been approved as a partner by all parties and stakeholders in the project.

Knowledge is at the heart of the work, to help other countries and organizations benefit. Be He@lthy, Be Mobile promotes innovation at country level through programme planning, technology selection and user recruitment. While most countries have opted for an SMS-based platform, there is growing interest in Instant Messaging and IP-based messaging platforms, such as Facebook Messenger and WhatsApp. Each of these platforms has specific features for interaction with the user, but they also raise considerations of privacy and secondary use of data. Be He@lthy, Be Mobile will continue to work on adopting and delivering content through alternative platforms as part of its innovations.

04.1   *BMJ Innovations*

The peer-reviewed journal *BMJ Innovations*, published by the BMJ Group, has issued a series of articles on the role of mobile phone technology in delivering health care. Three of the articles highlight implementation and evaluation of Be He@lthy, Be Mobile programmes. Two programmes in India (QuitNow for smoking cessation and mDiabetes) and one in Senegal (mDiabetes) demonstrate that mobile communication is cost-effective for delivering health interventions for reducing the burden of NCDs. These studies highlight the positive impact and acceptability of technological interventions in the target population.

BMJ Innovations is designed to promote understanding of what makes a digital health service effective. Programmes are affected by internal (content, technology, integration and management) and external (social and political) factors. This creates a complex nexus of influences, indicating that the system within which a solution is embedded is as important as the solution itself. It also means that partnership is essential: without the experience of all relevant sectors, hybrid interventions of health and technology would fail.

05 RESULTS SUMMARY

05.1 mTobaccoCessation in India *(4)*

BMJ Innovations ▶
article on
mTobaccoCessation
in India

The self-reported quit rate in the QuitNow mTobaccoCessation programme in India was 19% at 4–6 months, as compared with an estimated baseline population quit rate of around 5%. Additionally, 66% of registered subscribers made quit attempts during the study period, and 77% reported that the programme was helpful for quitting tobacco. This may be the first published evaluation of a national mTobaccoCessation programme in a lower–middle-income country.

05.2 mDiabetes in India *(5)*

BMJ Innovations ▶
article on
mDiabetes in India

In the mDiabetes programme in India, 41% of users surveyed said that they followed healthy dietary advice and 55% practised physical activity. The programme also helped to improve understanding of diabetes for 56% of users and prompted 11% to be screened for diabetes. The study demonstrated the feasibility and acceptability of mHealth for improving health-seeking behaviour in a large population.

05.3 mDiabetes in Senegal *(6)*

BMJ Innovations ▶
article on
mDiabetes in
Senegal

In a biometric evaluation in Senegal of the impact of the mDiabetes programme on blood glucose control in people with type 2 diabetes, blood concentrations of HbA1c (indicator of average blood glucose stability over time) were compared for people who did and did not receive SMS messages. The concentrations were significantly lower in participants who received the messages, indicating that the intervention improved glycaemia control.

05.4 Key conclusions from the evaluation

Mobile phones are a cost-effective way of delivering health interventions to a broad population.

Countries save money and time by using mHealth programmes, rather than devising their own.

The accuracy, reliability and appropriateness of the content is guaranteed by WHO's evidence-based process.

05.5 Artificial Intelligence

AI can improve health significantly by improving medical diagnostics and treatment decisions based on digital data. In regions with limited access to good-quality health care, these tools can assist health care practitioners. Because of financial, legal and technical constraints, however, such solutions are rarely deployed at global scale. The AI for Good Global Summit, in April 2018, was organized collaboratively by ITU and sister United Nations agencies, including WHO and the Be He@lthy, Be Mobile initiative. Following the summit, an ITU Focus Group on "Artificial Intelligence for Health" (FG-AI4H) was established to engage researchers, engineers, practitioners, entrepreneurs and policy-makers to leverage AI solutions in practice. The aims of the group are to identify opportunities for standardization and benchmarking to broaden the use of AI for health and to facilitate global dialogue on all aspects of the use of AI for health.

Be He@lthy, Be Mobile is on the management team of the FG-AI4H to help coordinate the discussions and meetings. The first FG-AI4H meeting took place in September 2018 at WHO headquarters in Geneva, Switzerland, and the second in November 2018 at Columbia University in New York City, USA. The focus group collaborates in development of appropriate national guidance to ensure the safe, appropriate use of AI in health. By identifying opportunities for standardization, the group will enable broad use of AI for health. Meetings in 2019 are scheduled to take place in Lausanne, Switzerland (January), Shanghai, China (April) and Geneva, Switzerland (May). Participation in the ITU Focus Group on "Artificial Intelligence for Health" is free of charge and open to all.

05.6 EU mHealth knowledge and innovations hub

WHO and ITU are creating a joint mHealth hub for Europe to share successes in mHealth throughout the European Region and boost uptake of mHealth solutions by national governments. The hub will provide services in operational research, training and education, identifying standards, regulatory and policy goals and implementation. It will focus on knowledge management and innovation and on practical implementation. This dual focus is particularly important for mHealth, as one of the highest barriers to broader adoption of mHealth is scaling up from pilot programmes, which can be overcome only with targeted support and development of mHealth evidence at scale.

The overall objectives of the hub are to:
- collect and disseminate research and experience in large-scale implementation of mHealth programmes and
- support European Member States in setting up large-scale mHealth programmes.

For the first objective, the mHealth hub will produce a set of "knowledge tools" to provide advice on large-scale implementation of mHealth services and interventions. The focus is primarily on prevention and management of NCDs such as diabetes, cancer and mental health but also on broader topics, such as assessment frameworks and integration of innovations into health care systems.

The second objective, development of national mHealth interventions in selected European Member States, will be met collectively by WHO and ITU through the newly established hub. Countries interested in working with the hub will be encouraged to join through an open call for Expressions of Interest later in 2019.

The hub is a 4-year project funded by the European Commission under the Horizon 2020 action: "establishing EU mHealth Hub", including evidence for the integration of mHealth into health care systems. A reputable non-commercial institution will be appointed as host for the mHealth hub, to be announced in 2019. In the long term, the hub is expected to become independent and self-sufficient and to continue to provide support to countries in scaling-up of their national mHealth services.

05.7 SDG summer school

The SDG summer school is part of the Geneva–Tsinghua initiative, a collaboration between the University of Geneva and Tsinghua University in China. In 2018, the SDG summer school was run with Be He@lthy, Be Mobile and focused on team problem-solving and hands-on prototype development in the field of mHealth.

Participants in the SDG summer school are selected through the Open Seventeen Challenge, a competition open to all university students who propose innovative solutions for achieving the health-related SDGs. Of 70 applicants, 35 were selected to spend the summer working on their projects, which addressed road safety, compliance with tobacco regulations, cervical cancer screening, female hygiene in public places, access to sanitation and detection of retinal disease. Through its engagement with the Geneva–Tsinghua initiative and the Open Seventeen Challenge, Be He@lthy, Be Mobile had the pleasure of working with some of the brightest young minds on the use of digital technology for NCD prevention and management!

SDG summer school

Yes helmet

Incentivizing use of helmets by bicyclists through a mobile app, with machine learning to classify images with helmets

A CleanAir Greece

Using crowdsourcing to map noncompliance with smoke-free laws in public places

At Your Cervix

Improving prevention and early detection of cervical cancer by menstrual tracking with mobile apps.

Fem.Friendly

Gathering data and finding solutions to improve female hygiene in public places.

Sanitation

Improving access to toilets and raising awareness about sanitation practices.

iDoctor

Low-cost imaging system with AI to provide rapid detection of potential eye diseases.

▲

Data collectors testing the
TobaccoSpotter mobile application in
Mongolia

◄

TobaccoSpotter mobile application
currently available only in Chile,
Mongolia, Pakistan, Romania, Seychelles,
Thailand and Uganda.

◄ TobaccoSpotter promotional materials

05.8   TobaccoSpotter

During the past decade, countries at all income levels have made significant progress in adopting smoke-free legislation and bans on tobacco advertising, promotion and sponsorship. WHO has strong mechanisms in place for assessing and reporting on the strength of laws; however, it is also important to determine implementation and enforcement of laws. As part of a joint initiative between Be He@lthy, Be Mobile and the WHO department for Prevention of Noncommunicable Diseases, a pilot project was launched to assess national compliance with laws on smoke-free indoor public places and public transport and bans on tobacco advertising, promotion and sponsorship. The project includes determination of a scalable method to measure compliance with national tobacco control laws.

Three types of survey method are being compared: conventional surveys conducted by trained field data collectors, crowdsourcing surveys conducted by the general public and surveys conducted by public health experts and health professionals. A mobile application, "TobaccoSpotter", was developed for reporting compliance and non-compliance. The project is being implemented in seven countries: Chile, Mongolia, Pakistan, Romania, Seychelles, Thailand and Uganda, with funding provided by Bloomberg initiatives. Be He@lthy, Be Mobile facilitated development of the mobile application and provided expertise in launching this mobile health initiative.

06 PARTNERSHIPS

Be He@lthy, Be Mobile has a few partnerships with organizations that share its vision and belief that digital solutions can help protect people from NCDs. The multi-sectoral partnerships include collaboration with governments, other United Nations bodies, nongovernmental organizations, academic institutions and the private sector. Partners join to learn with like-minded organizations and develop large mHealth and digital health programmes.

What do our partners bring to the initiative?

- **funds to sponsor our country programmes, handbooks and innovations work streams;**

- **time and energy to support our workshops, events and forums;**

- **intellectual support to our handbooks and content libraries forums;**

- **rally in-country networks to support our country programmes;**

- **written articles, advocacy pieces and social media stories to build support for Be He@lthy, Be Mobile;**

- **technological and marketing solutions; and**

- **secondment to the secretariat in Geneva.**

What do our partners get from the initiative?

- contribution to **social impact** and SDGs by improving global health;

- **brand association** with Be He@lthy, Be Mobile, a joint initiative between WHO and ITU;

- mHealth **handbook content**, which can be delivered to customers and/or staff, subject to a licensing agreement;

- **networking** with our partners and other stakeholders by participating in workshops, side-events, stakeholder forums, hackathons, partner initiatives and high-level political events;

- opportunities to **learn** about digital health, NCDs, human-centred design, behaviour change, emerging markets and scaling-up of programmes;

- **exposure** through our website, newsletter, journal articles, social media and annual report;

- strategic **guidance** for corporate social responsibility and exploration of new business opportunities;

- better **understanding** of working with governments, particularly in low- and middle-income countries, and with the United Nations; and

- access to the initiative's professional network and expertise in **scaling-up digital health**.

06.1 Spotlight: Arm Ltd is developing a rugged tablet with Be He@lthy, Be Mobile

Health care delivery in rural areas remains difficult for many reasons, including lack of documentation and adequate recording methods. Paper-based records are easy to lose or manipulate, and the available digital devices are not fit for the needs of health care workers. Generic tablets have a short battery life, which is not suitable for use in remote communities. The devices often lack features such as flash and a camera that are required for simple diagnostics. Devices that offer more features tend not only to be more fragile but are also generally unaffordable.

Be He@lthy, Be Mobile has partnered with the processor and software design company Arm Ltd to develop a prototype low-cost, robust tablet with a long battery life that would meet the needs of development health care workers globally. In this project, funded by the United Kingdom Department for International Development and Arm Ltd, Be He@lthy, Be Mobile is responsible for specifying the requirements of the device, while Arm Ltd provides the network and technical expertise. The aims are to have two prototypes designed and tested by the end of 2019 and to collect market data and evidence for demand for such a product.

06.2 Collaboration with the private sector

Joining forces with the health insurance industry
On 18 July 2018, Be He@lthy, Be Mobile hosted a dialogue with the health insurance industry in Geneva, Switzerland, to exchange information and strategies for the prevention and control of NCDs through technology, incentives, behaviour change and financing. The event was attended by representatives of the health insurance industry, civil society, academia and United Nations organizations.

After a session on sharing experiences and best practices from WHO and from health insurers, participants broke into groups to discuss digital tools, emerging markets, user data, behaviour change, financing and divestment from harmful industries. Several potential areas of collaboration emerged. Be He@lthy, Be Mobile has capitalized on the momentum from the dialogue to explore how best to collaborate with the private sector to tackle NCDs among their customers and around the world.

Working with Sanofi to reduce the burden of diabetes
Sanofi, a multinational pharmaceutical company, joined Be He@lthy, Be Mobile in 2014 in developing the mDiabetes programme, which was launched as a pilot programme in Senegal. The scarcity of trained health care professionals and limited access to health care in Senegal contribute to gaps in the management of diabetes. Our partners supported development and implementation of the programme by providing expertise in diabetes prevention and management. Sanofi is involved in several digital projects globally, including the virtual clinics developed by Onduo in the USA and the online health care professional training programme eDiabetes in Africa. Sanofi is committed to improving access to prevention, treatment and care for people living with NCDs in low- and middle-income countries and reducing the burden of disease by harnessing the power of mobile phone programmes for improving health.

06.3 Collaboration with academia

University of Cambridge, Judge Business School

The University of Cambridge Judge Business School in the United Kingdom supports Be He@lthy, Be Mobile by annual consultations on the initiative's business model. In the Global Consulting Project, Masters of Business Administration students investigated for-profit revenue models as a potential approach after interviews with United Nations agencies and private partners, whose sustainable business models have helped Be He@lthy, Be Mobile to reassess its business model.

06.4 **Collaboration with nongovernmental organizations**
Non-communicable Disease Alliance (NCDA)

NCDA continues as a partner to the Be He@lthy, Be Mobile initiative. In 2018, they submitted statements on digital health to both the WHO Executive Board and the World Health Assembly in support of adoption of the mHealth resolution, highlighting the importance of evaluating and regulating existing mHealth tools and promoting use of mHealth to complement existing practices. During 2018, NCDA continued its involvement with the Broadband Commission, including co-hosting a session at the World Health Assembly with the Novartis Foundation and Intel on the contribution of digital technologies to reducing NCDs and achieving universal health coverage. The Chief Executive Officer, Katie Dain, participated in a panel discussion on the side-lines of the United Nations General Assembly to mark the launch of the report on the promise of digital health to address NCDs and accelerate universal health coverage in low- and middle-income countries, to which NCDA had contributed. NCDA co-organized a session at the 2018 annual meeting of the American Public Health Association in San Diego, USA, in November to explore the opportunities presented by digital technology to reduce health inequity and inequality by reaching those furthest behind.

06.5 **Bilateral collaboration**
Italian Agency for Development Cooperation

The Italian Agency for Development Cooperation is an international development programme financed by the Italian Ministry of Foreign Affairs and International Cooperation. With support from the Agency, the Be He@lthy, Be Mobile initiative provided technical assistance to Sudan for a national mHealth programme for diabetes prevention and management. Sudan was the fifth country to initiate an mHealth programme for diabetes, following Senegal, India, Egypt and Tunisia. The objective of Sudan's mDiabetes programme is to use mobile technology to reduce the country's burden of diabetes with an SMS service for diabetes management and prevention of related complications. The mHealth messages will also target the general population, those at high risk of diabetes and health workers who serve diabetic patients. The success of the programme will be evaluated by measuring behaviour change, awareness about diabetes, blood sugar levels and reduced HbA1c levels. Another objective of the programme is to build the capacity of the Government of Sudan to provide information on diabetes prevention. Details of the programme targets, reach and content are being finalized with national focal points.

By the end of 2018, the Be He@lthy, Be Mobile initiative had conducted two missions to Khartoum to plan work and provide technical assistance. The team met with representatives from the Italian Agency for Development Cooperation on both missions and assisted the WHO Country Office and the Federal Ministry of Health in technology, content adaptation and operations. The national mDiabetes programme is expected to be launched in mid-2019.

ACKNOWLEDGEMENTS

All of this was done with a little help from our friends.
Be He@lthy, Be Mobile would like to express its
sincere appreciation and thanks to all its partners:

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Annex 1

Steering Committee, informal expert groups and regional focal points

WHO	ITU
Nicholas Banatvala, Senior Adviser to the Assistant Director General, Noncommunicable Diseases and Mental Health	**Kemal Huseinovic,** Chief, Infrastructure, Enabling Environment and E-Applications
Douglas Bettcher, Director, Prevention of Noncommunicable Diseases	**Eun-Ju Kim,** Regional Director for Asia and the Pacific
Edward Kelley, Director, Service Delivery and Safety	**Yushi Torigoe,** Deputy to the Director and Chief of Administration and Operations Coordination

Informal expert groups

Six informal expert groups have been established to date:

mTobaccoCessation Informal Expert Group
- Lorien Abroms, George Washington University, USA
- Caroline Free, London School of Hygiene and Tropical Medicine, United Kingdom
- Pratima Murthy, National Institute of Mental Health and Neurosciences, India
- Mark Parascandola, National Cancer Institute, USA
- Robyn Whittaker, University of Auckland, New Zealand

mDiabetes Informal Expert Group
- Line Kleinebreil, Université Numérique Francophone Mondiale, France
- Ambady Ramachandran, India Diabetes Research Foundation and Dr. A. Ramachandran's Diabetes Hospitals, India
- Nalini Saligram, Arogya World, USA and Arogya World India Trust, India
- Nikhil Tandon, All India Institute of Medical Sciences, India
- Josefien Van Olmen, Institute of Tropical Medicine and University of Antwerp, Department of Primary and Interdisciplinary Care, Belgium
- Robyn Whittaker, University of Auckland, New Zealand

mCervicalCancer Informal Expert Group
- Raveena Chowdhury, Marie Stopes International, United Kingdom
- Ophira Ginsburg, NYU School of Medicine, USA
- Mauricio Maza, Basic Health International, El Salvador
- Dan Murokora, Masaka Regional Hospital, Uganda
- Groesbeck Parham, University of North Carolina, USA
- Patrick Petignat, University Hospitals of Geneva, Switzerland
- Rengaswamy Sankaranarayanan, International Agency for Research on Cancer, India
- Achim Schneider, Charité University Medicine, Germany
- Surendra S. Shastri, Tata Memorial Centre, India
- Karen Yeates, Queen's University, Canada

mBreatheFreely Informal Expert Group
- Innes Asher, University of Auckland, New Zealand
- Jean Bousquet, Fondation FMC-VIA-LR, Montpellier, France
- Valentin Prieto Centurion, University of Illinois, USA
- Niels Chavannes, Leiden University Medical Centre, The Netherlands

- Asma El Sony, Epidemiologcal Laboratory for Research and Public Health, Sudan
- Gregory Erhabor, Obafemi Awolowo University, Nigeria
- Jim Kiley, National Institutes of Health, USA
- Jørgen Vestbo, University of Manchester, United Kingdom

mAgeing Informal Expert Group
- Olivier Bruyere, University of Liège, Belgium
- Joconiah Chirenda, University of Zimbabwe, Zimbabwe
- Leila Pfaeffli Dale, University of British Columbia, Canada
- AB Dey, All India Institute of Medical Sciences, New Delhi, India
- Amit Dias, Goa Medical College, India
- Dorothy Anne Forbes, Western University, Canada
- Magne Hustavenes, Oslo and Akershus University College, Norway
- Mikel Izquierdo, Public University of Navarra, Spain
- Jill Keeffe, L V Prasad Eye Institute, India
- Qurat ul Ain Khan, Aga Khan University Hospital, Pakistan
- René Rizzoli, University Hospital of Geneva, Switzerland
- L. Suzanne Suggs, Università della Svizzera italiana, Switzerland
- Jean Woo, Chinese University of Hong Kong, Hong Kong (China)

mActive Informal Expert Group
- Shifalika Goenka, Centre for Chronic Disease Control and Public Health Foundation of India, India
- Abby King, Stanford University, USA
- Michael Rosenberg, University of Western Australia, Australia

Regional focal points

WHO regional offices
Prebo Barango, Jean Marie Dangou, Heba Fouad, Clayton Hamilton, Mina Kashiwabara, Jagdish Kaur, Kelvin Khow, Kathleen Lannan, Ahmed Mohamed Amin Mandil, Mohamed Nour and David Novillo Ortiz

ITU regional offices
Karim Abdelghani, Sameer Sharma and Cleveland Thomas

Annex 2

Financial overview: income and expenses

Funds are raised for Be He@lthy, Be Mobile in several industry groups, including pharmaceuticals, insurance, technology, bilateral organizations, foundations and development agencies. Partners donate to ITU directly, and the Steering Committee allocates funds to countries and for technical work.

By December 2018, partners had committed just under 9 million USD for the six years of the initiative.

In-kind contributions
Non-financial support from partners, countries and academic institutions

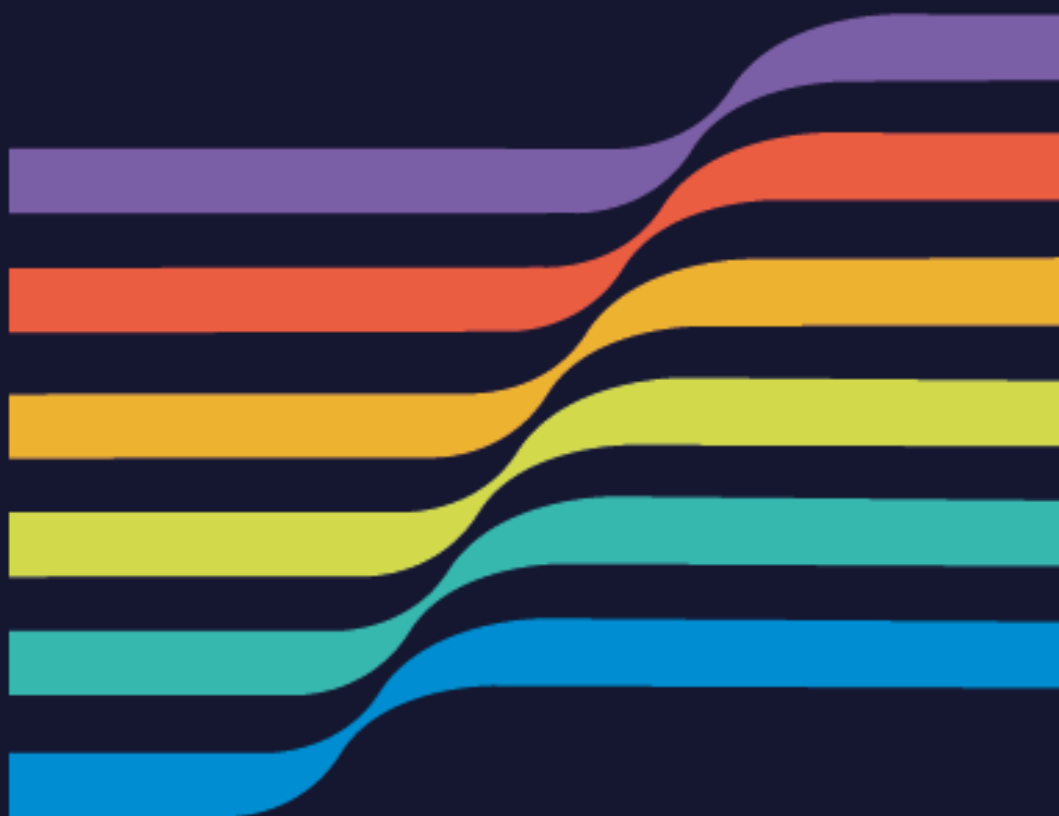| Donor	In-kind support
WHO	Additional staff to secretariat and Steering Committee
ITU	Additional staff to secretariat and Steering Committee; support for Telecoms 2012
International Federation of Pharmaceuticals Manufacturers and Associations	Publication "Health at your fingertips"
Donor	**In-kind support**
The NCD Alliance	Advocacy support
University of Cambridge	Financial modelling seminar and monitoring and evaluation framework, 2013
University of Southern California	Workshop on mSmartLife, 2014
University of Oxford	Workshop on mHypertension, 2015
All-India Institute of Medical Sciences, University College of Medical Sciences	Workshop on mAgeing, 2015
Norwegian Directorate of eHealth	Additional staff to secretariat
American University of Cairo	Workshop on mTB-Tobacco, 2016
Université de Genève	Open Seventeen Challenge on mHealth, 2017
Université de Genève	Workshop on mAgeing, 2017
Norwegian Directorate of eHealth	Workshop on mBreatheFreely, 2017
University of Western Australia, Stanford University	Workshop on mActive, 2018
University of Montpellier	Workshop on mOralHealth, 2018

Secretariat operating income and expenses, 1 January 2013–30 December 2018, in US dollars

Income	2013–2017	2018	2013–2018
Total income	**$ 8 133 996**	**$ 547 241**	**$ 8 681 237**
Voluntary contributions	$ 4 479 018	$ 498 366	$ 4 977 385
Cash contributions	$ 344 313	$ –	$ 344 313
Multilateral	$ 3 300 000	$ –	$ 3 300 000
Interest earned	$ 10 665	$ 48 875	$ 59 540

Expenses	2013–2017	2018	2013–2018
Total expenses	**$ 4 258 623**	**$ 872 692**	**$ 5 131 315**
Global activities, subtotal	**$ 2 376 522**	**$ 395 707**	**$ 2 772 228**
Programme coordination and management (staff for global and country activities)	$ 1 721 399	$ 325 514	$ 2 046 913
Toolkit development	$ 500 576	$ 55 934	$ 556 510
Promotion and partnerships	$ 154 547	$ 14 259	$ 168 806
Country activities, subtotal Programme planning and implementation support	**$ 1 426 957**	**$ 363 995**	**$ 1 790 952**
Burkina Faso	$ 17 027	$ –	$ 17 027
Costa Rica	$ 177 959	$ –	$ 177 959
Egypt	$ 29 729	$ 27 509	$ 57 238
Norway	$ 119 911	$ –	$ 119 911
Philippines	$ 133 677	$ 29 807	$ 163 484
Senegal	$ 259 593	$ 10 394	$ 269 987
Tunisia	$ 138 356	$ 75 164	$ 213 520
United Kingdom	$ 25 747	$ –	$ 25 747
Zambia	$ 332 948	$ 180 538	$ 513 486

India	$ 155 884	$ 40 583	$ 196 467
Others	$ 36 126	$ –	$ 36 126
Operations, subtotal	**$ 455 144**	**$ 112 991**	**$ 568 135**
Administrative and operations services ITU, 10%; WHO, 13%	$ 374 723	$ 100 127	$ 474 849
ITU administrative agent (1%)	$ 31 395	$ 4 152	$ 35 547
Bank charges and other	$ 49 026	$ 8 712	$ 57 738
Remaining funds	**$ 3 875 373**	**$ (325 451)**	**$ 3 549 922**