

# REGIONAL WORKSHOP FOR CIS AND GEORGIA

---

**“Most Popular Mobile Applications: Ways of Implementation  
and Development in the CIS Countries”**

**mHealth**

**Issyk Kul, Kyrgyz Republic, 6-8 September 2016**



Hani Eskandar  
ICT Applications, ITU  
September 2016

# HEALTH IN THE SDG ERA





# Examples of mHealth Strategies

	Health services	Description of mHealth usage and applications	Example Cases
	Data Collection / Disease Surveillance	CHW-based health and illness surveillance, diagnostic and treatment algorithms, improved data quality and timeliness.	
	Treatment Adherence / Appointment Reminders	Automated text-message reminders to improve clinic visit compliance or drug adherence.	
	Emergency Medical Response Systems	On-demand EMRs, <u>Geolocation</u> services, targeting care to WHERE AND WHEN needed.	
	Health Information Systems & Support Tools for Health Workers	Collection and analysis of patient, clinic and commodities data; information helps health worker and health system responsiveness	
	Supply Chain Management	Management and monitoring of inventory and supply chain, protecting patients and improving responsiveness.	
	Health Financing	Innovative use of mobile-enabled financial products, insurance, or on-the spot lending for health services.	
	Disease Prevention and Health Promotion	Push and Pull information services to educate patients and the public.	

(Source: World Bank and Dalberg. "Study on Mobile Applications for the Health Sector" Presentation. 2010)  
 Source: Dalberg research and analysis

# Examples of technology options for Health

CHANNEL	STRENGTHS	WEAKNESSES
<b>IVR (Interactive Voice Response)</b>	<ul style="list-style-type: none"> <li>• Voice- and phone-enabled access</li> <li>• Fast time-to-market</li> <li>• Supports natural language</li> <li>• Ease of integration</li> </ul>	<ul style="list-style-type: none"> <li>• Limited capability and development tools</li> <li>• Inability to pause, resume, forward and rewind</li> </ul>
<b>SMS</b>	<ul style="list-style-type: none"> <li>• Simple, easy and convenient</li> <li>• Cost effective</li> <li>• Private communications</li> <li>• Fast communications</li> </ul>	<ul style="list-style-type: none"> <li>• Some security vulnerabilities</li> <li>• Fake SMS (spoofing)</li> </ul>
<b>USSD (Unstructured Supplementary Service Data)</b>	<ul style="list-style-type: none"> <li>• Simple and logical</li> <li>• Real-time, fast and responsive</li> <li>• Inexpensive</li> <li>• Interactive navigation</li> </ul>	<ul style="list-style-type: none"> <li>• Session-based timeouts</li> <li>• Codes more difficult to remember than Common Short Codes</li> </ul>
<b>MMS</b>	<ul style="list-style-type: none"> <li>• Direct and personal</li> <li>• Messages can be stored and forwarded</li> <li>• Interactivity through multi-media</li> </ul>	<ul style="list-style-type: none"> <li>• Not compatible with basic phones</li> <li>• More expensive than SMS</li> <li>• Content adaptation limited by screen size and resolution variations</li> <li>• Read and response rates lower than SMS</li> </ul>
<b>Data Applications</b>	<ul style="list-style-type: none"> <li>• Self-contained experience</li> <li>• Graphics and user-generated content</li> <li>• Automatic updates and read content offline</li> <li>• Leverages device-native capabilities (camera, GPS)</li> <li>• Strong paid model</li> </ul>	<ul style="list-style-type: none"> <li>• Fragmentation, need to build for multiple platforms, with time and costs</li> <li>• Managing multiple releases</li> <li>• Client side changes</li> <li>• Need to submit app to some stores for approval</li> </ul>
<b>Mobile Web</b>	<ul style="list-style-type: none"> <li>• More economical than mobile apps</li> <li>• Mobile phones and smartphones supported</li> <li>• Mobility for content and services</li> <li>• Videos and photos</li> </ul>	<ul style="list-style-type: none"> <li>• Less functionality, unable to use advanced phone features such as camera, GPS</li> <li>• Small display size</li> <li>• Low text input and low bandwidth</li> </ul>

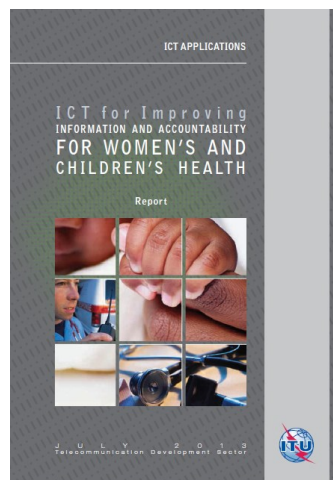
In addition to Helplines, Voice calls, TV, Radio, Social Networks, etc.



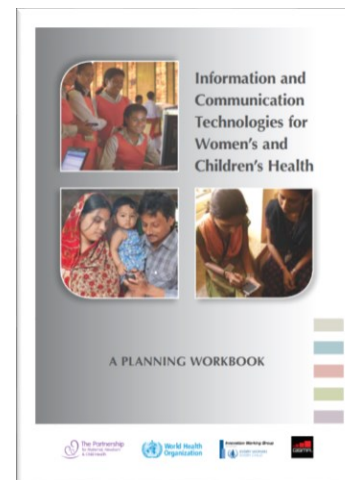
# Examples of eHealth supporting health promotion for MNCH

## A. eHealth services provided to individuals, new and expectant mothers, infants, their families and communities

ICT innovations and services	Examples of ICT services along the WHO Continuum of Care				Examples of eHealth projects in CoIA countries <sup>22</sup>
	Pre-pregnancy	Pregnancy	Birth	Post-natal	
<b>eHealth supporting Public Health Information and Education</b> <ul style="list-style-type: none"> <li>Call centres and helplines</li> <li>Local radio</li> <li>SMS/IVR-based health education and promotion</li> <li>SMS and social networks for behaviour change and communication</li> </ul>	<ul style="list-style-type: none"> <li>Access to Reproductive Health Information</li> <li>Reinforce positive health behaviour change, such as child spacing</li> <li>Stimulate demand on Reproductive healthcare</li> </ul>	<ul style="list-style-type: none"> <li>Providing tips on appropriate care and general information on pregnancy</li> <li>Support the prevention and treatment of mother-to-child transmission of HIV/AIDS and other communicable diseases</li> <li>Peer support networks of pregnant women</li> <li>Improving access and utilization of Maternal Health Services by pregnant women</li> </ul>	<ul style="list-style-type: none"> <li>Incentivizing women to attend facilities providing skilled care during and after birth</li> </ul>	<ul style="list-style-type: none"> <li>Access to information about infant and child nutrition, safe drinking water, hygiene promotion, etc.</li> </ul>	<ul style="list-style-type: none"> <li>MAMA [2]</li> <li>Text4Baby [46]</li> <li>Medic Mobile [13]</li> <li>UNICEF Reminder Mother System [48]</li> </ul>



<http://www.itu.int/en/ITU-D/ICT-Applications/Documents/CoIA%20Background%20ICT4RMNCH.pdf>



<http://www.who.int/pmnch/knowledge/publications/ict/en/index1.html>

# Example of eHealth for Health Promotion: Helpline

## National Health Portal in India

### National Health Portal Voice Web (Voice Portal)



The NHP Voice Web is a 24X7 toll free helpline (1800-180-1104) wherein you can get authentic health information

# Example of eHealth for Health Promotion: SMS for MNCH



Mobile Alliance for Maternal Action

Mom receives personalized, stage-based messages 2–3 times a week.

· Encouragement · Warning Signs · Reminders



Connecting Frontline Health Workers to resources and each other to expand their knowledge, organize content into courses, and share their learning with the community.



### Family Planning

62 resources



### Antenatal Care

26 resources



### Labor & Delivery

36 resources



### Newborn Care

89 resources



### Child Health

66 resources



### Nutrition

50 resources



## Preparing Injectable Medicines

### Video from Global Health Media Project

This film shows how to use a dosing guideline and how to prepare and draw up two commonly used antibiotics, ampicillin and gentamicin.



## The Position of the Baby

### Video from Global Health Media Project

This film demonstrates how to feel where the baby is within the uterus and how to measure the station of the baby.



## Giving Good Care During Labor

### Video from Global Health Media Project

This film shows ways to help a laboring woman and contribute to a feeling of trust.



# Health Education for Women and Children Health



Uganda: delivering vital health content in rural areas



Makerere University



**MedicalAidFilms**



Video training content



[www.health-orb.org](http://www.health-orb.org)



Outernet's Lighthouse

<https://outernet.is/>



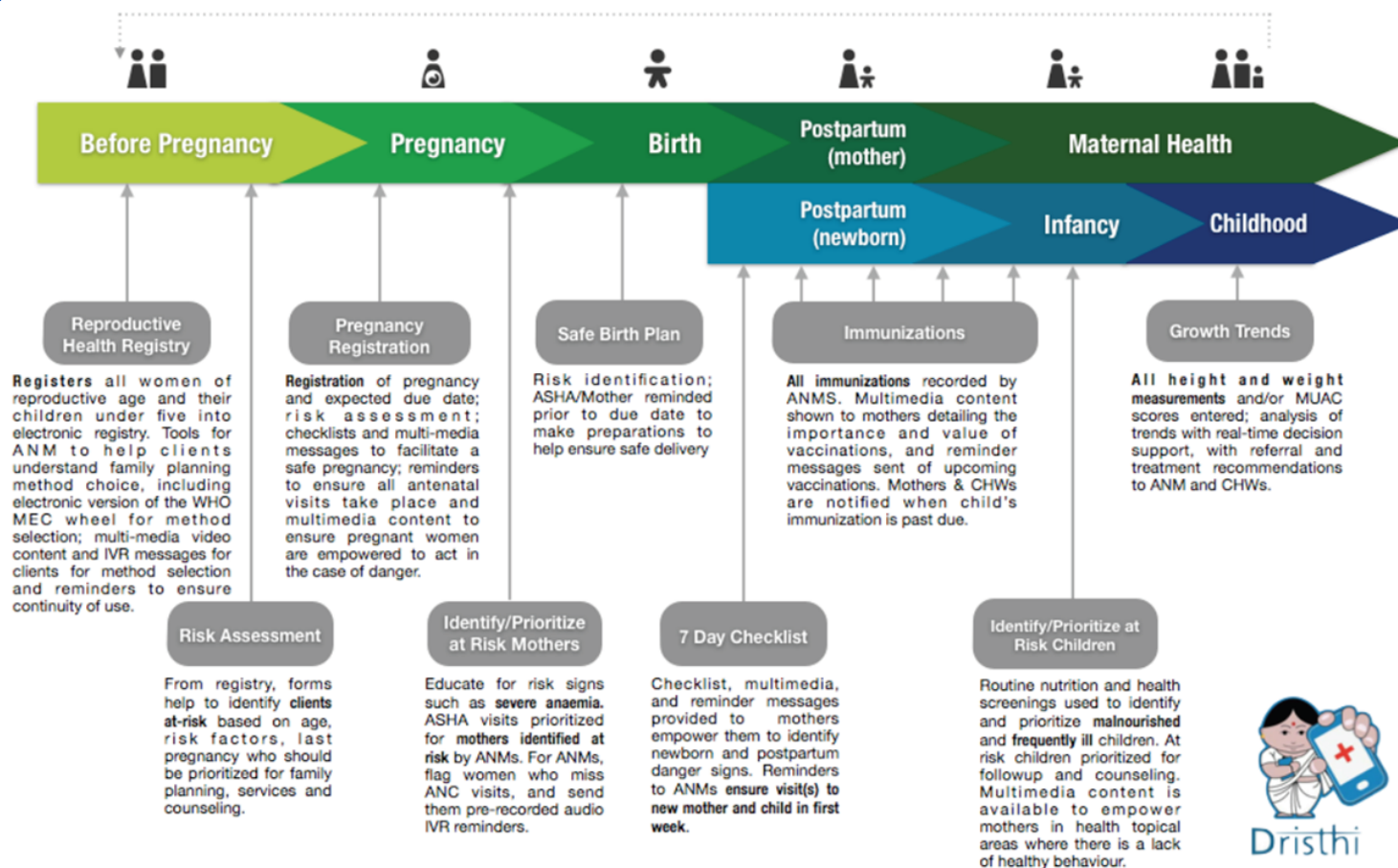
Health content can be viewed offline and shared with other health workers and the community

# Care Program Management Phase – Example: Open Smart Register Platform





# Care Program Management Phase – Example: Open Smart Register Platform



Across the system: linkage to the Maternal Child Tracking System (MCTS); Dristhi-based real-time monitoring of provider performance (head-, hand-, heart-scores) related to service delivery and client health outcomes; automated reporting of services, commodities, and health events into HMIS.

# SMS printers aid early infant diagnosis of HIV/AIDS in Nigeria

---



Early infant diagnosis of HIV is critical



Infant tested, sample sent to lab



Lab test for HIV and results instantly returned to remote health facility by SMS technology



Results received and printed by SMS printer, and shared with baby's caregiver



Life-saving treatment promptly initiated





Non-communicable diseases (NCDs) are rising faster than the decline of infectious diseases and maternal and child health issues

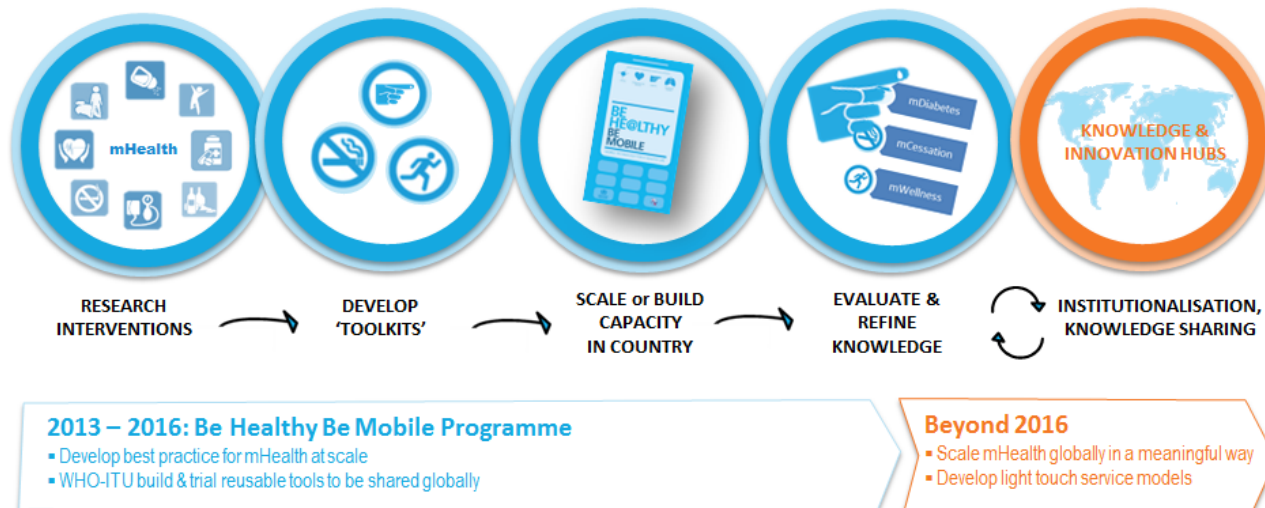


Four out of five deaths from NCDs worldwide are in low- and middle-income countries

# Be He@lthy Be Mobile: mHealth for NCDs



- Joint initiative between two UN agencies: WHO and ITU
- Supports government scale-up of health interventions for NCDs using mobile technology
- Collects global evidence on best practices for technology, health content for prevention and management
- Promotes **universal health coverage, innovation and intersectoral collaboration**
- Focus on Partnerships, Toolkits, and Countries



**Scale-up model: from pilot to institutionalization**

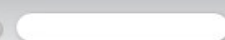
# Example of a Smoking Cessation programme using mobile in India, Tunisia, Philippines and Costa Rica



<https://www.dropbox.com/s/mjr6z96ejdbdglx/Changing%20the%20Face%20of%20ICTs%20Costa%20Rica%20%281%29.mp4>



Un programa de mSalud



DEJE DE FUMAR HOY

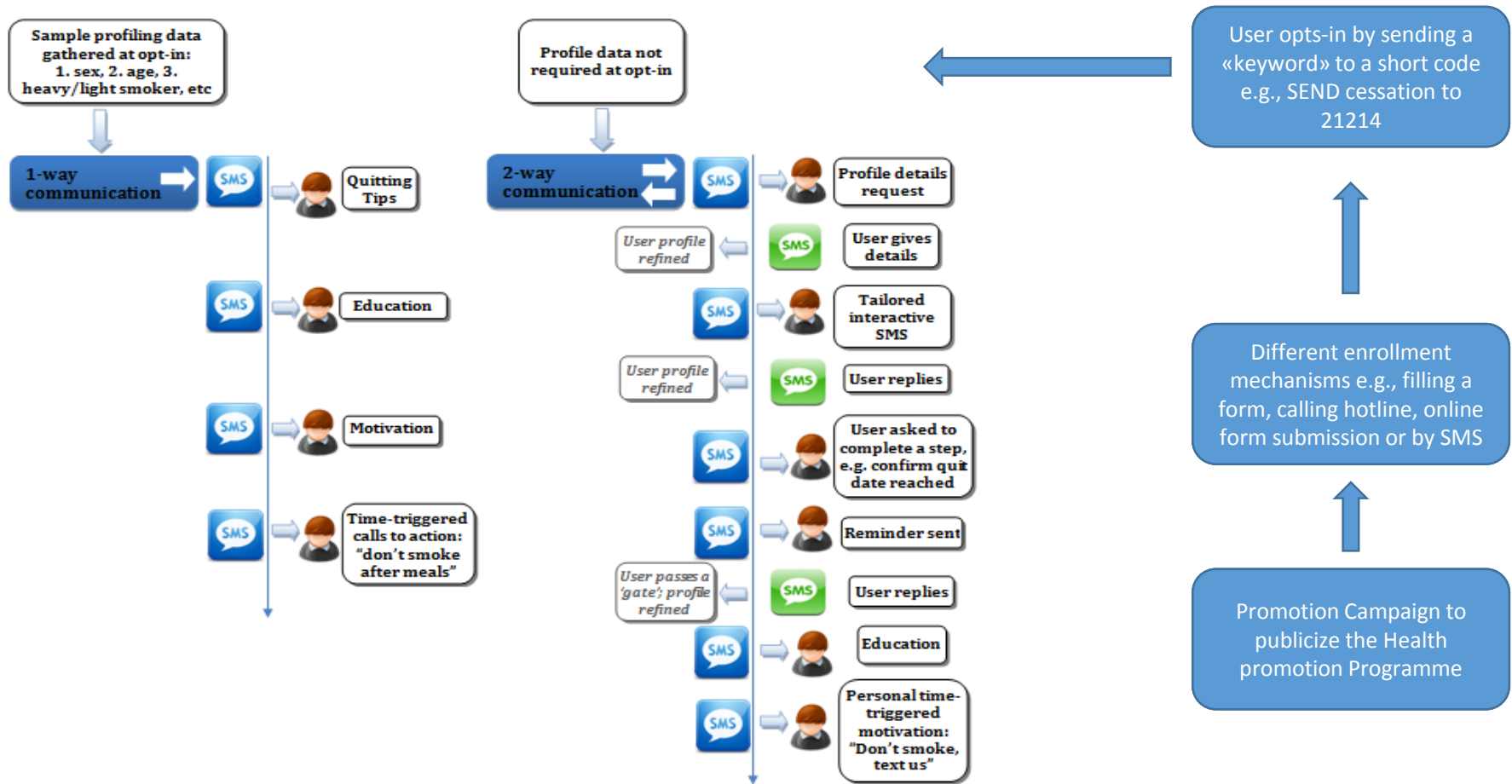
PREPÁRESE PARA DEJAR DE FUMAR

APRENDA MÁS

AYUDE A ALGUIEN

# Some design principles for SMS

## for Health Promotion and Behavior change



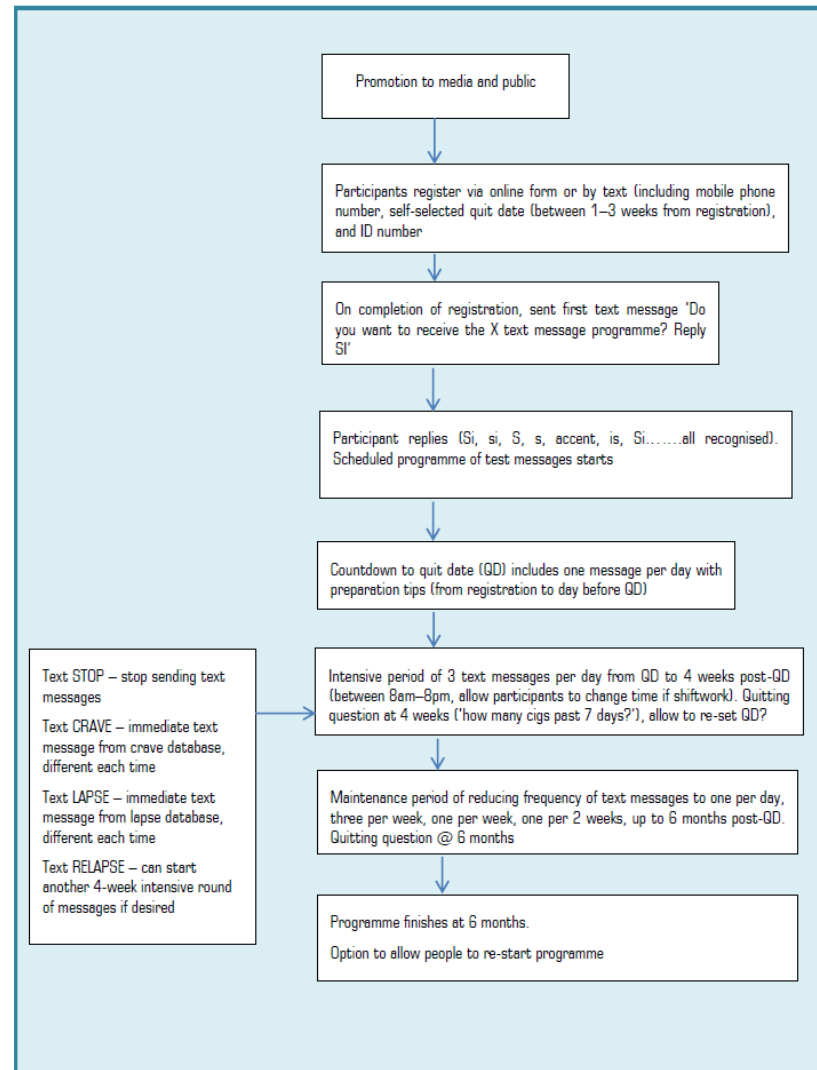
## Some tips when writing the message library

---

Approach	Example message
Provide health information, advice and tips, often tailored around user characteristics	Try using Nicotine Replacement Therapy (NRT). Smokers who use NRT double their quit rates.
Ask users to set goals	By how many cigarettes do you hope to cut down?
Provide opportunities for tracking progress	Track how many cigarettes you smoked yesterday.
Provide reinforcement for goals which are met	Congrats! You met your goal.
Offer reminders (e.g. to take vitamins; to follow-through with goals)	Your Quit Day is tomorrow.
Offer social support	Hi! I'm your quitpal. I've been through this and quitting is tough. Stick with it and you'll make it through.



# 2-way SMS behavior change programme for Tobacco Cessation

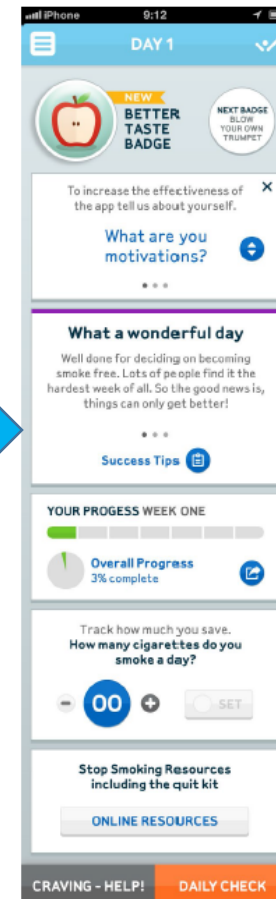
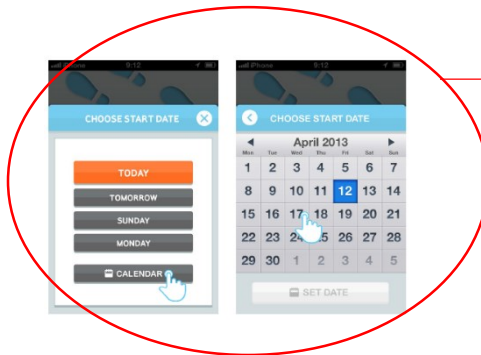
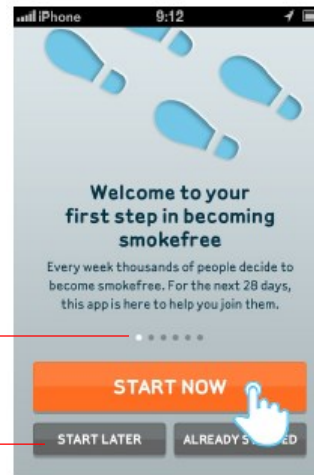
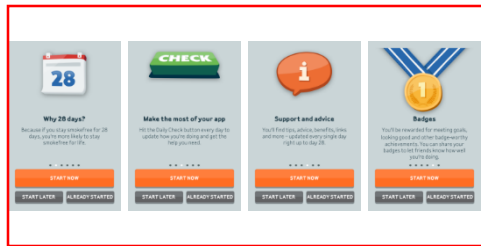


# Example of mHealth for Behavior change through mApps



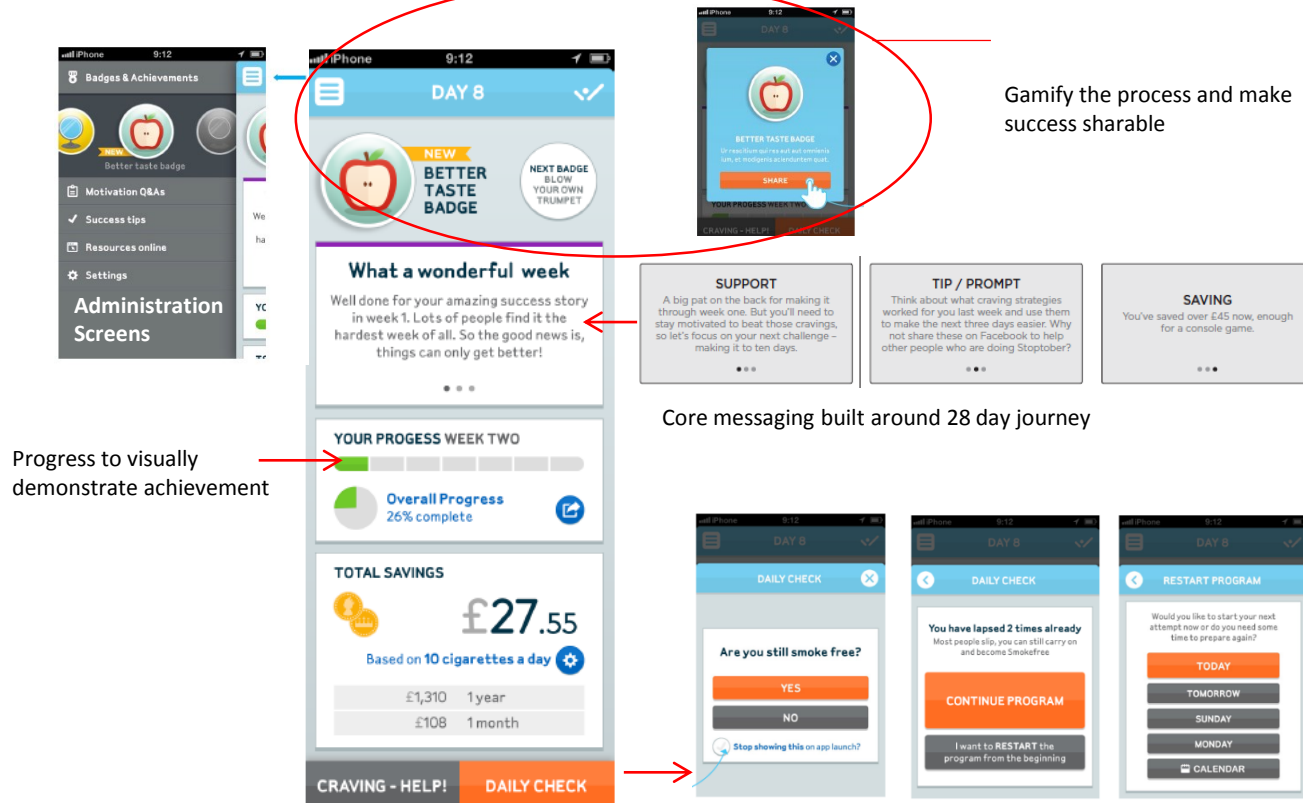
Public Health  
England

## SmokeFree App



# Example of mHealth for Behavior change through mApps

## Progress



# Example of mHealth for Behavior change through mApps



## Quit Smoking Mobile App

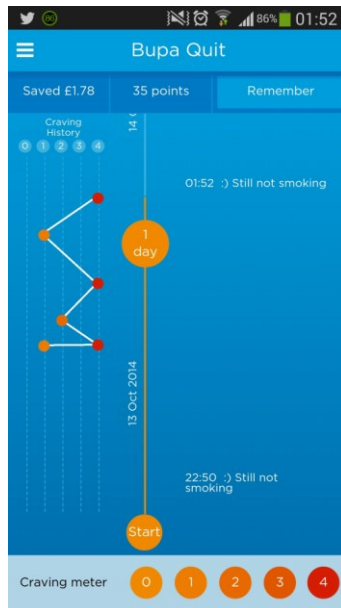
### Quit Smoking App



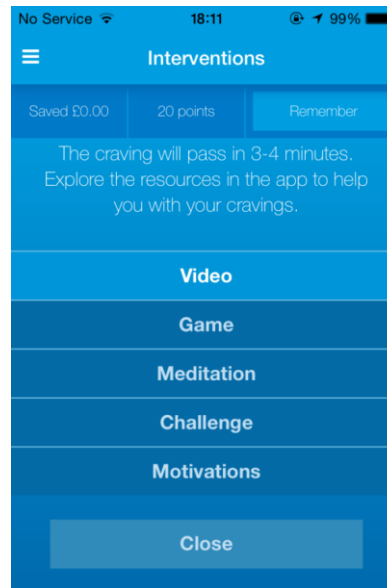
- Raises awareness on the hazards of tobacco dependency
- Offers quitting tips and encouragement using video clips with local celebrities
- Non-smokers can use it for advice on helping family and friends quit smoking

# Example of mHealth for Behavior change (Smoke Quit)

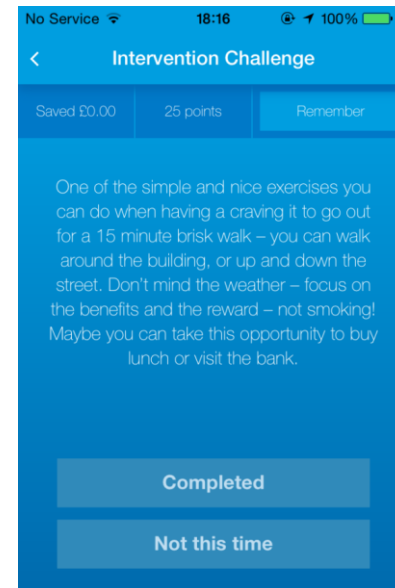
BupaQuit is an evidence based intervention for craving monitoring and management



Help you stay smoke free for 28 days...



...by helping you overcome your cravings...



...through clinically proven behaviour change interventions



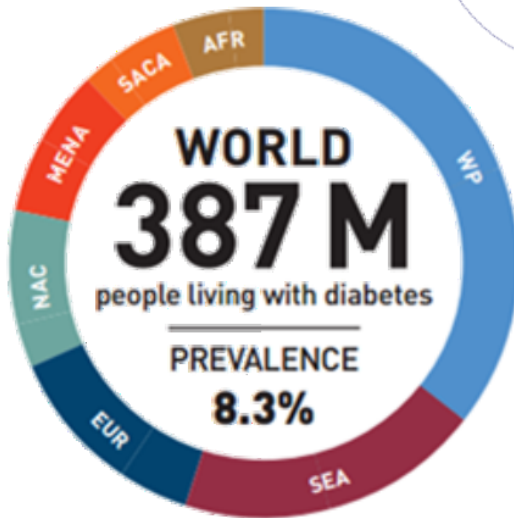
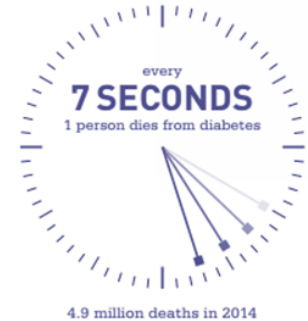
# Diabetes: a significant Public Health Issue

**1/12**  
people with  
**DIABETES**



**1** healthcare  
**in 9**  
**IS SPENT ON DIABETES**

In 2014 diabetes expenditure  
reached US\$612 billion



expected increase

**+205**  
**MILLION**



## Macrovascular Complications<sup>12</sup>



The risk of stroke in newly treated Type 2 Diabetes patients is more than double that of the general population



People with diabetes are two to six times more likely to develop cardiovascular disease than people without diabetes

## Microvascular Complications<sup>14</sup>



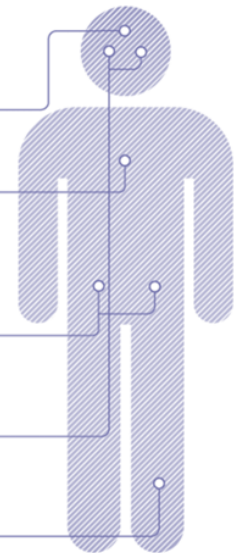
Damage to the kidney filtering systems from diabetes (diabetic nephropathy) is a leading cause of kidney failure



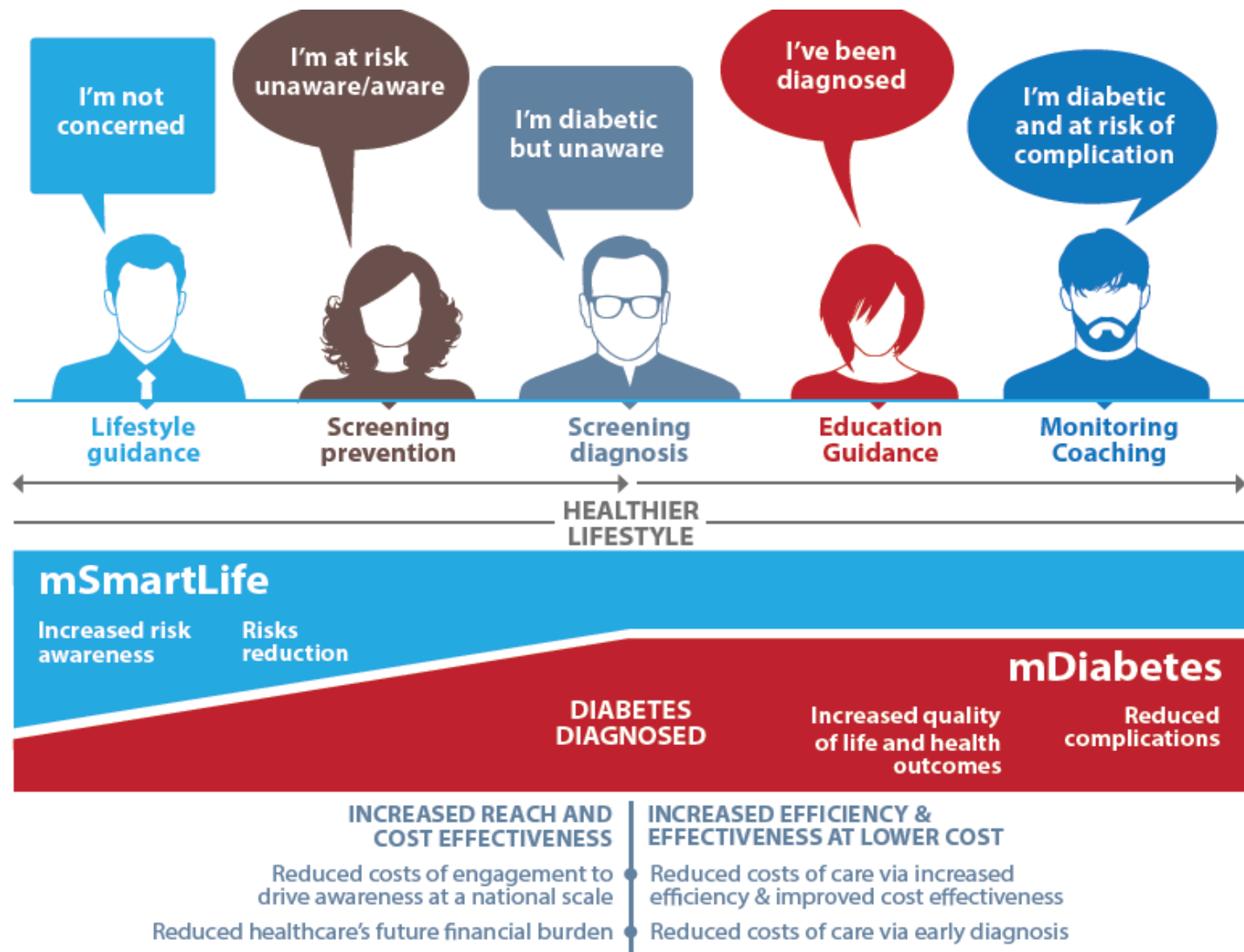
Microvascular damage to the retina from diabetes (diabetic retinopathy) is a leading cause of blindness



Damage to the nerves from diabetes (diabetic neuropathy) is a leading cause of foot wounds and ulcers, which frequently leads to foot and leg amputation



# The mDiabetes intervention needs to be embedded within the continuum of prevention & care



# There are plenty of ad-hoc solutions to tackle specific needs, but there's a lack of integrated solutions

**mWellness**



**Info Portal**  
*Avallain iAFYA*



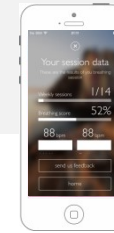
**Nutrition**  
*Food-Switch*



**Physical Activity**  
*Ground Miles*



**Smoking cessation**  
*txt2quit*



**Stress**  
*Azumio-Biobeats*



**Lifestyle Tracking & Dashboard**  
*FitBit / Jawbone / Nike+ / TicTrac*



**Lifestyle guidance**

**Screening prevention**

**Screening diagnosis**

**Education Guidance**

**Monitoring Coaching**



**Text Messaging**  
*Arogya World*



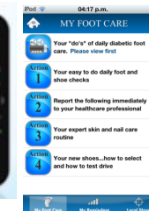
**Lifestyle assessments**  
*Sanitas*



**Risk scoring**  
*Diabetes UK SocialDiabetes*



**Educational**  
*Type2 & Me / Foot Care*



**Networking**  
*Diabetic Connect / Sugar Crew*



**Telemedicine Tracking / Diagnosis**



**Self Management**  
*WellDoc/ SiDiary*



**mDiabetes**

## 1. Lifestyle guidance (diabetes awareness)

### 1.3. Text Messaging: mDiabetes, by Arogya World (India)



Arogya World ([www.arogyaworld.org](http://www.arogyaworld.org)) is a global health non-profit organization working to prevent NCDs, non-communicable diseases, through health education and lifestyle change.

mDiabetes in India reached more than one million people from all over India with text messages in 12 languages about diabetes and its prevention, and has tested the program's effectiveness in bringing about behaviour change known to prevent diabetes.

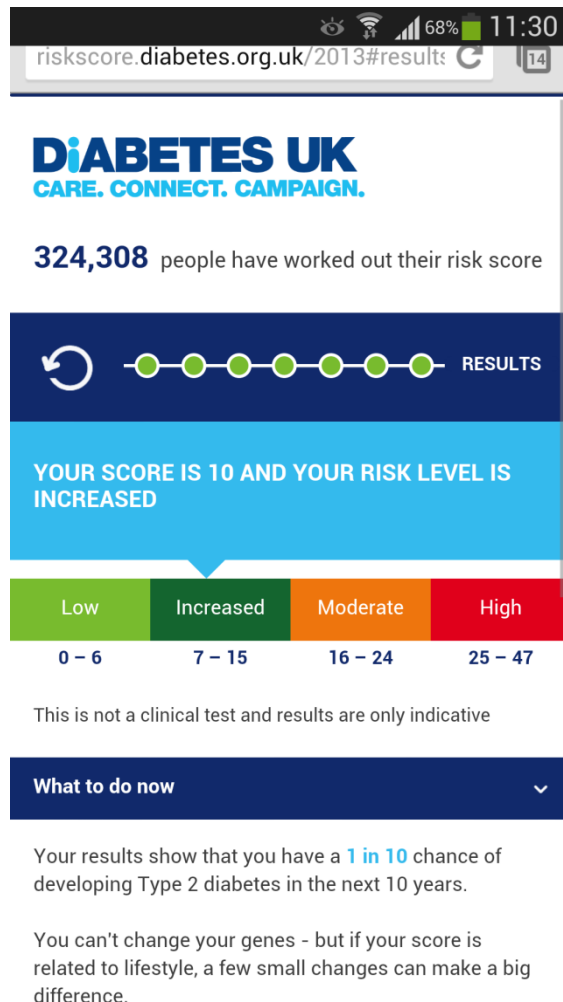
#### **Evidence:**

Consumers' awareness of diabetes and its complications increased, and promising trends in behaviour change were noted: an 11% increase in daily exercise, a 15% increase in the intake of 2-3 servings of fruits a day, and an 8% increase in 2-3 servings of vegetables a day.

- 2 texts a week for 6 months
- 56 txts about diabetes
- 45m txts sent
- 1m people enrolled / 186K people finished programme
- Partnership with Nokia, Emory University, J&J, Aetna & Ipsos
- Deployed in India in 12 languages.
- Arogya are based in the US.

## 2. Screening for prevention / 3. Screening for diagnosis

### 2.1. / 3.1. Risk Scoring, by Diabetes UK (UK)



Diabetes UK is the leading charity that cares for, connects with and campaigns on behalf of every person affected by or at risk of diabetes.

The Diabetes Risk Score determines risk of Type 2 diabetes over the next 10 years.

People at increased or low risk will be given lifestyle advice in order to keep the risk low.

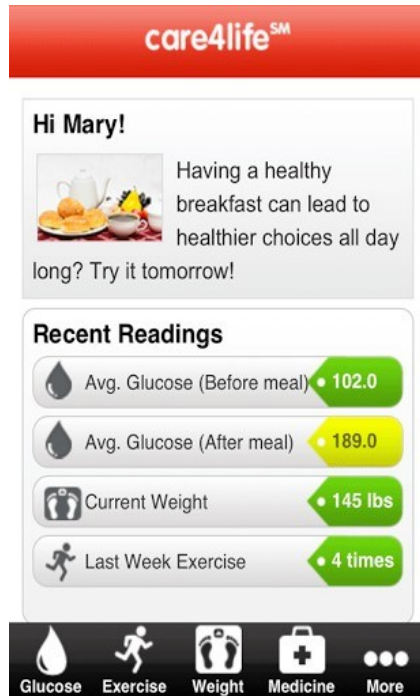
People at moderate or high risk will be asked to visit their local GP surgery for lifestyle intervention advice and possible diabetes diagnostic tests.

- In conjunction with Leicester University and Leicester University Hospitals
- Over 324,000 assessments delivered online. Sept 2013:
  - Low: 29%
  - Increased: 37%
  - Moderate: 25%
  - High: 9%
- Available via website and mobile browsing site.
- Those at moderate or high risk receive a PDF letter for the GP (over 30% of total).



## 4. Condition education & guidance

### 4.2. Text coaching: Care4Life, by Voxiva (US)



Care4life is a mobile health program that sends text messages according to the individual's care plan and focuses on the core principles of diabetes care.

The messages will have education about diabetes, tips for managing diabetes, reminders to test blood glucose, take medications, and record weekly progress on weight, exercise, and medication adherence.

- Launched in Oct 2012
- Free interactive 6-month mobile programme.
- Text messaging + Data tracking + Virtual coaching
- In collaboration with the American Diabetes Association.
- Free for individuals. Licensing model for healthcare professionals and health insurers.

#### Evidence:

- 85% reported improved knowledge of diabetes and how to manage it
- 85% said care4life helped them remember to take medications and attend doctors' appointments
- 86% said it helped them set health goals and work toward achieving them
- Further, 96% of participants would recommend care4life to other people with diabetes.

## 5. Care monitoring & coaching

### 5.2 Care companion app: DiabetesManager, WellDoc (US)

DM is the first mHealth solution cleared by the U.S. Food and Drug Administration (FDA) to provide real time, automated clinical and behavioural patient coaching combined with decision support for the patient's doctor.

#### **Evidence:**

The intervention impacted medication therapy management at the provider level, while simultaneously supporting other key aspects of diabetes self-management, such as glucose testing, diet, and exercise.



- Two insurance companies have already agreed to pay more than \$100 a month for patients who use WellDoc's DiabetesManager.

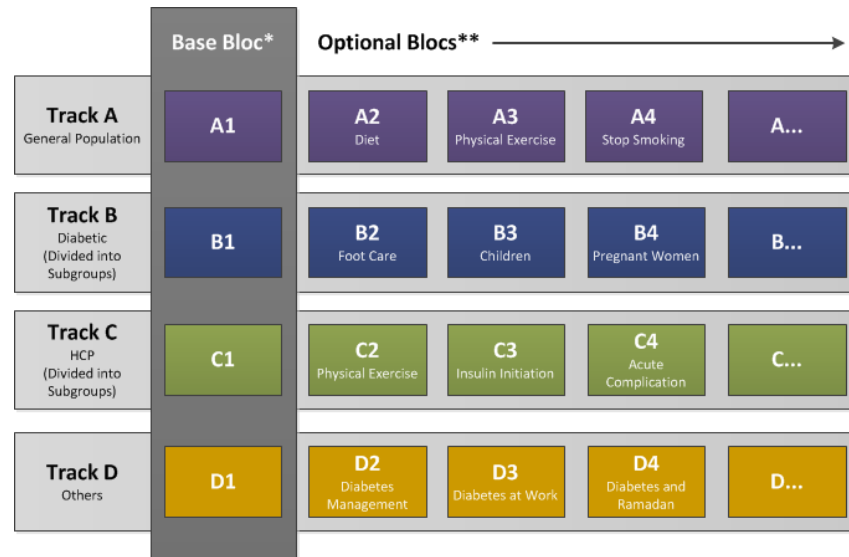
The virtual patient coach portion of the WellDoc solution reduced A1c on average by 1.5 percent and when physicians utilized the clinical decision support the A1c was further reduced by approximately 30 percent, or a total of 1.9 percent. These results were significant compared to the 0.7 percent A1c reduction for control group.

*"Mobile Diabetes Intervention for Glycemic Control: Impact on Physician Prescribing Behavior"* (ADA) 72<sup>nd</sup> Scientific Sessions

# SMS-based mDiabetes prevention and education in Senegal

## First phase

- A series of SMS messages sent during Ramadan to help diabetics manage their diabetes in 2014-2016.
- High visibility and engagement at the population level
- More than a million SMS messages sent to more than 52,000 participants so far.

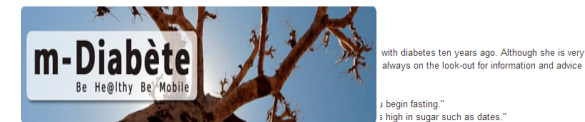


\*The Base Bloc is common to all subgroups of the track

\*\*Optional Blocs are designed for a subgroup of the track

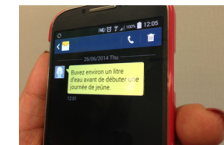


Mobile phones help people with diabetes to manage fasting and feasting during Ramadan



Bientôt le Ramadan! Consultez votre médecin pour vérifier si votre glycémie est normale, c'est-à-dire 0,90g/L à 1,20g/L

Les changements d'alimentation et d'horaires de repas pendant le Ramadan ont une influence sur l'équilibre de votre diabète. Il est très important d'être bien équilibré et de bénéficier de conseils médicaux pour ajuster votre traitement avant de commencer une période de jeûne. Demandez conseil. Les professionnels de santé sont là pour vous aider à préserver votre santé tout en respectant votre foi.



Messages that aim to increase awareness and help with fasting and feasting.

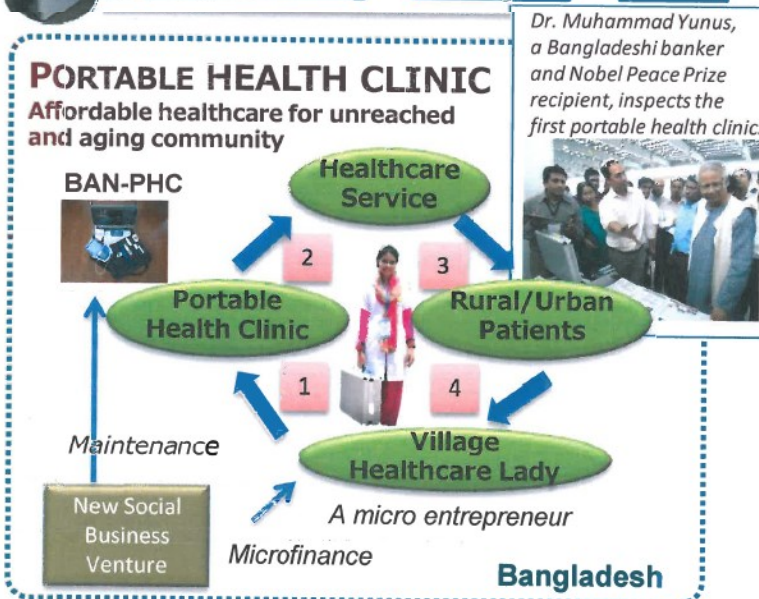
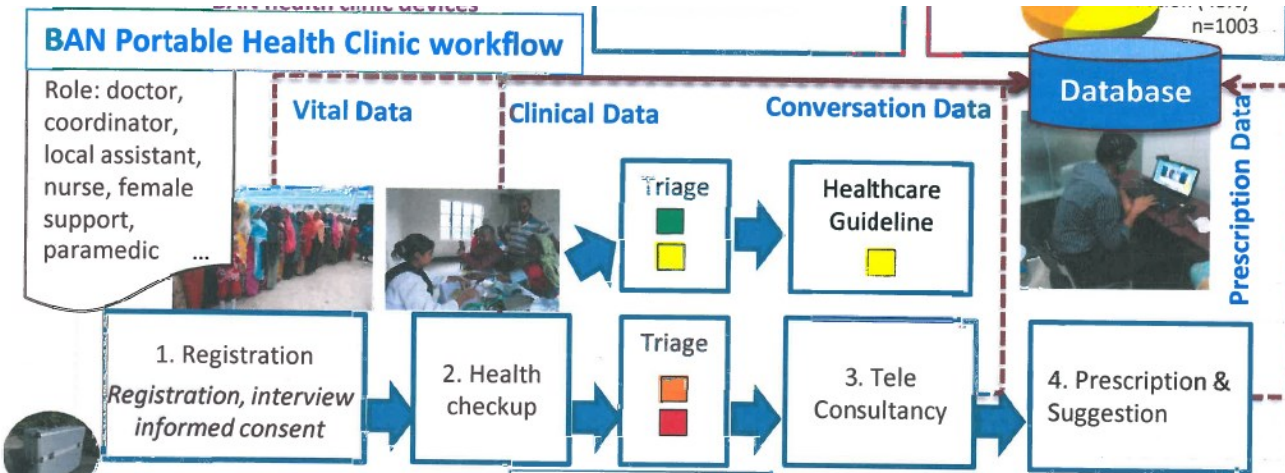
ch-speaking country under "Be He@lthy Be mational Telecommunication Union (ITU). The subjects that use mobile technology, in particular anage noncommunicable diseases such as

for tobacco programme in Costa Rica, an mCervical cancer programme in Zambia and has plans to roll out mHypertension and mWellness programmes in other countries.

- Four tracks:
  - Prevention (general population risk awareness)
  - Management for diabetics
  - Health care worker training
  - Foot complications

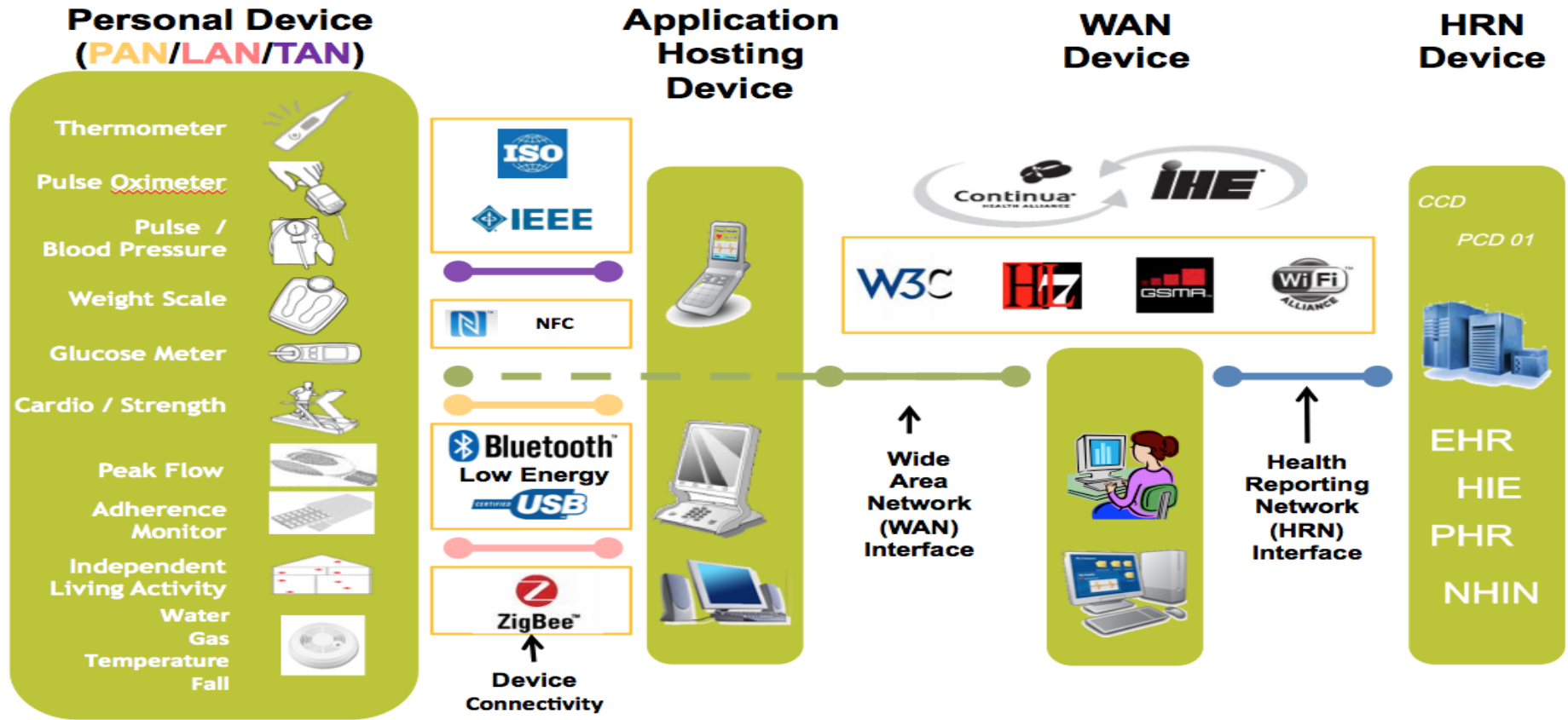


# Patient Care Management



Portable health clinic consists of cost-effective portable devices and back-end service infrastructures.

# ITU's Personal Health Care Standards



- ITU-T H.810 Interoperability design guidelines for personal health systems ( = transposition of Continua Healthcare Guidelines) – Dec 2013
- ITU-T H.860: Multimedia e-health data exchange services: data schema and supporting services (ongoing)
- H.820-H.849: Interoperability compliance testing of personal health systems (HRN, PAN, LAN and WAN) (ongoing)



The screenshot shows a WhatsApp chat interface. At the top, the contact name is 'Hani' with a status 'Updated Name to 'Hani''. The chat history includes a grey bubble from Hani saying 'Thank you Hani for your registration. If you feel like you lost your way and you want to end this program reply with END otherwise reply with GO.' and a blue bubble from the user replying 'Go'. Below this, another grey bubble from Hani says 'Now Hani, let's get started by setting up a quit date between today and the next 2 days. For the date 01 March 2015, please reply with 01.03.2015.' At the bottom, there is an empty text input field with a blue border and a 'Send' button to its right. The phone's status bar at the very bottom shows the time as 12:42 and a battery level of 95%.

WhatsApp chat interface showing a conversation with 'Hani'.

Header: Updated Name to 'Hani.'

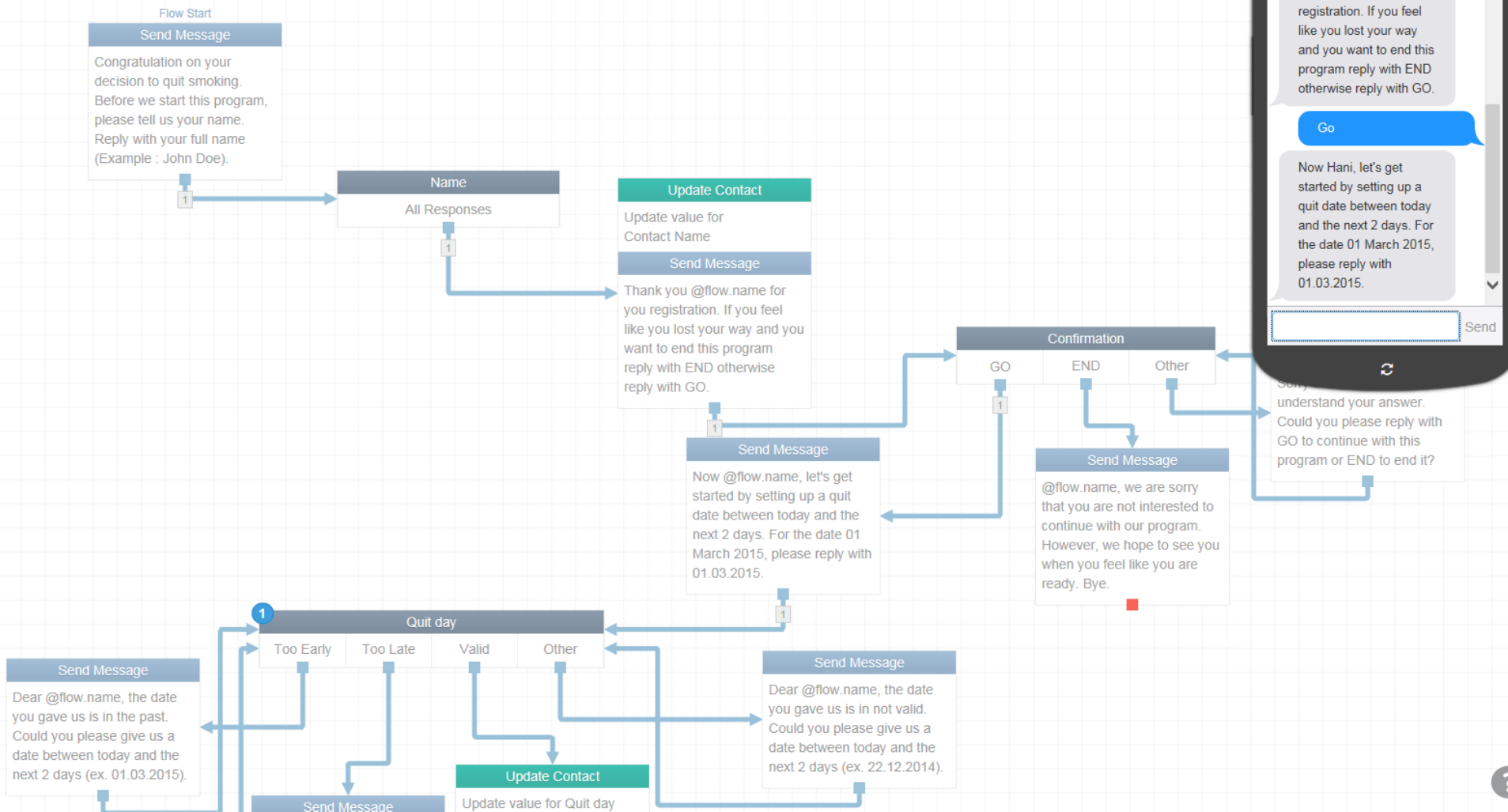
Message 1 (Grey bubble): Thank you Hani for your registration. If you feel like you lost your way and you want to end this program reply with END otherwise reply with GO.

Message 2 (Blue bubble): Go

Message 3 (Grey bubble): Now Hani, let's get started by setting up a quit date between today and the next 2 days. For the date 01 March 2015, please reply with 01.03.2015.

Input field: [Empty text box]

Send button: Send





ITU

Home

PHONEBOOK

Subscribers

Groups

CONTENT

Messages

Surveys

Trees

CALLS

Outgoing Calls

Incoming Calls

MORE

Audio Library

Languages

Language Selectors

Response Prompts

Organization Settings

Credit Transactions

Users

Call To Records

Exports

Home

Welcome to VOTO Mobile

VOTO Mobile's platform lets you bridge language, literacy, and distance barriers using the power of mobile communication. Share information with **InfoLink**, request feedback with **SurveyLink**, and be always listening with **OpenLink**.

Send a Message >

Send a Survey >

Current Activity

 Sending Call with Message: **Welcome to programme**  
Calls Sent Total Succeeded **0** Total Failed **0**  
SMS Sent Total Succeeded **0** Total Failed **0**  
Call Started: Today at 3:16pm

Recent Activity

No Recent Activity

Overall Engagement




InfoLink

Subscribers	2
Calls Sent	4
Calls Answered	2 50.00%
Total Airtime	



SurveyLink

Surveys	0
All Respondents	0
Questions Asked	0
Questions Answered	0 0%



OpenLink

Received Calls	0
Average Duration	00:00
Messages Retrieved	0
Surveys Completed	0

# Some tips when writing the message library

---

- **Messages can take many forms.** providing information or advice, asking users to track behaviours, providing feedback on goals, offering reminders or providing social support. Remember: try to keep it to one actionable message per text.
- **Message language.** Text messages generally should start with the programme name. Do not use abbreviations or text speak (e.g. 'how r u doin?').
- **Provide a way for users to get more information.** Give them the option to either reply to a text to request more information or provide a link to a web page with more information.
- **Consider smartphone or social media integration.** Users may be reading text messages on smartphones. This means that text messages can seamlessly link to email, web and Facebook, and the content can include multimedia (audio, video), games and visualization of data.
- **Repurpose already-existing content.**
- **Focus on message quality.** messages should be evidence-based and derived from theory.
- **Consider the literacy demands on your audience.**

# ITU-WHO National eHealth Strategy Toolkit

## Part 1 National eHealth vision

- Manage the process
- Engage with stakeholders
- Establish the strategic context
- Learn from trends and experience
- Draft an initial vision
- Identify required components
- Gather information on the eHealth environment
- Assess opportunities and gaps
- Refine vision and develop recommendations

## Part 2 National eHealth action plan

- Manage the process
- Engage with stakeholders
- Develop eHealth action lines
- Develop an integrated action plan
- Determine high-level resource requirements
- Apply funding constraints to refine plan
- Define implementation phases

## Part 3 National eHealth monitoring and evaluation

- Define indicators for monitoring and evaluation
- Define baseline and target measures
- Define supporting governance and processes

### Leadership and governance

Strategy and Investment

Services and applications

Standards & Interoperability

Infrastructure

Legislation, policy and compliance

Workforce

## National eHealth Strategy Toolkit

