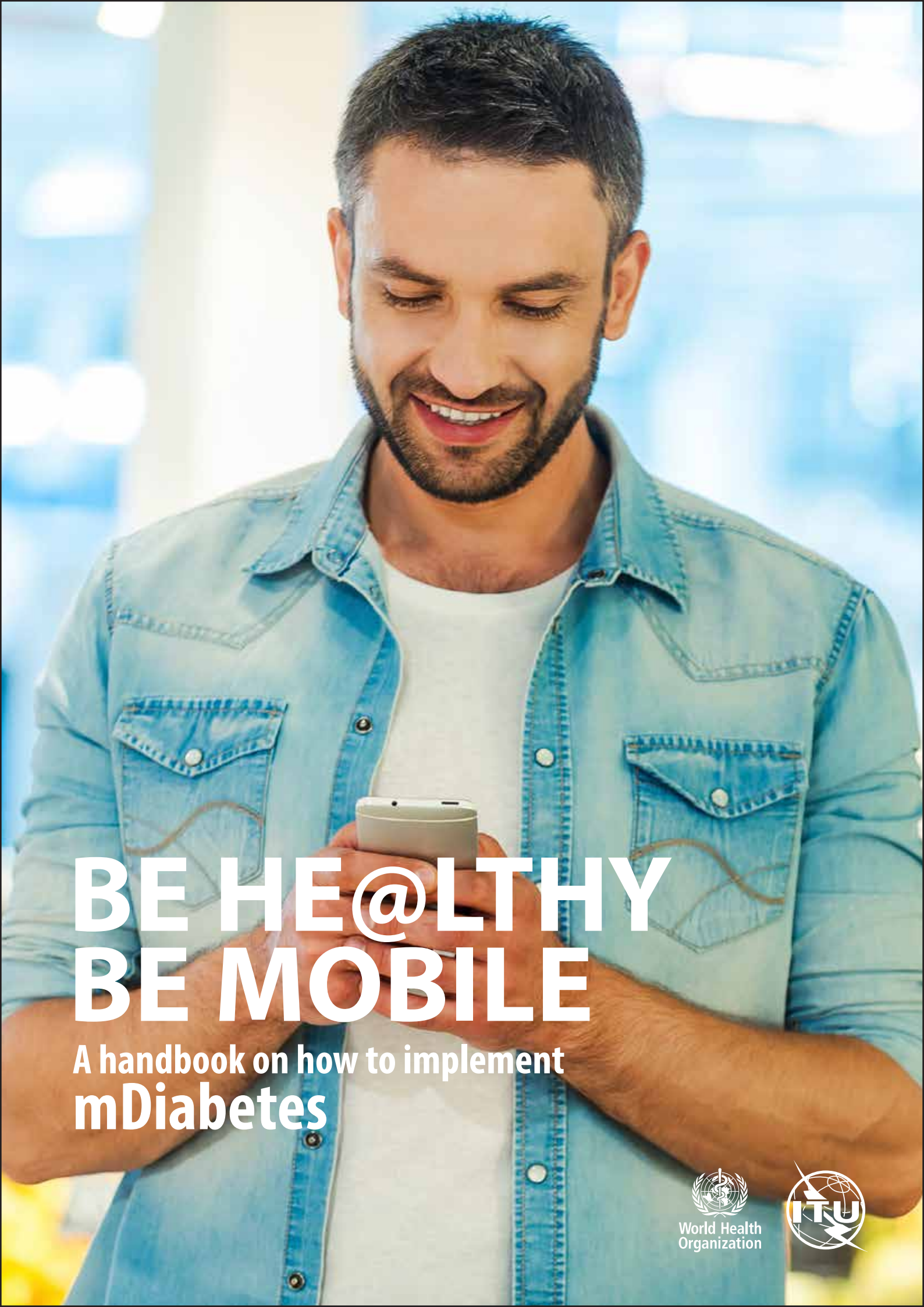

BE HE@LTHY BE MOBILE

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Introduction

Purpose

"Be He@lthy, Be Mobile" (BHBM) is a global initiative, led by the World Health Organization (WHO) and the International Telecommunication Union (ITU), based on mobile technology (mHealth) and particularly text messaging and apps, to help combat noncommunicable diseases (NCDs) such as diabetes, cancer, cardiovascular diseases and chronic respiratory diseases. The origins of the Initiative lie in the response to the Moscow Declaration on NCDs, the Political Declaration on NCDs to identify concrete actions to be undertaken by Member States, and actions of the WHO Global NCD Action Plan 2013-2020, marking when the WHO decided to scale up activities to reduce the global burden of NCDs using innovative technologies.

This handbook was prepared by an international group of experts in mDiabetes for WHO and ITU to provide evidence-based operational guidance and resources to assist countries and governments in drawing up a detailed work plan for the development and deployment of a national mDiabetes programme to prevent or control diabetes by healthy living. This handbook describes the considerations and decisions to be made in planning for a national mDiabetes programme in five areas:

- Operations management
  - Needs assessment
  - Programme leadership and partnerships
  - Work plan development
- Content development and adaptation
- Technology
- Promotion and recruitment
- Monitoring and evaluation

The handbook also contains annexes that include samples of message libraries, examples of mDiabetes programmes, and templates and considerations for project management.

Background

Many studies have been conducted on the use of text messaging in disease management and disease prevention. Reviews of these studies indicate that text messaging is effective in many aspects of health behaviour change and disease management (*1*, *2*), although most have been conducted in developed countries and only a few studies have been conducted in resource-poor settings. As mHealth is a new area, the trials to date have tended to be small and fairly heterogeneous. Several organizations, including WHO, and experts are working to determine best practices for research to build a robust evidence base for mHealth. Although the evidence of effectiveness is not yet complete, the dramatic increase in worldwide mobile phone use, from 1 billion subscriptions in 2002 to over 7 billion in 2015 (corresponding to a penetration rate of 97%), makes mHealth one of the most attractive areas of public health intervention (*3*). One-way push mobile text messaging is the least advanced but the most widely used tool for mHealth. The use of text messaging varies globally from 89% in Mexico to 48% in India (*4*).

According to WHO, 80% of cases of diabetes, 80% of heart disease and 40% of cancer could be prevented by avoiding tobacco, increasing physical activity and adopting a healthy diet (*5*). While better management of diabetes and improving treatment and care are important, it is globally recognized that, in the case of NCDs and especially diabetes, prevention through lifestyle changes is critical and cost–effective (*6–20*). Prevention occupies centre stage in both the WHO Global Action Plan (*20*) and the 2011 United Nations Political Declaration on NCDs (*21*), which encourage governments to commit to action and engage with individuals to change their behaviour. Use of mHealth at a population level could be an effective way

to achieve behaviour change, especially in lower- and middle-income countries where mobile phone use is growing exponentially and transmission is inexpensive.

Compelling evidence that diabetes can be prevented through behaviour change is provided by the landmark clinical trial of the Diabetes Prevention Program (*6*), which showed that intensive lifestyle intervention reduced the incidence of diabetes by 58% in 3234 high-risk adults in the USA and that lifestyle changes were better than the commonly used diabetes medication metformin (which reduced diabetes incidence by 31%). A follow-up study showed that prevention or delay of diabetes by lifestyle changes or metformin can persist for at least 10 years (*7*).

What is an mDiabetes programme?

A population-based diabetes prevention programme should account for the wide diversity of individuals and their motivation to change their lifestyle. While the majority of a population does not have diabetes, some individuals may be interested in the programme because they know someone with diabetes; others are at high risk or have undiagnosed diabetes. The programme should therefore provide information and at the same time enhance prevention, motivate testing in people at risk and provide appropriate, culturally relevant guidance for both people with diabetes and the general population. The factors that contribute to diabetes may differ geographically even within a country or as a result of income disparity. The significance of dietary habits, physical activity and access to health care must be considered.

with broader public health programs utilizing schools, mothers, employers as well as national awareness campaigns. Figures 1 and 2 show the five main areas in which mDiabetes programmes may be useful within a broader, structured national diabetes programme: prevention, screening, long-term management, secondary prevention of complications and for specific conditions (e.g. gestational diabetes and type 1 diabetes). Some examples of ways that mHealth programmes have been used to address diabetes include:

1) Arora et al. (2012) showed that for resource-poor inner city patients in the United States with diabetes (median HbA1c 8.9%) who received 3 text messages daily for 3 weeks in Spanish or English, healthy behaviors increased. Daily consumption of fruits and vegetables increased from 56.5% of subjects before the intervention to 83% after; the number of students exercising improved from 43.5% of subjects before to 74% after; self-efficacy, measured by the Diabetes Empowerment Scale—Short Form, improved from 3.9 to 4.2; and scores on the Morisky Medication Adherence Scale improved even more dramatically from 3.5 to 4.75. Ninety percent of participants indicated they would like to continue the program, and 100% said they would recommend the program to family or friends. This proof-of-concept study demonstrated that text messages increased healthy behaviors, improved diabetes self-efficacy and medication adherence, and improved patient satisfaction *(8).*

2) Ramachandran et al. (2006) found that lifestyle modifications can prevent diabetes

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