BE HE@LTHY BE MOBILE

A handbook on how to implement **mHypertension**

World Health Organization

ITU

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mHypertension

Contents

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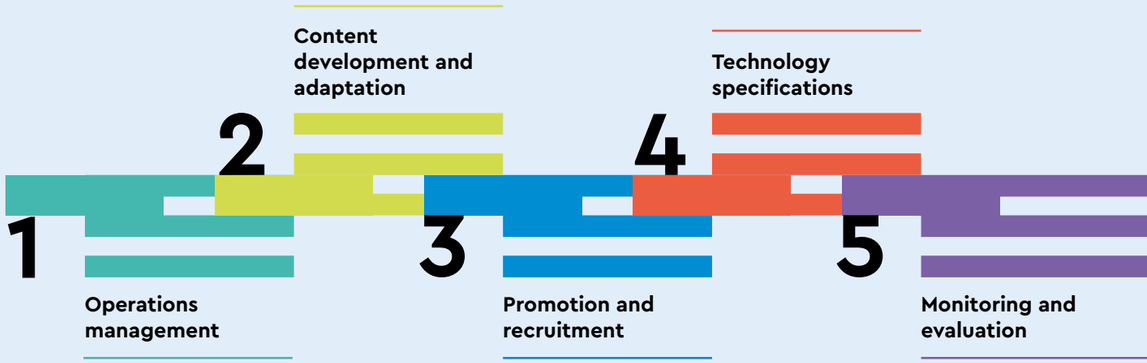
Executive Summary

WHO and the International Telecommunication Union (ITU) have formed a partnership to use mobile technology to help combat noncommunicable diseases. As part of this Be He@lthy, Be Mobile initiative, WHO and ITU aim to assemble evidence-based and operational guidance to assist countries and governments to implement mHealth programmes for noncommunicable diseases. Mobile health, or mHealth, is defined as "medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants, and other wireless devices" *(1)*. The Be He@lthy, Be Mobile initiative generally uses basic technologies common in most mobile phones. The handbooks specific to the mHealth programme act as aids to policy-makers and implementers of national, or large-scale, mHealth programmes.

This handbook provides guidance for developing and implementing an mHealth programme to support people with hypertension in achieving better control of their condition and improving their quality of life. It describes how an mHypertension programme can be used to supplement and augment existing national hypertension control programmes, and illustrates the steps required for successful implementation. The example text message library provided in the handbook uses evidence-based behaviour change techniques to support healthy behaviour changes and hence better hypertension control. This document and programme content are informed by a relevant evidence base and were developed following standardized processes. These mHealth interventions have shown promise for the behaviour change necessary to reduce the risk of developing or exacerbating hypertension, and WHO considers that the proper application of this handbook can be a critical factor in success in achieving behaviour change.

The handbook provides guidance on the following components of an mHypertension programme:

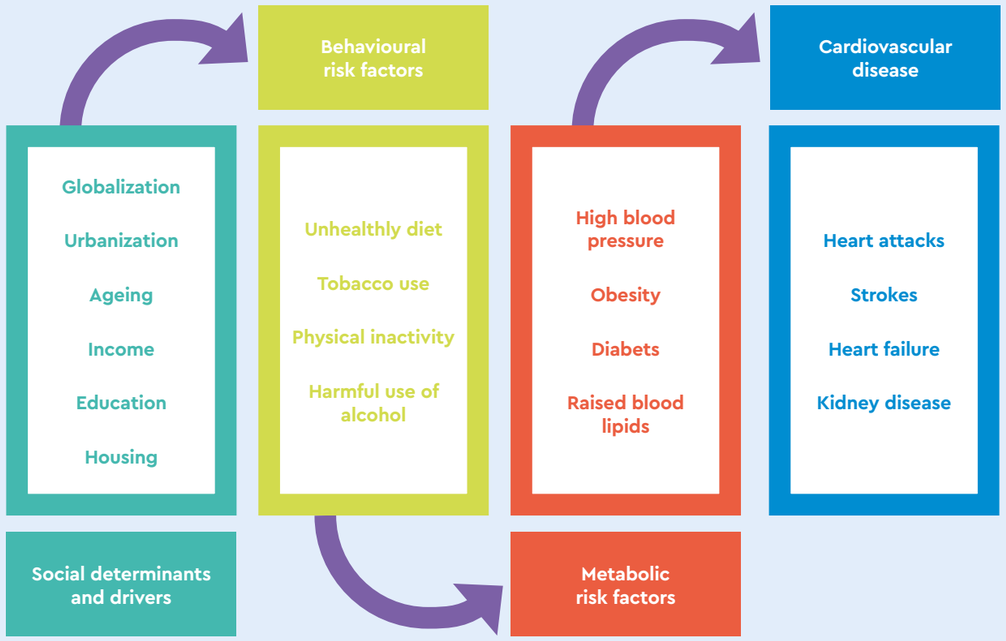


Background

Hypertension, or blood pressure equal to or greater than 140/90 mmHg *(2)* is the leading risk factor for premature mortality globally and is estimated to cause 9.4 million deaths every year, which equates to more than half the approximately 17 million deaths due to cardiovascular disease *(3)*. Blood pressure level is directly associated with cardiovascular risk and overall morbidity and mortality risk; lowering the blood pressure reduces these risks. Evidence suggests that even modest reductions in blood pressure are important and linked with risk reduction.

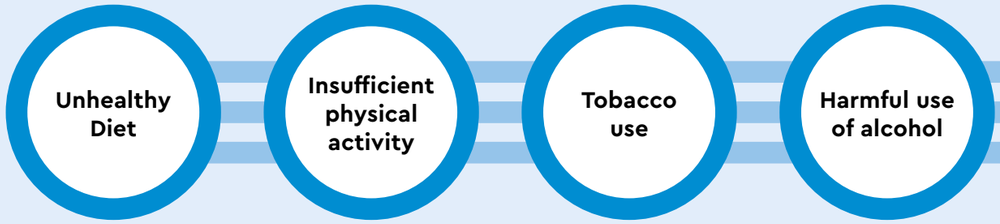
Lifestyle-related noncommunicable diseases are chronic diseases that take years or decades to manifest; preventing or even delaying the onset of these diseases could improve lives and result in substantial cost savings *(4)*. Addressing behavioural risk factors such as an unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol can help to prevent hypertension at a population level. Figure 1 below shows the main factors that contribute to the development of hypertension *(2)*.

FIGURE 1. MAIN FACTORS THAT CONTRIBUTE TO THE DEVELOPMENT OF HIGH BLOOD PRESSURE AND ITS COMPLICATIONS



Source: (2).

WHO and the United States Centers for Disease Control and Prevention have launched the Global HEARTS initiative to strengthen prevention of cardiovascular disease globally *(5)*. The HEARTS technical package includes recommendations to countries for preventing and managing hypertension, a major risk factor for cardiovascular disease. Early detection of hypertension is key to minimizing the chance of heart attack, heart failure, stroke and kidney failure. The HEARTS technical package provides information on the four main behavioural risk factors for cardiovascular disease *(5)*:



Control of hypertension can be achieved by a healthy lifestyle and safe and effective medications, when needed. However, to do so demands multistakeholder collaboration, involving governments, civil society, academia, and the private sector. mHealth presents one tool which supports the implementation efforts for hypertension control aligned as part of the implementation of HEARTS.

In 2016, ITU reported that, in countries with available data, 85% of the population aged 25-75 years owned a mobile phone *(6)*. This worldwide mobile phone usage makes mHealth a widespread modality for providing public heath interventions. While mHealth research has mainly taken place in high-income countries, the explosion of mobile technologies in lower-income countries means that it is now being explored as an approach to support the development and strengthening of health systems.

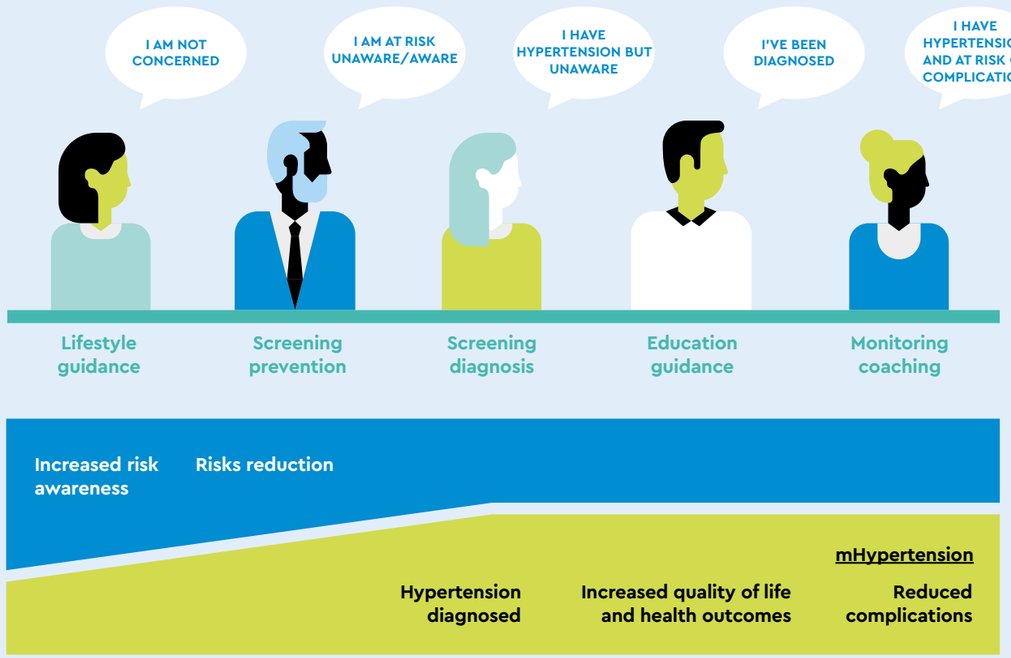
Much of the human and social impact caused each year by morbidity and mortality related to noncommunicable diseases could be averted through population level interventions that are well understood, cost-effective and feasible *(7)*. Results from recent systematic reviews have been quite promising in respect of the use of mHealth to manage chronic conditions, such as coronary heart disease *(8, 9)* and its risk factor, hypertension *(10, 11)*. mHealth interventions have also shown promise for the behaviour change necessary to reduce the risk of developing or exacerbating hypertension, such as engaging in regular physical activity *(12, 13)*. Deploying mHealth at the population level can be an effective way to achieve behaviour change, especially in lower and middle-income countries where mobile phone penetration is growing exponentially and risk of cardiovascular disease is high *(2)*.

What is an mHypertension programme?

There are many ways mobile technology can be used to prevent or control hypertension. Annex 1 provides further details on mHealth programme ideas at the individual or health system level. This handbook focuses on the individual level, to provide basic education, behaviour change strategies (see Annex 2) and medication adherence prompts to support people with hypertension in achieving better control.

A comprehensive mHypertension programme operating over a wide geographical area should aim to address the spectrum of disease of hypertension, the use of appropriate technologies and the needs and cultural norms of the population. The interventions should be embedded in the continuum of prevention and care, since mHealth can support services at all levels (see Figure 2).

FIGURE 2. THE mHYPERTENSION CONTINUUM OF PREVENTION AND CARE



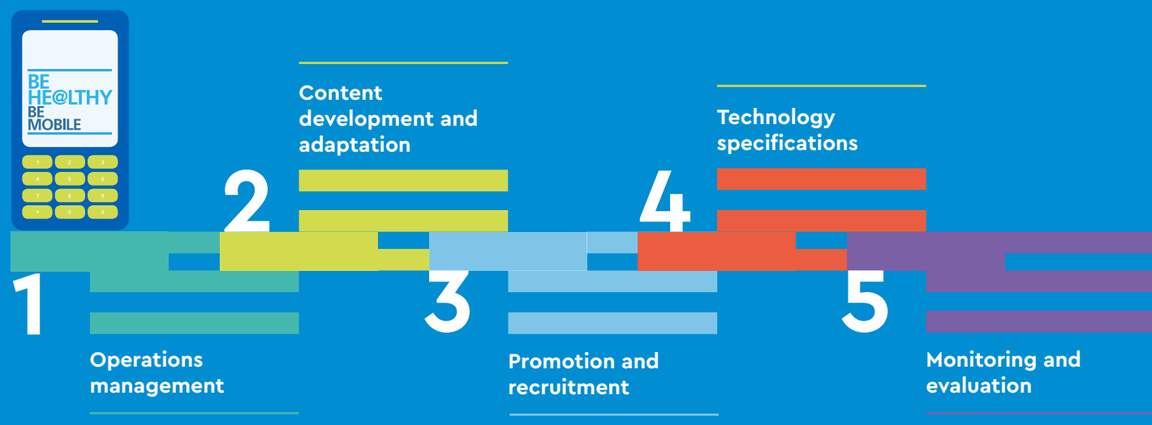
Previous mHealth hypertension interventions have delivered education and supportive strategies to make healthy lifestyle changes and/or adhere to guidance using text messaging, mobile applications and telemonitoring *(10, 11, 14, 15)*. However, the present handbook describes a standard mHypertension programme for the individual using the simplest form of mHealth technology: text messaging. A recent review found mHealth interventions to be effective for prevention and management of cardiovascular disease, and suggested that text message interventions were more effective than smartphone interventions. However, using multiple modalities should be considered for maximum outreach *(16)*. The mHypertension message library and programme algorithms found in Annexes 3 and 4 have been developed for text messaging. Countries or groups can choose to adapt the programme algorithm, message content and technology they use based on the capacity, interests and needs of their respective populations.

The goal of the mHypertension programme is to help people with hypertension to improve their blood pressure control through healthy behaviours and self-management.

To achieve this goal, the focus of the messages is on education and supporting behaviour change, namely adherence to prescribed medication and monitoring of blood pressure, eating a diet low in salt and high in fruit and vegetables, starting or maintaining regular participation in physical activity, stopping smoking and limiting alcohol consumption. Text message content is based on the recommendations from the HEARTS technical package *(5)* and the WHO global brief on hypertension *(2)*. Each mHypertension user will receive three modules (adherence, healthy eating and physical activity), with the option of adding modules on tobacco cessation and/or harmful use of alcohol if the user is a smoker or consumes an unhealthy amount of alcohol. Details on the content for each stream can be found in Section 2 of the handbook. Each stream will also have slightly different evaluation outcomes, which can be found in Section 5 of the handbook.

Developing an mHypertension programme

FIVE AREAS OF THE mHYPERTENSION PROGRAMME



SECTION 1

OPERATIONS MANAGEMENT

1.1 mHEALTH NEEDS ASSESSMENT

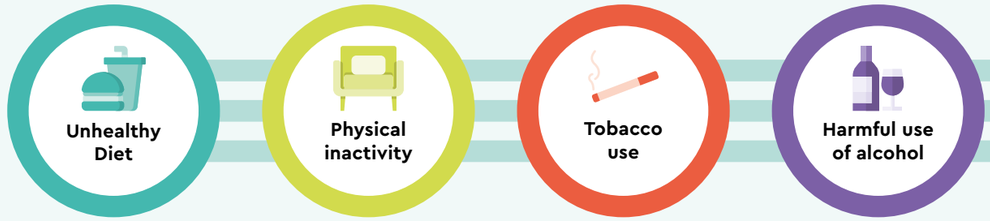
A thorough mHealth needs assessment, including a readiness assessment, is a crucial step in developing an mHypertension programme. As with any large-scale intervention, it is essential to understand the context in which the intervention will be delivered. For the mHypertension programme to be effective, text messages need to be consistent with users' needs, their capabilities and impairments and their motivations. Messages can support self-management by incorporating relevant and effective behaviour change techniques, which provide strategies and encouragement to overcome barriers. Supporting a person diagnosed with hypertension to self-manage their condition may increase their understanding of hypertension and how it increases their risk of cardiovascular disease. It may also encourage the person to be an active participant in decision-making about their health and motivate them to engage in healthy behaviours *(17)*. A needs assessment will help determine the relevant barriers and facilitators of behaviour change for people diagnosed with hypertension in each participating country's context.

A needs assessment also provides a vehicle for consolidating information for planning, identifying gaps in knowledge and helping with decision-making. Conducting a needs assessment will provide an understanding of the setting for the operations management teams. The needs assessment will involve visiting, observing and interviewing key informants and stakeholders and documenting existing resources. The results of the needs assessment will be useful in the development and implementation of a national mHypertension programme, and act as a baseline measure from which the programme can be monitored and evaluated.

The following information describes questions related to the goals and content of an mHypertension intervention that should be considered as part of a needs assessment.

Which behaviours contribute to hypertension? Which behaviours can control diagnosed hypertension?

Based on the HEARTS technical package *(5)*, the four main behavioural risk factors for cardiovascular disease are the following:



Other considerations for the population include taking blood pressure medication as prescribed and receiving health-care service reminders, such as attending appointments with health workers and regular monitoring of blood pressure. Individuals should know their own blood pressure, especially if a close relative had or has hypertension, as this is another risk factor *(2)*.

A good understanding of the most prevalent unhealthy behaviours in each country's specific context will help decision-making about the emphasis and frequency of the text messages in the mHypertension programme. Identification of these behaviours can be completed as part of the literature review during the needs assessment.