1 Introduction

More people die each year from cardiovascular diseases than from any other cause. Over three quarters of heart disease and stroke-related deaths occur in low-income and middle-income countries *(1)*. Blood pressure is the force exerted by circulating blood against the walls of the body's arteries, the major blood vessels in the body. Blood pressure is written as two numbers. The first number (systolic) represents the pressure in blood vessels when the heart contracts or beats. The second number (diastolic) represents the pressure in the vessels when the heart rests between beats. Hypertension – or elevated blood pressure – is a serious medical condition that significantly increases the risk of diseases of the heart, brain, kidneys and other organs *(2)*. Hypertension can be defined using specific systolic and diastolic blood pressure levels or reported use of antihypertensive medications. An estimated 1.4 billion people worldwide have high blood pressure, but just 14% have it under control *(2)*. However, cost-effective treatment options do exist.

A World Health Organization (WHO) guideline dealing specifically with raised blood pressure was last published more than 20 years ago – in 1999 – and is now outdated. In 2007, a comprehensive guideline on cardiovascular risk included some recommendations on hypertension but this also needs revision and updating in the light of new evidence and practice *(3)*. Guidance is particularly needed on some controversial issues, such as when to start treatment and whether laboratory testing and cardiovascular risk assessment are needed prior to starting treatment. In the past decade, WHO has included diagnosis and management of hypertension in a total cardiovascular risk approach as part of the WHO package of essential noncommunicable disease (NCD) Interventions (WHO PEN) 2007, 2010 and 2013. However, this approach has not included the most recent advances in pharmacological treatment.

The WHO Essential Medicines List (EML) identifies all classes of antihypertensive drugs – angiotensin-converting enzyme inhibitors (ACEi), calcium channel blockers (CCB), angiotensin receptor blockers (ARB) and thiazide diuretics – as essential. In June 2019, the EML included single-pill combination medications for hypertension. This further supports the evaluation of all classes of antihypertensive drugs as well as single-pill combinations in this current guideline.

Scope and objectives of the hypertension guideline

The 2021 WHO hypertension guideline aims to provide the most current and relevant evidence-based global public health guidance on the initiation of treatment (with pharmacological agents) for hypertension in adults. The recommendations target the general adult, non-pregnant, hypertensive population.

Although several countries and professional societies have guidelines on the topic of hypertension, these are specific to the population of that particular country or the specific setting or constituency of the professional society. Recent shifts in hypertension management, such as moving away from using beta-blockers as a first-line agent or the increased research and adoption of combination therapies and single-pill combinations, are all additional reasons for new guidance. The *Guideline for the pharmacological treatment of hypertension in adults* will be the first global guideline in the past two decades on the topic and will have specific relevance to low- and middle-income countries (LMICs).

The guideline provides new recommendations on the threshold for the initiation of pharmacological treatment for hypertension, recommendations on intervals for follow up, target blood pressure to be achieved for control, and the cadre of health care workers who may initiate treatment. It provides the basis for deciding whether to initiate treatment with monotherapy, dual therapy, or single-pill combination, as well as guidance for countries on selecting medicines for hypertension control in their national guidelines for hypertension management.

This guideline will replace the guidance in the modules *Evidence-based protocols* and *Risk-based CVD management* of the HEARTS technical package, as well as the guidance in the WHO PEN package regarding the threshold for initiation of treatment, and for the preferred pharmacological treatment for hypertension.

The guideline does not address measurement of blood pressure or diagnosis of hypertension. It addresses pharmacotherapy in individuals with a "confirmed" diagnosis of hypertension, such as hypertension diagnosed when blood pressure is found to be elevated on two different days.

Although this guideline does not address modifiable risk factors for hypertension such as unhealthy diet, physical inactivity, consumption of tobacco and alcohol, and being overweight or obese, a comprehensive treatment plan for hypertension must include addressing these risk factors through life-style modifications and other interventions *(2)*.

Nonpharmacological approaches to treatment or prevention of hypertension include:

- reducing salt intake (to less than 5g daily)
- eating more fruit and vegetables
- being physically active on a regular basis
- avoiding use of tobacco
- reducing alcohol consumption
- limiting the intake of foods high in saturated fats
- eliminating/reducing trans fats in diet *(2)*.

The guideline does not address hypertensive crisis as it is focused on chronic blood pressure management in regular care settings.

The objectives of the hypertension guideline are to:

- provide a blood pressure threshold for the initiation of treatment for hypertension;
- determine if laboratory tests or cardiovascular risk assessment are required prior to initiation of treatment for hypertension;
- determine the pharmacological agents with which to initiate treatment;
- determine the need to initiate treatment with monotherapy, dual therapy, or single-pill combinations;
- provide targets for blood pressure control in hypertension;
- provide intervals for follow up for patients with hypertension; and
- determine how nonphysician health care workers can participate in the management of hypertension.

Target audience

Primary audience

Clinicians/health care providers at all levels of health care.

Secondary audience

National NCD/CVD programme managers, health care academics, policy-makers setting practice recommendations, students, and hypertension medicine manufacturers.