Published in final edited form as:

Lancet. 2015 February 28; 385(9970): 825–827. doi:10.1016/S0140-6736(14)62256-X.

A public health approach to global management of hypertension

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Non-communicable diseases are responsible for two-thirds of deaths worldwide, with 80% occurring in low-income and middle-income countries (LMICs).[1] Cardiovascular disease causes more deaths than any other non-communicable disease, and hypertension is the leading remediable risk factor for cardiovascular disease.[2] Hypertension kills an estimated 9·4 million people annually worldwide—about as many as all infectious diseases combined.[3]

Hypertension is probably the easiest chronic non-communicable disease to treat, since blood pressure measurement for diagnosis and monitoring is simple, drug regimens can be once daily and inexpensive, and treatments exist that do not need laboratory monitoring. However, hypertension is adequately controlled in only about 13% of people with the disorder worldwide.[4]

Although there is some scepticism about the ability of LMICs to implement programmes to treat chronic disorders, antiretroviral treatment for HIV, which is substantially more complex and expensive than treatment for hypertension, has been successfully scaled up to reach at least 37% of HIV-infected people who are eligible for treatment. Most of these patients live in LMICs.[5] This experience suggests that rapid expansion of treatment and control of hypertension in LMICs should be achievable.

The benefits would be substantial. In the USA, achievement of control rates of about 65% in all people with hypertension could avert tens of thousands of deaths per year.[6] For cardiovascular disease, direct health-care costs and productivity losses could amount to as much as US$20 trillion globally over two decades if we do not act.[7] The question is not whether treatment of hypertension should be undertaken, but rather how it should be done. A recent *Lancet* editorial noted that a global effort to treat and control hypertension is needed, citing the Global Standardized Hypertension Treatment (GSHT) Project as a promising approach.[8] In this Viewpoint, we describe this initiative and its underpinnings, which drew heavily from lessons learned in the treatment of HIV/AIDS and tuberculosis in LMICs.

Recognition in 1996 that combination antiretroviral treatment reversed progression of HIV-associated immune deficiency led a decade later to mass scale-up of treatment in LMICs, where the burden of disease is highest. Philosophical and practical approaches to the

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SYA drafted the manuscript. All authors revised the manuscript and approved the final version for publication.

Declaration of interests

We declare no competing interests.

implementation of treatment programmes in settings with weak health systems had to first be defined[9] and then implemented. These approaches included (1) simplification by focusing on core interventions; (2) standardisation through the adoption of a public health approach with standard regimens; (3) decentralisation to assure treatment delivery in remote areas, including through task sharing to enable nurses, community health workers, and others to undertake specific programmatic functions and thus extend access, reduce costs, and potentially increase consistency of care; (4) minimisation of laboratory monitoring requirements by committing to provide treatment safely even in the absence of laboratory capacity beyond HIV testing; (5) monitoring to appropriately track patients and outcomes, including assuring treatment effectiveness; and (6) programme assessment to allow national and regional comparisons. Less than 20 years later, nearly 13 million people worldwide are receiving antiretroviral treatment.[5] New infections and deaths are declining; between 2001 and 2013, new HIV infections have declined by 38%, and between 2005 and 2013, AIDS-related deaths have decreased by 35%.[5]

Methods used to control tuberculosis, for which diagnosis, treatment, and monitoring are standardised worldwide, were used to scale-up HIV/AIDS treatment. The tuberculosis control programme is accountable for every person diagnosed and measures quality by assessing outcomes through cohort analysis of all people diagnosed. The following mutually exclusive outcomes are measured: cure, treatment failure, death, loss to follow-up, or transfer out (ie, confirmed transfer to another jurisdiction, which will then report one of the other outcomes). This simple scheme facilitates continuous assessment and improvement of programme performance, and between 1990 and 2012, the global tuberculosis death rate fell by 45%.[10]

To reduce cardiovascular disease through treatment of hypertension, both increased access to diagnosis and treatment and improved treatment quality will be necessary. In the USA, barely half of people with hypertension have their blood pressure at target levels; in a recent review involving 17 LMICs,[11] control rates varied from 4% to 47% among patients aged 35–49 years old. Infrastructure that is already in place, including for treatment of HIV/AIDS, could be used for management of chronic diseases where primary care delivery structures are limited, including in sub-Saharan Africa. In middle-income and high-income countries where a commitment to improvement of chronic care already exists, standardisation of treatment protocols and disease management can enhance dissemination of best practices, decrease costs, enable scale-up of quality treatment, and facilitate assessment of different treatment regimens and disease management approaches.

In 2013, the US Centers for Disease Control and Prevention, in collaboration with the Pan American Health Organization (PAHO), launched the GSHT Project to create a framework for treatment of hypertension that is sufficiently flexible for worldwide use.[12]

Effective blood pressure drugs have been available for decades, and every major therapeutic class now has available generic versions. Still, for five of every six patients worldwide, access to these drugs remains limited. In a 2010 study in 36 mostly LMICs,[13] cost was analysed for a group of antihypertensive drugs that included one from each of the five major classes. 1 month of daily treatment with one hypertensive drug cost a mean of 1·8 days’

wages, and many patients will need more than one drug to achieve control.[13] Mechanisms must be found to make drugs more affordable, as has occurred with drugs for the treatment of HIV/AIDS and tuberculosis.

Various factors, including standardisation of drug regimens and increased availability of generic versions, have contributed to the steep declines in costs for HIV and tuberculosis drugs since the 1990s—in the case of HIV drugs, by a factor of more than 100.[14] Broad consensus—at least within each country—on a core set of drugs that is effective for the treatment of most adults with hypertension could increase drug availability and reduce costs. This consensus was achieved at a regional GSHT Project workshop in 2013,[12] at which a core set of drugs was defined for treatment of hypertension throughout Latin America and the Caribbean. Within the year, the PAHO Strategic Fund—a pooled procurement mechanism that is able to leverage lower pricing to even its smallest member states—considered and added GSHT Project core drugs. Countries throughout the Americas can now purchase five of the six recommended drugs through PAHO Strategic Fund purchasing agreements. Another potential approach is use of combination pills (eg, one pill that incorporates two drugs) to enhance drug adherence and blood pressure control.

Attention to drug quality must be central to procurement and distribution, and must be preserved despite price pressures. Falsified or substandard drugs—more common in LMICs than in high-income countries—can undermine physician and public confidence. Active national government engagement and development of robust regulatory systems are essential to ensure quality of drugs.[15] At the regional level, the PAHO Strategic Fund addresses this issue by applying quality assurance norms throughout the pharmaceutical procurement process and supporting product quality control at the national level.

Careful review and revision of existing regional and national policies and systems related to payment, procurement, supply, and distribution might be necessary to ensure sustainable and affordable access to quality core drugs, as was done with HIV and tuberculosis treatment scale-up. As universal access to health care is considered, focus on effective treatment of hypertension as the chronic care intervention with the greatest effect on population health can not only result in substantial health improvement, but will also enable the rapid development of effective approaches that can be applied to other non-communicable diseases to reduce costs, increase access, and deliver quality services.

The GSHT Project promotes care delivery elements that can be integrated into all health-care systems. These include patient registries, standardised treatment guidelines, patient-centred care, community involvement, and the use of multidisciplinary teams to facilitate redistribution of specific clinical tasks across the care delivery team (ie, task sharing).

Hypertension registries, ideally created through simple and robust electronic systems, should include all patients within a facility or catchment area. This basic roster allows for baseline descriptive data on blood pressure measurement, prescribed treatments, target setting, and monitoring of progress. Cohort monitoring facilitates measurement of specific indicators, such as hypertension control rates, and implementation of corrective actions. In the USA, a hypertension registry was created to support systems-level improvements for 600000

patients, which raised hypertension control rates from 44% to 80% over 8 years.[16] This approach has also been applied to hypertension treatment in Palestinian refugee camps in Jordan.[17]

Simplification of treatment protocols, including specification of drugs and dosages to use at each step, is another key element to improve treatment of hypertension.[9, 18] When patients receive standardised care, delivery systems can be planned and streamlined and decision making by providers can be simplified. This approach is underused in the treatment of hypertension. A review of 22 treatment guidelines and protocols in Latin America and the Caribbean showed that only six recommended specific drugs rather than general drug classes, and only two went beyond naming a specific diuretic.[12] In response, the GSHT Project advises that systems or countries design or select a treatment protocol, guided by their local circumstances, to be used throughout.[13] In the USA, the Million Hearts initiative has made instruments broadly available for health-care facilities to create drug-specific protocols.[19] Countries engaged in the GSHT Project are developing similar resources.

In May, 2013, the World Health Assembly endorsed a set of global voluntary targets for non-communicable diseases, including a 25% reduction in the prevalence of raised blood pressure by 2025.[20] We estimate that treating half of people with uncontrolled hypertension, including those untreated and those inadequately treated, would avert 10 million cardiovascular events worldwide over 10 years.[21] Global innovations in HIV/AIDS and tuberculosis show that treatment of people with a chronic or long-term disorder can have a broad reach and population effect.

The building blocks for effective practices for treatment of hypertension are in place. Countries of all income levels have much to gain from their implementation. With more than 9 million deaths from hypertension worldwide each year, the potential effect of improved treatment of hypertension, particularly if combined with population-wide measures such as sodium reduction, would be substantial.

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