

Developing population-based hypertension control programs

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ABSTRACT

Hypertension remains the leading cause of cardiovascular disease globally despite the availability of safe and effective treatments. Unfortunately, many barriers exist to controlling hypertension, including a lack of effective screening and awareness, an inability to access treatment and challenges with its management when it is treated. Addressing these barriers is complex and requires engaging in a systematic and sustained approach across communities over time. This analysis aims to describe the key elements needed to create an effective delivery system for hypertension control. A successful system requires political will and supportive leadership at all levels of an organization, including at the point of care delivery (office or clinic), in the health care system, and at regional, state and national levels. Effective screening and outreach systems are necessary to identify individuals not previously diagnosed with hypertension, and a system for follow up and tracking is needed after people are diagnosed. Implementing simple protocols for treating hypertension can reduce confusion among providers and increase treatment efficiency. Ensuring easy access to safe, effective and affordable medications can increase blood pressure control and potentially decrease health care system costs. Task-sharing among members of the health care team can expand the services that are delivered. Finally, monitoring of and reporting on the performance of the health care team are needed to learn from those who are doing well, disseminate ideas to those in need of improvement and identify individual patients who need outreach or additional care. Successful large-scale hypertension programs in different settings share many of these key elements and serve as examples to improve systems of hypertension care delivery throughout the world.

Keywords

Hypertension; patient care team; quality improvement; population health; population health management; clinical protocols; diagnostic screening programs; antihypertensive agents.

Hypertension is a leading cause of cardiovascular disease globally, contributing to the death of more than 10 million people every year and to disability in more than 200 million individuals. For more than 60 years, effective strategies have been demonstrated to improve hypertension control and significantly reduce hypertension-related complications. However, despite safe and effective treatment options, hypertension control in most countries remains suboptimal, especially in

low- and middle-income countries where most cardiovascular-related deaths occur (1).

Many barriers exist to controlling hypertension, and these result in missed diagnoses, an inability to access treatment and inadequate control when the disease is treated. Traditional patient- or provider-focused strategies that address barriers have not improved control in large populations because most barriers are functional limitations of health care delivery

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systems that are not related to patients' or clinicians' behavior. Addressing these barriers requires a systematic and sustained health system approach and communities' engagement over time (2). The 2020 São Paulo call to action for the prevention and control of high blood pressure identifies a comprehensive list of components that are key to successful hypertension treatment and control in the community, and these include policies, advocacy, patient empowerment and health system strengthening (3).

Several packages of recommendations have been developed to facilitate implementation of population-based hypertension control systems, such as the World Health Organization's Global Hearts Technical Package (4), Controlling High Blood Pressure from Resolve to Save Lives (5), the Million Hearts Campaign (6), and the Pan American Health Organization's HEARTS in the Americas initiative (7). Many publications describe successful hypertension control programs implemented in different settings, such as managed care (8), veterans' health systems (9), mixed community insurance environments (10), and nationally, provincially or state-funded health systems (11, 12).

This opinion and analysis paper was developed by a group of university professors and senior global health experts with subject matter expertise and significant experience in implementing successful local, national, regional and global initiatives to improve hypertension control at the population level (13). The analysis aims to describe the key elements necessary to create effective delivery systems for hypertension control programs. Common themes from implementation guides and successful programs are described.

LEADERSHIP

Key elements of a successful system include political will and supportive, innovative and strategic leadership at multiple levels of a health system, including at the point of care delivery and at regional, state and national levels. There exist many simultaneous health priorities and potentially competing projects in most settings. Thought leaders, advocates, administrators and other stakeholders, using data demonstrating the value of ensuring population health, are necessary to support the prioritization of hypertension control activities. Ideally, leaders in the health care community should be visible in their sponsorship of this prioritization to facilitate broad support. Obtaining support from key leaders can signal to others, such as policy-makers, to invest in organizing systematic plans to implement programs to improve hypertension control. To ensure the efficient use of resources and increased likelihood of continued support, developers should evaluate and enhance current care delivery programs, instead of creating new and redundant models (14).

SCREENING, OUTREACH AND PATIENT FOLLOW UP

Systems for effective diagnosis, such as screening and outreach, are necessary to identify individuals not previously diagnosed with hypertension, as globally, a lack of diagnosis is a central cause of poor rates of hypertension control (1). Care delivery systems are often ineffective at reaching rural, remote or low-income communities, hindering these populations' access to care and services. Comprehensive screening programs intentionally designed to connect with underserved

populations are critical to identify those in need of treatment and to begin to address health inequities.

Implementing universal and accurate blood pressure measurement and referrals, when indicated, during all medical center encounters may be an effective strategy in settings where most individuals visit a medical center at least annually. In settings where large segments of the population have infrequent contact with medical providers, systematic outreach screening can be implemented. Outreach is most efficiently conducted using a registry, for example, a list of adults residing in the community served by a particular clinic, medical center or health system (15). Community members can be systematically identified and invited to visit screening facilities or be visited by community health workers. Mandatory annual screening in workplaces can be used to reach large numbers of individuals. Some systems may have access to demographic survey data that identify subpopulations with high rates of undiagnosed hypertension, and outreach to these groups can be prioritized. Although many advocacy organizations operate periodic screening activities at kiosks, tables or booths in community locations – such as places of worship, community centers, commercial shopping areas and health fairs – evidence is lacking that these strategies significantly improve community hypertension awareness and control. However, the interest generated by these efforts may increase community visibility, generating support for hypertension screening programs. Because the most effective strategy for screening is not known and may vary among different communities and populations, a combination of screening programs may be most effective.

Screening programs are important for identifying those in need of additional care, but alone they are not sufficient to achieve high control rates. They must be closely linked to the delivery of health care services to have an impact. Once individuals screen positive for hypertension, it is critical to have reliable processes to connect them with a health system that delivers high-quality hypertension care to assess if they have hypertension and, if appropriate, initiate treatment, investigations and follow-up care. By developing agreements and systems to ensure effective patient navigation, including for people in communities where universal health care may not be available, individuals who screen positive for hypertension are more likely to enter care. Strategies for effectively transferring patients include sharing lists of patients from screening activities with treatment or confirmation sites, or directly referring patients to medical facilities when indicated. The receiving sites can develop systems to follow up with those identified during screening who have not connected with a receiving medical center.

DIAGNOSTIC AND TREATMENT PROTOCOLS

Guidelines often recommend complicated procedures for diagnosing and treating hypertension. Some recommend that blood pressure measurements be taken on several occasions in each arm, with the average of multiple readings calculated, and then having individuals return for repeated visits for verification and confirmation. Such recommendations may be impractical in many primary health care settings, where hypertension care takes place for most individuals. Some hypertension protocols recommend using blood pressure measuring devices, such as home blood pressure monitors, automated office blood pressure

monitors and ambulatory blood pressure monitors. These protocols and devices are suitable only for populations for whom the devices are affordable and available. Despite these challenges, even in low-resource settings, medical staff should be trained to measure blood pressure. To reduce the likelihood of false-positive and false-negative hypertension diagnoses, only validated automated blood pressure devices should be used. Successful population hypertension control programs utilize pragmatic, simplified and effective approaches to diagnosis, treatment and follow up (16).

A clinical guideline differs from a treatment protocol. Most hypertension guidelines suggest many pharmacological options (several medications, classes, doses and strengths), are very detailed and are often lengthy (several hundred pages). They may serve as comprehensive frameworks for typical and less common presentations of the condition. In contrast, an ideal treatment protocol contains a small set of pharmacological options, is appropriate for most individuals with uncomplicated hypertension and is brief (one page). Ideal protocols specify the recommended medication dose at each step and provide limited options for medications and doses. Medications recommended in protocols are selected based upon value (low cost and high efficacy), availability, their low rate of adverse events, the reduced need for laboratory monitoring and the availability of once-daily dosing, with an option to use fixed-dose combinations of two complementary medications to initiate treatment and, if available, single-pill combination therapy.

Developing and adopting a standardized and simple treatment protocol has additional program benefits. Using a shared protocol ensures that training activities will be more efficient and simplified as treatment becomes more standardized. Also, it provides a standard against which the quality of care can be assessed when programs are under way. Further, because all patients will be receiving similar care for hypertension, systemic biases that contribute to health inequities can be assessed and addressed. In addition, developing, selecting or adapting a hypertension treatment protocol can catalyze the launch of or recommitment to hypertension control in a community. A consensus conference to create or select a community-wide medication treatment protocol could include clinical leaders and multidisciplinary teams consisting of academic leaders, medical system administrators, pharmacy and equipment procurement experts, clinicians (such as primary care clinicians, family physicians, cardiologists, internal medicine physicians and nephrologists), ministers of health or government representatives, and other key stakeholders (17).

Simple and directive diagnostic and treatment protocols for the detection and treatment of hypertension reduce confusion among providers and increase treatment efficiency for people with hypertension. For example, the HEARTS in the Americas program is implementing a clinical pathway composed of eight key drivers to improve hypertension control and optimize the treatment cascade (17). A simple clinical pathway, including medication protocols for hypertension, is essential to achieving high control rates by addressing and reducing therapeutic inertia, a significant barrier to hypertension control.

MEDICATIONS

Access to safe, effective and affordable medications can increase blood pressure control and potentially decrease health

system costs. Often, health system formularies make dozens of antihypertensives available at many dose strengths. Selecting a few specific medications (from guideline-recommended classes) and doses can improve the accuracy of medication forecasting and lower costs through bulk purchasing. Other logistical issues, such as storage and distribution, may be improved when larger volumes of limited numbers of medications are required. Patient engagement and adherence can be increased by prescribing once-daily medications.

Using single-pill combination therapy – that is, a single pill that combines two or more medications – can improve adherence, and these combinations are increasingly available. Single-pill combination therapy lowers the number of pills taken by patients and can reduce the time until blood pressure is controlled. Most single-pill combination medications contain two or more classes of antihypertensive agents that act through different pharmacological mechanisms with complementary actions, resulting in greater blood pressure reduction at lower doses and with lower rates of adverse events. When two medications from complementary pharmacological antihypertensive classes are used (for example, a renin-angiotensin-aldosterone system inhibitor plus a calcium channel blocker), the combination is effective across a broad range of underlying conditions. This is key to implementing a population-based approach to hypertension control because it can simplify a treatment protocol by eliminating the need to have separate medicine recommendations for different groups. Delivering single-pill combination therapy may be less expensive than purchasing two or more medication components separately (18).

TASK-SHARING

Task-sharing among members of the health care team can provide expanded access to services and is recommended in many clinical guidelines. Using a mix of providers with different skill sets can increase the efficiency of delivery systems and is recommended for settings with limited health care resources. The scope of licensure authorized by regulatory authorities may allow nonphysician personnel to participate in an expanded role. Offering training, coaching, supervision and support can increase the scope of team members' clinical practice so that they can function at the highest level permitted by their license. After teams identify the care activities required for their hypertension control program, tasks can be assigned to team members based on the maximum scope of practice, which can be more effective than a system in which physicians deliver most services. For example, medical assistants can be trained to measure blood pressure and contact patients who are due for follow-up services. Trained nurses and pharmacists, working with a standardized protocol, can often initiate treatment and adjust medications, refer patients to other health services, offer counseling, arrange for follow up and provide other services, including referrals to physicians, when indicated (19). Patients, family members and caregivers can also be trained to participate in hypertension care, for example, by learning how to accurately measure and report blood pressure results.

MONITORING AND REPORTING

Monitoring and reporting allow for objective feedback to be given to teams and for identification of effective models

for dissemination. The regular reporting of a core set of metrics for hypertension quality performance allows leadership, administrators, implementers and care teams to understand their performance over time and make prompt corrections to any deviations. The standardization of metrics allows the performance of similar programs to be compared and for learning from high-performing groups. Selecting a quality metric that can be measured easily, shared widely and distributed regularly is more critical than picking a more complex metric. For example, valuable metrics to help identify which centers are performing well and which may have improvement opportunities include measuring the total number of individuals diagnosed with hypertension every quarter, the number of people who had controlled blood pressure documented at their last clinic encounter during the past 12 months and the percentage who started treatment 6 months ago who had blood pressure controlled during the past quarter.

Monitoring and reporting can also identify individual patients who need additional care. Other metrics can also be designed and implemented to target specific process interventions, such as the HEARTS in the Americas program's maturity index (17). For example, a monthly list of patients who were unable to follow up 3 months after an elevated blood pressure reading could be used to send reminder notifications prior to the patient's next scheduled visit or trigger community health workers to visit the patient's home to support adherence.

Although some early and smaller hypertension control programs have used manual data collection, digital systems that collect and aggregate information electronically are necessary to ensure efficiency and sustain programs in large health systems and populations.

PROGRAM DESIGN

Regardless of size, any program for population-level hypertension management can benefit from a structured process to address the critical components. Smaller programs may start with fewer metrics and focus on team-based care. Larger systems may start by focusing on standardizing existing or new metrics and ensuring consistent training activities. Even larger systems, such as countries or states, may focus on consensus-building and leadership, including developing protocols and a robust infrastructure for quality metrics. Community hypertension awareness campaigns combined with intervention strategies implemented by health care systems can be instituted simultaneously to achieve a synergistic effect. Most hypertension control programs will need to identify and address many elements and make modifications as implementation occurs in response to periodic assessments of progress and challenges (13).

CONCLUSIONS

In some communities identifying and treating individuals with hypertension has evolved from providing inconsistent and limited (or no) care to an emerging paradigm of organized and reliable screening and treatment applied systematically across a population over time (20). While these hypertension programs may be as unique as the countries and communities they operate within, several key program elements have been

TABLE 1. Key components of successful population-based hypertension control programs

Component	Description
Leadership	Prioritize hypertension control Facilitate adequate resource allocation
Screening, outreach and patient follow up	Undertake opportunistic screening in clinics and systematic outreach Address the entire population at risk Develop mechanisms to ensure appropriate follow up
Treatment protocols	Ensure a simple and standardized clinical pathway for diagnosis and treatment Use as opportunity for consensus building Facilitate medication procurement and task-sharing
Medications	Prefer small number of high-quality and effective medications and doses Prefer affordability with low-cost or no-cost medications Use single-pill combination medications to reduce burden and increase control
Task-sharing	Allow larger workforce to address hypertension Ensure personnel work at their maximum scope Is more efficient and allows for greater opportunities to deliver care
Monitoring and reporting	Ensure that metrics are easy to measure, shared widely and distributed regularly Standardize to allow for comparison with other centers and programs Allow for identification of opportunities for improvement and successes

Source: Table prepared by the authors from the analysis undertaken for this report.

shown to enhance their effectiveness (Table 1). Addressing hypertension care in a large population can be accomplished using several strategies, including engaging leadership, implementing screening with outreach and follow up, implementing a standardized clinical pathway that has a specific treatment protocol, ensuring access to high-quality medications, enhancing task-sharing, and ensuring that quality metrics are reported. Successful large-scale hypertension programs in many settings share many of these key elements and serve as examples of how to improve existing and future systems of hypertension care delivery throughout the world.

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Conflicts of interest. MGJ is a former employee of Resolve to Save Lives. NRCC receives personal fees from Resolve to Save Lives, Switch Health, the Pan American Health Organization (PAHO) and the World Bank, and is an unpaid consultant on dietary sodium and hypertension control to numerous governmental and nongovernmental organizations. SYA has been a paid consultant for the PAHO Hearts in the Americas initiative. PO is a staff member of PAHO.

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Creación de programas de control de la hipertensión basados en la población

RESUMEN

A pesar de la disponibilidad de tratamientos seguros y efectivos, la hipertensión sigue siendo la principal causa de enfermedad cardiovascular a nivel mundial. Lamentablemente, el control de la hipertensión enfrenta muchos obstáculos, como la falta de detección y concientización efectivas, la incapacidad de acceder al tratamiento y los retos que plantea su manejo cuando se recibe tratamiento. Resulta complejo abordar estos obstáculos; se debe adoptar un enfoque sistemático y sostenido en todas las comunidades a lo largo del tiempo. El presente análisis tiene como objetivo describir los elementos clave necesarios para crear un sistema de atención eficaz para el control de la hipertensión. Un sistema adecuado precisa voluntad política y un liderazgo que brinde apoyo en todos los niveles de una organización, incluido el punto donde se presta la atención (consultorio o clínica), el sistema de atención de salud y a nivel regional, estatal y nacional. Se necesitan sistemas efectivos de detección y de alcance comunitario para encontrar a las personas sin diagnóstico previo de hipertensión, así como un sistema para el seguimiento y la localización una vez han sido diagnosticadas. La aplicación de protocolos simples para tratar la hipertensión puede reducir la confusión entre los proveedores y aumentar la eficiencia del tratamiento. Garantizar un acceso fácil a medicamentos seguros, efectivos y asequibles puede aumentar el control de la presión arterial y potencialmente disminuir los costos para el sistema de atención de salud. La distribución de tareas entre los miembros del equipo de atención de salud permite expandir los servicios que se prestan. Finalmente, es necesario dar seguimiento al desempeño del equipo de atención de salud y presentar información al respecto, a fin de aprender de las buenas prácticas, difundir ideas entre quienes necesitan mejorar y determinar a cuáles pacientes se debe llegar y cuáles necesitan atención adicional. Los programas de hipertensión a gran escala con buenos resultados en diferentes entornos comparten muchos de estos elementos clave y sirven como ejemplos para mejorar la atención de la hipertensión en todo el mundo.

Palabras clave

Hipertensión; grupo de atención al paciente; mejoramiento de la calidad; salud poblacional; gestión de la salud poblacional; protocolos clínicos; programas de detección diagnóstica; antihipertensivos.

Desenvolvimento de programas de controle da hipertensão de base populacional

RESUMO

A hipertensão continua sendo a principal causa de doenças cardiovasculares no mundo, apesar da disponibilidade de tratamentos seguros e eficazes. Infelizmente, existem muitas barreiras para o controle da hipertensão, incluindo a falta de rastreamento e a conscientização eficazes, a incapacidade de acesso ao tratamento e desafios de conduta clínica quando ela é tratada. A abordagem dessas barreiras é complexa e requer um enfoque sistemático e sustentado em diferentes comunidades ao longo do tempo. Esta análise tem como objetivo descrever os elementos-chave necessários para criar um sistema eficaz de prestação de intervenções para o controle da hipertensão. Um sistema de sucesso requer vontade política e liderança que o apoie em todos os níveis de uma organização, inclusive no ponto da prestação de cuidados (consultório ou clínica), no sistema de saúde e nos níveis regional, estadual e nacional. Sistemas eficazes de triagem e acolhida são necessários para identificar indivíduos com hipertensão não diagnosticada, e um sistema de acompanhamento e rastreamento após o diagnóstico se faz igualmente necessário. A implementação de protocolos simples para o tratamento da hipertensão pode reduzir a confusão entre os profissionais de saúde e aumentar a eficiência do tratamento. Garantir o fácil acesso a medicamentos seguros, eficazes e acessíveis pode aumentar o controle da pressão arterial e potencialmente diminuir os custos do sistema de saúde. A divisão de tarefas entre os integrantes da equipe de saúde pode expandir os serviços prestados. Finalmente, é necessário monitorar e informar acerca do desempenho da equipe de saúde para aprender com aqueles que estão indo bem, disseminar ideias para aqueles que precisam melhorar e identificar pacientes individuais que precisam de ajuda ou cuidados adicionais. Programas bem-sucedidos de controle da hipertensão em larga escala em diferentes ambientes compartilham muitos desses elementos-chave e servem como exemplos para melhorar os sistemas de atenção à hipertensão em todo o mundo.

Palavras-chave

Hipertensão; equipe de assistência ao paciente; melhoria de qualidade; saúde da população; gestão da saúde da população; protocolos clínicos; programas de triagem diagnóstica; anti-hipertensivos.
