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Protocol-Based Treatment of Hypertension:

A Critical Step on the Pathway to Progress

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Improved treatment of hypertension is among the most important—and quite possibly also the single most neglected—area of clinical medicine. Only half of Americans with hypertension have blood pressure less than 140/90 mm Hg, and more than 13%—an estimated 9 million people—have a systolic blood pressure of 160 mm Hg or higher and/or diastolic pressure of 100 mm Hg or higher.¹ Much better control is possible: Canada has a rate of blood pressure control of more than 65%,² and the Minneapolis-St Paul region has a level of blood pressure control more than 20 percentage points higher than the United States as a whole.³ The United States is making progress, but this progress is painfully slow—the rate of control is increasing only 1% per year.⁴

In simple numbers, it is estimated that nearly 36 million US adults have uncontrolled blood pressure, with 2 major subgroups that would benefit from protocol-based care.¹ The first is the large number of people—14 million—who are unaware of their hypertension.¹ Most of these people are hiding in plain sight: they are in clinical treatment with elevated blood pressure documented, but hypertension neither diagnosed nor treated. High-performing systems can reduce by half the proportion of hypertensive patients unaware of their blood pressure and not being treated.⁵ The second group is the estimated 16 million people who know they have hypertension and are taking medication for it, but do not yet have it under control.¹

Thirty-two million of the 36 million whose blood pressure is uncontrolled have a usual source of care and 30 million are insured, including 14 million Medicare beneficiaries. But the most compelling statistic—and the one that makes the case for more focused clinical attention—is that nearly 3 of 4 people with uncontrolled hypertension (an estimated 26 million people) visited a health care professional at least twice in the prior year.¹ Opportunities are being missed to initiate and improve care of patients with hypertension, and as a result they are experiencing preventable myocardial infarctions, strokes, and kidney

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and heart failure. Standardized treatment approaches, including hypertension treatment protocols, algorithms, and care pathways, can accelerate progress.

Hypertension treatment and control can be achieved with a comprehensive approach that ensures accurate measurement, detection of white-coat hypertension and resistant hypertension, patient adherence, and timely titration and intensification as needed. Therapeutic inertia, partly because of unfamiliarity with clinical guidelines and clinical uncertainty, has been well documented as a contributing factor to lack of blood pressure control.⁶ While it is not reasonable, achievable, or even desirable to have 100% of patients with appropriate control of hypertension because of adverse effects or other reasons, many more people can have blood pressure controlled than currently do.

There are at least 6 major benefits of adoption and use of standardized, evidence-based protocols:

- Protocols reduce clinical variability that is outside the bounds of evidence-based practice.
- A protocol can better enlist and enable all members of the health care team to reinforce the importance of blood pressure control and the value of adherence to healthy habits, medications, and self-monitoring, and to participate in medication titration and adjustment by following standard protocol-consistent order sets. Such clarity allows qualified staff to advance patients safely and efficiently along the treatment pathway, ensures that the supervising clinician is consulted if clinical exceptions occur, and identifies patients likely to benefit from consultation for resistant hypertension.
- Algorithms can be incorporated into electronic health records through clinical decision support tools, registry functions, and measurement to facilitate quality improvement.
- A protocol can result in a more efficient and cost-effective selection of medications and treatment approaches.
- Standardized treatment facilitates evaluation, both of the quality of care and of the impact of care.
- Adopting a standardized treatment approach sends a strong signal to clinical staff that hypertension control is a priority.

Million Hearts, a US Department of Health and Human Services initiative co-led by the Centers for Disease Control and Prevention and the Centers for Medicare & Medicaid Services along with more than 60 nongovernmental partners, aims to prevent 1 million myocardial infarctions and strokes by 2017. Million Hearts is focusing on blood pressure control in the initiative's first 2 years. Clinicians in markedly different practice settings can achieve hypertension control rates well above 70%, and they achieve those results by making hypertension control a priority with each patient across their practice or system, including the use of standardized treatment approaches.⁵

Adopting and using a protocol is important, but it is not a universal solution—in fact, there is no single solution to control blood pressure. Communitywide interventions to reduce sodium consumption, prevent obesity, and increase physical activity can help achieve modest reductions in blood pressure.¹ Better access to primary health care, increased public awareness of the importance of blood pressure control, and reporting and feedback are all important to improve outcomes. Simply adopting a protocol does not mean that it will be used; effective implementation requires continuous analysis and feedback on critical indicators such as the proportion of adults who are documented to have hypertension (if much below 30%, the US-wide average, then many patients with hypertension are likely undiagnosed and untreated) and the proportion of control achieved by each clinician or care team (monthly feedback can lead to rapid improvement).^{1,5}

To improve care by accelerating adoption and implementation of standardized treatment approaches nationwide, Million Hearts is now making available sample protocols that are being used successfully around the country, as well as a customizable template for blood pressure control.⁷ There are differences in opinion about many aspects of blood pressure control, ranging from which medications to start with to blood pressure targets. However, there should be no debate about the need to improve performance and the important role of protocol-driven care, which has been well documented for more than 30 years.⁸ Every physician, other health care practitioner, and health care organization should adopt one of the posted protocols or create their own customized evidence-based protocol. Which protocol is selected is less important than the decision to select, adopt, implement, and evaluate implementation of any evidence-based protocol. Standardized treatment will help clinicians, teams, and patients achieve and maintain healthy blood pressures and thereby prevent myocardial infarction and stroke.

REFERENCES

1. Centers for Disease Control and Prevention (CDC). Vital signs: awareness and treatment of uncontrolled hypertension among adults—United States, 2003-2010. *MMWR Morb Mortal Wkly Rep.* 2012;61:703–709. [PubMed: 22951452]
2. Joffres M, Falaschetti E, Gillespie C, et al. Hypertension prevalence, awareness, treatment and control in national surveys from England, the USA and Canada, and correlation with stroke and ischaemic heart disease mortality: a cross-sectional study. *BMJ Open.* 2013;3(8):e003423.
3. Luepker RV, Steffen LM, Jacobs DR Jr, Zhou X, Blackburn H. Trends in blood pressure and hypertension detection, treatment, and control 1980 to 2009: the Minnesota Heart Survey. *Circulation.* 2012;126(15):1852–1857. [PubMed: 22962433]
4. Egan BM, Zhao Y, Axon RN. US trends in prevalence, awareness, treatment, and control of hypertension, 1988-2008. *JAMA.* 2010;303(20):2043–2050. [PubMed: 20501926]
5. Jaffe MG, Lee GA, Young JD, Sidney S, Go AS. Improved blood pressure control associated with a large-scale hypertension program. *JAMA.* 2013;310(7):699–705. [PubMed: 23989679]
6. Handler J, Lackland DT. Translation of hypertension treatment guidelines into practice: a review of implementation. *J Am Soc Hypertens.* 2011;5(4):197–207. [PubMed: 21640688]
7. Million Hearts. Centers for Disease Control and Prevention website. <http://millionhearts.hhs.gov/resources/protocols.html>. Accessed November 9, 2013.
8. Hypertension Detection and Follow-up Program Cooperative Group. Five-year findings of the hypertension detection and follow-up program, I: reduction in mortality of persons with high blood pressure, including mild hypertension. *JAMA.* 1979;242(23):2562–2571. [PubMed: 490882]