

## Improvement in Hypertension Control: Is the Glass Half Empty or Half Full?

Borzecki AM, Wong AT, Hickey EC, et al. Hypertension control: how well are we doing? *Arch Intern Med* 2003;163:2705–11.

### Study Overview

**Objective.** To assess blood pressure (BP) control in patients with diagnosed hypertension cared for in the Veterans Affairs (VA) health care system and to compare rates of BP control in 1999 with results from 1990–1995.

**Design.** Two cohort studies using review of medical records.

**Setting and participants.** Patients with ICD-9 codes for hypertension from 10 VA sites were eligible if they had at least 2 visits to general medical or medical subspecialty clinics in 1999 at least 6 months apart. Comparison patients from the 1990–1995 cohort differed from the 1999 cohort in that patients in the earlier cohort were drawn only from sites in New England and their hypertension was diagnosed by chart review.

**Main outcome measures.** Office BP at the last visit of the year was determined by chart review. Mean BPs and the prevalence of BPs above guideline thresholds were compared in the overall samples and in subgroups with diabetes and renal disease. The frequency of visits with BP measurements resulting in medication increases also was determined.

**Main results.** BP was lower in the 1999 cohort than in the 1990–1995 cohort (142.2/76.6 mm Hg versus 145.3/82.6 mm Hg;  $P < 0.05$ ). In 1999, 18% of subjects had BP  $\geq 160/100$  mm Hg compared with 26% in 1990–1995 ( $P < 0.003$ ), and 57% had BP  $\geq 140/90$  mm Hg in 1999 compared with 69% in 1990–1995 ( $P < 0.001$ ). BPs improved more for patients with diabetes, or renal disease, but in 1999, 77% of patients with diabetes and 60% with renal disease had BPs  $\geq 130/85$  mm Hg. Medication increases occurred at 21% of visits where BP was measured in 1999 compared with 11% in 1990–1995. Of visits with systolic BP  $\geq 165$  mm Hg, 43% in 1999 and 22% from 1990–1995 resulted in medication increases.

**Conclusion.** This data suggests a temporal improvement in BP control for patients cared for in the VA system. Further-

more, medication intensification now occurs more often. However, most patients remain above goal BP, and while larger improvements were seen for patients with diabetes or renal disease, most patients with these conditions have dangerously high BP.

### Commentary

BP control in the VA system improved during the 1990s, a time of increasing awareness of the risk associated with mildly elevated BP and a time of active quality improvement in the VA system [1]. The improvement these authors observed is similar to the temporal changes seen in the country overall in the National Health and Nutrition Examination Surveys (NHANES) [2]. The larger decline of BP among adults with diabetes also represents an important improvement, and this change was not observed nationally [2]. The authors are correct to point out that these modest improvements in BP control are large enough to produce significant reductions in hypertension-related morbidity and mortality on the population level. It also is encouraging to see a doubling in the frequency of medical treatment intensification occurring at office visits where hypertension is detected.

Unfortunately, these findings are not cause for celebration when we consider how far the results are from ideal BP control. Even for these patients who have access to care through the VA system, 57% did not achieve a BP of  $< 140/90$  mm Hg in 1999, and very few patients with diabetes met the stricter goal of  $< 130/85$  mm Hg. While this study provides evidence that physicians' treatment patterns are improving, it still is alarming that 57% of office visits where systolic BP was  $\geq 165$  mm Hg did not result in medication intensification and when hypertension was less pronounced, treatment intensification was even less frequent.

This study provides insight into hypertension management that is not available from studies such as NHANES because it examines the frequency of treatment intensification for hypertension occurring at individual office visits. The major limitation of this study is that the criteria used to select the study populations differed in the 2 cohorts. As a

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result, changes in hypertension control over time cannot be viewed as definitive findings. Also, this study does not measure patients' adherence to hypertension therapy and therefore cannot distinguish how much of the shortfall in hypertension control is due to clinicians' treatment decisions or from factors that occur outside the office (eg, patients' non-adherence to antihypertensive medication).

### **Applications for Clinical Practice**

Poor control of hypertension is still very common. Physicians frequently do not increase medical therapy at office visits where BP is elevated. Outpatient management of hyperten-

sion seems to be a worthwhile target for quality improvement initiatives.

*—Review by Stephen D. Persell, MD, MPH*

### **References**

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2. Hajjar I, Kotchen TA. Trends in prevalence, awareness, treatment, and control of hypertension in the United States, 1988–2000. *JAMA* 2003;290:199–206.

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