Antihypertensive Medication Adherence, Stroke and Death

James E. Bailey, MD, MPH^{1,2}, Jim Y. Wan, PhD¹, Jun Tang, MS², Muhammad A. Ghani, MD³, and William C. Cushman, MD^{1,3,4}

¹Department of Preventive Medicine, University of Tennessee Health Science Center, Memphis, TN, USA; ²Division of General Internal Medicine, Department of Medicine, University of Tennessee Health Science Center, Memphis, TN, USA; ³Department of Medicine, University of Tennessee Health Science Center, Memphis, TN, USA; ⁴Preventive Medicine Section, Veterans Affairs Medical Center, Memphis, TN, USA.

The Authors' Reply. We appreciate Dr. Lapane's analysis of the practical implications raised by our recent article documenting the adverse effect of antihypertensive medication non-adherence on risk of stroke and death.¹ We agree with both Dr. Lapane and Fischer et al.² that there is great potential for well-designed interventions using health information technology to improve adherence to essential medications and save lives.

We concur with Dr. Lapane that physicians frequently underestimate the extent of non-adherence and are generally unprepared to deal with it. Given the high rates of non-adherence, it is critical that intervention approaches support rather than interrupt efficient physician workflow.

So what interventions does research suggest are most promising? Unfortunately, there is scant direct evidence. However, our recent research does provide some strong indirect evidence. Three complementary health information exchange (HIE) registry-facilitated approaches should be investigated to assess use of antihypertensive medication refill adherence (MRA) in the primary care setting. First, preliminary evidence suggests that feedback of MRA information through an electronic health record (EHR) dashboard at the point of care is likely to help providers recognize, track, and emphasize adherence without disruption of busy schedules.^{3,4} Second, outreach personnel (nurses, medical assistants or pharmacists) can be employed to routinely reach out to all patients identified through the HIE registry as non-adherent according to MRA. Third, HIE computer-generated reminders can be sent directly to patients to emphasize adherence.⁵ For all three approaches, MRA, which can be easily calculated using readily available electronic pharmacy data and assesses long-term adherence,¹ is likely to be more effective than a refill-by-refill approach as Lapane describes.

Our recent research supports making MRA information readily available through health information exchanges (HIE) and electronic medical records to providers to help them

support patient adherence. Further research is needed to assess whether HIE feedback of MRA information to providers, outreach personnel and patients has potential to save the lives of at-risk patients with hypertension and other serious chronic diseases.

James E. Bailey, MD, MPH, Division of General Internal Medicine, Department of Medicine, University of Tennessee Health Science Center, 956 Court Avenue, Coleman D222, Memphis, TN 38163-001, USA (e-mail: jeb@uthsc.edu); **Jim Y. Wan, PhD**, Department of Preventive Medicine, University of Tennessee Health Science Center, 66 N. Pauline, Suite 633, Memphis, TN 38105-001, USA (e-mail: jwan@uthsc.edu); **Jun Tang**, Division of General Internal Medicine, Department of Medicine, University of Tennessee Health Science Center, 956 Court Avenue, Coleman D222, Memphis, TN 38163-001, USA (e-mail: jtang@uthsc.edu); **Muhammad A. Ghani, MD**, Department of Medicine, University of Tennessee Health Science Center, 956 Court Avenue, Coleman D328, Memphis 38163-001, TN, USA; **William C. Cushman, MD**, Preventive Medicine Section, Veterans Affairs Medical Center, Memphis, TN, USA (william.cushman@med.va.gov).

REFERENCES

1. **Bailey JE, Wan JY, Tang J, Ghani MA, Cushman WC.** Antihypertensive Medication Adherence, Ambulatory Visits, and Risk of Stroke and Death. *J Gen Intern Med* 2010 Feb 18. [Epub ahead of print]
2. **Fischer MA, Stedman MR, Lii J, et al.** Primary medication non-adherence: analysis of 195,930 electronic prescriptions. *J Gen Intern Med*. 2010;25:284-90.
3. **Jamtvedt G, Young JM, Kristoffersen DT, O'Brien MA, Oxman AD.** Audit and feedback: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2006;CD000259
4. **Lang E, Afilalo M, Vandal AC, et al.** Impact of an electronic link between the emergency department and family physicians: a randomized controlled trial. *CMAJ*. 2006;174:313-8.
5. **Ornstein SM, Garr DR, Jenkins RG, Rust PF, Arnon A.** Computer-generated and physician and patient reminders. Tools to improve population adherence to selected preventive services. *J Fam Pract*. 1991;32:82-90.

J Gen Intern Med 25(8):764

DOI: 10.1007/s11606-010-1379-9

© Society of General Internal Medicine 2010

Published online May 13, 2010