in Canada. Direct-to-consumer advertising may have helped escalate niacin use, specifically Niaspan in the United States, with its prominent “intervention-style” ads.11

Our study is limited in that we did not have access to patient-level data to determine whether niacin prescribing was clinically appropriate. Our study only evaluated the prescription niacin market; niacin use likely exceeds our estimates since some niacin products can be purchased over the counter.

In conclusion, our study shows that prescription niacin sales are substantial and growing, even in the absence of contemporary supportive trial evidence. The discordance between sales and evidence should be a focus of professional dialogue about the role of this medication in the medical armamentarium.

Cynthia A. Jackevicius, BScPhm, PharmD, MSc
Jack V. Tu, MD, PhD
Dennis T. Ko, MD, MSc
Noelle de Leon, PharmD
Harlan M. Krumholz, MD, SM

Author Affiliations: Department of Pharmacy Practice and Administration, College of Pharmacy, Western University of Health Sciences, Pomona, California (Jackevicius, de Leon); Institute for Clinical Evaluative Sciences, Toronto, Ontario, Canada (Jackevicius, Tu, Ko); Institute of Health Policy, Management, and Evaluation, University of Toronto, Toronto (Jackevicius, Tu, Ko); Veterans Affairs Greater Los Angeles Healthcare System, Los Angeles, California (Jackevicius); University Health Network, Toronto (Jackevicius); Division of Cardiology, Schulich Heart Centre, Sunnybrook Health Sciences Centre, University of Toronto, Toronto (Tu, Ko); Departments of Medicine, Section of Cardiovascular Medicine, Epidemiology and Public Health, and Health Policy and Administration, and Robert Wood Johnson Clinical Scholars Program, Yale University School of Medicine, New Haven, Connecticut (Krumholz); Center for Outcomes Research and Evaluation, Yale–New Haven Hospital, New Haven (Krumholz).

Corresponding Author: Cynthia A. Jackevicius, BScPhm, PharmD, MSc, College of Pharmacy, Western University of Health Sciences, 309 E Second St, Pomona, CA 91766 (jackevicius@westernu.edu).


Author Contributions: Dr Jackevicius had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Jackevicius and Krumholz. Acquisition of data: Jackevicius and de Leon. Analysis and interpretation of data: All authors. Drafting of the manuscript: Jackevicius. Critical revision of the manuscript for important intellectual content: All authors. Obtained funding: Jackevicius. Administrative, technical, and material support: de Leon. Study supervision: Jackevicius.

Conflict of Interest Disclosures: Dr Krumholz is the recipient of a research grant, through Yale University, from Medtronic, and chairs a cardiac scientific advisory board for UnitedHealth.

Funding/Support: This study was funded in part by the College of Pharmacy of Western University of Health Sciences, Pomona, California, and in part by a Canadian Institutes of Health Research (CIHR) team grant in cardiovascular outcomes research to the Canadian Cardiovascular Outcomes Research Team. Dr Tu is supported by a Canada Research Chair in Health Services Research, and by a Career Investigator award of the Heart and Stroke Foundation of Ontario, Toronto. Dr Ko is supported by a New Investigator award from the CIHR. The Institute for Clinical Evaluative Sciences is supported by an operating grant from the Ontario Ministry of Health and Long-Term Care, Toronto. Dr Krumholz is supported by grant U01-HL105270-03 (Center for Cardiovascular Outcomes Research at Yale University) from the National Heart, Lung, and Blood Institute.

Role of the Sponsors: Neither Western University or CIHR were involved in the design and conduct of the study; collection, management, analysis, or interpretation of the data; and preparation, review, or approval of the manuscript.

Disclaimer: The views expressed in this article are those of the authors and do not necessarily represent the views of the Department of Veterans Affairs, the CIHR or the Ontario Ministry of Health and Long-Term Care. The statements, findings, conclusions, views, and opinions contained and expressed in this article are based in part on data obtained under license from the IMS Brogan CompuScript Audit database (2002-2009), and IMS Health National Prescription Audit (2002-2009). The statements, findings, conclusions, views, and opinions contained and expressed herein are not necessarily those of IMS Health Inc or any of its affiliated or subsidiary entities.

Additional Contributions: Joseph S. Ross, MD, MHS, contributed to the interpretation of the data and provided input into revising the manuscript critically for important intellectual content. The IMS Health–US and IMS-Brogan-Canada provided the data required for the analyses from the National Prescription Audit and the CompuScript Audit, respectively. Michael Warren, MA, of Claremont Graduate University, assisted with data analysis, for which he received compensation.


Appropriate Use of Myocardial Perfusion Imaging in a Veteran Population: Profit Motives and Professional Liability Concerns

Myocardial perfusion imaging (MPI) is performed millions of times annually in the United States to assess patients for coronary ischemia. Some have expressed concern that MPI is being used inappropriately, possibly because of self-referral profit motives and professional liability fears.13

Editor’s Note page 1383

Supplemental content at jama.letters.com

cjama@ajkgroup.com 1381

Letters

JAMA Internal Medicine July 22, 2013 Volume 173, Number 14
hypothesized that the single-payer environment of the Veterans Affairs (VA) health system, which eliminates self-referral profit motive and limits liability concern, will result in less inappropriate use of MPI.

Methods | We conducted a retrospective cross-sectional investigation of MPI ordered in a single VA medical center. Our institutional review board reviewed the protocol and waived the requirement for informed consent. Participants were identified from records of MPI performed using the VA Computerized Patient Record System, beginning December 2010. Demographic information, medical history, and information regarding symptoms were gathered to establish associations with inappropriate MPI ordering. Appropriateness categorization was performed on the basis of the 2009 criteria and using a data collection instrument endorsed by professional societies and the Imaging in FOCUS initiative for assessment of appropriateness. Patient symptoms that prompted ordering of MPI were attributed to ischemia, unless specifically indicated otherwise. The primary outcomes were the proportion of inappropriate MPI tests and univariate associations between patient characteristics and the likelihood of inappropriate MPI. Statistical analysis was performed using SPSS, version 20 (IBM). We used the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement in designing our investigation.

Results | We identified 332 MPI studies performed between December 1, 2010, and April 11, 2011. The population of patients was predominantly male with high prevalence of obesity, diabetes mellitus, hypertension, and hyperlipidemia (Table). Coronary artery disease and abnormal electrocardiogram results were also common findings. Chest pain was the most commonly reported individual symptom (49.4%); however, typical angina was rare (0.6%). Positron-emission tomography was used for 304 patients (92%) and single-photon–emission computed tomography for the remaining 28 patients (8%).

For all but 4 patients (1%), an indication from the 2009 AUCs could be identified. Study indications were 78% (n = 259) appropriate, 13% (n = 42) inappropriate, and 8% (n = 27) uncertain (eFigure in Supplement). The most common inappropriate MPI indications included testing of patients with low pretest probability who could have undergone treadmill electrocardiogram testing (7 patients [16.7% of total inappropriate MPI]) and asymptomatic patients with low coronary heart disease risk (7 patients [16.7% of total inappropriate MPI]) (eTable in Supplement). Of the 9 preoperative MPI tests reviewed in this investigation, 6 were inappropriate and 3 were appropriate.

Patient characteristics were compared with MPI indications to identify factors associated with inappropriate MPI ordering (Table). The absence of symptoms was associated with a nearly 5-fold higher likelihood of inappropriate testing (odds ratio [OR], 4.80 [95% CI, 2.39-9.66]; P < .001). Both chest pain (OR, 0.07 [95% CI, 0.02-0.20]; P < .001) and diabetes mellitus (OR, 0.37 [95% CI, 0.17-0.80]; P = .01) were associated with a lower likelihood of inappropriate testing.

Discussion | In this retrospective cross-sectional investigation regarding the appropriate use of MPI in a VA health care setting, we observed that a substantial portion of MPI tests were ordered for inappropriate indications. The findings are in contrast to our initial hypothesis but are similar to those of another VA-based investigation, the results of which were published during our investigation.

Our hypothesis was based on unique characteristics of the VA patient care environment. First, no self-referral or profit motives exist. Second, whereas the Federal Tort
Claims Act permits medical malpractice lawsuits against federally employed physicians, the substantial majority of claims are resolved through administrative processes. Only 3 judgments against the US government were recorded for tort claims in 2010.6 We did not detect a significant reduction in inappropriate testing in the VA environment, which suggests a lesser role of defensive medicine and self-referral in the inappropriate use of MPI. A recent survey of cardiologists did not find any association between ownership of diagnostic equipment (MPI, catheterization laboratory, computed tomography scanner, or echocardiography laboratory) and concordance with appropriateness categories.7

The magnitude and pattern of inappropriate testing in our investigation are similar to those in prior reports.3 Hendel et al8 observed similar common inappropriate MPI indications, as well as significant associations between asymptomatic patients and inappropriate testing (OR, 22.5 [95% CI, 15.2-33.2]) and lower likelihood of inappropriate testing in patients with diabetes mellitus (OR, 0.4 [95% CI, 0.4-0.5]).

Reasons for the observed patterns of ordering MPI are unclear. Conceivably, commonalities in medical training, independent of postgraduate practice environment, could contribute to an exaggerated perception of benefit of MPI in asymptomatic patients and those at low risk of coronary heart disease. This exaggerated perception of the benefit would also seem to hold true for preoperative risk assessment, with the majority of preoperative MPI in our study having been inappropriately ordered.

David E. Winchester, MD, MS
Ryan Meral, BA
Scott Ryals, MD
Rebecca J. Beyth, MD, MSc
Leslee J. Shaw, PhD

Author Affiliations: Cardiology Section, Medical Service, Malcom Randall VA Medical Center, Gainesville, Florida (Winchester); Division of Cardiovascular Medicine, Department of Medicine, College of Medicine, University of Florida, Gainesville (Winchester); medical student at the College of Medicine, University of Florida, Gainesville (Meral); Department of Medicine, College of Medicine, University of Florida, Gainesville (Ryals); Geriatric Research Education and Clinical Centers (GRECC), Malcom Randall VA Medical Center, Gainesville, Florida (Beyth); Division of General Internal Medicine, Department of Medicine, College of Medicine, University of Florida, Gainesville (Beyth); Division of Cardiology, College of Medicine, Emory University School of Medicine, Atlanta, Georgia (Shaw); Emory Clinical Cardiovascular Research Institute, Emory University School of Medicine, Atlanta, Georgia (Shaw).

Corresponding Author: David E. Winchester, MD, MS, Medical Service, Malcom Randall VA Medical Center, 1601 SW Archer Rd 111D, Gainesville, FL 32608 (david.winchester@va.gov).


Author Contributions: Dr Winchester had full access to the data and accepts responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Winchester. Acquisition of data: Winchester, Meral, Ryals. Analysis and interpretation of data: All authors. Drafting of the manuscript: Winchester, Shaw. Critical revision of the manuscript for important intellectual content: All authors. Statistical analysis: Winchester. Obtained funding: Winchester.

Administrative, technical, and material support: Meral, Ryals. Study supervision: Winchester, Beyth, Shaw.

Conflict of Interest Disclosures: None reported.

Funding/Support: This investigation was supported by NIH T35 Training Grant T35-1HL07489-28. This material is based on work supported by the Department of Veterans Affairs, Veterans Health Administration.

Role of the Sponsor: The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government.

Previous Presentation: This study was presented at the American College of Cardiology Scientific Session, March 11, 2013; San Francisco, California.


Editor’s Note

Why Physicians Order Tests

In a Department of Veterans Affairs (VA) medical center, use of myocardial perfusion imaging was inappropriate in approximately 20% of studies, a proportion that is similar to that reported from other practice settings in the United States. The facts that VA physicians are salaried and malpractice claims are very uncommon suggest that there are other reasons that physicians order inappropriate tests. These might include exaggerated belief in the accuracy and clinical benefit of tests, lack of understanding of the potential harms (including radiation exposure and false-positive results), and a cultural value for “doing more.” This study was small and conducted at a single VA medical center, so the findings should be viewed as hypothesis generating. Nevertheless, it suggests that the culture of overordering is ingrained and we need to carefully consider approaches to reducing inappropriate care that focus on physician knowledge and culture.

Deborah Grady, MD