stantial opportunities to perform better. Where absolute rates of adverse behaviors were low, such as HIV risk behaviors, most Americans adhere to public health recommendations, and the lack of difference between HCWs and other Americans is reassuring.

Perhaps most surprisingly, female HCWs older than 50 years were less likely to adhere to the guidelines of having a mammogram within the past 2 years. Other studies have also observed this paradoxical, unexplained finding. Among respondents who were not college graduates, HCWs were more likely to have a personal physician than non-HCWs, an association absent among graduates. If confirmed, working in health care may improve access preferentially among individuals at greatest risk for not having a regular provider.

Specific limitations should be mentioned. The BRFSS is limited to self-reported information, which cannot be externally confirmed. Because HCWs did not report their specific positions, we cannot differentiate between physicians, nurses, aides, and other HCWs.

In conclusion, HCWs adhered variably to healthy life choices, often no differently and, for mammography, even less than other Americans. Interventions directed toward HCWs or their employers may improve overall adherence rates. Despite serving as role models, HCWs frequently do not “practice what they preach.”

Benjamin K. I. Helfand, MSc
Kenneth J. Mukamal, MD, MPH

Published Online: December 17, 2012. doi:10.1001/2013.jamainternmed.1039
Author Affiliations: Division of General Medicine and Primary Care, Beth Israel Deaconess Medical Center, Boston, Massachusetts.

Correspondence: Dr Mukamal, Division of General Medicine and Primary Care, Beth Israel Deaconess Medical Center, 1309 Beacon St, Second Floor, Brookline, MA 02446 (kmukamal@bidmc.harvard.edu).

Author Contributions: Mr Helfand had full access to all 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: Helfand and Mukamal. Acquisition of data: Helfand and Mukamal. Analysis and interpretation of data: Helfand and Mukamal. Drafting of the manuscript: Helfand and Mukamal. Critical revision of the manuscript for important intellectual content: Helfand and Mukamal. Statistical analysis: Helfand. Study supervision: Mukamal.

Conflict of Interest Disclosures: None reported.

Additional Information: This work is dedicated to the memory of Joshua Bryan Inouye Helfland. This manuscript contains original data.


Effect of Patient Navigation on Enrollment in Cardiac Rehabilitation

Globally, cardiovascular diseases are the leading causes of morbidity and mortality. Secondary prevention measures, such as outpatient cardiac rehabilitation (OCR), effectively reduce this burden.2,3 Randomized controlled trials and quantitative reviews demonstrate that OCR programs result in significant reductions in morbidity, mortality, and cost of care compared with usual care. Despite this evidence, referral to and enrollment in OCR is low, averaging 19% in the United States.4 It is important to identify new approaches to improve enrollment in OCR because there are limited intervention studies targeting participation among eligible cardiac patients.2,3

The objective of this study was to test the hypothesis that a patient navigation (PN) intervention would achieve significantly higher rates of OCR enrollment compared with usual care.

Methods. The study design was a randomized controlled trial approved by the human subjects committee at Stony Brook University. From May 2009 to June 2011, patients were screened on the general cardiology and thoracic surgery floors at Stony Brook University Hospital. Inclusion criteria were age 21 years or older and a diagnosis of procedure clinically indicated for OCR referral (myocardial infarction, heart failure, stable angina pectoris, percutaneous coronary intervention, coronary artery bypass graft surgery, or heart valve replacement or repair). Patients were excluded if they were not proficient in the English language, had a major noncardiac comorbidity with a poor prognosis, had a recent uncontrolled psychiatric or substance abuse disorder, were participating in another study that would interfere with the trial, were unable to provide a telephone number, or declined participation. All consenting patients were consecutively assigned to either PN or usual care groups using computer-generated block randomization.

Consistent with prior research on the use of lay health advisors in cancer care coordination,2 2 individuals with no prior clinical knowledge were trained to help patients navigate the inpatient to outpatient cardiac care system, with a particular focus on enrolling in a local OCR program. Each patient assigned to PN had a navigator meet with them prior to discharge. Patients in the PN intervention were educated about OCR (ie, the likely benefits of participation, the location of local programs, and

©2013 American Medical Association. All rights reserved.
details on how to access it). Navigators facilitated contact with an OCR program of the patient’s choice. Individuals discharged prior to face-to-face navigation were mailed information to their home and a navigator reviewed it by telephone within 1 week. Approximately 10 days after hospital discharge, navigators called PN patients to encourage them to discuss OCR with a physician and to enroll. Those assigned to usual care received the standard discharge instructions.

Sociodemographic and clinical data were collected from medical charts and 2 in-depth telephone interviews at 4 and 12 weeks after hospitalization. The primary outcome was patient OCR enrollment, defined as having attended at least 1 OCR session. For patients who reported enrollment in an OCR program, the program was contacted to verify enrollment. For patients who did not complete the second telephone interview (9 usual care and 22 PN participants), the local OCR programs were contacted to determine enrollment status.

Categorical variables and outcomes were compared using 2-tailed independent sample t tests. P < .05 (2-sided) was considered statistically significant. Statistical analysis was performed with SPSS version 19.0 (SPSS Inc).

Results. Of the 599 inpatients screened for the trial, 181 consented to participate. Of the 181 trial participants, 3 died before the first telephone interview (within 1 month of hospital discharge) and were excluded from the analyses. Therefore, 178 patients (89 per group) had their cardiac rehabilitation enrollment verified and were included in the analyses.

The Table gives the sociodemographic and clinical variables at baseline. Overall, participants tended to be young (mean [SD] age, 60.4 [10.5] years), male (66.3%), white (86.5%), and married (60.1%); have insurance (84.3%); and have an education greater than high school (60.3%). Most patients had a prior myocardial infarction (83.1%), hypertension (79.8%), or hyperlipidemia (65.7%). Participants in the PN intervention were less likely to be married and more likely to have an education beyond high school. Of the 178 study participants, 21 of the 89 randomized to PN (23.6%) and 6 of the 89 randomized to usual care (6.7%) enrolled in an OCR program (P = .003).

Comment. Despite compelling evidence that participation in OCR is associated with reductions in morbidity and mortality as well as gains in quality of life and functional status, enrollment of eligible cardiac patients into OCR programs remains suboptimal. To our knowledge, this is the first randomized controlled trial to compare the effect of a PN intervention against usual care on increasing patient enrollment into OCR. The results demonstrated a 3-fold increase in patient enrollment in an OCR program compared with usual care.

In conclusion, lay individuals trained as cardiac patient navigators achieve significantly higher rates of OCR enrollment compared with usual care.

Lisa Benz Scott, PhD
Shannon Gravelle, PhD
Thomas R. Sexton, PhD
Sabrina Brzostek, PhD
David L. Brown, MD

The Table: Patient Characteristics at Baseline

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>PN Intervention (n = 89)</th>
<th>Usual Care (n = 89)</th>
<th>Total (N = 178)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociodemographic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, mean (SD), y</td>
<td>60.2 (9.9)</td>
<td>60.7 (11.1)</td>
<td>60.4 (10.5)</td>
<td>.76</td>
</tr>
<tr>
<td>Female</td>
<td>32 (36.0)</td>
<td>28 (31.5)</td>
<td>60 (33.7)</td>
<td>.63</td>
</tr>
<tr>
<td>White</td>
<td>64 (73.7)</td>
<td>71 (85.5)</td>
<td>135 (76.3)</td>
<td>.82</td>
</tr>
<tr>
<td>Married</td>
<td>48 (53.9)</td>
<td>63 (70.8)</td>
<td>107 (60.1)</td>
<td>.03</td>
</tr>
<tr>
<td>Education level (more than high school)</td>
<td>50 (68.5)</td>
<td>44 (53.0)</td>
<td>94 (60.3)</td>
<td>.05</td>
</tr>
<tr>
<td>Income (&lt;$50,000)</td>
<td>37 (50.0)</td>
<td>37 (50.0)</td>
<td>74 (42.0)</td>
<td>.99</td>
</tr>
<tr>
<td>Working full/part time</td>
<td>23 (31.9)</td>
<td>34 (42.0)</td>
<td>57 (31.7)</td>
<td>.24</td>
</tr>
<tr>
<td>Medical insurance</td>
<td>72 (80.9)</td>
<td>78 (87.6)</td>
<td>150 (84.3)</td>
<td>.30</td>
</tr>
<tr>
<td>Clinical characteristic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index cardiac diagnosis/procedure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MI</td>
<td>75 (84.3)</td>
<td>73 (82.0)</td>
<td>148 (83.1)</td>
<td>.84</td>
</tr>
<tr>
<td>PCI</td>
<td>66 (74.2)</td>
<td>59 (66.3)</td>
<td>125 (70.2)</td>
<td>.33</td>
</tr>
<tr>
<td>CABG</td>
<td>15 (16.9)</td>
<td>15 (16.9)</td>
<td>30 (16.9)</td>
<td>&gt;.99</td>
</tr>
<tr>
<td>Heart failure</td>
<td>12 (13.5)</td>
<td>23 (25.8)</td>
<td>35 (19.7)</td>
<td>.06</td>
</tr>
<tr>
<td>Heart valve surgery</td>
<td>1 (1.1)</td>
<td>3 (1.7)</td>
<td>4 (2.2)</td>
<td>&gt;.99</td>
</tr>
<tr>
<td>Diabetes</td>
<td>29 (32.6)</td>
<td>28 (31.5)</td>
<td>57 (32.0)</td>
<td>&gt;.99</td>
</tr>
<tr>
<td>Hypertension</td>
<td>70 (78.7)</td>
<td>72 (80.9)</td>
<td>142 (78.9)</td>
<td>.85</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>64 (71.9)</td>
<td>53 (60.5)</td>
<td>117 (65.7)</td>
<td>.11</td>
</tr>
<tr>
<td>BMI, mean (SD)</td>
<td>30.8 (6.3)</td>
<td>31.6 (6.8)</td>
<td>31.1 (6.6)</td>
<td>.43</td>
</tr>
<tr>
<td>Smoker</td>
<td>27 (30.3)</td>
<td>18 (20.2)</td>
<td>45 (25.3)</td>
<td>.17</td>
</tr>
<tr>
<td>LVEF &lt;40%</td>
<td>13 (22.0)</td>
<td>17 (27.0)</td>
<td>30 (24.6)</td>
<td>.54</td>
</tr>
</tbody>
</table>

Abbreviations: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared); CABG, coronary artery bypass graft; LVEF, left ventricular ejection fraction; MI, myocardial infarction; PCI, percutaneous coronary intervention; PN, patient navigation.
We read with interest the excellent article by Mueller and colleagues’ about hospital-based medication reconciliation practices. We would like to offer some elements about our own experience. The evaluation of the potential clinical impact of the unintentional discrepancies identified and corrected during medication reconciliation process is particularly of high interest. Recently, we have set up a collaboration at admission within our institution and estimated in parallel the potential clinical significance of identified unintentional discrepancies by using a 3-category scale: level 1, “no potential harm”; level 2, “monitoring or intervention potentially required to preclude harm”; and level 3, “potential harm.”

On the basis of 256 patients, our results showed that 27.2% of the identified unintentional discrepancies (n=173) were judged to be of clinical importance, indicating that they had the potential to cause patient harm (level 3, 6.4%) or the potential to require a greater patient supervision (level 2, 21.8%). Potential harm was driven by the type of errors (eg, omission, incorrect medication prescription), by the type of medication classes and the number of medications per patient, and by the clinical characteristics of the patients. We also performed a systematic search of English-language articles about the rating of potential harm during reconciliation and identified 15 articles published between 2005 and 2012. These studies estimated that 14.7% to 66.2% of unintentional discrepancies at admission or discharge were able to cause potential damage to patients. This wide range in results is partially because of the use of different methods for scoring medication errors. Nevertheless, all of the studies confirm that medication discrepancies have the potential to cause deterioration in patients’ clinical status and encourage pharmacists and clinicians to identify the most effective practices to avoid them across the continuum of care.

Bruno Michel, PharmD, PhD
Bapiste Quelevenec, PharmD
Emmanuel Andrès, MD, PhD

Author Affiliations: Departments of Pharmacy (Drs Michel and Quelevenec) and Internal Medicine, Diabetes, and Metabolic Disorders (Dr Andrès), Hôpitaux Universitaires de Strasbourg, Strasbourg, France.

Correspondence: Dr Michel, Hôpitaux Universitaires de Strasbourg, Hôpital de Hautepierre, Pôle Pharmacie-Pharmacologie, Service de Pharmacie, 1 Ave Molière BP 83 049, 67008 Strasbourg CEDEX, France (bruno.michel@chru-strasbourg.fr)

Conflict of Interest Disclosures: None reported.

COMMENTS AND OPINIONS

Medication Reconciliation Practices and Potential Clinical Impact of Unintentional Discrepancies


5. Thomas RJ, King M, Lui K, Oldridge N, Pinia IL, Sprott J. Canadian Association of Cardiovascular and Pulmonary Rehabilitation, American College of Cardiology Foundation; American Heart Association Task Force on Performance Measures (Writing Committee to Develop Clinical Performance Measures for Cardiac Rehabilitation). AACVPR/ACCF/AHA 2010 update: performance measures on cardiac rehabilitation for referral to cardiac rehabilitation/secondary prevention services endorsed by the American College of Chest Physicians, the American College of Sports Medicine, the American Physical Therapy Association, the Canadian Association of Cardiac Rehabilitation, the Clinical Exercise Physiology Association, the European Association for Cardiovascular Prevention and Rehabilitation, the Inter-American Heart Foundation, the National Association of Clinical Nurse Specialists, the Preventive Cardiovascular Nurses Association, and the Society of Thoracic Surgeons. J Am Coll Cardiol. 2010;56(14):1159-1167.
