Importance
With growing national focus on reducing readmissions, there is a need to comprehensively assess the quality of transitional care, including discharge practices, patient perspectives, and patient understanding.

Objectives
To conduct a multifaceted evaluation of transitional care from a patient-centered perspective.

Design
Prospective observational cohort study, May 2009 through April 2010.

Setting
Urban, academic medical center.

Participants
Patients 65 years and older discharged home after hospitalization for acute coronary syndrome, heart failure, or pneumonia.

Main Outcomes and Measures
Discharge practices, including presence of follow-up appointment and patient-friendly discharge instructions; patient understanding of diagnosis and follow-up appointment; and patient perceptions of and satisfaction with discharge care.

Results
The 395 enrolled patients (66.7% of those eligible) had a mean age of 77.2 years. Although 349 patients (95.6%) reported understanding the reason they had been in the hospital, only 218 patients (59.6%) were able to accurately describe their diagnosis in postdischarge interviews. Discharge instructions routinely included symptoms to watch out for (98.4%), activity instructions (97.3%), and diet advice (89.7%) in lay language; however, 99 written reasons for hospitalization (26.3%) did not use language likely to be intelligible to patients. Of the 123 patients (32.6%) discharged with a scheduled primary care or cardiology appointment, 54 (43.9%) accurately recalled details of either appointment. During postdischarge interviews, 118 patients (30.0%) reported receiving less than 1 day’s advance notice of discharge, and 246 (66.1%) reported that staff asked whether they would have the support they needed at home before discharge.

Conclusions and Relevance
Patient perceptions of discharge care quality and self-rated understanding were high, and written discharge instructions were generally comprehensive although not consistently clear. However, follow-up appointments and advance discharge planning were deficient, and patient understanding of key aspects of postdischarge care was poor. Patient perceptions and written documentation do not adequately reflect patient understanding of discharge care.
n 2013, approximately two-thirds of US hospitals will incur financial penalties from the Centers for Medicare and Medicaid Services because of excessively high 30-day readmission rates after hospitalizations for acute myocardial infarction, heart failure, and pneumonia.1 There has been a corresponding groundswell of interest on the part of hospitals in improving transitions of care. Nonetheless, not only are the best strategies for improving transitions still uncertain,2 but comprehensive assessments of transition quality are also still lacking.

Safely transitioning patients from hospital to home is a complex process that requires successfully completing a number of tasks, from coordinating care with outside physicians to educating patients.2 In part related to the complexity of this transition, the adverse event rate after hospital discharge is high, even apart from readmissions.4 Evaluation of hospital discharge practices has often focused on documentation of specific processes on the patient’s medical record5–8 and, more recently, on patient satisfaction with discharge care.7 Although these assessments are important, simply documenting that information is conveyed or that patients are satisfied with practices may not be a sufficient measure of transition success. A successful transition also depends on whether hospitals have adequately educated patients about key elements of care such as diagnosis and follow-up plans.8

A safe and patient-centered passage from the hospital should therefore include consistent and high-quality provision of transitional care (eg, follow-up appointments and comprehensive and intelligible discharge instructions),9,10 should ensure that patients understand key aspects of the transition, and should be patient centered (eg, provide adequate notice of and preparation for discharge and result in high levels of satisfaction). Although studies have been conducted of individual aspects of the patient experience (eg, patient understanding of medication changes11–13 or proportion of patients discharged with follow-up appointments14), we lack a comprehensive assessment incorporating all 3 domains of process, understanding, and patient-centeredness.

To address these issues, we conducted the Diagnosing Systemic failures, Complexities and HARm in GEriatric discharges (DISCHARGE) study of older patients discharged to the community after hospitalization for 3 common conditions: heart failure, pneumonia, and acute coronary syndrome. We studied the comprehensiveness and quality of hospital discharge practices, determined understanding of diagnosis and postdischarge follow-up compared with medical record data, and assessed patient or caregiver satisfaction.

Methods

Study Cohort

The DISCHARGE study was a prospective, observational cohort study of patients 65 years or older discharged to home from a medicine service at Yale–New Haven Hospital between May 1, 2009, and April 4, 2010, who were admitted with acute coronary syndrome, heart failure, or pneumonia. We defined acute coronary syndrome as unstable angina, non-ST segment elevation myocardial infarction, or ST segment elevation myocardial infarction. We followed the American College of Cardiology/American Heart Association16 2007 guidelines for unstable angina and non-ST segment elevation myocardial infarction: chest pain (or anginal equivalent) plus the presence of positive biomarkers or electrocardiogram changes. For ST segment elevation myocardial infarction, we used the European Society of Cardiology and American College of Cardiology17 definition: in brief, elevated troponin levels and ischemic electrocardiogram changes or positive imaging results. We defined heart failure using the 2008 European Society of Cardiology18 guidelines: in brief, the presence of symptoms and of signs typical of heart failure and objective evidence of a structural or functional abnormality of the heart at rest. We defined pneumonia using the American Thoracic Society19 2007 guideline of a demonstrable infiltrate by means of chest radiograph or other imaging technique and suggestive clinical features such as cough, fever, sputum production, pleuritic chest pain, rales, and bronchial breath sounds.

On a daily basis, physicians reviewed the admission note and/or sign-out note for all new admissions to the medical service of patients older than 64 years to identify eligible patients. Eligible patients had 1 of the 3 target conditions, spoke English or Spanish, and were not enrolled in hospice care. In addition, patients were ineligible to participate if they failed the Mini-Cog mental status screen while in the hospital. All patients determined at this stage to be eligible for the study were telephoned at home within 1 week of discharge. A maximum of 5 attempts were made to reach patients. At this time, some additional patients who seemed confused or delirious during the telephone interview or who did not speak English or Spanish were found to be ineligible. In these cases, caregivers of patients were asked to enroll instead if the patient provided permission. After the interviews were completed, physicians reviewed the patients’ medical records and determined that the diagnosis for some patients had changed during hospitalization (ie, some patients initially categorized as having pneumonia were later determined to have chronic obstructive pulmonary disease [COPD] exacerbation instead). We therefore post hoc excluded some additional patients on the basis of not meeting diagnosis eligibility criteria.

Eligible patients were interviewed by telephone within 1 week of discharge, at which time they consented to participate in the telephone interview and at the same time, separately, gave the investigators permission to review their medical records. The Yale Human Investigation Committee approved the study, and we obtained verbal informed consent from all study participants.

Study Setting

At the time of the study, Yale–New Haven Hospital was a 944-bed urban, tertiary care hospital with statistically lower than national risk-standardized mortality for all 3 target conditions but statistically higher than mean 30-day readmission rates for pneumonia and heart failure. Patients with pneumonia were admitted to the general medicine service and were cared for either by hospitalist attending physicians and physician assistants or nurse practitioners (“hospitalist team”) or by house staff under the supervision of university attending...
physicians ("house staff team"). Patients with acute coronary syndrome or heart failure may have been admitted to a specialized cardiology service or to a general medicine service. All patients received a printed discharge instruction sheet jointly produced by physicians and nurses. This discharge instruction sheet was reviewed with the patient by the nurse prior to discharge and includes information on diagnosis, medications, appointments, and symptoms to monitor. There was no standard "teach-back" practice for patient education.

Data Collection
On enrollment (within 1 week of discharge), patients or caregivers underwent a telephone interview by trained, nonclinical personnel. Experienced nurse abstractors reviewed the medical records of those who consented. Medical record review included review of the signed copy of the discharge instructions given to patients prior to discharge.

The interview included approximately 50 questions, addressing diagnosis, discharge instructions, communication with primary physicians, arrangement of follow-up appointments, understanding of medications, and patient education (Appendix A in Supplement). Where available, we used standardized, validated questions, including the 3-Item Care Transitions Measure (CTM-3) for assessment of patient perceptions about the discharge process and the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) questions about discharge education.

Measures
To assess the quality of the discharge process, we assessed (1) whether an appointment was made for the patient before discharge, (2) whether the reason for hospitalization included any language likely to be intelligible to patients (as defined in this paragraph), (3) whether recommendations for diet and activity were written in lay language (eg, no credit for "cardiac diet" or "2-g Na diet"), (4) whether appropriate "call your doctor" instructions were provided, (5) patient report of amount of notice before discharge, and (6) perceived adequacy of home services. In large part, these were based on national standards and guidelines. To define intelligible language, we recorded every paragraph, whether recommendations for diet and activity were written in lay language (eg, no credit for "cardiac diet" or "2-g Na diet"), whether appropriate "call your doctor" instructions were provided, patient report of amount of notice before discharge, and perceived adequacy of home services. In large part, these were based on national standards and guidelines.

To define intelligible language, we recorded every paragraph, whether recommendations for diet and activity were written in lay language (eg, no credit for "cardiac diet" or "2-g Na diet"), whether appropriate "call your doctor" instructions were provided, patient report of amount of notice before discharge, and perceived adequacy of home services. In large part, these were based on national standards and guidelines.

Discharge Process Quality
Original Investigation Research

Results
Enrollment and Study Sample
A total of 3743 patients 65 years and older were discharged home from the medicine service at Yale–New Haven Hospital during the study period; 592 were determined to be eligible for comparison with documentation in the medical record. To determine patient understanding of discharge diagnosis, we compared patients’ responses to the question "please tell me the reason you were in the hospital" with administrative billing data of principal diagnosis, the wording in the diagnosis section of the discharge instructions, and our assignment of the patient to the heart failure, pneumonia, or acute coronary syndrome cohort. If the patient had several main diagnoses, we credited description of any of them. We considered patient understanding of discharge diagnosis to be complete if the patient’s language would make it clear to a medical professional what the diagnosis for the hospitalization was. We considered patient understanding of diagnosis to be partially complete if the patient could identify nonspecific symptoms consistent with the discharge diagnosis (eg, for heart failure, "breathing problem" or "problem with heart"); and we considered patient understanding to be lacking if they provided vague or unspecified symptoms or an incorrect diagnosis or reported that they did not know (Appendix C in Supplement).

We considered patient report of an appointment to be fully accurate if the patient report matched at least 2 of the name, date, or time of an appointment on the discharge instructions; partially accurate if the patient report matched 1; and inaccurate if an appointment was listed in the discharge instructions but the patient reported no follow-up (Appendix D in Supplement). We gave credit for the highest level of understanding of either the primary care or cardiology follow-up appointment. We described patient understanding of medication changes in a separate report. Our measures of patient-centered care were patient satisfaction with the following: preparation for discharge, discharge care (including the CTM-3), discharge instructions, and postdischarge needs assessment. The CTM-3 includes 3 questions: whether patient and/or family preferences were taken into account in discharge planning, whether patients understand postdischarge self-care needs, and whether patients understand the purpose of each of their medications. It is scored on a 1 to 100 scale with higher scores indicating better quality.

Statistical Analysis
We double-abstracted the medical records of 18 patients to determine the reliability of coding practices. We used descriptive statistics to report measures of discharge process quality, patient understanding, and patient perceptions. We constructed word clouds of the 30 most common phrases used by physicians and of the 100 most common phrases used by patients to describe the reason for hospitalization using Wordle (www.wordle.net). Word clouds use font size to represent frequency. We dichotomized questions about patients’ perceived understanding into agree (strongly agree and agree) vs disagree (strongly disagree and disagree). All analyses were conducted using SAS, version 9.2 (SAS Institute).

Downloaded From: http://archinte.jamanetwork.com/pdfaccess.ashx?url=/data/journals/intemed/928181/ on 06/20/2017
the study. All eligible patients were called at home within 1 week of discharge, at which time we enrolled 395 (66.7%) (Figure 1). The primary reason for failure to enroll patients was unreachability. Only 31 eligible patients (5.2%) declined to give consent. Of the enrolled participants, 377 additionally provided consent for medical record review.

The study sample had a mean age of 77 years and was 54.2% male (Table 1). Overall, the study population was predominately white, English-speaking, and well educated. A total of 52.2% had acute coronary syndrome, 39.0% had heart failure, and 23.8% had pneumonia. Some patients had more than 1 qualifying condition. A total of 38 interviews (9.6%) were conducted with caregivers rather than patients.

Coding reliability was very high. We found 100% agreement about activity instructions, presence of reason for hospitalization, notation about which physician to call with problems, contact info of physician, and the 6 measures of warning signs for all 3 conditions. Nurses agreed about 17 of 18 diet instructions (94%) and 15 of 18 primary care appointments (83%).

Discharge Process: Discharge Instruction Content and Quality

Table 2 details the discharge process metrics and patient understanding metrics by topic area. Key findings are summarized here. Every patient received discharge instructions. Reason for hospitalization, activity instructions, name and contact information of a follow-up physician, and warning signs were included in more than 97% of discharge instructions. A total of 338 (89.7%) included lay language about diet, and 315 (83.6%) included follow-up information.

With respect to content quality, we found that 99 of the reasons for hospitalization (26.3%) were not written in language likely to be intelligible to patients. Furthermore, the most commonly used phrases were medical jargon such as “coronary artery disease” and “unstable angina.” See Figure 2A, a word cloud of the 30 most common words or phrases written in discharge paperwork as the reason for hospitalization.

Less than two-thirds of diet instructions for patients with heart failure recommended a low-salt diet, and only 123 patients (32.6%) were discharged with a documented follow-up appointment with either a primary care physician or cardiologist. The 6 specific warning signs that we assessed (2 for each of the included conditions) were included in more than 90% of instructions, with the exception of fever in instructions to patients with pneumonia (84.6%).

Patient Understanding

Patients rated their own understanding highly, with more than 90% agreeing that they understood the reason for hospitalization, activity instructions, presence of reason for hospitalization, and warning signs for all 3 conditions. Nurses agreed about 17 of 18 diet instructions (94%) and 15 of 18 primary care appointments (83%).
Table 2. Comparison of Discharge Instruction Content, Content Quality, Patient Perceived Understanding, and Actual Patient Understanding for Key Elements of Transitional Care

<table>
<thead>
<tr>
<th>Content</th>
<th>Presence (No. [%]) (n = 377)</th>
<th>Quality (Proportion [%])</th>
<th>Self-Reported</th>
<th>Verified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason for hospitalization</td>
<td>370 (98.1)</td>
<td>Includes any language likely to be understood by patients (271/377 [71.9])</td>
<td>Strongly agree or agree clearly understand reason for hospitalization (349/365 [95.6])</td>
<td>Complete (218/366 [59.6]) Symptoms only (118/366 [32.2]) None (30/366 [8.2])</td>
</tr>
<tr>
<td>Activity level (338 [89.7]) and diet (367 [97.3])</td>
<td>Diet describes low salt for HF (92/146 [63.0])</td>
<td>Strongly agree or agree understand “things responsible for in managing health” (345/360 [95.8])</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Follow-up (315 [83.6%])</td>
<td>Follow-up appointment scheduled with primary physician or cardiology practice (123/377 [32.6])</td>
<td>Had a follow-up appointment (201/395 [51.0])</td>
<td>Complete* (54/123 [43.9]) Partial† (41/123 [33.3]) None‡ (28/123 [22.8])</td>
<td>NA</td>
</tr>
<tr>
<td>Advised to follow up in certain time frame (192/377 [50.9])</td>
<td>NA</td>
<td>NA</td>
<td>Complete* (107/192 [55.7]) Partial† (25/192 [13.0]) None‡ (60/192 [31.3])</td>
<td>NA</td>
</tr>
<tr>
<td>No follow-up appointment with primary physician or cardiology practice (62/377 [16.4])</td>
<td>NA</td>
<td>NA</td>
<td>Made appointment* (35/62 [56.5])</td>
<td>NA</td>
</tr>
<tr>
<td>Name/contact info of follow-up MD (371 [98.4])</td>
<td>Specific section indicating who to call in case of problems (0)</td>
<td>Know who to call (330/382 [86.4])</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Reason to call physician/warning signs (371 [98.4])</td>
<td>ACS: dyspnea (182/193 [94.3]); cardiac pain (181/193 [93.8])</td>
<td>Symptoms to look out for (330/395 [83.5])</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Pneumonia: fever (77/91 [84.6]); shortness of breath (81/91 [89.0])</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>HF: weight gain (133/146 [91.1]); orthopnea, edema, or any kind of dyspnea (139/146 [95.2])</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Abbreviations: ACS, acute coronary syndrome; HF, heart failure; NA, not assessed or not applicable.

* Credit given for highest knowledge of either primary care or cardiology appointment.

Discussion

In this study of discharge practices, understanding, and patient-centered care, conducted at a typical large teaching hospital, we found that practices were inadequate: only one-third of patients were given a follow-up appointment before discharge, fewer than two-thirds of patients with heart failure were advised to limit salt intake in discharge instructions, and more than a quarter of discharge instructions did not use intelligible language to describe the reason for hospitalization. We also found that patient understanding was suboptimal: more than one-third of patients could not clearly describe their diagnosis, and less than half could recall follow-up appointments that had been made for them. Nonetheless, despite these gaps, patients were uniformly positive in their assessments of discharge care and education, overwhelmingly reporting that they found their discharge instructions easy to read and understand and that they understood their diagnoses. In fact, the mean CTM-3 score in this study was substantially higher than in previous studies, and the answers to the HCAHPS questions were slightly more positive than for the hospital as a whole.25,26
The disjunction between actual and perceived understanding in this study and in a companion report is marked and has important implications. Current evaluations primarily assess patient perceptions of understanding (e.g., CTM-3) because it is cumbersome to assess actual understanding. Our findings suggest that assessing perceptions alone may produce a falsely optimistic picture. On the other hand, patients were able to identify several gaps in discharge practices, including little notice to prepare for discharge, limited assessment of needed home supports, and a low rate of follow-up appointment provision. We were not able to verify these perceived gaps aside from provision of follow-up care. Nonetheless, our results suggest that patient perceptions may be useful in assessing the quality of discharge practices in general, even if they are not necessarily a reliable indicator of factual understanding in particular. To better assess what was actually done, questions should be constructed to ask about practice rather than perceived understanding, and the reliability of patients’ reports on practice should be assessed.

Several studies of patients who have received care in the emergency department have found that they lack understanding of key elements of transitional care, including diagnosis and medications, but we had expected that understanding after hospitalization might be higher given the longer period of time available to educate patients. Consistent with other, smaller, studies of hospitalized patients, however, patient misunderstanding was still widespread. We suspect that several factors contributed. First, clinicians do not reliably use patient-friendly language, as evidenced by the wording on patients’ discharge instructions and by other studies of verbal instructions. This might in part explain why previous studies have not found an association between content of discharge instructions and patient outcomes. Second, whereas a minority of older patients become delirious during hospitalization, it seems likely that many develop subtle cognitive deficits because of illness, sleep deprivation, physical dislocation, and other stressors. In 1 study, 79% of patients aged 55 to 85 years hospitalized in the general medicine service showed evidence of mild cognitive impairment. These deficits are often not recognized by clinicians and may impair understanding. Third, families, caregivers, and outside clinicians are often left out of the transitional process, making it difficult for them to reinforce new knowledge. Last, both physicians and nurses overes-

Figure 2. Word Clouds of Common Phrases Describing Reason for Hospitalization

A, Thirty most common phrases describing reason for hospitalization in written discharge instructions to patients. B, One hundred most common phrases describing reason for hospitalization used by patients.
timate patients’ knowledge, which may make them less likely to provide sufficient education.43–45

A variety of interventions will likely be necessary to improve discharge practices, patient understanding, and the patient-centeredness of the care transition. Improving advance discharge planning, follow-up appointment rates, medication reconciliation, and communication with outside clinicians is critical and may require fundamental changes in hospital systems. Improving patient understanding, on the other hand, requires fundamental changes in the way clinicians interact with patients. For example, having the patient teach back key information so that the clinician can verify understanding or correct misperceptions has been widely promoted as a means of improving patient comprehension.44 In a recent study, we found that nearly 70% of hospitals reported using teach-back, although it remains to be seen how successfully.45 Some also recommend treating every patient as if he or she were cognitively impaired or of low health literacy (the “universal precautions” approach).46–47 Indeed, misunderstanding spans all literacy and education levels.15,32

Our study has several limitations. As a single-site study at a large urban medical center, it may not be generalizable to small, nonteaching settings, although our results are consistent with those of other studies. Our study population was limited to 3 major diseases and further restricted only to patients who were discharged home and consented to enroll by telephone, likely making this population more functional and less ill than an unselected group of patients with the same conditions. In addition, we assessed understanding of diagnosis, follow-up, and medications but not understanding of warning signs or self-care (which would have required numerous subjective scoring decisions). The literature suggests that patients are least likely to understand the latter.28 For all these reasons, we suspect that our assessments of understanding likely represent a best-case scenario. By contrast, we treated the medical record as a gold standard, whereas it might be that patients were actually more accurate—for example, in reporting follow-up appointments. We assessed quality of the discharge process on the basis of the content of written discharge instructions; many patients also receive verbal instruction, which we could not capture. We therefore cannot assess this aspect of discharge care. Nonetheless, although the verbal part of the discharge process may have addressed some of the gaps that we describe, a best practice would be to include the information in the written materials. We did not routinely interview family members, who might have had higher or lower levels of understanding. Last, we had an insufficient number of readmissions to correlate practice or understanding with readmission rates, which is an important area for future study.

In conclusion, we found that patient perceptions of discharge practices and self-rated understanding may be more optimistic than direct evaluations of practice or understanding would warrant. It may therefore be useful to supplement existing evaluations of transitional care with questions about practice and/or tests of factual knowledge. Furthermore, it may be best to reorganize patient education efforts around the premise that all patients will have difficulty understanding, remembering, and enacting key aspects of transitional care.

ARTICLE INFORMATION
Accepted for Publication: April 22, 2013.
Published Online: August 5, 2013.

Author Affiliations: Section of General Internal Medicine, Department of Medicine, Yale School of Medicine, New Haven, Connecticut (Horwitz, Moriarty, Fogerty); Center for Outcomes Research and Evaluation, Yale-New Haven Hospital, New Haven, Connecticut (Horwitz, Krumholz); Hospitalist Service, Yale–New Haven Hospital, New Haven, Connecticut (Chen, Kanade); Section of Nephrology, Department of Internal Medicine, Yale School of Medicine, New Haven, Connecticut (Brewster); Division of Cardiology, David Geffen School of Medicine, University of California, Los Angeles (Ziaeian); Section of Geriatrics, Department of Internal Medicine, Yale School of Medicine, New Haven, Connecticut (Jenq); Department of Health Policy and Management, Yale School of Public Health, New Haven, Connecticut (Krumholz); Robert Wood Johnson Clinical Scholars Program, Department of Internal Medicine, Yale School of Medicine, New Haven, Connecticut (Krumholz); Section of Cardiovascular Medicine, Department of Internal Medicine, Yale School of Medicine, New Haven, Connecticut (Krumholz).

Author Contributions: Dr Horwitz 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: Horwitz, Moriarty, Brewster, Kanade.

Acquisition of data: Horwitz, Moriarty, Brewster, Kanade, Ziaeian, Jenq.

Analysis and interpretation of data: Horwitz, Moriarty, Chen, Fogerty, Kanade, Ziaeian, Krumholz.

Drafting of the manuscript: Horwitz, Chen, Brewster, Ziaeian, Jenq.

Critical revision of the manuscript for important intellectual content: Moriarty, Fogerty, Brewster, Kanade, Ziaeian, Krumholz.

Statistical analysis: Horwitz, Fogerty.

Obtained funding: Horwitz, Brewster, Ziaeian, Kanade, Jenq.

Administrative, technical, or material support: Horwitz, Moriarty, Fogerty, Brewster.

Study supervision: Horwitz, Moriarty.

Conflict of Interest Disclosures: Dr Krumholz chairs a cardiac scientific advisory board for UnitedHealth and is the recipient of a research grant, through Yale University, from Medtronic. No other disclosures are reported.

Funding/Support: At the time this study was conducted, Dr Horwitz was supported by the Clinical and Translational Science Award grant ULI RR024139 and KL2 RR024138 from the National Center for Advancing Translational Sciences, a component of the National Institutes of Health (NIH), and NIH Roadmap for Medical Research, and was a Centers of Excellence Scholar in Geriatric Medicine supported by the John A. Hartford Foundation and the American Federation for Aging Research. Dr Horwitz is now supported through the National Institute on Aging (NIA) (K08 AG038336) and by the American Federation for Aging Research through the Paul B. Beeson Career Development Award Program. This work was also supported by a grant from the Claude D. Pepper Older Americans Independence Center at Yale University School of Medicine (P30AG021342 NIH/NIA). Dr Krumholz is funded by grant IU01HL105270-03 (Center for Cardiovascular Outcomes Research at Yale University) from the National Heart, Lung, and Blood Institute.

Previous Presentation: An earlier version of this work was presented as a poster presentation at the Society of General Internal Medicine Annual Meeting; May 11, 2012; Orlando, Florida.

REFERENCES
Research Original Investigation


