needed. Nonetheless, the number of medication changes may serve as a novel, valuable, and readily measurable marker of patients at high risk of medication-related problems and may help identify patients who should be targeted for close attention and follow-up.

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Contraindicated Initiation of β-Blocker Therapy in Patients Hospitalized for Heart Failure

To increase β-blocker treatment for patients with heart failure and left ventricular systolic dysfunction, recently updated performance measures recommend that oral β-blocker therapy be started by the time of hospital discharge in patients hospitalized for decompensated systolic heart failure. These performance measures make clear that patients in whom a β-blocker therapy is started should not be hospitalized in an intensive care unit (ICU), should have no or minimal evidence of fluid overload or vol-
ume depletion, and should not have required recent treatment with an intravenous positive inotropic agent.\(^{19(395)}\)

To assess current patterns of β-blocker therapy initiation in these patients at risk for worsening clinical instability from β-blocker use, we examined a large, contemporary cohort of heart failure hospitalizations in the United States.

**Methods** | We conducted a retrospective cohort study using Perspective, a voluntary, fee-supported database developed by Premier Inc for measuring quality and health care utilization. As of 2010, Perspective contained data on more than 130 million cumulative hospital discharges, representing approximately 20% of annual acute care hospitalizations in the United States. In addition to the information available in the standard hospital discharge file, Perspective contains a date-stamped log of all billed items at the patient level including diagnostic tests, medications, and therapeutic services. Perspective has been previously used to describe the pharmacologic treatment of hospitalized patients.\(^2,3\) Perspective is not publicly available; access to the database was provided under contract with Premier Inc.

The Yale University Human Investigation Committee reviewed the protocol and determined that it was not considered human subjects research according to the Office of Human Research Protections. We included hospitalizations from 2009 and 2010 for patients 18 years or older with a principal discharge diagnosis of heart failure by *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)* codes 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, and 428.xx. We excluded hospitalizations that involved transfers from another acute care facility or that had an unknown admission source because information about treatment at the referring institution was unavailable. We further excluded hospitalizations with a pediatric attending physician to concentrate on care patterns of physicians who treat adults. For sensitivity analyses, we examined 2 additional heart failure cohorts with greater specificity for systolic dysfunction\(^4,5\): (1) heart failure hospitalizations involving patients aged 18 to 49 years and (2) heart failure hospitalizations with acute myocardial infarction as a secondary ICD-9-CM discharge diagnosis.

For each cohort, we identified hospitalizations during which oral β-blocker therapy was started. β-Blocker therapy initiation was defined as (1) no evidence of oral β-blocker treatment during hospital days 1 to 2, and (2) oral β-blocker treatment on the day of hospital discharge. Length of stay was therefore 3 days or more for all patients. Oral β-blockers included metoprolol succinate, carvedilol, bisoprolol, and 13 non-guideline-approved agents. We calculated the percentage of β-blocker therapy starters receiving these agents in potentially contraindicated situations as defined by the following performance measures: (1) while being cared for in an ICU; (2) while receiving intravenous loop diuretics on the day of discharge, considered to reflect ongoing volume overload; and (3) after having received an intravenous inotrope including dobutamine, milrinone, or dopamine during hospitalization.

We calculated summary statistics using frequencies and percentages with SAS version 9.2 software (SAS Institute Inc).

**Results** | We identified 217,550, 15,108, and 5,154 heart failure hospitalizations from the primary (P), age-restricted (A-R), and acute myocardial infarction-restricted (AMI-R) cohorts, respectively. In the 3 cohorts, the median patient age was 76 (P), 44 (A-R), and 76 (AMI-R) years (eTable 1 in the Supplement). Patients in the P cohort were similar to that of a large heart failure registry.\(^6\) β-Blockers were administered in 71.6% (P), 76.6% (A-R), and 73.4% (AMI-R) of hospitalizations in each cohort during the first 2 hospital days (eTable 2 in the Supplement). Following hospital day 2, β-blocker therapy was started in 7.1% (P), 7.3% (A-R), and 10.7% (AMI-R) of hospitalizations in each cohort. The hospitalizations in which β-blocker therapy was started comprised 24.9% (P), 30.9% (A-R), and 40.4% (AMI-R) of all heart failure hospitalizations potentially eligible for β-blocker therapy initiation. More than 40% of β-blocker therapy starters had at least 1 potential contraindication to treatment (Figure). Approximately one-third received concomitant intravenous diuretics on the day of discharge, and up to one-fifth had received intravenous inotropes during hospitalization. Potential contraindications were higher among cohorts with higher specificity for systolic dysfunction.

**Discussion** | Even before performance measures encourage the further use of β-blockers during hospitalization for heart failure, there is evidence from a large, contemporary database that these agents are frequently started in patients with markers of clinical instability. Further research is needed to confirm these care patterns and examine the outcomes associated with β-blocker therapy initiation in settings with and without potential contraindications to treatment. In the interim, to avoid
unintended consequences that may result from the unselective application of this performance measure.\textsuperscript{7,8} It may be prudent to explore metrics that also assess medication overuse to avoid treating those at higher risk for adverse consequences of therapy.

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Editor’s Note

Performance Measures: Better Outcomes, Not Better Grades

Performance measures are widely used with the goal of improving care of patients with heart failure and other illnesses. This study by Dharmarajan et al illustrates that performance measures may sometimes have unintended consequences. The authors show that in the enthusiasm to achieve the measure of placing patients with heart failure on β-blocker therapy at hospital discharge, many patients who should not receive β-blockers are getting them, while others who meet the criteria are not. It is likely that there was more thoughtful discussion and decision making behind these decisions that is not captured in administrative data used for this analysis. However, it must also be remembered that the purpose of performance measures is to improve patient care, not to get high grades. Too much focus on meeting a target can distract us from the care of the whole patient.

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Hepatitis C Virus Screening and Prevalence Among US Veterans in Department of Veterans Affairs Care

From 2.7 to 3.9 million Americans are living with hepatitis C virus (HCV) infection, and 45% to 85% are unaware they are infected.\textsuperscript{1-4} In August 2012, the Centers for Disease Control and Prevention (CDC) began recommending 1-time HCV screening for persons born from 1945 through 1965 because...