compared with controls, but not after day 8.6 Moreover, even in the contemporary era, in a trial of 45,852 patients with acute MI, neither a composite outcome of death, reinfarction, or cardiac arrest nor death was significantly reduced by metoprolol compared with placebo.3 More recent trials suggest that long-term β-blocker use is not a necessity for patients without heart failure.6

While it is true that many patients were excluded from the propensity score–matched analysis, the online supplement included a regression adjustment to a propensity score, in which all patients were included and the results were similar to the main analysis. Moreover, the analysis with β-blocker use as a time-dependent covariate showed results that were similar to the main analysis.

Drs Costagliola and Hernández state that our article illustrates several ways an observational study may differ from an RCT. As outlined in our response above, the results of our observational study are not very different from RCTs in patients without heart failure. While the concerns about enrolling patients with prevalent β-blocker use and immortal time bias are valid and are limitations of the study, it should be noted that the results of our study are not vastly different from those of RCTs. Despite this, we agree and stated in the article that observational studies have inherent limitations, including inability to correct for unmeasured confounders.

The results of our study are hypothesis generating and should be confirmed in future RCTs. Until that time, physicians should base recommendations for β-blocker use on RCTs. However, in patients without heart failure, this evidence for the prevention of long-term clinical outcomes is nonexistent.

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Conflict of Interest Disclosures: The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Dr Steg reported receiving research grants (to INSERM U-698) from the New York University School of Medicine, sanofi, and Servier; serving as a consultant to Ablynx, Amarin, Amgen, Astellas, AstraZeneca, Bayer, Boehringer Ingelheim, Bristol-Meyers Squibb, Daiichi/Sankyo, Eisai, GlaxoSmithKline, Lilly, Medtronic, Merck Sharp & Dohme, Novartis, Otsuka, Pfizer, Roche, sanofi, Servier, and The Medicines Company; holding stock in Aterovax; and receiving reimbursement for travel expenses from Merck Sharp & Dohme. Dr Bhatt reported serving on the advisory board for Medscape Cardiology and the board of directors for the Boston VA Research Institute, Society of Chest Pain Centers; being the chair of the American Heart Association Get With The Guidelines Science Subcommittee; receiving honoraria from the American College of Cardiology (editor, Clinical Trials, CardioSource), Duke Clinical Research Institute (clinical trial steering committees), Slack Publications (chief medical editor, Cardiology Today Intervention), and WebMD (continuing medical education steering committees); serving as senior associate editor for the Journal of Invasive Cardiology; receiving research grants from Amarin, AstraZeneca, Bristol-Meyers Squibb, Eisai, Ethicon, Medtronic, sanofi-aventis, and The Medicines Company; and performing unfunded research for FlowCo, Plex Pharma, and Takeda. Dr Bangalore did not report any disclosures.
Results. We identified 1,402,039 unique NH residents and a subset of residents observed continuously for at least 90 days (n = 561,681 residents and n = 5038 NHs). Approximately 39.4% of study NHs had more than 100 residents, 76.2% were for profit, and 59.7% had multiple owners.

Of the overall sample of 1,402,039 NH residents, 308,449 (22.0%; 95% CI, 21.9%-22.1%) received 1 or more prescriptions of antipsychotics. Prevalence of antipsychotic drug prescribing in NHs varied significantly (quintile 1 vs quintiles 2-5, P < .001) with the highest quintile states (28.1%; 95% CI, 27.0%-29.1%) located in the central south and the lowest quintile states (17.2%; 95% CI, 16.3%-18.1%) located mostly in the west (Figure). Of 4,338,723 antipsychotic prescriptions in NHs, the majority (68.6%; 95% CI, 68.5-68.7) were for the atypical agents quetiapine fumarate, risperidone, and olanzapine (n = 2,988,573) (Table). Among the 186,076 residents receiving antipsychotics and observed for 90 days, 13,956 (7.5%; 95% CI, 7.3%-7.6%) received only 1 prescription for antipsychotics while the median number was 10 (IQR, 5-14) prescriptions. The median duration of antipsychotic therapy during the 90-day observation period ranged from 30 (IQR, 8-74) days to 77 (IQR, 67-85) days.

Comment. Our finding that 22.0% of NH residents received antipsychotics in 2009-2010 is within the lower range of rates that were documented 25 years earlier before the passage of the Omnibus Budget Reconciliation Act of 1987, which instituted regulations on the appropriate use of antipsychotics in NHs.4,5

The reasons for our findings are unclear. Geographic variation suggests the absence of an evidence-based approach to the use of these medications in NHs. The most common antipsychotics prescribed are often used for off-label indications related to dementia, and the extended durations of use raise concerns about the care of frail elders residing in NHs.

While our study included data from only 1 long-term care pharmacy, a comparison of our sample with data from NHs in the 2010 Online Survey, Certification and Reporting showed substantial overlap (61.9% vs 66.4% female, respec-

Table. Most Commonly Prescribed Antipsychotic Medications in Nursing Homes (NHs)

<table>
<thead>
<tr>
<th>Generic Drug Name</th>
<th>No. of Residents Prescribed Drug</th>
<th>% of Total Prescriptions</th>
<th>Type of Antipsychotic</th>
<th>Duration of Use During 90-Day Stay in NH, Median (IQR), da(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quetiapine fumarate</td>
<td>1,356,223</td>
<td>31.1</td>
<td>Atypical</td>
<td>72 (67-85)</td>
</tr>
<tr>
<td>Risperidone</td>
<td>1,061,897</td>
<td>24.4</td>
<td>Atypical</td>
<td>70 (50-83)</td>
</tr>
<tr>
<td>Olanzapine</td>
<td>570,453</td>
<td>13.1</td>
<td>Atypical</td>
<td>70 (48-83)</td>
</tr>
<tr>
<td>Haloperidol</td>
<td>402,077</td>
<td>9.2</td>
<td>Conventional</td>
<td>30 (7-70)</td>
</tr>
<tr>
<td>Aripiprazole</td>
<td>347,900</td>
<td>8.0</td>
<td>Atypical</td>
<td>69 (50-82)</td>
</tr>
<tr>
<td>Clozapine</td>
<td>232,125</td>
<td>5.3</td>
<td>Atypical</td>
<td>77 (67-85)</td>
</tr>
<tr>
<td>Ziprasidone</td>
<td>138,881</td>
<td>3.2</td>
<td>Atypical</td>
<td>66 (30-82)</td>
</tr>
<tr>
<td>Chlorpromazine</td>
<td>65,159</td>
<td>1.5</td>
<td>Conventional</td>
<td>30 (8-74)</td>
</tr>
<tr>
<td>Fluphenazine</td>
<td>54,967</td>
<td>1.3</td>
<td>Conventional</td>
<td>54 (26-76)</td>
</tr>
<tr>
<td>All others(^c)</td>
<td>109,141</td>
<td>2.9</td>
<td>Atypical and conventional</td>
<td>70 (52-83)</td>
</tr>
</tbody>
</table>

Abbreviation: IQR, interquartile range.

\(^a\)Calculated among 186,076 residents of NHs receiving at least 1 antipsychotic and observed for at least 90 days.

\(^b\)Includes paliperidone, perphenazine, thiothixene, loxapine, trifluoperazine, combination of olanzapine and fluoxetine, asenapine, loperidone, molindone, pimozine, triflat, loxitane, and mesoridazine.
Letters

RPh, Abir O. Kanaan, PharmD (Massachusetts College of Pharmacy and Health Sciences, Worcester, Massachusetts) and Jennifer L. Donovan, PharmD, MPH, and Celeste A. Lemay, MPH (Meyers Primary Care Institute and University of Massachusetts Medical School, Worcester).

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Additional Contributions: Dr Briesacher 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: Briesacher, Tjia, Gurwitz.

Analysis and interpretation of data: Briesacher, Field, Peterson, Gurwitz.

Drafting of the manuscript: Briesacher.

Critical revision of the manuscript for important intellectual content: Briesacher, Tjia, Field, Peterson, Gurwitz.

Study supervision: Briesacher.

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Corrections

Incorrect Body Mass Index Range: In the Editorial entitled “Does Body Mass Index Adequately Convey a Patient’s Mortality Risk?” published in the January 2, 2013, issue of JAMA (2013;309[1]:87-88), in the third to last paragraph of the Editorial, the last sentence of the paragraph should have stated “The average resulting from combining persons in the lowest mortality category (BMI of 22-25) with those who have greater mortality (BMI of 18.5-22) might explain why the NHLBI category of normal weight has an observed mortality similar to class 1 obesity (BMI of 30-34.9).” This article has been corrected online.

Incorrect Title: In the Book Review of Malignant: Medical Ethicists Confront Cancer, published in the October 10, 2012, issue of JAMA (2012;308[14]:1483-1484), the title of the book under review was incorrectly reported as Malignant: Medical Ethics Confront Cancer. This article has been corrected online.

Error in Wording: In the JAMA Patient Page entitled “Energy Drinks” published in the January 16, 2013, issue of JAMA (2013;309[3]:297), a wording error occurred in the last paragraph. The first sentence should have read, “Energy drinks are regulated by the US Food and Drug Administration.” The article has been corrected online.