First, the finding of excessive sodium in the meals offered to patients with diabetes and those with sodium restrictions underscores the potential for inpatient food service to contribute to the exacerbation or slow resolution of the very conditions that may have led to the hospitalization, including the common salt-sensitive conditions of heart, kidney, and liver failure. Therapeutic goals and nutritional goals should be aligned, particularly for these conditions, and optimized to ensure the best outcomes in the hospital and in the ongoing care for these often chronic conditions.

Second, the finding of sodium content in excess of the recommended limit in nearly all of the menu offerings at these institutions suggests that most inpatients may not actually have the option to consume healthy levels of sodium while they are hospitalized. Importantly, Arcand and colleagues quantified the sodium that had already been added to these inpatient meals. Both within the hospital and outside the hospital, most of the sodium consumed in our Western diet is that which is already added to the processed, prepared, and/or packaged foods that we consume. The choices of inpatients are also constrained by their physical confinement to the hospital and possibly by hospital rules restricting outside food and supplements. A critical first step toward increasing the healthy choices for hospitalized patients may be to prepare all meals with low sodium content and make optional table salt available for those patients who do not have additional restrictions. Interestingly, studies suggest that individuals who are left unencumbered to salt food during consumption rarely add sodium in quantities that match those that are already found in processed food formulations.

Finally, Arcand and coauthors’ study adds to the growing evidence of unhealthy food environments in our health care institutions. The list of concerns, which is long and varied, includes high sugar and fat content and excessive portion sizes for pediatric patients, fast food restaurants on hospital premises, and widespread reliance on vending machines after hours, with choices restricted to sodas and other items that are high in sugar. The unhealthy food environment in these institutions affects not only patients but also hospital personnel, particularly those who are working after-hours shifts.

Two decades ago, several US hospitals took steps to ban smoking on their premises. Although the explicit motivation was to protect the health of patients, these measures had the critically important additional impact of improving the health of hospital personnel (as measured by successful tobacco quit rates among hospital staff) and positioning health care institutions as leaders in the subsequent efforts to curb smoking in the workplace that have been instrumental in turning the tide on smoking rates in the United States. Hospitals again have the opportunity to take the lead and to create food environments that are consistent with their mission to cure the sick and to promote health. Through the simple act of serving food that meets national nutritional standards, our hospitals will act in the best health interests of their patients, and their staff and will undoubtedly again be leaders in our ongoing dialogue on how to improve our food supply, which in turn will improve the health of us all.

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and drug claims databases. All patients had CHF recorded as the primary diagnosis (International Classification of Diseases, Ninth Revision, code 428). Patients were included in the cohort if they had a first CHF-related hospital admission, were discharged alive, and filled prescriptions for an ACE inhibitor (captopril, cilazapril, enalapril, fosinopril, lisinopril, perindopril, quinapril, ramipril, and/or trandolapril) or ARB (candesartan, eprosartan, irbesartan, losartan, telmisartan, and/or valsartan) after discharge. Follow-up for each patient was from the time of first prescription filled for any ACE inhibitor or ARB (time 0) to the time of death, CHF readmission, end of the study period, or switch to a different drug class. Three study groups were formed according to the initial dose of ACE inhibitor or ARB prescribed: low-, medium-, and high-dose groups.

In addition to descriptive statistics on baseline characteristics, multivariate Cox proportional hazards models were used to assess the associations between dose and all-cause mortality or the composite end point of all-cause mortality or CHF readmission. The medium-dose groups for ACE inhibitors and ARBs were used as the reference, and adjusted hazard ratios (HRs) and 95% CIs were estimated for the low- and high-dose groups, with adjustments made for all baseline characteristics and potential confounders, including cardiovascular and lung diseases, chronic kidney and liver conditions, diabetes mellitus, dementia, malignancy, concurrent use of other cardioprotective medications, in-hospital therapeutic procedures, length of hospital stay, specialty of the treating physician, year of hospitalization, and time to the first ACE inhibitor or ARB prescription. Sensitivity analyses were also performed among dose groups, which were adjusted with propensity score analysis to further control for selection bias and potential residual confounding.

Results. The study included 43,405 individuals (mean [SD] age, 79.5 [7.5] years; 45% men). After discharge, 73% filled a prescription for an ACE inhibitor, 27% for an ARB. Of these, 29% received a low-dose prescription of either drug. Compared with patients in the low- and medium-dose groups, those receiving a high dose of either drug were more likely to have hypertension (52% vs 40%) and diabetes mellitus (45% vs 35%), whereas, patients receiving low doses of either drug were more likely to have renal disease (31% vs 21%). The rest of the baseline characteristics were similar among the 3 groups.

After adjusting for all baseline variables and potential confounders, we found that low-dose users of either drug class had significantly higher mortality and CHF readmissions than patients who filled prescriptions for medium or high doses (Figure). Treatment with high-dose ACE inhibitors significantly decreased mortality and the composite end point, while high-dose ARB treatment improved mortality and the composite end point only when compared with middle- and low-dose treatment combined. Sensitivity analyses between dose groups were adjusted with propensity scores, and Cox regres-

<table>
<thead>
<tr>
<th></th>
<th>ACE Inhibitor Dose</th>
<th>HR (95% CI)</th>
</tr>
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<tbody>
<tr>
<td>Mortality</td>
<td>Med [Reference]</td>
<td>1.00</td>
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<tr>
<td>n=19,318 (61%)</td>
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<td>1.16 (1.12-1.20)</td>
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<td>High</td>
<td>0.90 (0.86-0.94)</td>
</tr>
<tr>
<td></td>
<td>Med + High vs Low</td>
<td>0.84 (0.81-0.88)</td>
</tr>
<tr>
<td></td>
<td>High vs Low + Med</td>
<td>0.85 (0.81-0.90)</td>
</tr>
<tr>
<td>Mortality or CHF</td>
<td>Low</td>
<td>1.09 (1.05-1.13)</td>
</tr>
<tr>
<td>n=18,973 (60%)</td>
<td>High</td>
<td>0.93 (0.89-0.96)</td>
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<tr>
<td></td>
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<tr>
<td></td>
<td>High vs Low + Med</td>
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<thead>
<tr>
<th></th>
<th>ARB Dose</th>
<th>HR (95% CI)</th>
</tr>
</thead>
<tbody>
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<td>Mortality</td>
<td>Med [Reference]</td>
<td>1.00</td>
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<tr>
<td>n=51,28 (38%)</td>
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<td>1.15 (1.06-1.24)</td>
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<td></td>
<td>Med + High vs Low</td>
<td>0.88 (0.79-0.96)</td>
</tr>
<tr>
<td></td>
<td>High vs Low + Med</td>
<td>0.91 (0.84-0.98)</td>
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<tr>
<td>Mortality or CHF</td>
<td>Low</td>
<td>1.18 (1.09-1.27)</td>
</tr>
<tr>
<td>n=57,31 (42%)</td>
<td>High</td>
<td>0.95 (0.89-1.02)</td>
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<td></td>
<td>Med + High vs Low</td>
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<tr>
<td></td>
<td>High vs Low + Med</td>
<td>0.92 (0.86-0.99)</td>
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**Figure.** Adjusted hazard ratios (HRs) and 95% confidence intervals for mortality and the combined outcome of mortality or congestive heart failure (CHF) readmission by treatment dose. A, Angiotensin II–converting enzyme (ACE) inhibitor dose. B, Angiotensin receptor blocker (ARB) dose. Sensitivity analyses (bolded rows) have been adjusted with propensity score analyses. Med indicated medium.
sion models were performed using the propensity score–
matched cohorts. In these analyses, treatment with high-
dose ACE inhibitors and ARBs reduced mortality and CHF
readmissions more than the medium- and low-dose treat-
ments combined (Figure).

Comment. To our knowledge, this is the first study to
estimate the effect of different doses of ACE inhibitors
and ARBs on all-cause mortality and CHF readmission
in patients 65 years or older with a first CHF admission.
Unlike clinical trials, our study included a representa-
tive sample of unselected patients with CHF and re-
flects real-world clinical practice. We demonstrated that,
of over 43,000 patients with CHF, approximately one-
third were prescribed low doses of ACE inhibitors or ARBs.
Low-dose users had significantly greater all-cause mor-
tality and CHF readmissions. Both ACE inhibitors and
ARBs decreased mortality and the composite end point
in a dose-dependent manner, with high-dose users hav-
ing the best outcome. However, ACE inhibitors were more
effective than ARBs at reducing the composite end point.
Our results demonstrate that target doses of ACE inhibi-
tors or ARBs are reached in only one-third of patients with
CHF. Physicians should strive, whenever possible, to treat
patients with CHF with high doses of ACE inhibitors or
ARBs to improve outcomes.

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Analysis and interpretation of data: Egiziano, Behlouli, and
Daskalopoulou. Drafting of the manuscript: Egiziano and
Daskalopoulou. Critical revision of the manuscript for
important intellectual content: Egiziano and Daskalopoulou.
Statistical analysis: Pilote, Behlouli, and Daskalopoulou.
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Frequency of Prescription Pain Reliever Nonmedical Use: 2002-2003
and 2009-2010

The public health consequences associated with the
nonmedical use of prescription pain relievers such as oxycodone, hydrocodone, and methadone have
dramatically increased over the last decade.1 In 2009, 15,979
people died of overdoses involving these drugs—a 109%
increase since 2002.2 Prior studies examining prescrip-
tion pain reliever overdose deaths found that nonmedical
use was common among decedents before death.3-5 Na-
tional estimates of past-year nonmedical use of these
drugs, however, have remained stable since 2002.6,7 These
estimates include the spectrum of nonmedical users from those
who used pain relievers once or twice to those who were
more frequent or chronic nonmedical users. This Re-
search Letter attempts to determine if the subset of chronic
nonmedical users of pain relievers—those using 200 days or
more in the past year—has increased since 2002, in para-
allel with fatal overdoses of these drugs. Understanding
trends in the frequency of nonmedical use can help iden-
tify populations at greatest risk for overdoses.

Methods. The National Survey on Drug Use and Health
(NSDUH), an annual survey of the noninstitutionalized,
civilian population 12 years and older, provides national
estimates of substance use in the United States. Informa-
tion on NSDUH survey methodology has been reported else-
where.6 Data from the NSDUH public use files were com-
bined for years 2002-2003 and 2009-2010 to improve the
detection of differences among specific subpopulations.
The NSDUH defines past-year nonmedical use (PYNMU)
of prescription pain relievers as use in the prior 12 months
without a prescription or use simply for the experience or
feeling it causes. Drugs in this category include prescrip-
tion opioid pain relievers and selected barbiturate combi-
nation products. Once respondents are identified as hav-
ing PYNMU, they are asked to state the number of days
they used pain relievers nonmedically in the past year.
Frequency of PYNMU of pain relievers was catego-
rized into the following 4 groups: 1 to 29 days, 30 to 99

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