There were several limitations of the present study. First, the study cohort was highly educated, numerate, and well insured, with a higher than average income level, thus differing from a population-based cohort of patients with DCIS. Second, we administered hypothetical scenarios to individuals personally not diagnosed as having DCIS. While it is possible that patients with DCIS may react differently to the survey, the use of hypothetical scenarios allowed us to explore women's preferences toward systemic therapy and active surveillance, unbiased by previous knowledge regarding DCIS and standard modes of treatment options. Finally, the projected outcomes in the scenarios were generalized and static, whereas true outcomes vary depending on patient age, tumor grade, and other case-specific factors.

We conclude that the terminology used to describe DCIS has a significant and important impact on patients’ perceptions of treatment alternatives. Health care providers who use “cancer” to describe DCIS must be particularly assiduous in ensuring that patients understand the important distinctions between DCIS and invasive cancer.

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Critical revision of the manuscript for important intellectual content: Omer, Hwang, Esserman, Howe, Ozanne.
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Obtained funding: Ozanne.
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Use of Acute Care Services Among Older Homeless Adults

The median age of homeless single adults in the United States has increased from approximately 35 years in 1990 to nearly 50 years in 2010, yet little is known about health care utilization among older homeless adults. Homeless adults 50 years or older have unique medical problems, including high rates of chronic illnesses and geriatric conditions. A better understanding of the health care use by this vulnerable population would help to target strategies to improve their care. Thus, we prospectively observed a cohort of older homeless adults to describe and identify modifiable factors associated with emergency department (ED) visits and hospitalizations during a 1-year period.

Methods | In 2010, we recruited 250 homeless adults from 8 shelters in Boston. Eligibility criteria included age 50 years or older, current homelessness, and ability to communicate in English and provide informed consent. We conducted a baseline in-person assessment, and 12 months later we reviewed medical records at 10 Boston hospitals to determine the cohort’s use of acute care services in the intervening year.

Baseline study variables are detailed elsewhere. Data collected by interview included demographic characteristics, comorbidities, access to health care, alcohol problems (Addiction Severity Index [ASI] score ≥0.17), and drug problems (ASI score ≥0.10). We assessed common geriatric conditions by means of interview and physical examination, including activities of daily living, instrumental activities of daily living, falls during the past year, global cognitive impairment (Mini-Mental State Examination score <24), and executive dysfunction, defined as a Trail Making Test Part B duration more than 1.5 standard deviations above population-based norms or as stopping the test early. We also assessed frailty (Fried criteria); major depression (9-item Patient Health Questionnaire score ≥10); and sensory impairment, defined as self-reported difficulty hearing despite using a hearing aid, self-reported difficulty seeing despite wearing corrective lenses, or best-corrected visual acuity worse than 20/40.

After 12 months, investigators reviewed medical records at the 10 hospitals for each participant by name, date of birth, and social security number. If a matching medical record was
found, investigators ascertained the number of ED visits and hospitalizations undergone by that participant during the past 12 months.

Multivariable logistic regression analysis was used to estimate the associations between baseline characteristics and 2 outcomes at 12 months: (1) at least 4 ED visits and (2) at least 1 hospitalization. Adjusted models included age, sex, and variables associated with the outcomes in bivariable analyses at a P value < .10. We conducted analyses using SAS, version 9.2 (SAS Institute).

**Results** | The participants’ mean age was 56.2 years, 19.2% were female, and 40.0% were white (Table 1). After 12 months, 64.0% of participants had at least 1 ED visit (range, 0–112), and 28.4% had at least 4 ED visits; the participants who made at least 4 ED visits accounted for 86.2% of all ED visits made by the cohort (eTable in Supplement). In multivariable analysis, the following characteristics were significantly associated with making at least 4 ED visits: female sex (adjusted odds ratio [AOR], 2.9 [95% CI, 1.2–6.6]), white race (AOR, 2.6 [95% CI, 1.3–5.4]), no usual source of primary care (AOR, 2.5 [95% CI, 1.2–5.3]), at
least 1 outpatient visit during the past year (AOR, 6.5 [95% CI, 1.2-34.4]), alcohol problem (AOR, 2.8 [95% CI, 1.2-6.5]), at least 1 fall during the past year (AOR, 2.9 [95% CI, 1.4-6.3]), executive dysfunction (AOR, 2.8 [95% CI, 1.3-5.8]), and sensory impairment (AOR, 3.1 [95% CI, 1.4-6.9]).

Eighty-four participants (33.6%) were hospitalized during the 12-month period (range, 0-38 hospitalizations). In multivariable analysis, the following characteristics were significantly associated with at least 1 hospitalization (Table 2): older age (AOR, 1.4 [95% CI, 1.1-1.8]), white race (AOR, 1.8 [95% CI, 1.0-3.4]), inability to see a health care provider when needed (AOR, 2.1 [95% CI, 1.0-4.6]), at least 1 clinic visit during the past year (AOR, 6.8 [95% CI, 1.5-30.2]), and sensory impairment (AOR, 2.0 [95% CI, 1.1-3.7]).

Discussion | This prospective study demonstrated that ED visits and hospitalizations are common among older homeless adults. Several modifiable factors were associated with greater use of acute care, including alcohol problems, past falls, and sensory impairment. In previous work, housing interventions have been shown to decrease acute care use among subgroups of homeless persons. Our results suggest that in pro-

<table>
<thead>
<tr>
<th>Baseline Characteristics</th>
<th>All Participants (n = 250a)</th>
<th>Hospitalization 0 (n = 166b)</th>
<th>≥1 (n = 84)</th>
<th>≥1 Hospitalization, Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (SD), y</td>
<td>56.2 (5.3)</td>
<td>55.7 (4.7)</td>
<td>57.2 (6)</td>
<td>1.3 (1.0-1.6) 1.4 (1.1-1.8)</td>
</tr>
<tr>
<td>Male sex, No. (%)</td>
<td>202 (80.8)</td>
<td>131 (78.9)</td>
<td>71 (85)</td>
<td>1.5 (0.7-2.9) 1.2 (0.5-2.6)</td>
</tr>
<tr>
<td>White race, No. (%)</td>
<td>100 (40.0)</td>
<td>59 (35.5)</td>
<td>41 (49)</td>
<td>1.7 (1.0-2.9) 1.8 (1.0-3.4)</td>
</tr>
<tr>
<td>Less than high school education, No. (%)</td>
<td>65 (26.2)</td>
<td>44 (26.8)</td>
<td>21 (25)</td>
<td>0.9 (0.5-1.7) 1.1 (0.6-1.8)</td>
</tr>
<tr>
<td>Primary language English, No. (%)</td>
<td>217 (86.8)</td>
<td>140 (84.3)</td>
<td>77 (92)</td>
<td>2.0 (0.8-4.9) 1.1 (0.8-3.6)</td>
</tr>
<tr>
<td>Insured, No. (%)</td>
<td>234 (94.7)</td>
<td>150 (92.0)</td>
<td>84 (100)</td>
<td>NA</td>
</tr>
<tr>
<td>Lacks a usual source of health care, No. (%)</td>
<td>71 (29.2)</td>
<td>47 (29.2)</td>
<td>24 (29)</td>
<td>1.0 (0.6-1.8) 1.0 (0.6-1.8)</td>
</tr>
<tr>
<td>Unable to see a health care provider when needed, No. (%)</td>
<td>40 (16.1)</td>
<td>18 (11.0)</td>
<td>22 (26)</td>
<td>2.9 (1.4-5.7) 2.1 (1.0-4.6)</td>
</tr>
<tr>
<td>≥1 Outpatient clinic visits during past year, No. (%)</td>
<td>216 (86.4)</td>
<td>136 (81.9)</td>
<td>80 (95)</td>
<td>4.4 (1.5-13.0) 6.8 (1.5-30.2)</td>
</tr>
</tbody>
</table>

Comorbidities, No. (%)

<table>
<thead>
<tr>
<th>Comorbidities</th>
<th>All Participants (n = 250a)</th>
<th>Hospitalization 0 (n = 166b)</th>
<th>≥1 (n = 84)</th>
<th>≥1 Hospitalization, Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary heart disease</td>
<td>33 (13.3)</td>
<td>15 (9.2)</td>
<td>18 (21)</td>
<td>2.7 (1.3-5.7) 2.0 (0.9-4.6)</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>40 (16.2)</td>
<td>21 (12.9)</td>
<td>19 (23)</td>
<td>2.0 (1.0-3.9) 1.5 (0.8-3.1)</td>
</tr>
<tr>
<td>Stroke</td>
<td>17 (6.9)</td>
<td>8 (4.9)</td>
<td>9 (11)</td>
<td>2.3 (0.9-6.3) 2.3 (0.9-6.3)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>147 (59.5)</td>
<td>92 (56.1)</td>
<td>55 (66)</td>
<td>1.5 (0.9-2.7) 1.5 (0.9-2.7)</td>
</tr>
<tr>
<td>Pulmonary disease</td>
<td>78 (31.5)</td>
<td>45 (27.4)</td>
<td>33 (39)</td>
<td>1.7 (1.0-3.0) 1.7 (1.0-3.0)</td>
</tr>
<tr>
<td>Alcohol problem, No. (%)</td>
<td>46 (18.9)</td>
<td>25 (15.4)</td>
<td>21 (26)</td>
<td>1.9 (1.0-3.6) 1.7 (0.8-3.6)</td>
</tr>
<tr>
<td>Drug problem, No. (%)</td>
<td>42 (17.0)</td>
<td>23 (14.1)</td>
<td>19 (23)</td>
<td>1.8 (0.9-3.5) 1.8 (0.9-3.5)</td>
</tr>
</tbody>
</table>

Geriatric conditions, No. (%)

<table>
<thead>
<tr>
<th>Geriatric conditions</th>
<th>All Participants (n = 250a)</th>
<th>Hospitalization 0 (n = 166b)</th>
<th>≥1 (n = 84)</th>
<th>≥1 Hospitalization, Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADL impairment⁹</td>
<td>74 (29.6)</td>
<td>44 (26.5)</td>
<td>30 (36)</td>
<td>1.5 (0.9-2.7) 1.5 (0.9-2.7)</td>
</tr>
<tr>
<td>IADL impairment⁹</td>
<td>142 (57.3)</td>
<td>98 (59.8)</td>
<td>44 (52)</td>
<td>0.7 (0.4-1.3) 0.7 (0.4-1.3)</td>
</tr>
<tr>
<td>≥1 Falls during past year</td>
<td>133 (53.4)</td>
<td>79 (47.9)</td>
<td>54 (64)</td>
<td>2.0 (1.1-3.4) 1.4 (0.8-2.7)</td>
</tr>
<tr>
<td>Global cognitive impairment⁴</td>
<td>61 (24.5)</td>
<td>41 (24.7)</td>
<td>20 (24)</td>
<td>1.0 (0.5-1.8) 1.0 (0.5-1.8)</td>
</tr>
<tr>
<td>Executive dysfunction⁴</td>
<td>73 (30.0)</td>
<td>43 (26.7)</td>
<td>30 (37)</td>
<td>1.6 (0.9-2.8) 1.6 (0.9-2.8)</td>
</tr>
<tr>
<td>Frailty⁷</td>
<td>40 (16.2)</td>
<td>24 (14.6)</td>
<td>16 (19)</td>
<td>1.4 (0.7-2.9) 1.4 (0.7-2.9)</td>
</tr>
<tr>
<td>Depression⁷</td>
<td>99 (39.8)</td>
<td>60 (36.4)</td>
<td>39 (46)</td>
<td>1.5 (0.9-2.6) 1.5 (0.9-2.6)</td>
</tr>
<tr>
<td>Sensory impairment⁷</td>
<td>150 (60.2)</td>
<td>88 (53.3)</td>
<td>62 (74)</td>
<td>2.5 (1.4-4.4) 2.0 (1.1-3.7)</td>
</tr>
</tbody>
</table>

Abbreviations: ADL, activity of daily living; IADL, instrumental activity of daily living; NA, not applicable.

Some percentages are based on denominators that are slightly smaller than n because of missing data for 1 to 7 participants.

Multivariable model adjusted for age quartiles, sex, and all variables with P value < .05 for multivariable association.

Age analyzed in quartiles; reference was youngest quarter.

Unable to produce a parameter estimate for the association of insurance with hospitalization because all participants who were hospitalized were insured, and the model did not satisfy convergence criteria.

Alcohol problem defined as an Addiction Severity Index score of at least 0.17.

Drug problem defined as an Addiction Severity Index score of at least 0.10.

ADL impairment defined as difficulty performing at least 1 ADL.

Global cognitive impairment defined as a Mini-Mental State Examination score of less than 24.

Executive dysfunction defined as a Trail Making Test Part B duration more than 1.5 standard deviations above population-based norms or as stopping the test early.

Frailty defined as at least 3 of Fried’s 5 characteristics.

Depression defined as a score of at least 10 on the 9-item Patient Health Questionnaire depression scale.

Sensory impairment defined as self-reported difficulty hearing despite wearing a hearing aid, self-reported difficulty seeing despite wearing corrective lenses, or visual acuity worse than 20/40.
grams serving the older homeless population, counseling on substance use, addressing risk factors for falls, and facilitating access to glasses or hearing aids may help avoid a substantial number of ED visits and hospitalizations.

The study has several limitations. We may not have captured all ED visits or hospitalizations, particularly if they occurred outside Boston. Moreover, because the study was conducted in Massachusetts, a state with universal health insurance, our results may not be generalizable to other states.

Providing primary care to older patients living in the street or a shelter is challenging. Focusing limited resources on targeting modifiable factors, including alcohol problems and common geriatric conditions, may lower rates of burdensome and costly acute care use in this vulnerable population.

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Laura J. Grande, PhD
Susan L. Mitchell, MD, MPH

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Author Contributions: Dr Brown 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.

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Acquisition of data: Brown, Bharel, Grande.

Analysis and interpretation of data: All authors.

Drafting of the manuscript: Brown, Mitchell.

Critical revision of the manuscript for important intellectual content: All authors.

Statistical analysis: Brown, Kiley.

Obtained funding: Mitchell.

Administrative, technical, and material support: Grande, Mitchell.

Study supervision: Bharel and Mitchell.

Conflict of Interest Disclosures: None reported.

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Additional Contributions: Mit Patel, MD (Department of Medicine, St Elizabeth’s Medical Center, Boston, Massachusetts), Kevin L. Arc, MD, MPH (Department of Medicine, Brigham and Women’s Hospital, Boston), Deborah Blazey-Martin, MD, MPH (Department of Medicine, Tufts Medical Center, Boston), and Daniella Floru, MD (Division of Geriatric Medicine, Lennel Shattuck Hospital, Boston) completed medical record reviews and provided comments on the manuscript.


The Influence of Hyperglycemia on the Therapeutic Effect of Exercise on Glycemic Control in Patients With Type 2 Diabetes Mellitus

Randomized clinical trials show that aerobic exercise training improves glycemic control in patients with type 2 diabetes mellitus (T2DM).1 However, interindividual variability is large.2 This may be explained by genetic variability,3 but ambient hyperglycemia4 and pancreatic ß-cell function5 may also contribute. We examined whether changes in glycemic control following a 12- to 16-week aerobic exercise training intervention were influenced by the pretraining glycemic state in 105 individuals with impaired glucose tolerance or T2DM.

Methods | This study was approved by our institutional review board, and subjects provided informed consent. Before and following a 12- to 16-week period of aerobic exercise training, body composition, aerobic fitness (maximal oxygen uptake [VO2max]), and glycemic control (hemoglobin A1c [HbA1c], fasting glucose, and oral glucose tolerance test [OGTT] levels) were determined in a total of 105 older (mean [SEM] age, 61 [1] years), overweight or obese (mean [SEM] body mass index, 33 [1] [calculated as weight in kilograms divided by height in meters squared]) individuals with impaired glucose tolerance (n = 56) or T2DM (n = 49; diagnosed a mean [SEM] 4.8 [0.9] years prior and not insulin treated). Relationships between preintervention variables and intervention-induced changes in variables were assessed by linear and nonlinear regression. See eMethods in the Supplement for full details of the study design.

Results | Mean (SEM) change in body weight (−4.6 [0.5] kg), whole-body adiposity (−1.9% [0.3%]), VO2max (+0.23 [0.03] L/min), fasting plasma glucose (−0.35 [0.08] mmol/L), and 2-hour OGTT (−0.8 [0.2] mmol/L) (to convert glucose to milligrams per deciliter, divide by 0.0555) were significantly improved following exercise training (full data are given in the eTable in the Supplement). Pretraining fasting plasma glucose level did not influence exercise-induced changes in glycemic control. However, there was a nonlinear quadratic relationship between pretraining 2-hour OGTT and exercise-induced changes in the 2-hour glucose response (r2 = 0.26; P = .06) (Figure, A). Subjects with a pretraining 2-hour OGTT