

expenditure for Part A and B services for normal-weight beneficiaries was \$6832, but expenditures were significantly less for overweight and obese beneficiaries (\$5473 [$P < .001$] and \$5790 [$P = .02$], respectively). Expenditures increased over time for all groups but appeared to increase more quickly in obese beneficiaries.

In regression analysis adjusting for demographic and economic covariates, expenditures increased by a mean of \$122 per year ($P < .001$) for normal-weight beneficiaries, and increased significantly faster for overweight (excess increase of \$108 per year [$P = .01$]) and obese beneficiaries (excess increase of \$149 per year [$P = .001$]). Adjusting for chronic conditions accounted for differences in the trend across BMI groups. After adjusting for chronic conditions, interactions between overweight and time ($P = .71$) and obesity and time ($P = .98$) were no longer significant.

Comment. Although Medicare expenditures increased in all BMI groups over this period, expenditures increased significantly faster for overweight and obese Medicare beneficiaries. Increasing rates of weight-related chronic conditions over time appeared to account for this trend.

We found smaller obesity-related differences in expenditures than reported in previous research.^{1,5,6} This may be due to differences in expenditure data (claims vs estimated expenditures), costs included (Medicare only vs total costs), or participant age range.

Our results suggest that projections related to the future costs of obesity should take into account changes in chronic health conditions among the obese older population as drivers of increased expenditures. If the parallel trends of increasing obesity and increasing numbers of chronic conditions continue, obesity-related Medicare spending may rise faster than projected based on prevalence of obesity alone.

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Emergency Department Use by Primary Care Patients at a Safety-Net Hospital

In fee-for-service payment models, there are strong financial incentives for hospitals to tolerate high levels of emergency department (ED) use, including use by established primary care patients. Yet, as health care reform introduces global payment models, high levels of ED use will no longer be financially tenable. Understanding the magnitude of the problem of ED use by established primary care patients is crucial to redesigning primary care delivery and reimbursement in the United States. We had 2 objectives: (1) to characterize ED use at an urban safety-net hospital after the implementation of Massachusetts health reform, focusing on patients who had primary care providers (PCPs) and (2) to identify patterns of ED use that might inform the hospital-based primary care practices' transformation to a medical home, and eventually, to an accountable care organization.

Methods. Boston Medical Center (BMC) is an urban safety-net hospital with 8 primary care practices staffed by 105 PCPs. The practices predominantly serve a minority and low-income population. We identified patients who had 1 or more primary care visits from July 1, 2009, to July 1, 2010, and examined their ED use over this period. We defined frequent ED users as patients with 4 or more ED visits in the past year and occasional ED users as those with 1 to 3 ED visits in the past year. We

Table. Demographic, Clinical, and Utilization Characteristics of Primary Care Patients According to ED Use, 2009-2010

Variable %	No ED Visits (n = 25 888)	Occasional ED Use ^a (n = 11 787)	Frequent ED Use ^b (n = 1928)
Age, mean (SD), y	45.8 (17.3) ^f	46.9 (17.2)	46.8 (16.8)
Female sex	57.9	58.2 ^g	51.7
Language			
English	78.6 ^f	78.0 ^g	87.0
Spanish	5.8	7.7	7.1
Haitian Creole	7.2	6.6	2.3
Other	8.4	7.7	3.5
Race ^c			
White	34.2 ^f	16.0 ^g	16.2
Black/African American	44.2	61.6	63.5
Hispanic/Latino	11.1	15.0	17.0
Other	10.5	7.4	3.3
Insurance			
Medicare	15.0 ^f	18.3 ^g	28.6
Commercial	32.6	17.7	9.4
Medicaid	16.8	24.5	33.6
Free care	8.6	13.2	8.3
Commonwealth care ^d	10.4	11.8	12.0
Other	16.6	14.4	8.1
Medical comorbidity ^e			
COPD	4.0 ^f	7.1 ^g	14.3
Diabetes	16.8 ^f	23.6 ^g	30.0
CHF	1.7 ^f	4.9 ^g	10.8
Psychiatric comorbidity ^e			
Anxiety	10.9 ^f	13.8 ^g	23.4
Bipolar disorder	1.8 ^f	3.4 ^g	9.0
Depression	20.2 ^f	29.5 ^g	47.1
Posttraumatic stress disorder	4.0 ^f	8.3 ^g	18.1
Panic disorder	1.3 ^f	1.9 ^g	3.8
Schizophrenia	1.0 ^f	1.7 ^g	4.0
Substance use diagnoses ^e			
Any alcohol	3.8 ^f	7.2 ^g	17.0
Alcohol dependence	1.0 ^f	2.5 ^g	10.7
Any drug	3.6 ^f	6.3 ^g	14.8
ED visits in the past year, mean (SD), No.	0.0	1.5 (0.7) ^g	6.4 (5.5)
Severity of ED visits			
Low	NA	75.4 ^g	72.2
Intermediate	NA	17.5 ^h	19.0
High	NA	7.1 ^g	8.8
Primary care visits in the past year, mean (SD), No.	2.7 (2.2) ^f	3.5 (2.8) ^g	4.3 (3.5)

Abbreviations: CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; ED, emergency department; NA, not applicable.

^aEmergency department visits in the past year, 1 to 3.

^bEmergency department visits in the past year, 4 or more.

^cPatient race and ethnicity were determined by clinical registration staff.

^dCommonwealth Care is a Massachusetts insurance program for poor and near-poor uninsured adults.

^eDiagnoses were obtained from outpatient medical record problem list.

^f $P < .001$ (compared with ≥ 1 ED visit).

^g $P < .001$ (compared with frequent ED use).

^h $P < .01$ (compared with frequent ED use).

used an algorithm developed by Billings et al¹ to categorize each visit's principal *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)* diagnosis and to determine the probability that a visit required ED care. Using a validation of this algorithm,² we defined visits as high severity if the probability that ED care was needed was 0.75 or higher for the visit's principal *ICD-9-CM* diagnosis. Similarly, we defined visits as low severity if the probability that ED care was needed was 0.25 or lower. Visits of indeterminate severity were defined as those with a probability higher than 0.25 and lower than 0.75. Visits classified as high severity have been

found to have a strong association with future hospitalization or death.³ We performed χ^2 tests and *t* tests to compare differences in demographics between persons with and without any ED use and with occasional vs frequent ED use. The Boston University Medical Campus institutional review board has approved this study as exempt.

Results. During the study period (2009-2010), 39 603 patients had 1 or more primary care visits. Most patients (65.4%) did not make any ED visits, while 11 787 (29.8%) were occasional ED users and 1928 were frequent ED users (4.9%) (**Table**). The 11 787 patients with occasional

ED use made 17 759 visits over the study period, while the 1928 patients with frequent ED use made 12 289 visits. Approximately half (49.8%) of all ED visits occurred on weekdays, while BMC primary care practices were open. Most ED visits were for low-severity conditions.

Comment. Emergency department use by primary care patients at an urban safety-net hospital was high, though most visits were of low severity. One possible reason for this is lack of access to primary care,⁴ with few available appointments to see a PCP. While data on time to third next available appointment, a standard measure of primary care access,⁵ are not available for the primary care practices during the study period, other practice metrics suggest that access may have been a problem. For example, missed primary care appointment rates were high, averaging 24.5%. High missed appointment rates are often correlated with long wait times to schedule appointments.⁶ In addition, monthly telephone call statistics show that only between 72.4% and 88.1% of patient telephone calls were answered by the primary care call center over the study period. It is possible that patients called the practices with an urgent problem, did not have their telephone call answered promptly, and decided to seek care in the ED instead. Indeed, 13% of telephone calls were abandoned by patients over the study period (patients called and subsequently hung up while they were kept on hold). The fact that nearly half of all ED visits took place during the hours of primary care clinic operation further suggests that appointment availability may have been an issue. In addition, a sizable minority, roughly one-fifth, of primary care is provided by residents,⁷ who have limited availability when they are not in clinic. It is also possible that Massachusetts health reform has affected access to primary care. As newly insured patients have entered primary care in large numbers, it is possible that access to primary care has worsened for other patients.

Massachusetts has been a bellwether for the implementation of health reform and will be a bellwether for the transformation of primary care, with the move away from fee-for-service payments and the introduction of global payments for health care. Overall ED volume has continued to increase in Massachusetts after health reform.⁸ It is unclear if changes in primary care practice and payment will be sufficient to reduce high levels of ED use among patients at an urban safety-net hospital.

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Proton Beam Therapy and Treatment for Localized Prostate Cancer: If You Build It, They Will Come

The number of treatment options for localized prostate cancer continues to expand, amidst growing concern regarding overdiagnosis and overtreatment of low-risk disease.¹⁻³ Treatment patterns, however, may be driven by availability of novel tech-