The Journal of Emergency Medicine, Vol. 49, No. 3, pp. 347–354, 2015

0736-4679/$ - see front matter

ELSEVIER

http://dx.doi.org/10.1016/j.jemermed.2015.01.034

Administration of Emergency Medicine

CAN NONURGENT EMERGENCY DEPARTMENT CARE COSTS BE REDUCED? EMPIRICAL EVIDENCE FROM A U.S. NATIONALLY REPRESENTATIVE SAMPLE

Haichang Xin, PHD, Meredith L. Kilgore, PHD, Bisakha (Pia) Sen, PHD, and Justin Blackburn, PHD

Department of Health Care Organization and Policy, School of Public Health, University of Alabama at Birmingham, Birmingham, Alabama
Reprint Address: Haichang Xin, PHD, Department of Health Care Organization and Policy, School of Public Health, University of Alabama at Birmingham, 1665 University Boulevard, RPHB 427, Birmingham, AL 35294-0022

☐ **Abstract—Background: A well-functioning primary care system has the capacity to provide effective care for patients to avoid nonurgent emergency department (ED) use and related costs. Objective: This study examined how patients' perceived deficiency in ambulatory care is associated with nonurgent ED care costs nationwide. Methods: This retrospective cohort study used data from the 2010–2011 Medical Expenditure Panel Survey. This study chose usual source of care, convenience of needed medical care, and patient evaluation of care quality as the main independent variables. The marginal effect following a multivariate logit model was employed to analyze the urgent vs. nonurgent ED care costs in 2011, after controlling for covariates in 2010. The endogeneity was accounted for by the time lag effect and controlling for education levels. Sample weights and variance were adjusted with the survey procedures to make results nationally representative. Results: Patient-perceived poor and intermediate levels of primary care quality had higher odds of nonurgent ED care costs (odds ratio [OR] = 2.22, p = 0.035, and OR = 2.05, p = 0.011, respectively) compared to high-quality care, with a marginal effect (at means) of 13.0% and 11.5% higher predicted probability of nonurgent ED care costs. Costs related to these ambulatory care quality deficiencies amounted to $229 million for private plans (95% confidence interval [CI] $100 million–$358 million), $58.5 million for public plans (95% CI $33.9 million–$83.1 million), and an overall of $379 million (95% CI $229 million–$529 million) nationally. Conclusions: These findings highlight the improvement in ambulatory care quality as the potential target area to effectively reduce nonurgent ED care costs.** © 2015 Elsevier Inc.

☐ **Keywords—ambulatory care; nonurgent emergency department care costs; nationwide**

INTRODUCTION

From 1997 through 2007, emergency department (ED) visits in the United States increased by 23%, to a total of nearly 117 million visits per year (1). Among them, nearly half of these visits were for nonurgent medical care or were potentially preventable, leading to billions of dollars in potentially avoidable spending annually (2–7). It is estimated that nonurgent ED care can be $450 to $650 more expensive than care received in a physicians' office. Urgent conditions that could be treated in physicians' offices have $600 to $900 higher costs per ED visit than a physician visit (3). In the same report, a large insurer estimated that reducing these two types of ED visits by 5% would save between $6 million and $9 million, and a 25% reduction would save between $29 million and $43 million (3). Stakeholders including health systems, physicians, and payers have devised various interventions to discourage nonurgent ED visits, such as patient education, financial disincentives, encouragement of primary care physician (PCP) services on evenings and weekends, and an increase of PCP supply. Despite these efforts, nonurgent ED visits have continued to rise, warranting further examination of the underlying reason (8).

RECEIVED: 19 August 2014; FINAL SUBMISSION RECEIVED: 29 December 2014;
ACCEPTED: 5 January 2015

Persistent nonurgent ED use may represent a deficiency in the primary care or ambulatory care system. A well-functioning primary care system has the capacity to provide timely, adequate, and effective care for patients to avoid nonurgent ED use. One study found that higher levels of primary care capacity are associated with lower rates of ED utilization (9).

Although that study examined Medicaid beneficiaries, its finding may apply to other populations as well. This current study examined deficiencies in primary care systems that are associated with nonurgent ED care costs.

Donabedian's structure-process-outcomes (SPO) model that measures health care quality and capacity served as the conceptual framework for this analysis. As guidance, the SPO model systematically identified and summarized ambulatory care system components that are associated with downstream ED use. Essentially, three domains of measures were identified, which reflect structure, process, and outcomes in ambulatory care, respectively. They are usual source of care, convenience of needed medical care, and patient evaluation of care quality. The first two domains of structure and process measures are within the health care access category. Based on this classification, this study specifically examined how access to and quality of ambulatory care is associated with nonurgent ED care costs, and to what extent these costs can be reduced if deficiencies in primary care systems could be improved.

Precise identification of specific deficiencies in primary care systems will reveal the underlying reasons for nonurgent ED care costs. These deficiencies' attributable cost magnitude will inform health policies on how improvements in specific areas of primary care systems can contribute to cost reduction for nonurgent ED care for insurance plans.

To date, no studies have examined the association between deficiencies in primary care systems and nonurgent ED care costs reduction nationwide. This current study is the first to examine empirical evidence using a nationally representative sample, and the latest (2010–2011) that captures the most recent reforms and initiatives in ambulatory care systems and the population's current ED utilization patterns.

METHODS

Data

We used Medical Expenditure Panel Survey (MEPS) data for this study (10). The MEPS is a nationally representative survey of the noninstitutionalized civilian population of the United States and is designed to produce national estimates on the health care use, costs, sources of payment, and insurance coverage of these individuals.

Each new panel entails a series of five rounds of in-person interviews (11). This design, which covers two full calendar years from 2010 through 2011 used in this study, allows for tracking individuals' preferences, health care utilization, and costs over time. Like many other national surveys, MEPS adopts a complex multistage, unequal probability, and cluster sampling study design (12). Because Hispanics, African Americans, Asians, and indigent populations have been oversampled to increase statistical power and improve the precision of estimates for specific subgroups, sample weights have been provided to calculate population estimates.

Study Population

This study used a retrospective cohort design. Individuals were included in this analysis if they were 18 years and older, had any ED visit in 2011, and had data from all five survey rounds.

Outcome Variables

Outcome measure was urgent vs. nonurgent ED care costs in 2011. The cost group status, instead of the cost amount itself, was of interest. The cost group status was adapted from the literature, rather than derived from cost values in these data. A study by Sarver et al. defined and measured nonurgent ED use (13). Specifically, a visit was considered to be urgent …

> if 1) it resulted in an admission; 2) the patient received an x-ray, magnetic resonance imaging, electrocardiography, electroencephalography, or any surgical procedure, and the patient reported the reason for the visit was an 'accident or injury,' diagnosis, or treatment, and, if it was an office or clinic visit, the visit was not the result of referral; or 3) the reason for the visit was an 'accident or injury,' diagnosis, or treatment, and the visit was within 3 days of the 'accident or injury' or onset of symptoms. The remaining visits were classified as nonurgent. (13)

We adopted the same approach to classify ED cost types, but made a minor revision by deleting the component "if it was an office or clinic visit, the visit was not the result of referral" within the second criterion to improve the construct validity of nonurgent ED use and its costs. This revision was made because this study focused on the nonurgent or urgent health care costs within the ED setting, instead of an ambulatory care setting.

Independent Variables

Based on the SPO model, three domains of measures were identified to reflect structure, process, and outcomes in ambulatory care, respectively: usual source of care, perceived convenience of needed medical care, and