The Effectiveness of Emergency Department Visit Reduction Programs: A Systematic Review

Maria C. Raven, MD, MPH*; Margot Kushel, MD; Michelle J. Ko, MD, PhD; Joanne Penko, MS, MPH; Andrew B. Bindman, MD

*Corresponding Author. E-mail: maria.raven@ucsf.edu, Twitter: @mravenEM.

Study objective: Previous reviews of emergency department (ED) visit reduction programs have not required that studies meet a minimum quality level and have therefore included low-quality studies in forming conclusions about the benefits of these programs. We conduct a systematic review of ED visit reduction programs after judging the quality of the research. We aim to determine whether these programs are effective in reducing ED visits and whether they result in adverse events.

Methods: We identified studies of ED visit reduction programs conducted in the United States and targeted toward adult patients from January 1, 2003, to December 31, 2014. We evaluated study quality according to the Grading of Recommendations Assessment, Development, and Evaluation criteria and included moderate- to high-quality studies in our review. We categorized interventions according to whether they targeted high-risk or low-acuity populations.

Results: We evaluated the quality of 38 studies and found 13 to be of moderate or high quality. Within these 13 studies, only case management consistently reduced ED use. Studies of ED copayments had mixed results. We did not find evidence for any increase in adverse events (hospitalization rates or mortality) from the interventions in either high-risk or low-acuity populations.

Conclusion: High-quality, peer-reviewed evidence about ED visit reduction programs is limited. For most program types, we were unable to draw definitive conclusions about effectiveness. Future ED visit reduction programs should be regarded as demonstrations in need of rigorous evaluation. [Ann Emerg Med. 2016;68:467-483.]

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INTRODUCTION

Despite some evidence to the contrary,[1] many policymakers, health care providers, and other stakeholders believe a substantial number of emergency department (ED) visits could be avoided or conducted in less costly alternative settings.[2] Payers have tried various means to discourage the use of EDs and to encourage the use of non-ED settings, such as primary care and retail clinics, in accordance with a belief that this will result in health care savings.[3]

Nationwide, there are many programs to reduce ED visits.[4,5] Some deploy intensive management to address social and medical needs for a small group of high-risk individuals who contribute to a large number of ED encounters. Others aim to decrease ED use broadly across a large population with low-acuity visits. ED visits are often perceived as costly and unnecessary, increasing pressure from payers such as Medicaid to reduce them.[6,7]

The effectiveness of these programs is poorly understood. There have been 4 published reviews that have focused on a specific program type or target population (eg, frequent ED users, case management programs). Each review concluded that the majority of programs reduced ED use. However, none applied a quality assessment in advance to determine which studies to include. As a result, the published systematic reviews include low-quality studies, which could undermine the validity of conclusions about program effectiveness. In addition, none included research published after 2010.[8-11] It is possible that including research studies conducted since 2010 and restricting the review to moderate- and high-quality studies would lead to different conclusions.

Attempts to reduce ED use may be logically sound, but it is unclear whether strategies to pursue ED visit reduction are effective and without adverse consequences. We conducted a systematic review of published moderate- and

Editor's Capsule Summary

What is already known on this topic

Many different interventions have been tested to reduce emergency department (ED) utilization among frequent or low-acuity users, with mixed results.

What question this study addressed

The authors reviewed the effectiveness of ED reduction programs but limited their evaluation to studies of moderate to high quality.

What this study adds to our knowledge

Less than one third of ED reduction programs were moderate to high quality. A diverse set of interventions and patient populations was examined. Only case management was found to reduce frequent ED use, and this evidence was based on 3 small studies.

How this is relevant to clinical practice

High-quality studies on this topic are needed; there is no need for more poorly conducted studies.

high-quality peer-reviewed studies of ED visit reduction programs between 2003 and 2015 that sought to reduce adult ED visits in the United States. The objective of our systematic review was to determine whether specific types of ED visit reduction programs are effective in reducing ED visits and result in adverse events. Our assessment was limited to those studies we judged to be of moderate or high quality by Grading of Recommendations Assessment, Development, and Evaluation (GRADE) criteria.

MATERIALS AND METHODS

We report our systematic review according to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines.[12] We submitted our formal review protocol to PROSPERO, including search strategy, primary outcomes, and study inclusion and exclusion criteria.

Study Design

We conducted a systematic literature search of PubMed, CINAHL, and PsycINFO for studies published between 2003 and 2014. Our search strategy included 1 main search term, "ED use." For this search term, we combined the Medical Subject Headings terms "emergency service, hospitalization/utilization," (CINAHL) "emergency service/utilization," "emergency care/utilization," and "emergency medical services," and (PsycINFO) "emergency medical services, hospital, and utilization." Using the Boolean "and" operator, we combined these subject heading terms with search terms related to "high frequency or high risk" and then with terms related to "low acuity." We then combined these results with terms that reference programs designed to reduce visits. Finally, we performed supplemental searches with terms used in previous reviews, related to programs or interventions designed to reduce ED utilization (Table 1).

We focused on studies published from 2003 to 2014 because during this period, rapid increases in ED utilization motivated an increasing number of interventions to decrease ED use, and because studies conducted in this period are relevant for practice today. We did not consider gray literature for this review after our initial scan demonstrated it did not meet the quality criteria outlined below.

Data Collection and Processing

We limited the scope of our review to studies of programs with a stated intent to reduce ED visits, which had ED visit reduction as a prespecified study outcome. We included randomized controlled trials and observational studies of programs published in the peer-reviewed literature that reported changes in ED visits as a discrete outcome. We included studies only from the United States because results from other countries may not be comparable because of differences in health care delivery and payment systems. We targeted studies that included adults either exclusively or in combination with children and excluded those that focused only on children. We excluded studies that reported ED use only as an aggregate outcome in combination with other health services use, did not include an abstract, and were not written in English. We included programs that focused on visits to medical EDs for mental health complaints but excluded those that focused exclusively on visits to psychiatric EDs because the patients who visit them and the care they deliver are distinct from those of nonpsychiatric EDs.

We decided a priori that several types of delivery system interventions whose primary purpose was not to reduce ED utilization were out of this review's scope. This included chronic disease management programs whose primary goal was to avoid hospital readmissions, patient-centered medical homes, electronic medical records, and clinical treatment studies (unless such studies were directly related to ED management and designed to reduce ED visits). Although we did include ED visit reduction programs whose target population included active substance users, we excluded studies of programs in which the primary goal was substance