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Emergency Medicine

The Max Harry Weil Institute
FOR CRITICAL CARE RESEARCH & INNOVATION

ED Overcrowding: A United States Perspective

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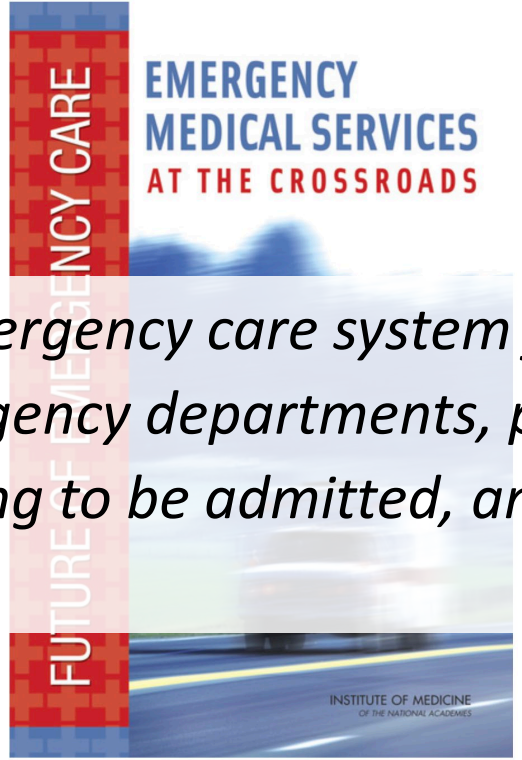
Disclosures

- No Financial Disclosures
- Co-Chair: International Liaison Committee on Resuscitation (ILCOR)
- President and Board Chair: SaveMiHeart
- Research Funding: NIH, DOD, AHA, Laerdal Foundation
- Research Equipment: BrainCool

2006 U.S. Institute of Medicine Reports



"Today our emergency care system faces an epidemic of crowded emergency departments, patients boarding in hallways waiting to be admitted, and daily ambulance diversions."

Impact of ED Crowding

- Increased morbidity
- Increased mortality
- Medical error
- Staff burnout
- Excessive cost

https://images.app.goo.gl/gr8RY9oqPtW4GJDZ6

A Conceptual Model of Emergency Department Crowding

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David J. Magid, MD, MPH
Karin V. Rhodes, MD
Leif I. Solberg, MD
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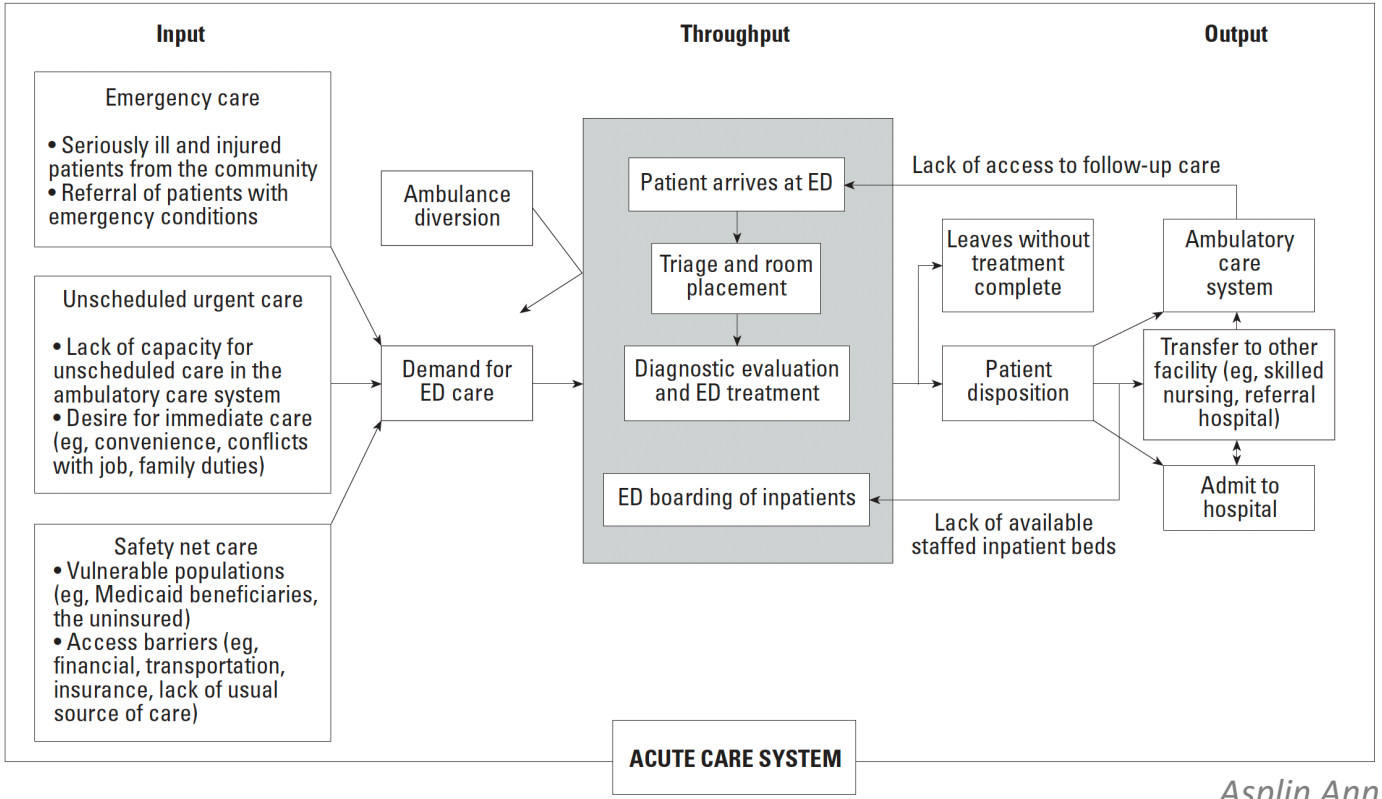
See related article, p. 167, and editorial, p. 181.

Emergency department (ED) crowding has become a major barrier to receiving timely emergency care in the United States. Despite widespread recognition of the problem, the research and policy agendas needed to understand and address ED crowding are just beginning to unfold. We present a conceptual model of ED crowding to help researchers, administrators, and policymakers understand its causes and develop potential solutions. The conceptual model partitions ED crowding into 3 interdependent components: input, throughput, and output. These components exist within an acute care system that is characterized by the delivery of unscheduled care. The goal of the conceptual model is to provide a practical framework on which an organized research, policy, and operations management agenda can be based to alleviate ED crowding.

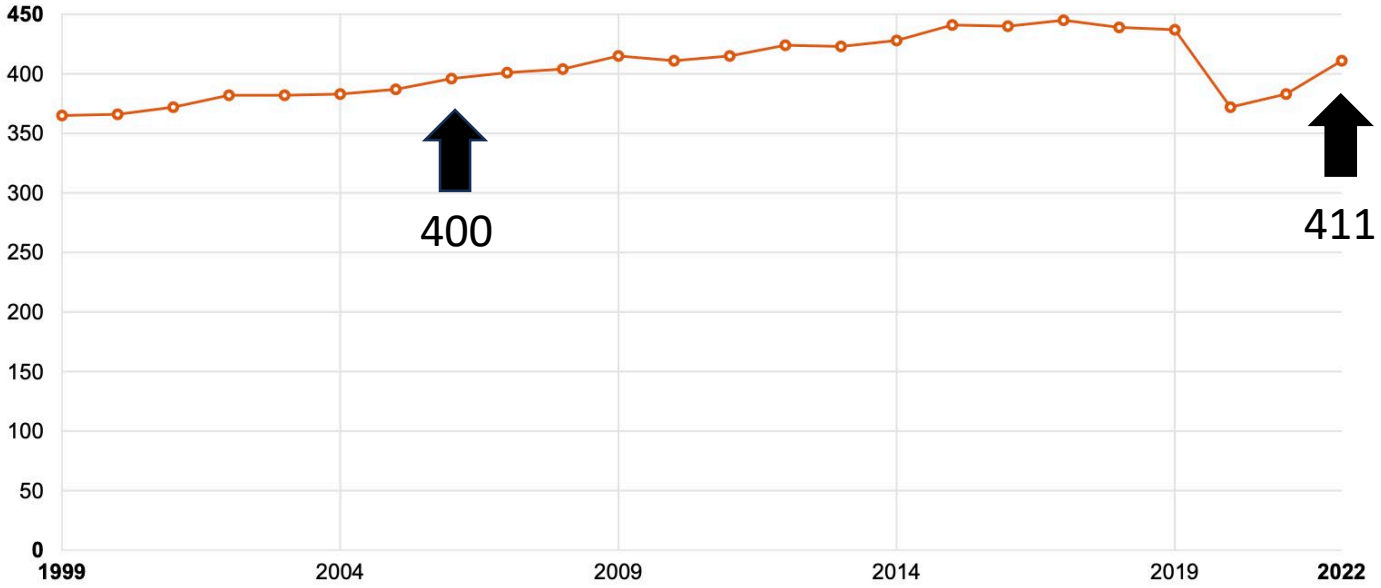
[*Ann Emerg Med.* 2003;42:173-180.]

The input-throughput-output conceptual model of ED crowding



Asplin Ann Emerg Med 2003

U.S. Hospital Emergency Room Visits per 1,000 Population



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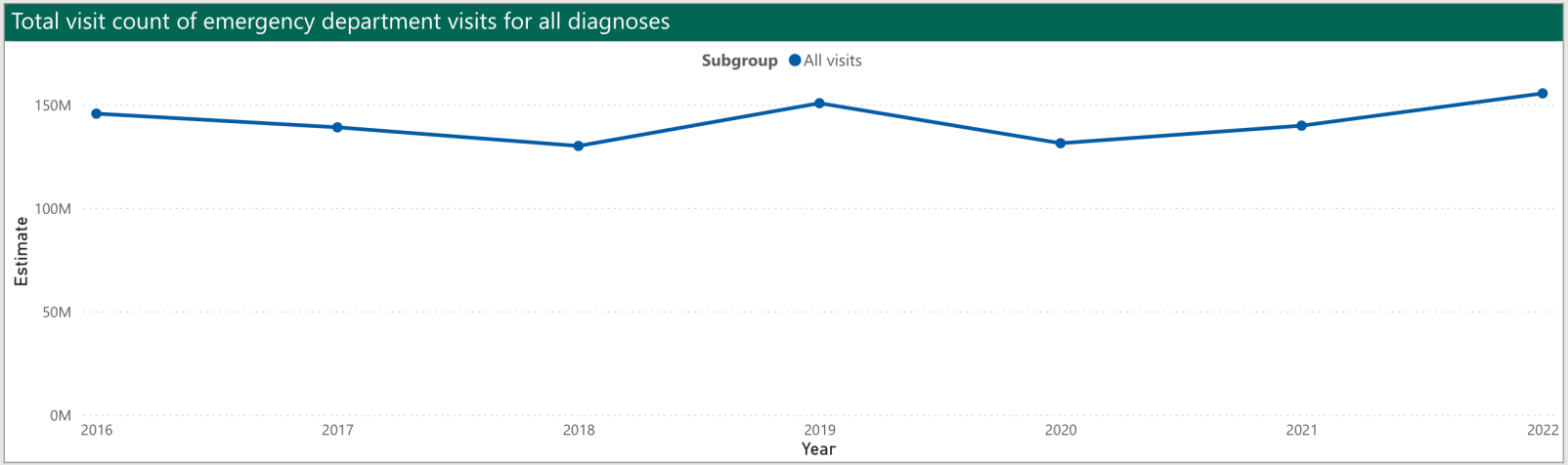
U.S. Hospital ED Visit 2016-2022

Select Estimate Type	Select Primary Diagnosis	Select Group
Visit count	All diagnoses	Total

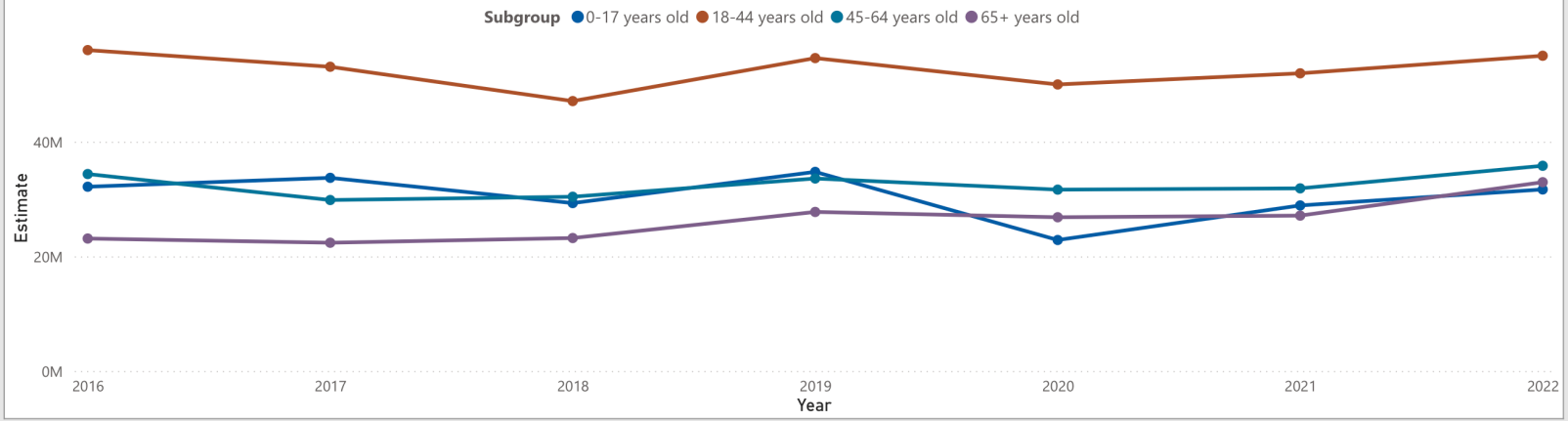


NOTE: Top 10 leading and ranked categories were identified using data from 2022 and were then assessed in prior years. Although 2022 data were used to identify leading and ranked categories, the 10 leading categories were relatively consistent over the evaluated years with a few exceptions. See NHAMCS web tables to assess how these categories and rankings changed over the evaluated years. For years where the estimates do not meet NCHS standards of reliability, data are suppressed. In the figure, years with suppressed data do not have a corresponding data point on the indicator line. When selecting "By expected payment source" from the group drop-down menu, subgroup visit counts will not sum to the respective annual totals because visits with a missing or unknown expected payment source are excluded. Estimates by MSA status are suppressed in 2020-2022 due to unreliable estimates.
SOURCE: National Center for Health Statistics, 2016-2022 National Hospital Ambulatory Medical Care Survey (NHAMCS)

U.S. Hospital ED Visit 2016-2022

Select Estimate Type	Select Primary Diagnosis	Select Group
Visit count	All diagnoses	By age

Visit count of emergency department visits for all diagnoses, by age



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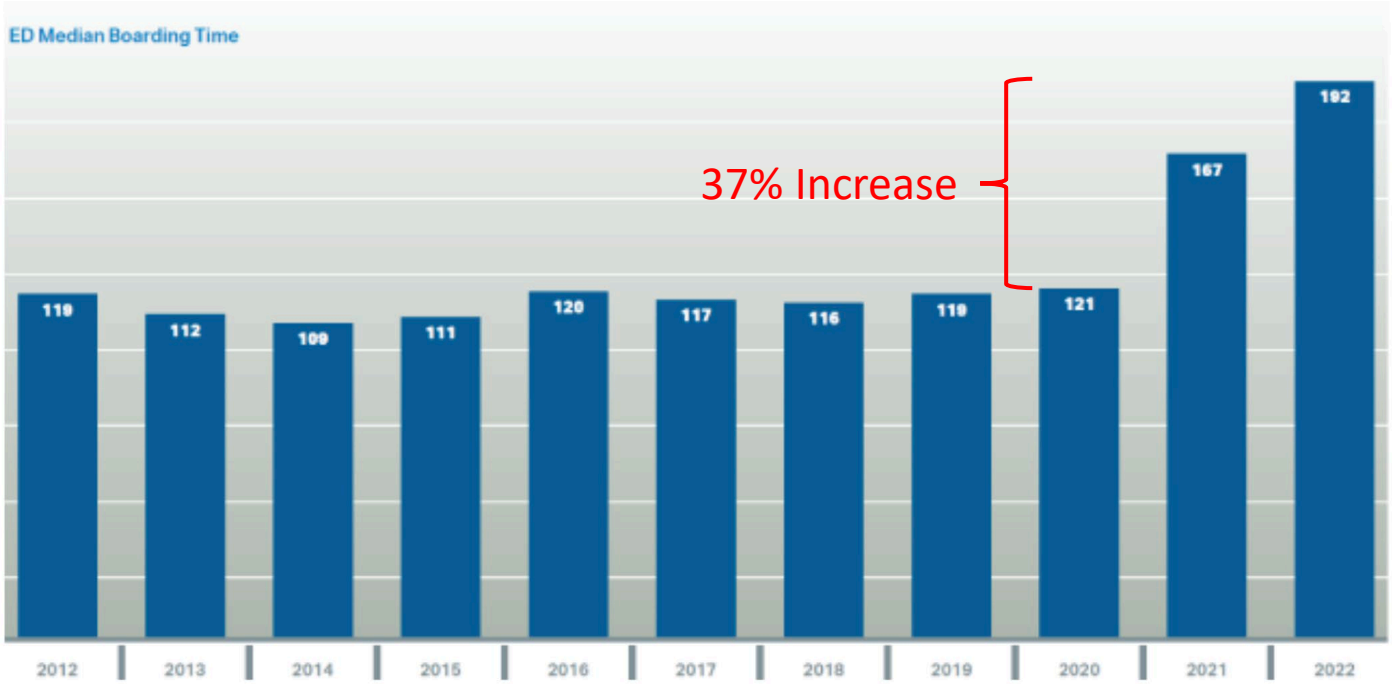
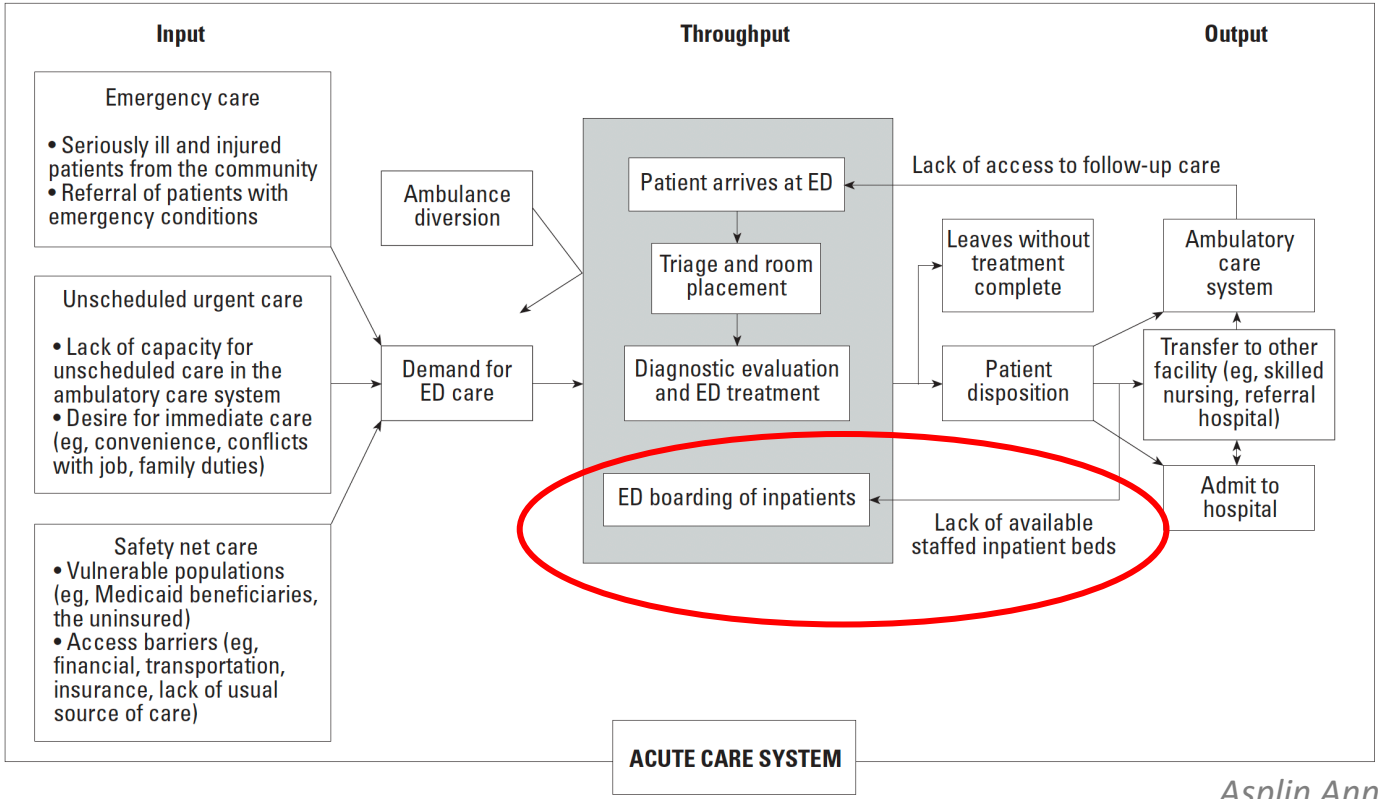
SOURCE: National Center for Health Statistics, 2016-2022 National Hospital Ambulatory Medical Care Survey (NHAMCS)

Post Covid-19 Increase in ED Boarding Hours



https://www.acepnow.com/article/a-sobering-year-for-emergency-departments-and-their-patients/?singlepage=1&theme=print-friendly

The input-throughput-output conceptual model of ED crowding



Asplin Ann Emerg Med 2003

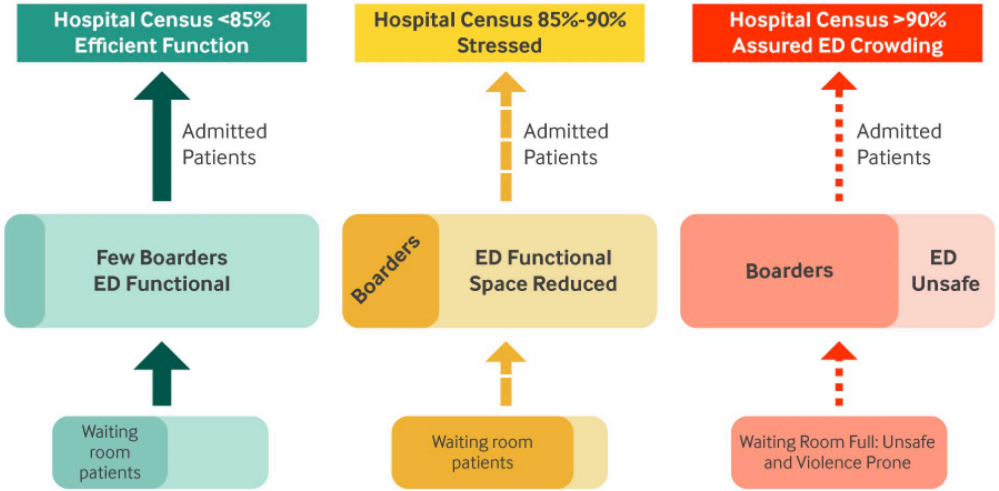
NEJM Catalyst

COMMENTARY

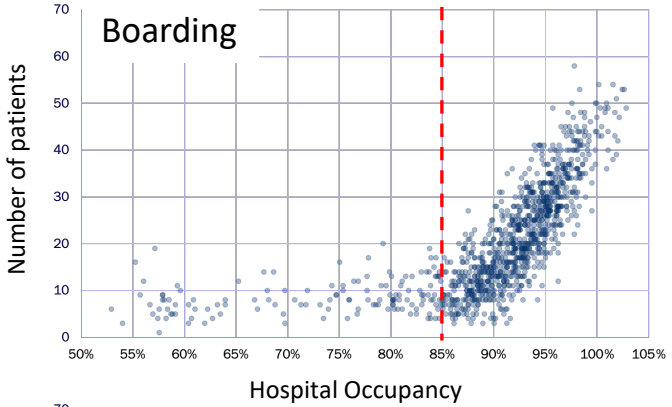
Emergency Department Crowding: The Canary in the Health Care System

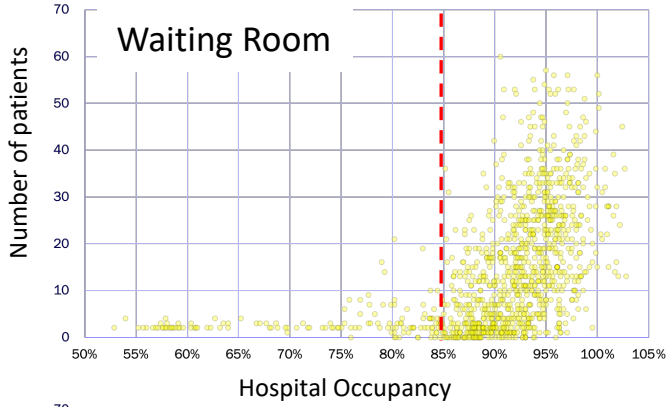
Gabor D. Kelen, MD, Richard Wolfe, MD, Gail D'Onofrio, MD, MS, Angela M. Mills, MD, Deborah Diercks, MD, Susan A. Stern, MD, Michael C. Wadman, MD, Peter E. Sokolove, MD

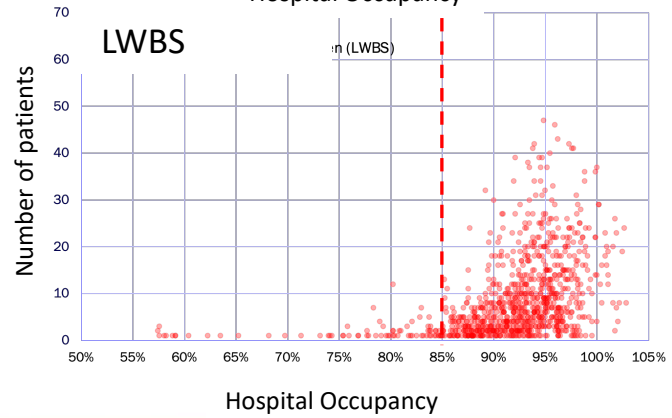
DOI: 10.1056/CAT.21.0217

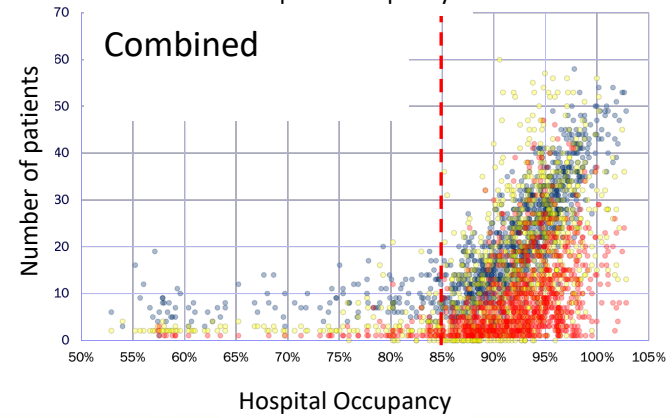


Relationship Between Inpatient Occupancy and ED Crowding

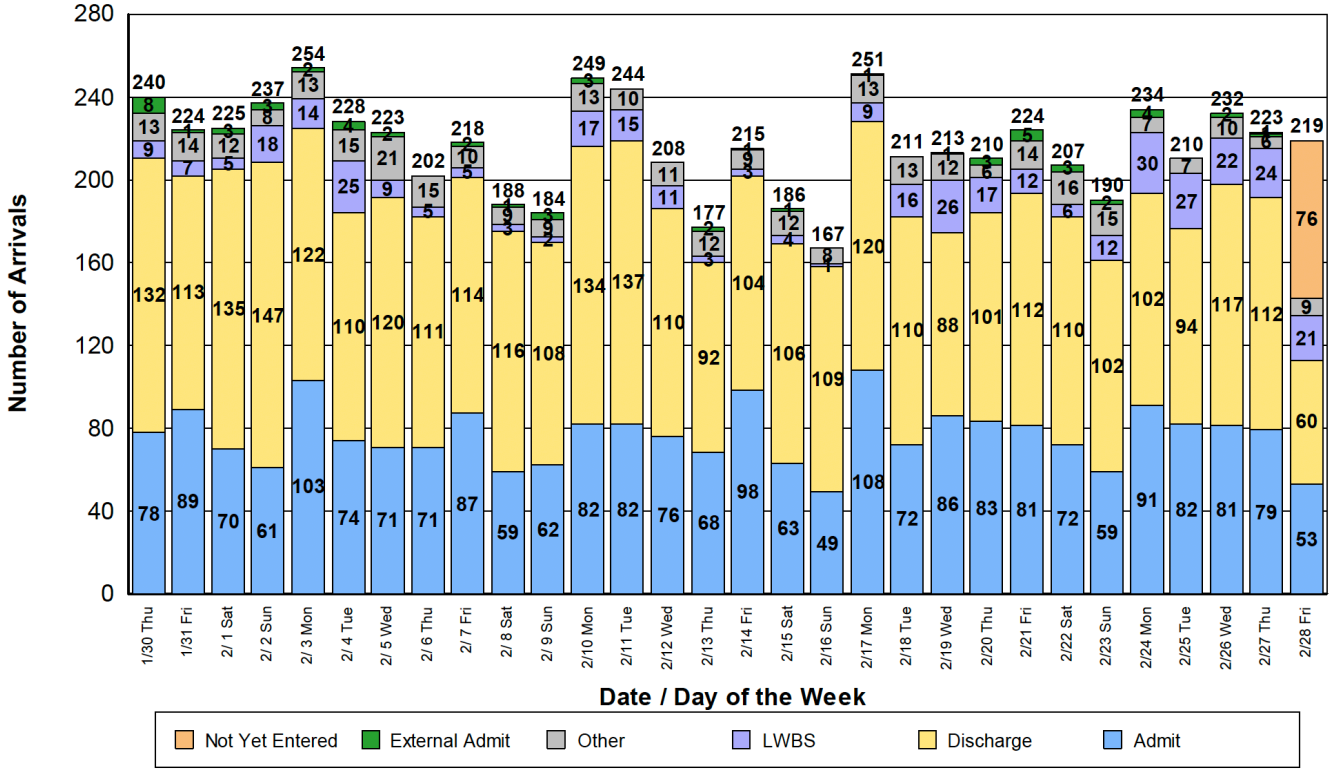




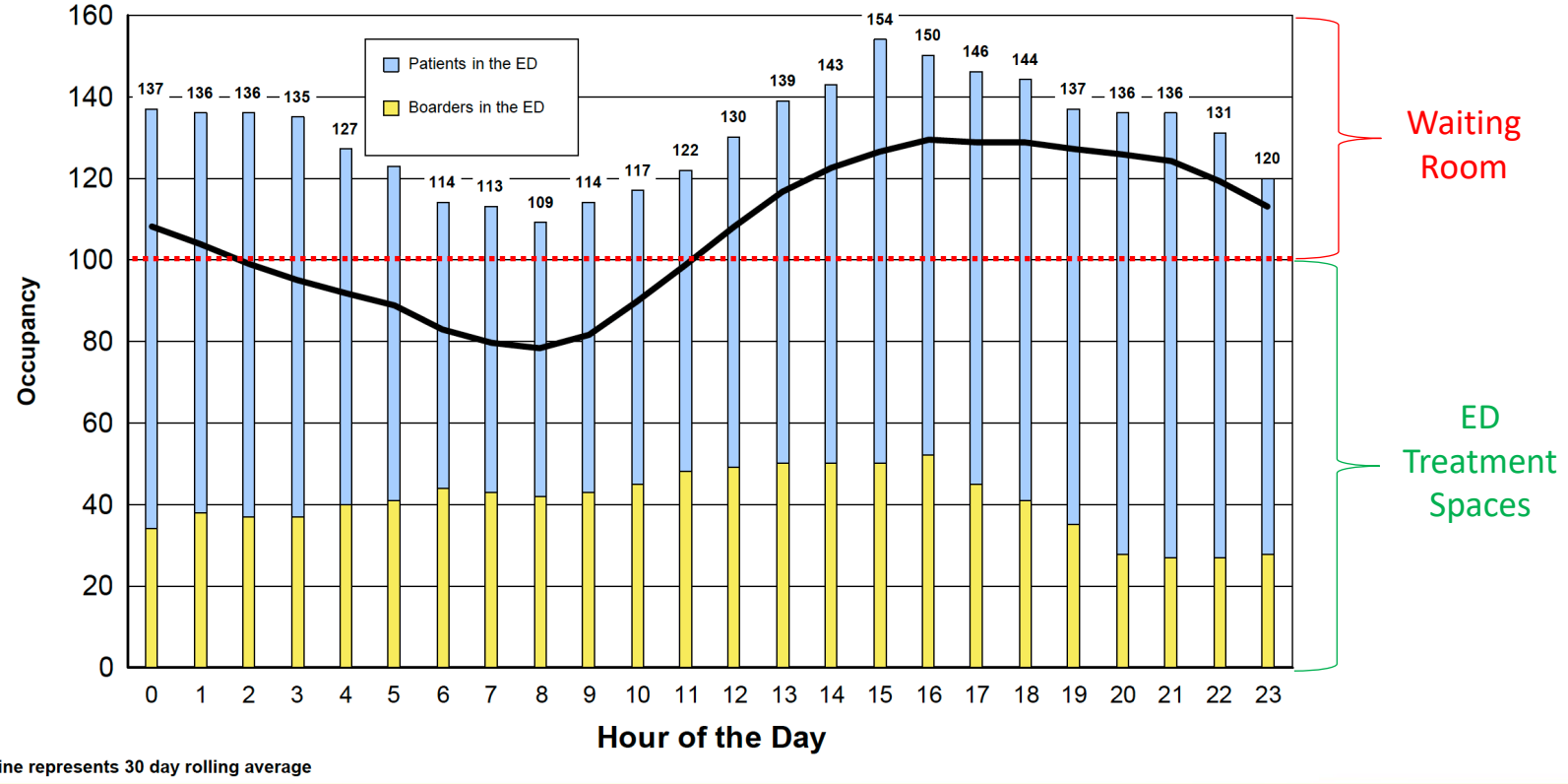




Variability in ED visits and ED Admission



Impact of ED Boarding on Capacity to Provide Care



Line represents 30 day rolling average

JAMA Network Open

Research Letter | Health Policy

Health Care Staffing Shortages and Potential National Hospital Bed Shortage

Richard K. Leuchter, MD; Benjo A. Delarmente, MD, PhD, MPP; Sitaram Vangala, MS; Yusuke Tsugawa, MD, PhD, MPH; Catherine A. Sarkisian, MD, MSHS

Introduction

Between August 2020 and April 2024, US hospitals were mandated to report weekly occupancy to the Department of Health and Human Services as part of COVID-19 data tracking efforts, providing unprecedented insight into mean daily census and inpatient bed supply across nearly all hospitals nationwide.[1] In this report, we repurposed this COVID-19 dashboard to describe several possible US hospital bed occupancy scenarios arising from an aging US population over the next decade, while varying hospitalization rates and staffed hospital bed supply.

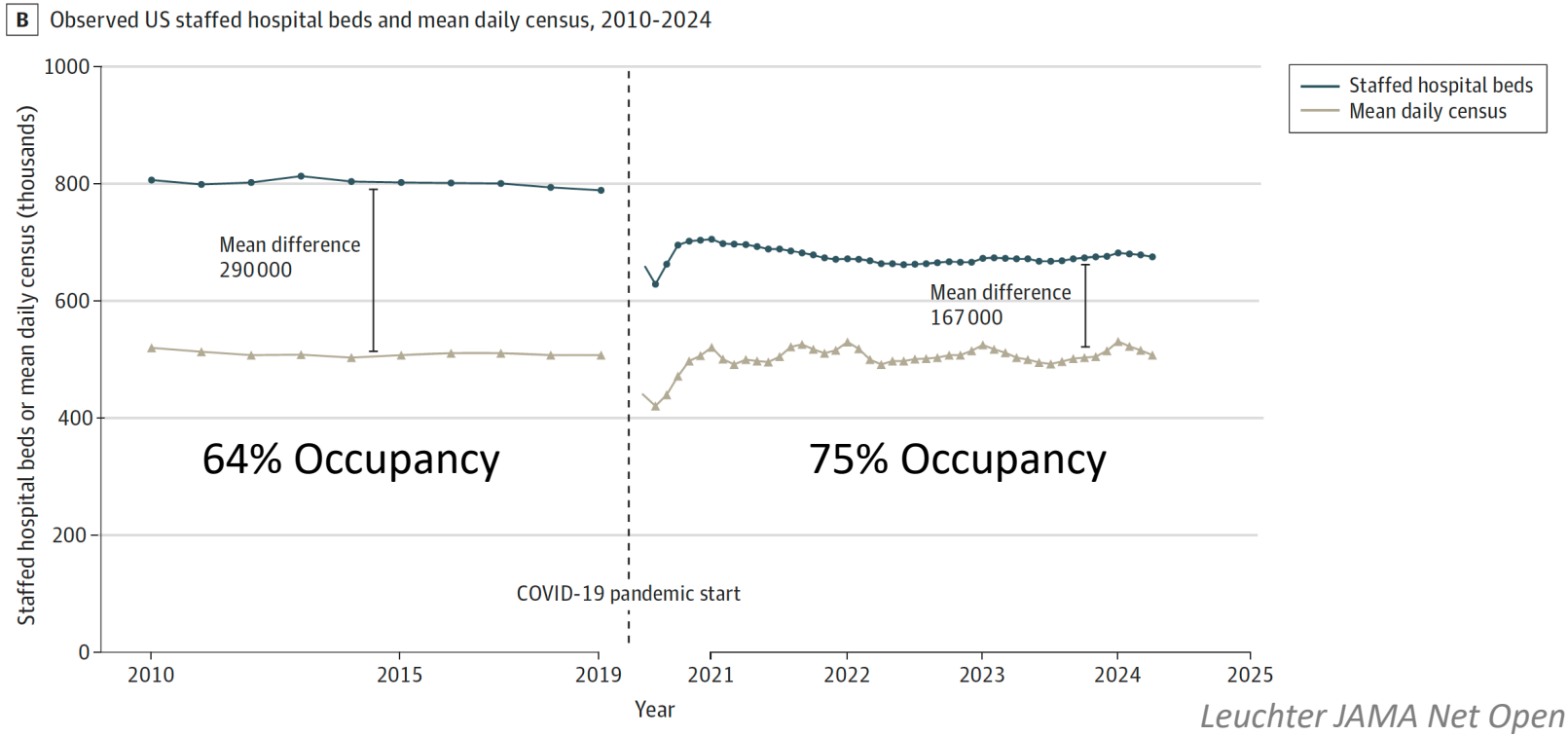
+ Invited Commentary

+ Supplemental content

Author affiliations and article information are listed at the end of this article.

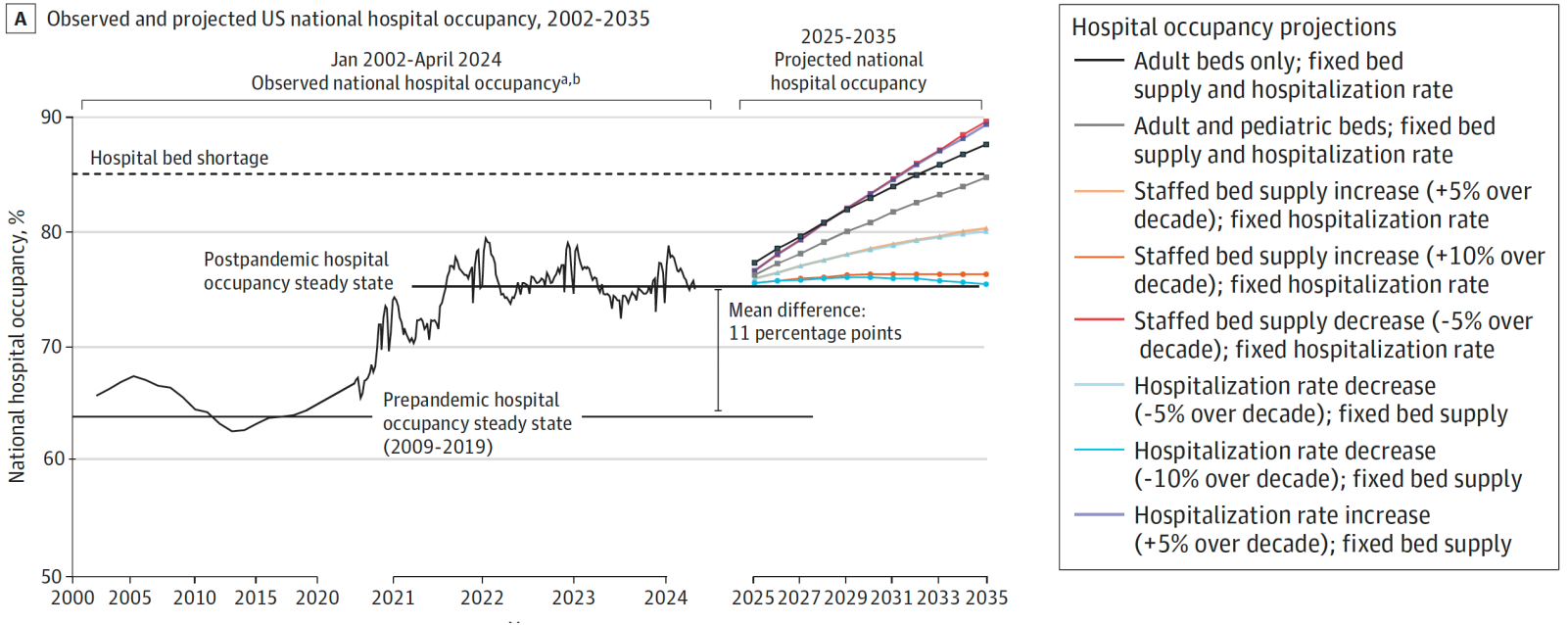
Leuchter JAMA Net Open 2025

Health Care Staffing Shortages and Potential National Hospital Bed Shortage



Leuchter JAMA Net Open 2025

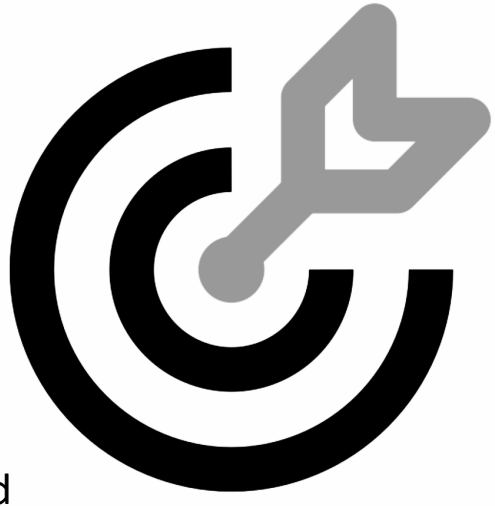
Health Care Staffing Shortages and Potential National Hospital Bed Shortage



Leuchter JAMA Net Open 2025

High Impact Interventions to Reduce ED Boarding

- Optimize staffing of exiting hospital beds
- Hospital operations 24-7-365
- Smoothing elective admissions and surgeries
- Align timing of inpatient discharges to admission demand
- Early transfer to community hospital or hospital-at-home for completion of care
- Direct admit from ED to rehabilitation or skilled nursing facilities
- Rapid access general and specialty clinics after ED evaluation and treatment



Potential Impact of Telemedicine on ED Visits

ARTICLE IN PRESS

THE PRACTICE OF EMERGENCY MEDICINE/ORIGINAL RESEARCH

Estimating the Proportion of Telehealth-Able United States Emergency Department Visits

K. Noelle Tune, MD; Kori S. Zachrison, MD, MSc; Jesse M. Pines, MD, MBA; Hui Zheng, PhD; Emily M. Hayden, MD, MHPE*

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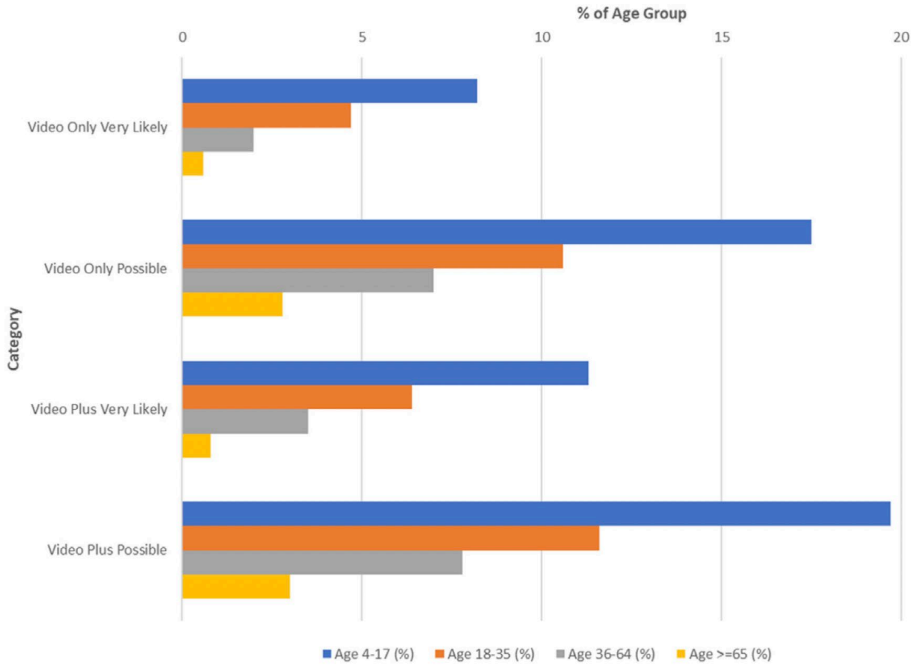
Study objective: We use national emergency department (ED) data to identify the proportion of "telehealth-able" ED visits, defined as potentially conductible by Video Only or Video Plus (with limited outpatient testing).

Methods: We used ED visits by patients 4 years of age and older from the 2019 National Hospital Ambulatory Medical Care Survey and applied survey weighting for national representativeness. Two raters categorized patient-described Reasons for Visit (RFV) as telehealth-able (yes, no, uncertain) for both Video Only and Video Plus visits. This categorization was stratified by age (4 to 17 years old, 18 to 35, 36 to 64, and 65 and older). Visit characteristics that were used to remove further nontelehealth-able visits included admission, procedures, diagnostic testing, acuity level, and pain score.

Results: Our sample included 133.6 million United States ED visits in 2019 for patients aged 4 years or older. Of those, between 3.4% and 8.8% of visits were telehealth-able by Video Only and between 5.0% and 9.7% by Video Plus, considering only the first RFV. Visits by younger patients were more often telehealth-able, with the proportion of telehealth-able visits decreasing with advancing age. Considering all RFVs, between 0% to 6.6% of ED visits were telehealth-able with Video Only and 0.02% to 7.6% with Video Plus.

Conclusion: Between 3% and 10% of United States ED visits may be potentially telehealth-able for patients aged 4 years and older, considering the first listed RFV and ED visit characteristics. Fewer visits may be telehealth-able when all reasons for visits are considered. [Ann Emerg Med. 2024;■:1-8.]

Please see page XX for the Editor's Capsule Summary of this article.



"Between 3% and 10% of United States ED visits may be potentially telehealth-able"

Emergency Medical Services (EMS) and Community Paramedicine

EXPLORE TOPICS

SEARCH

OCTOBER 16, 2024

The Value of Community Paramedicine

PURPOSE

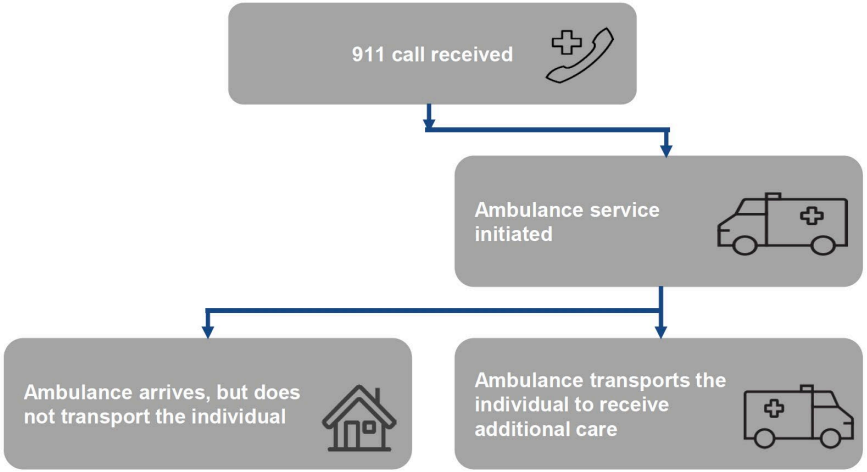
The information provided demonstrates the value of community paramedicine programs to partners that are addressing their communities' cardiovascular and chronic health needs. The information is not meant to act as technical assistance or an implementation guide.

- Prevent unnecessary ED use
- Prevent unnecessary ambulance transports
- Reduce rates of 30-day hospital readmission

Emergency Triage, Treat, and Transport (ET3) Model

Current State

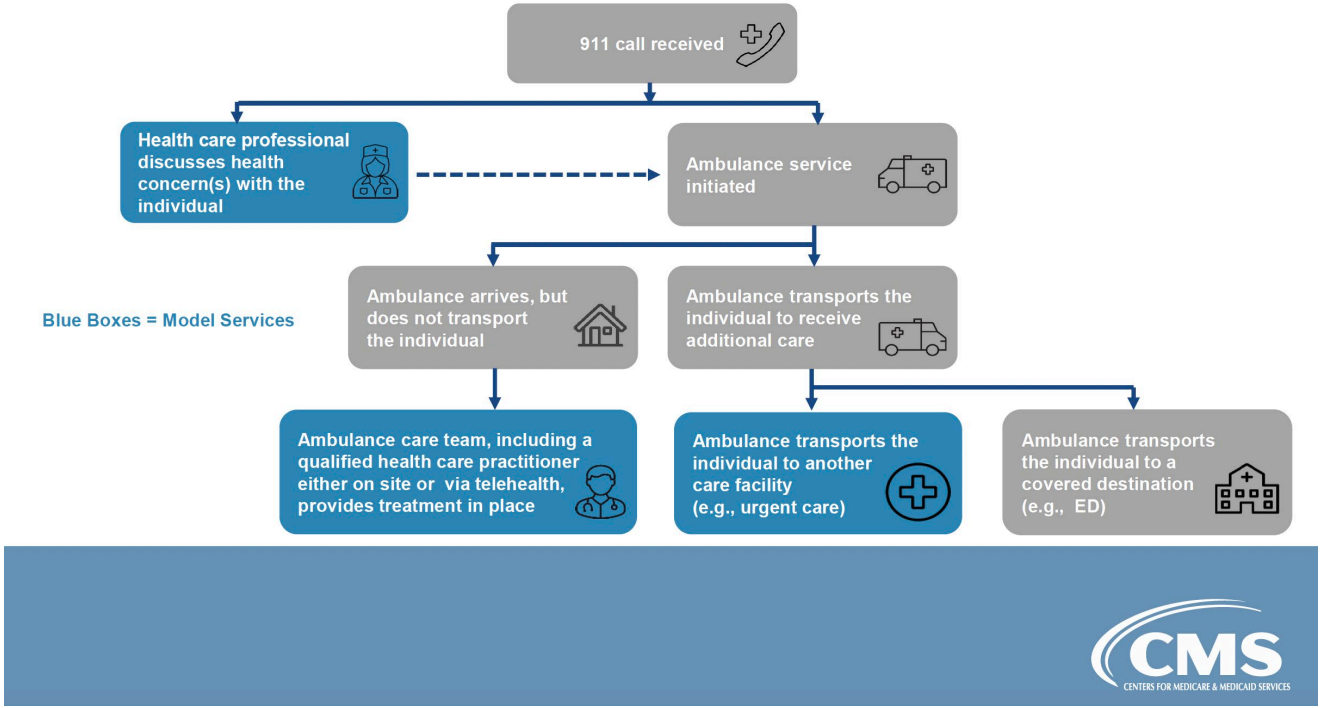
Ambulance dispatched regardless of acuity, with transport to ED even if lower-acuity alternatives could safely meet an individual's needs.



CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

Re-aligning Incentives for Future State

New options help individuals get the care they need and enable ambulances to work more efficiently.

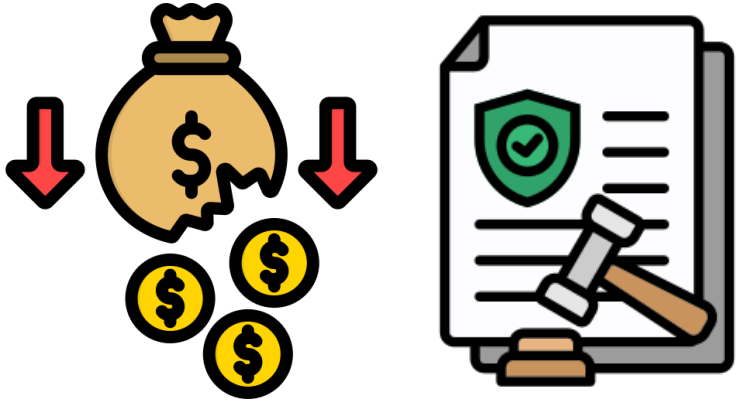


Emergency Triage, Treat, and Transport (ET3) Model

The ET3 Model ended early on December 31, 2023, two years prior to the performance period end date. This decision was made due to lower than expected participation and lower than projected interventions. Emergency Medical Services remain an area of focus for CMS, and we believe that the lessons learned from the ET3 Model can aid in the development of potential future initiatives. This decision does not affect Model Participants' participation in the Model through December 31, 2023.

Solving the Underlying Problem

- Improving system efficiency alone will not solve the problem
- Align financial incentives to create and sustain the capacity needed to provide unscheduled hospital-level care
- Remove regulatory barriers to creating and sustaining capacity needed to provide unscheduled hospital-level care



Questions