

# WebM&M

Morbidity and Mortality Rounds on the Web

## Spotlight

# Some Patients Can't Wait: Improving Timeliness of Emergency Department Care



Agency for Healthcare Research and Quality  
Advancing Excellence in Health Care



# Source and Credits

---

- This presentation is based on the 2020 AHRQ WebM&M Spotlight Case
  - See the full article at <https://psnet.ahrq.gov/webmm>
- Commentary by: David K. Barnes, MD, FACEP and Rita Chang, MD
  - Editors in Chief, AHRQ WebM&M: Patrick Romano, MD, MPH and Debra Bakerjian PhD, APRN
  - Spotlight Editors: Ian M. Julie, MD, MAS; Katren Tyler, MD
  - Managing Editor: Meghan Weyrich, MPH

# Objectives

---

*At the conclusion of this educational activity, participants should be able to:*

- Define the emergency department triage process
- State the root causes and dangers of emergency department crowding
- Use waiting room patient reassessment to improve emergency department triage
- Apply team-based communication strategies to healthcare scenarios
- Articulate barriers and solutions to effective communication between healthcare providers

---

# SOME PATIENTS CAN'T WAIT: IMPROVING TIMELINESS OF EMERGENCY DEPARTMENT CARE

A case in the ED that illustrates the effects of ED crowding, limitations of the ED triage process, and failures of teamwork and communication.

# Case Details

---

- 46-year-old woman
- Past medical history: stroke ten months prior, methamphetamine use, and remote endovascular repair of a thoracic aortic dissection
- Presented to the emergency department (ED) triage nurse at 12:38am
- Chief complaint: abdominal pain and vomiting
- Vital signs:
  - Blood pressure 154/113 mmHg
  - Heart rate 75 beats/minute
  - Respiratory rate 16 breaths/minute
  - Pulse oximetry 98% on room air
  - Oral temperature 36.6°C

# Case Details

---

- The triage nurse assigned the patient with Emergency Severity Index (ESI) category 2
- The patient remained in the waiting room because the ED was busy with no available beds
- No further nursing assessments or vital signs were recorded
- At 5:40am the patient became increasingly tachycardic, tachypneic, and pale, and began to scream in pain on the waiting room floor
- The patient was immediately taken to the resuscitation room and assessed by the Emergency Medicine attending physician and resident

# Case Details

---

- The ED care team:
  - Obtained vascular access
  - Sent a battery of laboratory tests
  - Ordered imaging studies
- Critical lab value: lactic acid value 10.2 mmol/L (normal 0.9 - 1.7 mmol/L)
- 7:00am: CT abdomen and pelvis with contrast was performed—it identified a ruptured thoraco-abdominal aortic aneurysm
- The emergency physicians immediately consulted Vascular Surgery
- 7:30am: Vascular Surgery evaluated patient and agreed to take the patient to the operating room (OR)

# Case Details

---

- Surgery was scheduled for 7:54am as a 0-2 hour case while surgical staff prepared the specialized vascular OR
- The patient's ED nurse called the OR to arrange transport and was told someone would be down to transport the patient to surgery in 30 minutes when the room became available
- 8:57am: while still in the ED waiting for the OR, the patient became unresponsive and pulseless
- The team called a code blue, initiated CPR, and administered blood products
- The patient could not be resuscitated and died in the ED

---

# **SOME PATIENTS CAN'T WAIT: IMPROVING TIMELINESS OF EMERGENCY DEPARTMENT CARE**

## **THE COMMENTARY**

By David K. Barnes, MD, FACEP  
and Rita Chang, MD

---

# INTRODUCTION

# What went wrong?

---

Three key factors contributed to a poor outcome for this patient:

- 1) ED crowding
- 2) Missed patient reassessment in the waiting room
- 3) Ineffective communication between the patient's healthcare teams

# Triage

---

- When the ED is at or above capacity, staff must determine how to allocate limited resources
- EDs use triage to sort and categorize patients to accommodate the arrival of patients across a continuum of severity and stability
- Most U.S. EDs use the ESI triage system, usually performed by a registered nurse

1. Gilboy N, Tanabe P, Travers D, Rosenau A. *Emergency Severity Index (ESI): a Triage Tool for Emergency Department Care, Version 4*. 2020:1-114.
2. Hinson JS, Martinez DA, Schmitz PSK, et al. Accuracy of emergency department triage using the Emergency Severity Index and independent predictors of under-triage and over-triage in Brazil: a retrospective cohort analysis. *Int J Emerg Med*. 2018; 11(1):1-10. doi:10.1186/s12245-017-0161-8.
3. Rui P, Kang K. National Hospital Ambulatory Medical Care Survey: 2017 Emergency Department Summary Tables. National Center for Health Statistics. [https://www.cdc.gov/nchs/data/nhamcs/web\\_tables/2017\\_ed\\_web\\_tables-508.pdf](https://www.cdc.gov/nchs/data/nhamcs/web_tables/2017_ed_web_tables-508.pdf).

# Emergency Severity Index

---

- Five-level triage algorithm
- Chief complaint, vital signs, visual assessment
- Estimates number of resources a patient will need
  - ESI-1 comprise < 1% of ED patients
    - Require immediate life-saving interventions
  - ESI-2 comprise 10-20% of ED patients
    - Present with confusion, disorientation, lethargy, severe pain, severe distress, or with high risk features
    - High priority and should be placed into a treatment bed as soon as possible

1. Gilboy N, Tanabe P, Travers D, Rosenau A. *Emergency Severity Index (ESI): a Triage Tool for Emergency Department Care, Version 4*. 2020:1-114.

2. Hinson JS, Martinez DA, Schmitz PSK, et al. Accuracy of emergency department triage using the Emergency Severity Index and independent predictors of under-triage and over-triage in Brazil: a retrospective cohort analysis. *Int J Emerg Med*. 2018; 11(1):1-10. doi:10.1186/s12245-017-0161-8.

3. Rui P, Kang K. National Hospital Ambulatory Medical Care Survey: 2017 Emergency Department Summary Tables. National Center for Health Statistics. [https://www.cdc.gov/nchs/data/nhamcs/web\\_tables/2017\\_ed\\_web\\_tables-508.pdf](https://www.cdc.gov/nchs/data/nhamcs/web_tables/2017_ed_web_tables-508.pdf).

# Triage Critique

---

- The patient was appropriately assigned ESI-2 at triage
- There was a substantial delay to room placement for evaluation and treatment
- No patient reassessment or repeat vital signs for >5 hours

# Communication Failure

---

- Communication failures between team members (e.g. physicians and nurses) as well as between teams (e.g. ED and surgery) may contribute to medical error
- Differences in perceptions between team members in this case may have created opportunity for error
  - The initial sense of urgency was lost after diagnosis was made
  - > 60 minutes elapsed after the OR case was scheduled until the patient's cardiac arrest from hemorrhagic shock

5. The Joint Commission. Joint Commission Perspectives. Volume 32, Issue 8, August 2012.

6. The Joint Commission. Human factors analysis in patient safety systems. The Source. Volume 13, Issue 4, April 2015.

7. Nagpal K, Vats A, Lamb B, et al. Information transfer and communication in surgery: a systematic review. *Ann Surg.* 2010;252(2):225-239.

doi:10.1097/SLA.0b013e3181e495c2.

# Teamwork and Communication Failure

---

- Some delay related to OR setup may be unavoidable
- Improved communication between the ED physicians and nurses, vascular surgery team, and the OR staff likely would have expedited OR setup and possibly led to a different outcome

---

# SYSTEMS CHANGE NEEDED/QUALITY IMPROVEMENT APPROACH

## ED Crowding & Boarding

# ED Crowding

---

- The primary cause of delayed care after triage is crowding
- Crowding is a major barrier to timely emergency care
- Patients face long waiting times to be treated
- Crowding creates unsafe conditions for all ED patients
- Boarding is the major cause of ED crowding
  - Boarded patients remain in the ED waiting for an inpatient hospital bed

3. Rui P, Kang K. National Hospital Ambulatory Medical Care Survey: 2017 Emergency Department Summary Tables. National Center for Health Statistics. [https://www.cdc.gov/nchs/data/ahamcs/web\\_tables/2017\\_ed\\_web\\_tables\\_508.pdf](https://www.cdc.gov/nchs/data/ahamcs/web_tables/2017_ed_web_tables_508.pdf).

8. Polevoi SK, Quinn JV, Kramer NR. Factors associated with patients who leave without being seen. *Acad Emerg Med*. 2005;12(3):232-236. doi:10.1197/j.aem.2004.10.029.

9. ACEP Emergency Medicine Practice Committee. *Emergency Department Crowding: High-Impact Solutions*. 2016. [https://www.acep.org/globalassets/sites/acep/media/crowding/empc\\_crowding-ip\\_092016.pdf](https://www.acep.org/globalassets/sites/acep/media/crowding/empc_crowding-ip_092016.pdf).

10. Asplin BR, Magid DJ, Rhodes KV, Solberg LI, Lurie N, Camargo CA Jr. A conceptual model of emergency department crowding. *Ann Emerg Med*. 2003;42(2):173-180. doi:10.1067/mem.2003.302.

# Effects of Crowding and Boarding

---

- Consequences of ED crowding and boarding are well established:
  - Patients (e.g. mortality, readmission, medical errors)
  - Staff (e.g. stress, violence towards staff)
  - Healthcare system (e.g. increased ED and inpatient length of stay)

11. Morley C, Unwin M, Peterson GM, Stankovich J, Kinsman L. Emergency department crowding: A systematic review of causes, consequences and solutions. Bellolio F, ed. *PLoS ONE*. 2018;13(8):e0203316–e0203342. doi:10.1371/journal.pone.0203316.

12. Verelst S, Wouters P, Gillet J-B, Van den Berghe G. Emergency Department Crowding in Relation to In-hospital Adverse Medical Events: A Large Prospective Observational Cohort Study. *J Emerg Med*. 2015;49(6):949-961. doi:10.1016/j.jemermed.2015.05.034.

13. Eitel DR, Rudkin SE, Malvey MA, Killeen JP, Pines JM. Improving service quality by understanding emergency department flow: a White Paper and position statement prepared for the American Academy of Emergency Medicine. *J Emerg Med*. 2010;38(1):70-79. doi:10.1016/j.jemermed.2008.03.038.

# Crowding Solutions

---

- Some institutions have successfully addressed crowding through bold strategies
- Full-capacity protocols are activated when a predetermined threshold of ED volume, acuity, or boarding is exceeded.
  - Example: Stony Brook full-capacity protocol requires admitted ED patients to be moved to inpatient hallway spaces even if inpatient beds are not ready.

14. Vicellio A, Santora C, Singer AJ, Thode HC, Henry MC. The association between transfer of emergency department boarders to inpatient hallways and mortality: a 4-year experience. *Ann Emerg Med.* 2009;54(4):487-491. doi:10.1016/j.annemergmed.2009.03.005.

# Crowding Solutions

---

- Other strategies to combat ED crowding include:
  - OR schedule smoothing
  - Community paramedicine
  - Around-the-clock hospital discharges
  - Performance incentives
  - Discharge lounges

15. Wong J, Khu KJ, Kaderali Z, Bernstein M. Delays in the operating room: signs of an imperfect system. *Can J Surg.* 2010;53(3):189-195.

16. California Emergency Medical Services Authority. Overview: Community Paramedicine. 2018. Website: [https://ems.ca.gov/community\\_paramedicine/](https://ems.ca.gov/community_paramedicine/). Accessed February 3, 2020.

17. Chang AM, Cohen DJ, Lin A, et al. Hospital Strategies for Reducing Emergency Department Crowding: A Mixed-Methods Study. *Ann Emerg Med.* 2018;71(4):497–505.e4. doi:10.1016/j.annemergmed.2017.07.022.

18. Franklin BJ, Vakili S, Huckman RS, et al. The Inpatient Discharge Lounge as a Potential Mechanism to Mitigate Emergency Department Boarding and Crowding. *Ann Emerg Med.* January 2020. doi:10.1016/j.annemergmed.2019.12.002.

---

# SYSTEMS CHANGE NEEDED/QUALITY IMPROVEMENT APPROACH

## Triage & Reassessment

# Waiting Room

---

- ED staff have many opportunities to affect the care and supervision of waiting room patients
- Issues relevant to a critique of this patient's triage include:
  - Accuracy of the triage level assignment
  - Time spent in the waiting room
  - Performance and frequency of patient reassessment

# Triage

---

- ESI framework may lead to both over- and under-triage
- The nurse appropriately triaged this patient as ESI-2 based on vital signs, appearance, and high-risk past medical history
- Criticism of the ESI designation is unwarranted given the absence of ESI-1 criteria

2. Hinson JS, Martinez DA, Schmitz PSK, et al. Accuracy of emergency department triage using the Emergency Severity Index and independent predictors of under-triage and over-triage in Brazil: a retrospective cohort analysis. *Int J Emerg Med.* 2018; 11(1):1-10. doi:10.1186/s12245-017-0161-8.

# Reassessment

---

- The patient was not reassessed for >5 hours.
- Staff could have identified her condition or deterioration earlier had she been reassessed in the waiting room.
- ESI does not specify a timeframe to room placement nor to evaluation by a Qualified Medical Provider (QMP).
- Regulatory requirements for patient reassessment do not exist.
- Some experts recommend minimum reassessment intervals.
- ED staff failed to follow their 2 hour reassessment policy.
- New regulatory requirements may worsen matters.

1. Gilboy N, Tanabe P, Travers D, Rosenau A. *Emergency Severity Index (ESI): a Triage Tool for Emergency Department Care, Version 4*. 2020:1-114.

19. McGhee TL, Weaver P, Solo S, Hobbs M. Vital signs reassessment frequency recommendation. *Nursing Management (Springhouse)*. 2016;47(9):11-12. doi:10.1097/01.NUMA.0000491132.98848.22.

20. The Joint Commission. Suicide Prevention. Website: <http://www.jointcommission.org>. Accessed February 3, 2020.

# Triage Improvement Strategies

---

- Some strategies exist to help crowded EDs minimize harm and reduce delays for patients who wait for bed placement:
  - Pull until full
  - Rapid intake process
  - Nursing protocols
  - Reserving inpatient beds at triage
  - Flow coordinators
- EDs could consider more frequent waiting room reassessment intervals based on patient condition

1. Gilboy N, Tanabe P, Travers D, Rosenau A. *Emergency Severity Index (ESI): a Triage Tool for Emergency Department Care, Version 4*. 2020:1-114.

21. Koehn D. Emergency Nurses Association: Topic Brief. May 2017:1-13.

---

# SYSTEMS CHANGE NEEDED/ QUALITY IMPROVEMENT APPROACH

## Teamwork & Communication

# Communication

---

- Communication is “a process by which information is exchanged between individuals through a common system of symbols, signs, or behaviors.”
- Three types of communication barriers:
  - Educational
  - Organizational
  - Geographical

22. Merriam-Webster Dictionary. Website: <https://www.merriam-webster.com/dictionary/>. Accessed February 3, 2020.

23. Weller J, Boyd M, Cumin D. Teams, tribes and patient safety: overcoming barriers to effective teamwork in healthcare. *Postgrad Med J*. 2014;90(1061):149-154. doi:10.1136/postgradmedj-2012-131168.

# Communication

---

- Health professions education remains largely discipline-specific, with minimal interaction between healthcare disciplines
- Cross training between disciplines may reduce education barriers to communication
  - Learning the roles and responsibilities of other team members
  - Periodically reviewing communication processes

23. Weller J, Boyd M, Cumin D. Teams, tribes and patient safety: overcoming barriers to effective teamwork in healthcare. *Postgrad Med J*. 2014;90(1061):149-154. doi:10.1136/postgradmedj-2012-131168.

# Communication

---

- When boundaries defining clinical responsibility blur, organizational communication can fail
- Disciplines that are ordinarily siloed should work collaboratively to improve two-way communication

# Communication Opportunities

---

- ED and OR staff could collaborate to create specific workflows and clinical pathways to improve the efficiency of care for patients with surgical emergencies, especially targeting handoffs and patient transportation
- A designated liaison between the ED and OR could simultaneously address geographical and organizational barriers

# Teamwork

---

- Teamwork requires:
  - Communication
  - Cooperation
  - Coordination
  - Shared goals
- In this case, improved communication between ED and OR teams would have accelerated OR readiness and established a clear plan for ED-to-OR transit

24. Agency for Healthcare Research and Quality (AHRQ). TeamSteps | Agency for Health Research and Quality. Website: <https://www.ahrq.gov/teamsteps/index.html>. Accessed February 3, 2020.

# Improving Teamwork and Communication

---

- Improved communication can improve patient care through:
  - Role clarity
  - Strong leadership
  - Verbalization of goals
- Examples of tools to improve teamwork and communication:
  - Team Strategies and Tools to Enhance Performance and Patient Safety (Team STEPPS).
  - Practicing team communication through the simulation

24. Agency for Healthcare Research and Quality (AHRQ). TeamSteps | Agency for Health Research and Quality. Website: <https://www.ahrq.gov/teamsteps/index.html>. Accessed February 3, 2020.

# Team STEPPS

---

- Team STEPPS
  - Developed by the Department of Defense Patient Safety Program and supported by the Agency for Healthcare Research and Quality.
  - A set of tools aimed at optimizing patient outcomes by improving communication and teamwork skills among health care professionals
  - Focuses on leadership, communication, situation monitoring, and mutual support
- Two tools may have aided the teams in this case:
  - Team huddle
  - Closed loop communication

24. Agency for Healthcare Research and Quality (AHRQ). TeamSteps | Agency for Health Research and Quality. Website: <https://www.ahrq.gov/teamsteps/index.html>. Accessed February 3, 2020.

# Team STEPPS Tools

---

- Team huddle:
  - Brief face-to-face meeting of team members to facilitate the exchange and sharing of information
  - Reduces hierarchies by providing a safe and respectful environment for other healthcare professionals to voice their concerns and opinions
- Closed loop communication
  - Receiver acknowledges a sent message and cross-checks the accuracy of the message with the sender
  - Ensures the transferred information was received as intended
  - Mitigates the risk of miscommunication and misunderstanding
  - Promotes shared goals, expectations, and execution of care plans

24. Agency for Healthcare Research and Quality (AHRQ). TeamSteps | Agency for Health Research and Quality. Website: <https://www.ahrq.gov/teamsteps/index.html>. Accessed February 3, 2020.

# Simulation

---

- Simulation-based training:
  - An artificial representation of a real world process to achieve educational goals through experiential learning utilizing aids to replicate clinical scenarios
  - Improves teamwork, task performance and speed, knowledge, and provider satisfaction
  - Improves team performance during emergency resuscitations

25. Al-Elq AH. Simulation-based medical teaching and learning. *J Family Community Med.* 2010;17(1):35-40. doi:10.4103/1319-1683.68787.

26. McLaughlin C, Barry W, Barin E, et al. Multidisciplinary Simulation-Based Team Training for Trauma Resuscitation: A Scoping Review. *J Surg Educ.* 2019;76(6):1669-1680. doi:10.1016/j.jsurg.2019.05.002.

27. Murphy M, Curtis K, McCloughen A. What is the impact of multidisciplinary team simulation training on team performance and efficiency of patient care? An integrative review. *Australas Emerg Nurs J.* 2016;19(1):44-53. doi:10.1016/j.aenj.2015.10.001.

---

# TAKE HOME POINTS

# Take-Home Points (1)

---

- ED crowding is a major problem that threatens patient safety. The ED is a public health resource, therefore policymakers and administrators should prioritize ED crowding as a public health crisis and develop temporary and permanent solutions to remedy it.

## Take-Home Points (2)

---

- ED staff have a responsibility to keep patients safe and to provide timely care. To improve waiting room safety, hospitals should implement strategies to improve triage accuracy, expedite care, and monitor patients waiting to be seen to reduce the risk of waiting.

## Take-Home Points (3)

---

- Effective teamwork and communication between healthcare teams and providers is necessary for efficient, high quality health care, especially when treating complex medical or surgical emergencies requiring interdisciplinary and inter-professional coordination.

## Take-Home Points (4)

---

- Closed loop communication, developing shared goals, and situational awareness developed through huddles are tools to improve teamwork and communication. Healthcare providers should train in teams to support a team-based healthcare delivery paradigm.

---

**THANK YOU!**