IHPI BRIEF
Better care for surgical patients:
Recognizing and responding to the unexpected to save lives

INSTITUTE FOR HEALTHCARE POLICY & INNOVATION
UNIVERSITY OF MICHIGAN

Each year at least 100,000 people die in U.S. hospitals following elective surgery.

Major complications that can develop following surgery — such as blood clots, infections, and heart attacks — are a significant cause of these deaths, as well as disability and other serious health conditions.

In recent decades, advances in surgical quality, infection prevention, and other safety measures have decreased post-surgical complications, as well as the deaths that can result from them.

However, not all complications are preventable; the unexpected can and does happen after surgery. According to U-M research, we know that:

- Hospitals with higher death rates after surgeries *do not have* higher rates of complications, but *do have* higher rates of "failing to rescue" patients who experience them.
- Death rates among patients with major complications also vary widely between hospitals (as much as an 11-fold difference), and Failure to Rescue (FTR) is one of the key drivers of this variation.

Therefore, more rapidly identifying and effectively responding to complications *when they do occur* after surgery presents a major opportunity to improve patient safety and prevent loss of life. Rescuing a surgical patient is a dynamic process. It requires interpreting and exchanging complex information in moments of crisis among care team members who have different professions and roles.

What does the evidence say about how healthcare systems can improve rescue?

? Failure to Rescue (FTR):
a death following a major post-surgical complication

The University of Michigan has one of only a few research programs in the country dedicated to improving rescue, evaluating effective rescue tools, and identifying opportunities for quality improvement.

Takeaways from our research on improving rescue after surgery

Some of the most effective targets to improve rescue include:

- Increasing providers' confidence and competence with earlier recognition and effective management of complications as they develop.
- Developing strategies to strengthen communication and collaboration within interprofessional care teams.

Hospital-level factors such as staffing ratios, technology, and teaching status explain only a third of variation in hospital rescue rates.

Safety attitudes, team behaviors, and other organizational culture factors are also drivers of rescue.

What are the implications for practice and policy?

As U-M researchers continue to develop and refine effective tools to improve rescue, we must continue to evaluate where and why failures occur and ultimately implement effective prevention strategies:

Hospitals and health systems should consider:

- Implementing quality improvement strategies that increase providers' confidence and competence with:
  - Earlier detection of major complications.
  - Effective interprofessional communication of early concerns.
- Ensuring a culture that prioritizes safety by:
  - Maximizing staffing strategies (within resource and training constraints), considering nurse:patient ratios and intensivist staffing.
  - Reevaluating workforce development to provide safe, reliable, and effective care.

Certification programs across health professions should consider:

- Enhancing training requirements that ensure greater exposure to effective rescue scenarios.

Professional specialty organizations should consider:

- Developing and implementing guidelines to improve rescue and response to crises.
- Developing networks to share information and best practices on post-operative rescue, including managing specific complications in high-risk groups.

Referenced studies on "Failure to Rescue" by IHPI members

Understanding Interpersonal and Organizational Dynamics Among Providers Responding to Crisis. McGovern KM, Wells EE, Landstrom GL, Ghaferi AA. *Qual Health Res*. 2019 Aug 20. PMID: 31431141. doi:10.1177/1049732319866818. [Epub ahead of print]

Interpersonal and Organizational Dynamics are Key Drivers of Failure to Rescue. Smith ME, Wells EE, Friese CR, Krein SL, Ghaferi AA. *Health Aff (Millwood)*. 2018 Nov;37(11):1870-1876. PMID: 30395494. doi:10.1377/hlthaff.2018.0704.

Association Between Hospital Staffing Models and Failure to Rescue. Ward ST, Dimick JB, Zhang W, Campbell DA, Ghaferi AA. *Ann Surg*. 2018. PMID: 29557884. doi:10.1097/SLA.0000000000002744.

Impact of Hospital Characteristics on Failure to Rescue Following Major Surgery. Sheetz KH, Dimick JB, Ghaferi AA. *Ann Surg*. 2016;263(4): 692-697. PMID: 26501706. doi:10.1097/SLA.0000000000001414.

The Next Wave of Hospital Innovation to Make Patients Safer. Ghaferi AA, Myers CG, Sutcliffe KM, Pronovost PJ. *Harvard Business Review*. 2016 Aug. 8.

Importance of Teamwork, Communication and Culture on Failure-to-Rescue in the Elderly. Ghaferi AA, Dimick JB. *Br J Surg*. 2016 Jan;103(2):e47-51. PMID: 26616276. doi:10.1002/bjs.10031.

Improving Mortality Following Emergent Surgery in Older Patients Requires Focus on Complication Rescue. Sheetz KH, Waits SA, Krell RW, Campbell DA Jr, Englesbe MJ, Ghaferi AA. *Ann Surg*. 2013 Oct;258(4):614-7. PMID: 23979275. doi:10.1097/SLA.0b013e3182a5021d.

Variation in Hospital Mortality Associated with Inpatient Surgery. Ghaferi AA, Birkmeyer JD, Dimick JB. *NEJM*. 2009;361:1368-75. PMID: 19797283. doi:10.1056/NEJMsa0903048.

Complications, Failure to Rescue, and Mortality with Major Surgery in Medicare Patients. Ghaferi AA, Birkmeyer JD, Dimick JB. *Ann Surg*. 2009;250(6):1029-34. PMID: 19953723. doi:10.1097/sla.0b013e3181bef697.

AUTHOR

Amir Ghaferi, MD, MS, University of Michigan

ihpi.umich.edu/FTR

The Institute for Healthcare Policy & Innovation is the nation's leading university-based institute of health services researchers working together to improve the quality, safety, equity, and affordability of healthcare.

Learn more at www.ihpi.umich.edu