

EMERGENCY MEDICINE - THE CRITICAL FIRST 15 MINUTES AND THE MASTERY OF VERSATILITY: A NARRATIVE REVIEW

Narrative Review

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ABSTRACT

Emergency Medicine (EM) is a critical specialty requiring rapid decision-making and immediate interventions to improve patient outcomes [1]. Despite its significance, EM is often misunderstood, particularly in regions like Pakistan, where it is perceived as basic first aid rather than a specialized field encompassing acute care, resuscitation, and high-stakes decision-making [1,2]. This narrative review synthesizes existing literature on the unique nature of EM, the critical importance of the initial minutes of emergency care, and the evolving role of EM physicians. It also highlights key challenges such as physician burnout, overcrowding, and resource constraints, while exploring innovations like AI-driven diagnostics and enhanced crisis management. This review also looks at various studies that underscore EM's impact, training requirements, and the misconceptions surrounding its role in healthcare [3,4].

Keywords: Emergency Medicine, Resuscitation, Critical Care, Resilience, Decision Making.

INTRODUCTION

In 1991, the International Federation of Emergency Medicine (IFEM) defined EM as “a field of practice based on the knowledge and skill required for prevention, diagnosis and management of acute and urgent aspects of illness and injury affecting patients of all age groups with a full spectrum of undifferentiated physical and behavioural disorders. It further encompasses an understanding of the development of pre-hospital and in-hospital emergency medical systems and the skills necessary for this development” [2].

Emergency Medicine (EM) operates at the intersection of urgency and expertise, where time-sensitive decisions determine survival [3]. Unlike other medical disciplines that allow for extended evaluations, EM demands immediate assessment, prioritization, and intervention [1,2,3,5]. The ability to think fast and act even faster defines the specialty. In many regions, including Pakistan, the full scope of EM is not well understood, often leading to misconceptions that EM physicians are simply referral doctors, first aid providers, or generalists [6,7]. Additionally, resistance from other specialties, perceiving EM as an encroachment on their domains, has led to barriers in its development.

This narrative review aims to clarify the role of EM, highlight the extensive training and skill set required, and address common misconceptions [8]. Additionally, it explores the challenges and innovations shaping the field, ultimately reinforcing the indispensable role of EM physicians in modern healthcare.

METHODS

Despite this being a narrative review, a literature search was conducted to gain a broader perspective. The search included the terms "Emergency Medicine," "resuscitation," "triage," "emergency department challenges," "high-stakes decision-making," "scope of practice," and "emergency medicine training." Databases searched were PubMed, Scopus, Google Scholar, and Web of Science, covering English-language publications from 2000 to 2024. Studies on EM training, decision-making, patient outcomes, challenges, research, innovation, and evidence-based medicine in Emergency Departments (EDs) were reviewed. Editorials and short communications provided additional insights into challenges faced by developing countries with limited literature. Excluded were studies focused solely on pre-hospital emergency care (EMS) without hospital-based EM involvement, newspaper articles, anecdotal reports, and those with inadequate methodology. While much research covers ED overcrowding, EM training, and physician burnout, little explores the scope of EM practice, its acceptance among healthcare professionals, 'turf wars,' and the lack of recognition for the specialty, particularly in developing countries. This narrative review compiles and synthesizes the available information, highlighting these critical gaps, especially in regions where EM is still emerging.

DISCUSSION

Unique Nature of Emergency Medicine:

EM is distinct from other medical specialties due to its broad scope and high-stakes environment. Unlike other specialists who focus on specific organ systems, EM physicians manage diverse cases, including cardiac arrests, trauma, sepsis, and psychiatric emergencies [1,9]. Their ability to transition seamlessly between different emergencies, guided by triage principles and resuscitation protocols, makes them indispensable in acute care settings [1,2,7,8].

The Initial Critical Minutes Defining the Specialty:

EM is described as “the most exciting first 15 minutes of every other specialty” (Dan Sandberg, BEEM Conference, 2014). Research underscores that the initial minutes in the ED are often the most crucial for patient outcomes. For example, early thrombolysis in stroke patients significantly reduces morbidity and mortality [10,11]. Similarly, adherence to Advanced Trauma Life Support (ATLS) guidelines within the golden hour of trauma care dramatically improves survival rates [12]. The ability to rapidly recognize and act on life-threatening conditions distinguishes EM from other specialties.

The ‘Jack of All Trades’ Misconception: Critics argue that EM physicians lack the depth of knowledge seen in specialists. However, in the context of acute care, depth is secondary to speed, accuracy, and adaptability [1,13]. EM physicians excel in clinical decision-making under uncertainty, relying on evidence-based clinical tools such as the HEART score for chest pain and the Canadian CT Head Rule to make rapid, high-stakes decisions [1, 3]. Their expertise ensures that by the time a specialist is involved, the patient is optimally stabilized, receiving appropriate treatment and on the correct clinical pathway, with a well-reasoned provisional or working diagnosis [11]. Suffice it to say that EM physicians are not just ‘jacks of all trades’, indeed they are also masters of high-stakes, time-critical medicine.

Training and Expertise in Emergency Medicine: The perception that EM physicians are generalists without specialized expertise is a misconception. EM training cultivates:

- a. Proficiency in life-saving procedures (e.g., intubation, chest tube insertion, central line placement) [14,11].
- b. Mastery of life support protocols, including Advanced Cardiac Life Support (ACLS), Advanced Paediatric Life Support (APLS), and ATLS [14,11].
- c. Simulation-based training for rare but critical conditions, emphasizing High Acuity, Low Occurrence (HALO) procedures [15].
- d. Emotional resilience training to cope with the unpredictability and emotional toll of the specialty [8].
- e. Exceptional leadership skills to navigate daily unpredictabilities, manage a high-acuity workload, maintain efficiency amidst organised chaos, and ensure seamless-decision making under pressure – all while upholding patient safety and fostering high team morale [1,8,16].

Not having comprehensive knowledge of Every Disease in Depth is Acceptable:

EM is a unique blend of breadth, speed and critical decision-making. Unlike specialties focusing on long-term disease management, EM prioritizes ruling out or recognising life-threatening conditions and initiating time-sensitive treatments. A deep dive into every disease process is impractical and unnecessary. What matters is recognising when to act, how to act, and when to transition care. Clinical decision rules, structured protocols, and experience-based intuition allow EM physicians to function effectively despite the vast breadth of emergencies they encounter [17].

Challenges Facing Emergency Medicine:

Overcrowding and Resource Constraints: ED overcrowding is a global issue, leading to increased patient mortality due to delayed care. Solutions include AI-driven triage and improved patient flow management [1, 16].

Physician Burnout: High patient volumes and the intensity of emergency care contribute to burnout. Studies suggest structured debriefing sessions and wellness programs can mitigate stress [8].

Resistance from Other Specialties: In regions where EM is newly established, traditional specialties often resist its development, perceiving it as an overlap with their domains.

Innovations in Emergency Medicine:

Artificial Intelligence (AI) and Machine Learning: AI-driven diagnostic tools are enhancing clinical decision-making, reducing diagnostic errors, and improving patient outcome. However, developing nations, including Pakistan, are slow to embrace this change [3].

Telemedicine in Emergency Care: Virtual consultations are increasingly being integrated into ED workflows, allowing for expert opinions in real-time and expanding access to specialized care [11].

Crisis Resource Management Training: Enhanced simulation programs for mass casualty incidents and disaster preparedness are being adopted to improve ED efficiency and patient safety [8,14,16].

CONCLUSION

Emergency Medicine stands at the forefront of healthcare, where every moment can mean the difference between life and death. More than just a specialty, it is a discipline defined by urgency, adaptability, and decisive action. For EM specialists, time is not just a factor—it is life itself. Their role demands the ability to assess, intervene, and stabilize patients with unmatched precision, often in

unpredictable and high-pressure environments. Unlike other fields that focus on a single organ system, EM requires a breadth of expertise, rapid clinical judgment, and unwavering resilience. This dynamic blend of agility and knowledge makes EM an essential pillar of modern medicine. As the specialty continues to evolve, embracing technological advancements and refining training will be crucial in overcoming its challenges. Recognizing the specialized skill set and critical contributions of EM physicians is vital to strengthening emergency care systems worldwide.

REFERENCES

1. Geary U, Kennedy U. Clinical Decision Making in Emergency Medicine. *Emergencias*. 2010;22(1):56–60.
2. ACEM - What is emergency medicine? [Internet]. *acem.org.au*. Available from: <https://acem.org.au/Content-Sources/About/What-is-emergency-medicine>
3. Chang CY, Abujaber S, Reynolds TA, Camargo CA, Obermeyer Z. Burden of emergency conditions and emergency care usage: new estimates from 40 countries. *Emergency Medicine Journal* [Internet]. 2016 Nov 1;33(11):794–800. Available from: <https://emj.bmj.com/content/33/11/794.full>
4. Mutaal A, Bajwa S, Muhammad, Khubaib Ashiq, Shuaib F, Dawood Shehzad, et al. Barriers in Opting for Emergency Medicine as a Career in Pakistan: A Cross-Sectional Survey Study. *Curēus*. 2024 Jan 18
5. Saleem SG, Haider KF, Yasin Z, Rybarczyk M. Bridging the Gap in Emergency Medicine in Pakistan. *Pakistan Journal of Medical Sciences*. 2019 Nov 29;36(ICON-Suppl)
6. Razzak JA, Hyder AA, Akhtar T, Khan M, Khan UR. Assessing emergency medical care in low income countries: A pilot study from Pakistan. *BMC Emergency Medicine* [Internet]. 2008 Jul 3;8(1). Available from: [https://www.who.int/bulletin/archives/80\(11\)900.pdf](https://www.who.int/bulletin/archives/80(11)900.pdf)
7. Rifat Rehmani. Emergency medicine: a relatively new specialty [Internet]. *eCommons@AKU*. 2018 [cited 2025 Apr 1]. Available from: https://ecommons.aku.edu/pakistan_fhs_mc_emerg_med/211/
8. Patel VL, Shidhaye R, Dev P, Shortliffe EH. Building resiliency in emergency room physicians: anticipating the next catastrophe. *BMJ Health & Care Informatics*. 2021 Apr;28(1):e100343.
9. Huang D, Osborn TM, Gunnerson KJ, Gunn SR, Trzeciak S, Kimball EJ, et al. Critical care medicine training and certification for emergency physicians*. 2005 Sep 1;33(9):2104–9.
10. Boulanger J, Lindsay M, Gubitz G, Smith E, Stotts G, Foley N, et al. Canadian Stroke Best Practice Recommendations for Acute Stroke Management: Prehospital, Emergency Department, and Acute Inpatient Stroke Care, 6th Edition, Update 2018. *International Journal of Stroke*. 2018 Jul 18;13(9):949–84.
11. Reynolds TA, Sawe H, Rubiano AM, Shin SD, Wallis L, Mock CN. Strengthening Health Systems to Provide Emergency Care. *Disease Control Priorities, Third Edition (Volume 9): Improving Health and Reducing Poverty*. 2017 Dec 6;247–65.
12. Tsang B, McKee J, Engels PT, Paton-Gay D, Widder SL. Compliance to advanced trauma life support protocols in adult trauma patients in the acute setting. *World Journal of Emergency Surgery*. 2013 Oct 2;8(1).
13. Counselman FL, Sanders AB, Slovis CM, Danzl DF, Binder LS, Perina DG. The Status of Bedside Ultrasonography Training in Emergency Medicine Residency Programs. *Academic Emergency Medicine*. 2003 Jan 1;10(1):37–42.
14. Saleem SG, Ali S, Khatri A, Mukhtar S, Farooq W, Maroof Q, et al. Clinical Outcomes Following the Implementation of a Novel One-Year Training Program in Emergency Medicine in Karachi, Pakistan. *Annals of Global Health* [Internet]. 2023 Jan 19 [cited 2024 Jul 15];89(1). Available from: <https://annalsofglobalhealth.org/articles/3890>
15. Hack KE, Levy MJ, Garfinkel E, Margolis AM. Establishing consensus-based high-acuity low-occurrence skills for EMS physicians: A pilot survey of EMS fellowship faculty. *AEM Education and Training*. 2022 Dec;6(6).
16. SEVENTY-SECOND WORLD HEALTH ASSEMBLY A72/A/CONF.1 Agenda item 12.9 Emergency care systems for universal health coverage: ensuring timely care for the acutely ill and injured [Internet]. 2019 [cited 2025 Apr 1]. Available from: https://apps.who.int/gb/ebwha/pdf_files/WHA72/A72_ACONF1-en.pdf
17. Sheikh S, Mugele J. Decision making in emergency medicine: Balance between intuition and bias. *AEM Education and Training*. 2021 Sep 9;5(4).
18. Wolfe RE. Role of Emergency Medicine in Disaster Management. *Elsevier eBooks*. 2023 May 29;19–25.