

Emergency Department Overcrowding: Causes, Consequences, and Strategies for Saudi Arabia

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ABSTRACT

To review the causes, consequences, measurement tools, and interventions for emergency department (ED) overcrowding, with a focus on Saudi Arabia. Narrative review of existing literature and healthcare reforms. Emergency departments worldwide, with emphasis on Saudi Arabia's healthcare system. Analysis of factors influencing ED input, throughput, and output; evaluation of impacts on patients, staff, and health systems; and assessment of interventions and emerging approaches. ED overcrowding stems from pressures at multiple stages of patient flow. Input factors include rising demand, aging populations, chronic disease, and non-urgent visits. Within the ED, throughput challenges such as diagnostic delays, staffing shortages, and prolonged consultations extend patient stays. Output failure, especially access block and inpatient boarding, remains the leading driver of crowding. These conditions delay time-sensitive care, worsen clinical outcomes, and increase rates of patients leaving without being seen. Staff are exposed to higher levels of stress, burnout, and workplace violence, while healthcare systems face greater costs, inefficient resource utilization, and erosion of public trust. Interventions include ED-based measures such as fast-track units, provider-in-triage, and point-of-care testing, as well as broader reforms like discharge lounges, admission smoothing, capacity protocols, and digital health adoption. Emerging solutions, including predictive analytics and telemedicine, show additional promise. ED overcrowding is multifactorial, with output failure as the critical driver. In Saudi Arabia, non-urgent ED use and prolonged ICU boarding are pressing issues. Vision 2030 reforms provide an opportunity to implement evidence-based strategies, strengthen primary care, and achieve sustainable solutions to improve patient outcomes.

Keywords: Emergency Service; Hospital; Crowding; Patient Flow; Bed Occupancy; Length of Stay; Saudi Arabia

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