



Ambulance Crew Waiting Time: Causes, Impacts and Solutions- A Review

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Abstract

Ambulance crew waiting time, defined as the duration spent by emergency medical services (EMS) teams at hospitals before transferring a patient to hospital care, is a critical concern globally. This delay impacts patient outcomes, leads to operational inefficiencies, and increases healthcare costs. Various factors contribute to this issue, including hospital overcrowding, increased demand for emergency services, and poor communication between hospitals and EMS teams. This paper explores the causes and impacts of ambulance crew waiting time and reviews potential solutions for mitigating these delays, emphasizing the need for systemic improvements and technological innovations.

Keyword: Ambulance Crew Waiting Time; Emergency Medical Service (EMS); Hospital Overcrowding; Healthcare Cost

Abbreviations

EMS: Emergency Medical Services; NHS: National Health Service; EDs: Emergency Departments.

Introduction

Emergency medical services (EMS) provide crucial pre-hospital care and are essential to the overall healthcare system. However, ambulance crew waiting time has become a growing issue in many countries. It is defined as the time between the arrival of an ambulance at a hospital and the successful transfer of the patient to the hospital staff. Lengthy delays in this process can compromise both the quality of patient care and the efficiency of EMS operations [1].

Ambulance waiting times are a multifaceted issue with wide-ranging effects. Hospital overcrowding, increased healthcare demand, and inefficient handover procedures [2] drive the problem. This paper examines these contributing factors, analyses the effects of extended waiting times on

healthcare outcomes and EMS operations, and reviews potential solutions, including policy interventions and technological innovations [3].

Methodology

This review employs a systematic approach to investigate the causes, impacts, and solutions related to ambulance crew waiting times. Relevant literature was sourced from peer-reviewed journals, government reports, and professional EMS organizations. The study focused on research published between 2015 and 2021 to ensure current trends and solutions were included.

The research process involved identifying major factors contributing to ambulance delays, assessing the impacts of these delays on patient outcomes and EMS operations, and evaluating existing solutions. The selection of sources was based on the credibility of the publications and their relevance to EMS and hospital operations.



Causes of Ambulance Crew Waiting Time

Hospital Overcrowding

Hospital overcrowding is one of the main drivers of ambulance crew waiting time. Overcrowded emergency departments (EDs) lack the capacity to receive patients promptly, resulting in ambulances queuing outside hospitals. The National Health Service (NHS) reported in 2020 that overcrowding in EDs, caused by a shortage of hospital beds and understaffing, significantly delayed patient handovers [2]. This problem has been exacerbated by growing healthcare demands and an aging population.

Hospital overcrowding not only delays the transfer of patients from ambulances but also creates bottlenecks in patient flow within the hospital. When patients are not promptly admitted or discharged, emergency departments are left without the space to treat new arrivals.

Increased Demand for Emergency Services

The demand for EMS has increased over the past decade due to rising rates of chronic illnesses, an aging population, and public reliance on emergency services for non-emergency health issues. A study published in the *Journal of Emergency Medical Services* in 2018 highlighted that increased call volumes and demand for emergency medical care have stretched EMS resources, contributing to longer waiting times at hospitals [3].

Ambulances are dispatched more frequently, yet many hospitals have not expanded their capacity to handle this surge. The gap between the supply of hospital resources and the growing demand for emergency services has become a significant cause of ambulance waiting times.

Inefficient Handover Processes

Ambulance handover processes vary widely across healthcare systems, often resulting in inefficiencies that prolong waiting times. Poor communications between ambulance crews and hospital staff, as well as inadequate handover protocols, are major contributors. In some cases, hospital staff may not be immediately prepared to receive the patient upon arrival, causing further delays. The *Journal of Emergency Medical Services* (2015) indicated that hospitals that lacked streamlined handover protocols experienced longer delays in ambulance handovers [4].

Ambulance Diversion

In an attempt to manage overcrowding, some hospitals implement ambulance diversion, whereby incoming ambulances are redirected to other hospitals that may have more capacity. However, this practice often results in

increased travel times and further delays in patient care. Research published in the *Journal of Emergency Medical Services* in 2015 found that while ambulance diversion can temporarily relieve overcrowded hospitals, it does not solve the underlying issue of long waiting times [4].

Impacts of Ambulance Crew Waiting Time

Negative Impact on Patient Outcomes

Extended waiting times in transferring patients from ambulances to hospitals can negatively affect patient outcomes, particularly in cases where urgent medical attention is required. Conditions such as strokes, heart attacks, and trauma require immediate intervention, and any delay in receiving hospital care can worsen outcomes. A study in the *American Journal of Emergency Medicine* in 2021 found that prolonged ambulance waiting times are associated with higher mortality rates, especially in time-sensitive medical cases [1].

Delays also increase the risk of complications, as patients who are left in the ambulance for extended periods may not receive adequate monitoring or treatment. For time-critical emergencies, the difference between life and death can hinge on the efficiency of patient handover.

Operational Inefficiencies for EMS

Ambulance waiting times contribute significantly to operational inefficiencies within EMS. When ambulances are delayed at hospitals, fewer vehicles and crews are available to respond to new emergency calls, leading to increased response times. According to a report by the *British Paramedic Association* in 2019, in some regions, up to 20% of ambulances were delayed at hospitals for over an hour, reducing their ability to provide timely emergency services [5].

These inefficiencies ripple through the entire EMS system, delaying care for other patients and increasing the workload on ambulance personnel. Additionally, EMS services are forced to allocate more resources, including additional ambulances and crew, to maintain service levels.

Economic Impact

The economic impact of prolonged ambulance waiting times is significant. Waiting time not only increases operational costs for EMS but also contributes to broader healthcare inefficiencies. A cost analysis published in 2016 by the *Health Economics Review* estimated that excessive waiting times result in increased staffing costs, fuel expenses, and wear and tear on ambulances [6]. These economic inefficiencies could be better managed if resources

were more effectively allocated to address the root causes of waiting times.

Discussion

The findings indicate that ambulance crew waiting time is a critical issue affecting patient care, EMS efficiency, and healthcare costs. Hospital overcrowding, increased demand for emergency services, and inefficient handover processes are the primary contributors to this problem. While ambulance diversion can temporarily reduce the strain on overcrowded hospitals, it does not offer a long-term solution.

The review also suggests that improvements in hospital capacity and patient flow, as well as the adoption of technological solutions, can reduce waiting times. Real-time data-sharing systems between EMS and hospitals have demonstrated the potential to reduce delays by providing hospitals with timely information to prepare for incoming patients [7]. Furthermore, policy interventions aimed at improving hospital staffing and dedicated handover zones can streamline the handover process [8].

Potential Solutions to Reduce Waiting Time

Policy Interventions

Governments and healthcare systems can introduce policy interventions aimed at reducing ambulance waiting times. A 2020 review by the *Australian Journal of Paramedicine* suggested that increasing hospital capacity and improving patient flow could significantly reduce waiting times [8]. Policies such as the introduction of dedicated ambulance handover zones within hospitals and the employment of more hospital staff specifically tasked with patient intake could help streamline the handover process.

Technological Innovations

Technological solutions have the potential to greatly improve the efficiency of ambulance handovers. For example, real-time data-sharing systems between ambulances and hospitals can provide hospitals with estimated arrival times and patient information before the ambulance arrives. A 2021 pilot project in Canada demonstrated that implementing a mobile app to share this information reduced waiting times by 15% [7]. These innovations help hospitals prepare in advance, reducing delays in patient handover.

Improved Communication and Coordination

Better communication and coordination between EMS and hospital staff are essential for reducing ambulance waiting times. Hospitals can establish clear protocols for

handover procedures and prioritize patients arriving by ambulance. Regular communication between ambulance dispatch centres and hospitals can also ensure that hospitals are prepared for incoming patients, reducing waiting times.

Conclusion

Ambulance crew waiting time is a complex issue with serious implications for patient outcomes, EMS operations, and healthcare system costs. Hospital overcrowding, increased demand for emergency services, and inefficient handover processes are the primary contributors to this problem. Addressing these challenges requires a combination of policy interventions, technological innovations, and improved communication between ambulance services and hospitals. By reducing ambulance crew waiting time, healthcare systems can improve patient outcomes, increase EMS efficiency, and alleviate the economic burden on healthcare providers.

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