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## Emergency Department to ICU Time and Mortality



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Delays in transferring patients from the Emergency Department (ED) to the ICU could delay treatment, leaving the patient at risk. A recent study explored the impact of this and found that increased ED to ICU wait times were associated with increased hospital mortality.

Data was used from the Dutch quality registry National Intensive Care Evaluation, covering 14,788 patients admitted to the ICU through the ED from 2009 to 2016. This data was gathered from across six university hospitals in the Netherlands and researchers were able to apply a logistic regression model and ultimately analyse the odds ratios of the individuals. The primary outcome of the study was the effects on hospital mortality with the secondary outcomes being 30- and 90-day mortality and ICU mortality.

The results of the study concluded that long ED to ICU wait times (of greater than 2.4 hours) was linked to increased hospital mortality. It was also found that patients with a high Acute Physiology and Chronic Health Evaluation IV (APACHE IV) probability – defining the most critically ill patients – were the most affected by increased transfer times to the ICU. Regarding the 30- and 90-day mortality, similar results could also be seen, however, effects on ICU mortality was unclear.

Researchers mentioned several factors which could have influenced ED to ICU wait times, including triage, care in the ED, bed capacity, time of admission and the admission diagnosis. Triage systems in hospitals need to be accurate; and as this could be a contributing factor to hospital mortality, researchers suggested that hospitals may need to implement additional systems or prediction models to ensure that the most critically ill patients are identified.

Care in the ED was also identified as a possible factor. Due to the strain on medical staff in this department, critically ill patients may not be able to receive the medical attention they need immediately. Previous studies have also noted that admission into the ICU was often quicker when there was increased bed capacity available, ensuring this may reduce the strain on the ED and reduce hospital mortalities for the most critically ill patients. In this current study, researchers also analysed whether the time of admission (day or night) affected delays of ICU transfers, of which they found no impact.

Concerning admission diagnosis, researchers looked into whether the diagnosis by itself could influence transfer times to the ICU. Cardiac arrest was found to be the most common diagnosis for those admitted into the ICU and the study showed that increased wait times, for these patients in particular, led to increased hospital mortality. However, due to the size of the cohort studied further research would need to be done on a larger sample size.

Source: [Critical Care Medicine](#)

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