

Crowding of Emergency Departments: An Assessment of the NEDOCS



Emergency department (ED) crowding is a global issue with a significant impact on patient outcomes, including increased medical errors, higher inpatient mortality, and poorer quality of care. It also leads to inefficiencies, such as longer waiting times and more patients leaving without being seen. The primary causes of crowding are staff shortages, sudden surges in patient arrivals, and a lack of hospital beds.

Various indicators have been proposed to measure ED crowding, ranging from simple metrics like occupancy rates to more complex composite indicators. The National ED Overcrowding Study (NEDOCS) is one widely used composite tool developed. It includes factors such as the number of patients in the ED, the number waiting for a hospital bed, and the longest waiting times. While NEDOCS has shown some effectiveness in measuring crowding, it has faced criticism for not always aligning with emergency physicians' perceptions of crowding.

A key consequence of ED crowding is delays in patient assessment and treatment, which is why researchers in Lombardy, Italy, evaluated the relationship between NEDOCS scores and patients' waiting times for a physician's first assessment. Waiting times are considered a reliable indicator of crowding and were also used to develop a new crowding metric.

To evaluate the NEDOCS, researchers used 2022 data from all Lombardy EDs, comparing waiting times across the five NEDOCS levels at ED arrival. A new crowding indicator was developed by analysing the relationship between the total number of ED patients and the waiting times for those with minor or deferrable urgency. Seven waiting time classes were defined, and the corresponding average waiting times were calculated for each class. These centre-specific cutoffs formed a 7-level crowding indicator, which was then compared to the NEDOCS score and validated with data from the first half of 2023.

The study found no correlation between the NEDOCS score and increased patient waiting times, suggesting that the NEDOCS does not effectively reflect the impact of ED crowding on the ability to evaluate new patients. In contrast, the proposed new indicator, which is easy to estimate in real-time and based on centre-specific cutoffs related to yearly patient volumes, showed minimal agreement with the NEDOCS in most EDs during both the development and validation phases.

Researchers propose the new objective crowding indicator based on patients' waiting times, specifically for those with minor or deferrable urgency. The research found that waiting times for these patients were directly linked to the total number of patients in the ED, confirming that delayed assessments are a clear consequence of crowding. In contrast, the NEDOCS failed to capture this effect, especially during high-level crowding conditions. The new indicator is real-time, easy to calculate, and based on centre-specific cutoffs derived from the total number of patients in the ED, offering a more straightforward way to assess crowding levels across different EDs. However, the study acknowledged limitations such as not accounting for patient complexity and relying on centre-specific cutoffs that need to be updated regularly.

Despite these limitations, the new indicator is easy to implement, adaptable across different EDs, and offers a clear, real-time measure of crowding. Future validation studies, including a prospective comparison with ED staff perceptions, are needed to further assess its accuracy and reliability in real-world settings.

Source: [BMC Emergency Medicine](#)

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Published on : Mon, 21 Oct 2024

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