



Implemented machine learning tools to inform decision-making for patient care in hospital settings: a scoping review

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Summary

This study explored the use of machine learning (ML) tools in hospitals to support healthcare professionals in making patient care decisions. Through a review of existing literature, the researchers examined the types of ML tools implemented, the strategies used to integrate them into clinical practice, and the outcomes associated with their use. The findings underscore both the potential of ML tools to support clinical decision-making and implementation challenges, particularly those related to system integration, clinician acceptance, and the need for ongoing training and support.

What does this mean?

The study suggests that ML tools hold significant promises for improving patient care by providing clinicians with data-driven insights. However, their successful implementation depends on several critical factors, including robust technological infrastructure, active clinician engagement, and strong organizational support.

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What is the current situation?

Hospitals are increasingly adopting ML tools to support clinical decision-making. These tools process large amounts of data to generate insights that can aid in diagnosis, guide treatment planning, and assist with patient monitoring. However, integrating ML into everyday clinical practice remains challenging. Success depends on ensuring these tools fit smoothly into existing workflows and that clinicians receive sufficient training to use them effectively.

What questions did we aim to answer in our research?

1. What ML interventions have been used to inform decision-making for patient care in hospital settings?
2. What strategies have been used to implement these ML interventions?

How did we approach these questions?

The research team conducted a scoping review of the literature, systematically searching multiple databases for studies that described how ML tools (such as AI-based computerized decision support systems or 'model-based' decision support systems) have been implemented in hospital settings. Studies were selected using predefined criteria, and data were extracted to map the types of ML tools used, the strategies applied to implement them, and the outcomes reported.

What answers did we find from our research?

The review identified a range of studies detailing how ML tools have been implemented in hospital settings, particularly for predictive analytics, diagnostic support, and treatment recommendations. Implementation strategies varied, but frequently included clinician reminders, facilitated relay of clinical information, and staff education. Common barriers to adoption included concerns about tools reliability and the time required to use them. Reported outcomes from successful implementation included improved accuracy and efficiency in clinical decision-making.

How confident are we in these findings?

The findings are based on a comprehensive literature review, providing a broad overview of how ML tools are currently being implemented in hospital environments. While the review provides valuable insights, the diversity in study designs and clinical contexts indicates that further research is needed to draw firm conclusions about the overall effectiveness of ML tools in hospital settings.