
Human Factors Engineering Improves CDS Usability for Pulmonary Embolism Diagnosis



According to a recent study published in the *International Journal of Medical Informatics*, poor usability continues to plague clinical decision support (CDS) despite its potential to improve patient safety. Although human factors engineering (HFE) approaches are recommended, few studies have investigated the impact of applying HFE methods and principles on CDS usability. Therefore researchers at Vanderbilt University and the University of Wisconsin-Madison sought to identify and describe the usability barriers and facilitators of an HFE-based CDS for diagnosing pulmonary embolism before its implementation in the emergency department. They determined that CDS usability can be improved through the following:

- HFE design principles should be systematically considered.
- Workflow integration should be regarded during the design stage.
- The Scapin and Bastien usability criteria support workflow integration during a technology's design.

The research team interviewed 32 emergency department physicians and identified 177 facilitators of and 94 barriers to CDS usability. Most facilitating factors pertained to 'minimal actions' criteria, like automatically populating vital signs into the CDS. Usability barriers for pulmonary embolism diagnosis included 'compatibility' issues like workflow integration, which was not explicitly considered in HFE.



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The research group concluded that using HFE principles in CDS design can improve CDS usability and emphasised that 'workflow integration should be explicitly considered in the design of health IT.'

Source: [International Journal of Medical Informatics](#)

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