



## Synopsis

# Digital alerting to improve sepsis detection and patient outcomes in NHS Trusts: a multi-methods study

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## Plain language summary

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## Plain language summary

Identifying when a patient's condition is getting worse is a major priority for health systems worldwide. One important cause of clinical deterioration is sepsis, a serious and potentially life-threatening response to infection. In the United Kingdom, sepsis affects an estimated 123,000 people each year and is associated with around 46,000 deaths.

Hospitals use early warning systems to identify patients whose condition may be worsening and to help prevent avoidable deaths. Many of these systems are based on routine measurements, known as vital signs, including heart rate, blood pressure, temperature and oxygen levels. Each measurement is given a score depending on how abnormal it is, and these scores are added together to indicate whether a patient may be at risk.

As hospitals have moved from paper-based records to electronic health records, many early warning systems have been digitalised. This allows vital signs and early warning scores to be monitored automatically and enables digital alerts to be generated when patients show signs of deterioration. These alerts are intended to prompt clinical staff to review patients quickly and take appropriate action.

The Digital Alerts for Sepsis study investigated how digital sepsis alerts affect patient outcomes and staff activity in NHS hospital trusts across England and Wales. Introducing digital alerts into hospital care is complex, as it involves new technology and changes to clinical practice. We therefore used a mixed-methods approach to understand how features of the alerts, such as the underlying algorithm and how clinicians are notified, work in practice. We evaluated digital screening tools across four NHS Trusts.

We examined whether these digital tools reduced deaths from sepsis. In some hospitals, we found a reduction in sepsis-related mortality after the screening tools were introduced. We also found that the tools may have a greater impact for older patients.

Overall, we found that none of the tools made full use of the information already available in electronic patient records. We recommend that future digital screening tools and alerts use patient data more effectively and are designed for different patient groups, to improve their impact in real-world hospital settings.