

We don't talk about communication: why technology alone cannot save clinically deteriorating patients

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Accepted 13 April 2022

Published Online First
22 July 2022



► <http://dx.doi.org/10.1136/bmjqs-2021-014498>

► <http://dx.doi.org/10.1136/bmjqs-2021-014527>



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To cite: Manojlovich M, Krein SL. *BMJ Qual Saf* 2022;**31**:698–700.

When a hospitalised patient begins to deteriorate clinically, prompt detection and early intervention by trained clinicians is critical for preventing in-hospital cardiac arrest. This is a common event that affects nearly 300 000 patients annually in the USA¹ and is associated with a high risk of death and neurological disability among survivors. A broad range of strategies have been proposed for the early detection and management of the deteriorating patient. Early warning systems (EWS) are an example of one strategy. EWS use clinical prediction models to identify patients who are likely to be deteriorating, with triggers and protocols for detecting and escalating care for such patients.^{2 3}

The use of EWS to monitor patients is now widespread, and two papers in this month's issue of *BMJ Quality & Safety* address this topic in different ways. First, Blythe and colleagues conducted a scoping review of real-time automated clinical deterioration alerts, which are part of an EWS, and importantly also sought evidence of their impact on patient outcomes.⁴ In contrast, Crotty and colleagues reported on implementation of an EWS algorithm and associated virtual nurse monitoring team, and sought to understand nursing perspectives on it using qualitative methods.⁵

The research question for the scoping review asked whether prediction models providing real-time clinical deterioration alerts lead to improved patient outcomes, compared with standard care. The authors followed a rigorous process for selecting studies, extracting data and synthesising the findings of the 18 included studies. There was heterogeneity in who the alerts were directed to, with some studies sending alerts to nurses in charge, others to a rapid response team, a remote-monitoring nurse, physicians, a

bedside nurse or a central nursing station. A range of outcomes were investigated including mortality, in-hospital cardiac or pulmonary arrest, intensive care unit admission and length of stay. Only 5 of the 18 studies used what were deemed robust study designs, and of these, only one reported a statistically significant improvement in patient outcomes. One of the conclusions of this review was that among studies reporting multiple improvements in patient outcomes, the type of EWS was not as important as who the alerts were directed to, and that alerts directed to a dedicated surveillance nurse or the patient's physician were associated with better outcomes.

Crotty and colleagues' single-site qualitative study investigated EWS from the perspective of bedside nurses. An EWS had been implemented 1 year previously, supplemented by a centralised team of nurses who virtually monitored alerts and informed nursing staff accordingly. The authors conducted 28 focus groups on six inpatient units, with a total of 227 nursing staff taking part. Units were stratified by alert frequency, ranging from less than 50 alerts per month to over 100 alerts per month. Data were analysed using a grounded theory approach. Six principal themes emerged: alert timeliness, lack of accuracy, workflow interruptions, actionability of alerts, underappreciation of core nursing skills and the opportunity cost of deploying the EWS programme.

The scoping review was unable to identify a consistent improvement in patient outcomes with an EWS, and the six principal themes noted above offer some possible reasons for why that might be. Another reason might be that we have not paid enough attention to communication among clinicians. Communication is defined as an interpersonal process where

shared understanding develops between communicators to generate an effect or action.^{6,7} Nurses—the 24-hour surveillance system for hospitalised patients—are often the first to detect early signs of patient deterioration.^{8,9} As suggested by both Blythe and Crotty and their colleagues, the nurse may be aware of the patient's clinical decline even before the EWS alert. However, the detection of clinical deterioration must be communicated to others, and this communication can be fraught and/or ineffective.

Many factors influence the communication needed to prompt appropriate action. For example, urgency has a major influence on communication but it manifests in different ways, all of which have implications for what gets communicated, to whom and how. First, nurses and physicians may have different perspectives on the same clinical situation that affect their perceptions of what is important or urgent.^{10,11} Nurses' sense of urgency is often based on their subjective knowledge of the patient and the context of the situation, whereas for physicians, urgency is often based on objective clinical data.^{10,11} Second, the experience levels of both nurses and physicians can influence what they perceive to be urgent and worthy of raising the alarm. It is only through experience that clinicians (including both physicians and nurses) learn about the large variation in physiological parameters that constitute 'normal' for one patient and severe decline in another. Third, urgency can be dependent on the relationship between a nurse and a physician. A physician who has a good relationship with a nurse will be more likely to trust that nurse, believe them when they say the situation is urgent and appreciate their core nursing skills. Indeed, this is one of the key findings in the study by Crotty and colleagues. However, the same physician may choose not to respond to another nurse's message either because their relationship is poor or because they do not know each other at all, with potential implications for patient safety.¹¹ Finally, patient acuity and the number of patients being cared for by a nurse or a physician vary, which can also affect perceptions of urgency. A hospital nurse usually cares for far fewer patients than a physician. As a result, the sickest patient on the nurse's panel may not be as sick as the sickest patient on the physician's panel, so that what is 'urgent' becomes relative rather than absolute.

Other factors that influence communication include inexperience, and a perceived hierarchy that sometimes places physicians in a 'superior' standing relative to nurses. Because of inexperience or fear of speaking up, nurses may have difficulty communicating their concerns (as we have seen in our own work¹²) using indirect language characterised as 'hint and hope'¹³ rather than direct communication.^{14,15} Nurses' use of indirect language further suggests uncertainty about next steps, which would influence the actionability of EWS alerts. The use of indirect communication can be confusing to

physicians who may also be looking for more objective data. Communication may be further hampered or rendered ineffective by factors such as limited time, lack of inclination to discuss with others or lack of certainty about the concern, which can lead to poor patient care decisions due to incomplete information.¹⁶

Finally, any discussion of communication needs to consider the medium used to convey a message. The use of pagers remains prevalent in North American hospitals and the use of other communication technologies continues to grow.^{17,18} However, there is little evidence that communication technologies facilitate effective communication between health professionals, in part because pagers and other communication technologies that allow information to flow in only one direction are still in use.¹⁹ Such technologies do not facilitate communication because they cause unnecessary interruptions, contribute to gaps in information exchange and create workarounds with the potential for adverse events.²⁰

All of these issues related to communication have potential to increase conflict between physicians and nurses who prioritise or interpret information differently,¹¹ or disagree on the need for action, such as calling a rapid response team to the bedside.^{21,22} It's not just physicians and nurses though. If we want to improve patient outcomes, we must pay attention to dynamics behind professional teams (from all disciplines) working together and acknowledge team dynamics and communication as an integral part of the care delivery process. Unfortunately, effective interventions for improving communication in urgent clinical situations are not yet available, so research in this area is sorely needed. In summary, technologies such as EWS are useful when considered as adjuncts to the monitoring and surveillance that nurses provide. However, they can never replace nurses or overcome some fundamental interpersonal challenges, such as those affecting clinician communication. We need to talk about communication to bring attention to that critical element, which is responsible for marshalling resources to the bedside when a patient starts to deteriorate.

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Funding Sarah Krein received funding support from the VA Research Career Scientist Award (RCS 11-222)

Competing interests None declared.

Patient consent for publication Not required.

Provenance and peer review Commissioned; internally peer reviewed.

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