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ICU Rounds: “*What we’ve got here is failure to communicate*”

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Critical care patients generate an enormous volume of data; physicians are tasked with making sense of the data and with making timely, congruous decisions regarding their care. Many of these decisions are made during patient rounds – approximately 9 per patient (1) – based on the premise that the data that inform the decisions are accurate and complete. The study by Artis et al. in this issue of *Critical Care Medicine* (2) challenges this premise.

Artis et al. examined the rate of “misrepresented” laboratory values during interprofessional patient rounds in a 26-bed medical ICU. Misrepresentations included labs that were obsolete, misinterpreted (described incorrectly, e.g., “WBC is stable” when in fact WBC has increased), incorrectly described as pending, erroneous, or omitted altogether. Twenty-six lab tests, representing a mix of common and infrequent orders, were selected that are relevant to the care of critically ill patients. Two senior critical care fellows audited 34 rounds, for a total of 301 patients and 4945 lab values. They found a high rate of misrepresented labs: nearly 39% of values were inaccurately communicated. 96% of patient presentations included at least one misrepresentation, with a mean of 6.3 per patient. Omissions comprised nearly 80% of the misrepresentations, with old data and data incorrectly described as pending accounting for an additional 14%. Only about 8% of misrepresentations were detected by someone on the rounding team, usually the attending physician.

In 94% of cases, presenters (medical students and residents) prepared a paper document including lab values and other information prior to rounds. Usually, these documents were printouts generated from the electronic health record (EHR), but some documents were manually created, and labs reported from them were no less accurate than the printouts. Not all labs were included – those that are more commonly ordered were more likely to appear on the paper document. Labs that were included were, not surprisingly, more likely to be communicated correctly.

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EHRs don't always support clinicians' workflows, leading to reliance on paper-based workarounds (3). Artis et al.'s study demonstrates this well. The EHR at their institution does not have a list of recent lab results that can be easily printed (or viewed on a shared display) for rounds, so presenters resorted to printing different EHR pages, like the progress note template, sign-out document, or a combination of both, and then wrote additional labs and notes on the margins. Even when using these methods, only 78% of audited labs appeared on the paper documents, highlighting the need for an up-to-date, consolidated, comprehensive labs summary in the EHR that can be easily shared among care providers. Novel methods for presenting lab values are promising (4,5), but their utility in supporting data gathering and reporting for rounds (and other episodes of patient-related communication, e.g., handovers) has yet to be established.

Lab results are critical to decision-making (6), but they are not always available during rounds (7,8). Artis et al. studied the misrepresentation of lab values because lab values are among the most frequently accessed information during rounds (6,9,10) and because it is simple to verify their accuracy using the EHR. The problem is not unique to lab results, however. Other studies have demonstrated poor communication of additional patient information during ICU rounds, including medications and care goals (11,12).

Artis et al. showed that even when they are available, lab results are not always reported. They did not assess whether omissions were deliberate or unintentional, which could have been useful information for designing solutions to this problem. It is possible that many unreported labs were intentionally left out to expedite rounds, which can be lengthy (13). It is arguable whether every lab value is important, but allowing inexperienced trainees to make this determination is an unsafe practice. Additional omissions may have been a result of presenters' reliance on EHR templates that did not display less frequently ordered labs.

Artis et al. are to be commended for their novel approach to an important problem. Their study, however, has some significant limitations. The magnitude of erroneously reported lab values was not reported and the judgment of which labs were misinterpreted was subjective. The reader is therefore unable to determine the impact of these misrepresentations on patient care. A creatinine of 2.3 that is reported to be 2.2, for example, would be considered an erroneous report, but whether this error is clinically meaningful is questionable. More importantly, as acknowledged by the authors, the study did not assess the impact of these misrepresentations on decision-making and, ultimately, on patient outcomes. The idea that incomplete or incorrect lab values can potentially affect patient care nevertheless has face validity; studies have demonstrated that as more patient information is reviewed during rounds, length of stay and the incidence of preventable complications decrease (11,12).

There are several factors that likely contribute to information loss during rounds, including the amount of data that ICU patients generate (14), the lack of experience of those who gather, analyze, and present these data (15), inadequate support from EHRs for this process (16,17), and the presence of distractors like noise and interruptions (6). It is imperative to develop tools that can overcome these issues and better support information exchange. The study by Artis et al. is an important first step toward quantifying the extent of the problem.

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