

# Defending Computerized Physician Order Entry From Its Supporters

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The article by Palen et al in this issue of the *Journal* is an important contribution to the literature on healthcare information technology (IT).<sup>1</sup> First, it is one of the few studies of a decision support system (DSS) that focuses on alerts for laboratory monitoring. Second, it reports negative findings; the alerts do not generate greater physician adherence to appropriate laboratory monitoring. Third, it is an especially good test of a part of a DSS: (1) physicians received elaborate 1-on-1 training on the laboratory monitoring alerts, their meaning, the triggering factors, and the timing; (2) the alerts focused on a limited set of specific medications for which the monitoring was relevant; (3) the selected monitoring alerts were carefully chosen from respected sources; and (4) local physicians reviewed and approved the monitoring guidelines (alerts), thus presumably enhancing buy-in. Last, this *Journal* was willing to publish a study of negative findings, an accomplishment in itself.

Equally important, the findings by Palen et al—and their comment that their results raise questions about computerized physician order entry (CPOE)—highlight a persistent error in the research literature on the technology, the inability or refusal to distinguish between CPOE and DSS.<sup>2,3</sup> This error impedes appreciation of the strengths and weaknesses of both technologies, and contributes to the cacophony in error reduction claims among vendors, in-house IT staff, researchers, and evaluators.<sup>4-8</sup> Note that clarification of the scope of CPOE and DSS is not a mere academic distinction. The way we define CPOE and its related advantages and problems is entwined in the political and commercial evangelizing for the technology as a redeeming force for healthcare's dual cardinal sins of high costs and medication errors.<sup>2-8</sup> The need, therefore, for a clear delineation will not only benefit researchers, but will also help the national effort at implementing healthcare IT.<sup>2-4,6-9</sup>

## The Scope of CPOE

DSS is not an integral part of CPOE.<sup>2,3</sup> Less than 10% of hospitals have CPOE,<sup>8,9</sup> and only a very small proportion of those hospitals also have DSS.<sup>2</sup> Moreover, some

hospitals have DSS without CPOE systems. The vast literature claiming that CPOE systems reduce the incidence of medication errors is often based on combining the effects of CPOE with the benefits of DSS.<sup>2-5</sup> These claims are undoubtedly not intentionally deceptive, but rather are the result of definitional sloppiness aided by the hopefulness of vendors and some researchers. Some claims for the effectiveness of CPOE systems include not only the benefits of DSS but also of electronic health records and electronic medication administration recording systems, further inflating the apparent utility of CPOE.

On the other side of the equation, when analysis of CPOE systems incorporates the problems of DSS, the results often detract from the apparent value of CPOE. Some CPOE systems are freighted with the difficulties of DSS, such as frustration with annoying warnings (alarm fatigue), conflicting criteria for warnings, physician irritation at being reminded of obvious steps, and integration of DSS plus CPOE with other IT systems (ie, pharmacy and nursing systems).<sup>2</sup> Rather than reflecting the advantages of CPOE, such expansive definitions might result in an inappropriately low estimate of the system's efficacy. Indeed, understanding the often difficult marriage of DSS with CPOE is essential to our evaluation of the contribution of Palen et al. Their findings, contrary to what the authors suggest, should not be viewed as a problem with CPOE. Palen and colleagues studied an aspect of a DSS, not of CPOE. While the warnings about appropriate laboratory tests failed to produce improvements in physicians' monitoring, the warnings, to our knowledge, did not cause the physicians to reduce the quality of their original medication orders—and writing appropriate medication orders is the primary function of CPOE.

What Palen and colleagues illustrate is how difficult it is to produce an effective DSS,<sup>2,3,6,10-12</sup> even in a trial that had remarkable resources to train each physician, select the medications and laboratory tests, etc.

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**Perverse Logic**

Those who see CPOE as a panacea for medication prescribing errors might be reluctant to accept my defense of the technology because they tend to see DSS (along with electronic health records and medical administration recording systems) as a part of CPOE, rather than as extraordinarily promising but sometimes troubled siblings. Conflating the technologies leads us to compare apples to oranges, inaccurately comparing different arrays of systems across hospitals.

I suggested above that defining the scope of CPOE is not just an academic exercise. That's because CPOE has become a part of federal healthcare policy, hospital and investor strategies, and hardball market economics. In an effort to promote CPOE as the panacea for healthcare's major problems, its supporters embrace an imperial definition of CPOE's scope and reported utility.<sup>3</sup>

CPOE is a promising technology in itself, which can be integrated with other technologies to improve its value. Its supporters only force the system to absorb the problems of other technologies if they insist CPOE systems are those other technologies—a claim I suggest is confusing and unhelpful.

Accordingly, I do not accept the suggestion by Palen and colleagues that their valuable findings oblige us to

question aspects of CPOE. Their findings do raise critical questions about DSS, and that's a serious contribution in itself.

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