

Overcoming Clinician Resistance to Medication Decision Support within CPOE

Medication decision support has emerged as a valuable tool for reducing errors and adverse drug events. This is particularly true when it is embedded within computerized physician order entry (CPOE) for use at the point of care.

Yet despite the growing popularity of CPOE and the positive impact it can have on medication error rates, hospitals continue to be vexed by adverse drug events. One primary reason for this is physician resistance, caused in large part by the belief that CPOE systems create more work and that traditional paper-based ordering is faster.

In some cases, hospitals found that physician resistance was so significant an obstacle that they "abandoned implementation plans, fearing that physician resistance could escalate to a point of 'physician rebellion.'" ⁱ

The reality, however, is that medication decision support within CPOE can accelerate workflow and increase care quality and safety.

DECISION SUPPORT AND ERROR RATES

Point of care medication decision support is effective because it overcomes the most common causes of errors. In particular, because the error in most preventable adverse events happens when drugs are ordered, "increasingly sophisticated clinical computer systems have been seen as a major opportunity to prevent inappropriate prescribing." ⁱⁱ

Medication decision support within CPOE eliminates the problem of both illegible handwriting and transcription errors, which are responsible for as much as 61 percent of medication errors in hospitals. It also lessens the risks associated with drugs that bear similar names. ⁱⁱⁱ

In doing so, medication decision support has had a measurable impact on safety. U.S. hospitals have realized a 66 percent drop in prescription errors after switching to CPOE systems. ^{iv} In Massachusetts alone, one study projected that full implementation of CPOE at all of the state's hospitals would result in the prevention of 55,000 adverse drug events each year and a savings of \$170 million. ^v

Further, CPOE has been linked to a 40 percent decline in medication error rates just among pediatric inpatients. ^{vi}

Yet despite those findings, medication error continues to be a significant problem. Studies have estimated that 2.4 percent to 3.6 percent of all hospital admissions are caused by adverse drug events, of which up to 69 percent are deemed preventable. Further, nearly 25 percent of all hospital patients experience medication errors, a 5 percent increase since 1992. Sixty percent of these prescription errors involve wrong doses or improper administration frequencies. ^{vii}

While there are numerous reasons why errors continue to occur, physician resistance to medication decision support within CPOE is a leading contributor.

WHY PHYSICIANS ARE RESISTING

In many cases, physician resistance is justified and lies within the decision support systems themselves. For example, the medication decision support tools being integrated into CPOE are often little more than pharmacist-friendly systems that have been retrofitted for physician use. These redesigns often fail to take into consideration the differences between how physicians prescribe and how pharmacists fill those prescriptions.

One example is prescribing systems within CPOE that require physicians to select medications based on preset dosages rather than allowing them to simply indicate the prescribed dosage. When the preset options do not match the desired dosage, physicians are forced to find ways to work around the limitations, which often means overriding alerts or simply not utilizing CPOE.

Also hindering physician acceptance are systems that require significant changes in prescribing practices. For example, requiring users to select a specific delivery method (e.g., CR, XR, XL and ER) from a laundry list of possibilities contributes to high rejection rates. Physician frustration with such requirements is further compounded by the rapidly growing number of delivery methods resulting from advances in pharmaceutical development.^{viii}

Other obstacles include systems that are simply too difficult to use or that have excessive nonessential, confusing or poorly constructed alerts and reminders. These cause workflow disruptions and productivity declines, neither of which the typical physician can afford to tolerate.

STRIKING THE RIGHT BALANCE

Breaking through physician resistance to medication decision support requires addressing all of these issues in a way that meets the needs of both the clinicians entering the initial orders and the pharmacists filling them. Doing so will increase physician adoption at the point of care and accelerate the reduction of adverse drug events and medication errors.

On the system side, the solution is to deliver the kind of intuitive, logical decision support and order entry options that physicians can relate to and that do not disrupt workflows or care processes.

Noted one study: “The point here is that usability matters—a lot. Developers must make it easy for a clinician to ‘do the right thing.’ In the human factors world, usability testing has had a tremendous impact on improving systems, and what appear to be nuances can make the difference between success and failure. While it should be obvious that clinical computing systems are no different, usability testing has not necessarily been a routine part of designing them. We have had many experiences in which a minor change in the way screens were designed had a major impact on provider actions.”^{ix}

For example, providing clinicians with a list of patient-appropriate dosing parameters for each medication is a simple and relatively unobtrusive way to reduce dosing variability and errors. Utilizing defaults to aid in the selection of the most appropriate initial dose can drive the same outcome.

Other suggestions include providing physicians with “complete pre-written medication orders that include dose, dose form (when necessary), route of administration, frequency and a PRN flag and reason (if necessary).

Alternatively, the system may provide separate recommendations for dose and frequency.”^x

These enhancements can decrease errors caused by unintentional oversight, a misplaced decimal point or incorrect dosing unit. As a result, they serve the dual purpose of reducing errors through dosage guidance and increasing physician acceptance by enhancing workflows.

Though potentially more intrusive, another possible resolution is to enable order reviews by algorithms that are invisible to end users and that run after obtaining the user’s dosing parameters. In this case, clinicians would be alerted only when reasonable dosing parameters have been exceeded.^{xi}

Finally, enabling human intervention in the form of reviews and evaluations to determine what is and is not working can also have a significant impact. For example, having respected clinician experts screen all alert language and recommendations prior to deployment helps eliminate controversy and increase perceived value. Tasking pharmacists with regular reviews of ignored alerts can generate a better understanding of why the warning was overridden and lead to modifications and refinements that ultimately advance acceptance.

A COLLABORATIVE APPROACH

While tweaks to the systems themselves can go a long way toward overcoming physician resistance, a comprehensive solution can only come from collaboration. Hospitals, CPOE and pharmacy system vendors and medication knowledge base vendors “need to collaborate if we are to realize the benefits of CDS and make medication use as safe and effective as possible. The importance of patient safety dictates that all parties should work on these problems expeditiously.”^{xii}

All stakeholders must work to build consensus on which contraindications to include in CPOE systems. Also critical is facilitating a means by which the effectiveness of medication decision support usage can be monitored and the resultant data shared with vendors for consideration in future system or knowledge base enhancements.

CPOE vendors should focus on developing user interfaces that present information clearly and concisely, allowing clinicians to act on alerts directly from alert screens when possible and then returning them to their previous workflows. They should support development of more detailed and intuitive knowledge bases and encourage research to deliver improved quality and breadth of currently available drug information databases.

Knowledge base vendors should work with CPOE and pharmacy system vendors to implement knowledge management tools that enable user control and allow provider organizations to customize purchased drug information without damaging information integrity. Further, when possible, knowledge base vendors should use established and emerging standards and should actively support ongoing standards development.

Finally, “the area of clinical decision support is replete with opportunities for further research” in such areas as:

- The impact of alerts on clinician behavior and care outcomes
- Optimal alert presentation
- Increasing clinicians’ sense of satisfaction with alerts and decision support
- The best means for sharing alert knowledge
- Whether physicians and pharmacists should see the same drug-related alerts ^{xiii}

But it is not just the research community that must be involved in the ongoing study of ways to increase the efficacy and, therefore, acceptance of medication decision support within CPOE. All stakeholder groups can play a role by facilitating one-on-one interviews or focus groups with providers, user lab research and quantitative surveys.

REMOVING THE OBSTACLES TO ADOPTION

Medication decision support within CPOE does reduce adverse drug events and medication errors. To have a significant impact however, providers and vendors must work together to address the obstacles that prevent physicians from embracing these important tools at the point of care.

When CPOE vendors design systems specifically for physicians’ needs — rather than retrofitting systems designed for the pharmacy — and by finding ways to deliver intuitive guidance when it is needed and alerts that advance rather than disrupt the care process, physician resistance can be overcome. As adoption and acceptance rates increase, medication errors and other adverse events will decrease.

The end result will be CPOE systems empowered by decision support that “will finally provide decision makers with tools making it possible to achieve large gains in performance, narrow gaps between knowledge and practice, and improve safety.” ^{xiv}

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