

THE PROMISE AND PERILS OF

CPOE



COMPUTERIZED PHYSICIAN ORDER ENTRY
SOUNDS LIKE A GOOD IDEA, AND IT IS.
IT ALSO SOUNDS SIMPLE, BUT IT ISN'T

Computerized physician order entry (CPOE) is an example of how a seemingly simple idea — enabling doctors to enter instructions for patient treatment directly into an electronic system instead of writing them out by hand — can become an exceedingly complex undertaking requiring respect and caution.

IT people with little understanding of healthcare often think that order entry can be directly transferred from other industries, while physicians tend to be suspicious of anything that diverges from the tried and true. While the latter might present some change management challenges, the former is downright dangerous.

The push for CPOE derives from data in both Canada and the United States indicating that the present system, dependent on fragmented, paper-based ordering, is inefficient and hazardous. In 2006 the Institute of Medicine in the U.S. concluded there were 1.5 million adverse drug events annually. In 2004 the *Canadian Medical Association Journal* published the results of a study estimating that adverse events were responsible for the deaths of between 9,000 and 23,000 Canadians each year.

Dr. Kaveh G. Shojania is familiar with arguments

both for and against CPOE: he's Canada research chair in patient safety and quality improvement at the University of Ottawa, and has extensive experience researching hospital quality measurement and medical error reduction in both the U.S. and Canada.

"I don't want people to conclude that I believe CPOE is not a good thing," he says, "but I would warn against thoughtless enthusiasm."

Although Dr. Shojania has seen some impressive implementations, particularly in the U.S., the fact that the software market is fragmented has created problems.

"There's no dominant vendor, and a lot of the software companies are coming from outside healthcare. At present there isn't a product that you can universally endorse."

That doesn't mean CPOE can't be done — it just means the IT supplier must be in for the long haul, and hospitals should take magnifying glasses to their service level agreements (SLAs). Implementing a CPOE is time-consuming and costly, and that's if you do it right. Doing it wrong could lead to an experience like that at Cedars Sinai Medical Center in Los Angeles in late 2002. Cedars Sinai put in a

By Tim Wilson

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homegrown CPOE, but within months the physicians revolted, the system was ripped out and the experience was declared a disaster.

The good news north of the border is that Canada’s stereotypically cautious approach is probably the right one. Says Dr. Shojania: “CPOE is a case where you could justify being a late adopter.”

As of 2006, Canada’s national statistics for CPOE were modest. Primary care adoption was at 14%, and hospital care at less than 10%. At present the big push is to bring CPOE into hospital environments, particularly in Alberta — by far the earliest and widest adopter in Canada — and in Ontario, where a number of hospitals are at varying stages of adoption.

The success stories in Canada all share a similar theme: go slowly, get everyone involved, and don’t expect a cookie-cutter solution from the vendor.

Mary Cornacchia, director of clinical informatics at North York General Hospital in Toronto, is involved in a complex implementation of CPOE based on applications provided by the U.S. software vendor Cerner. She

acknowledges that changes have to be built in as you go.

“In the past our staff would be part of the build,” she says, “but in this instance we tell Cerner what we want and they do it.”

Paula Rochon, a geriatrician with Baycrest Geriatric Health Care System, also in Toronto, and a senior scientist at the Institute for Clinical Evaluative Sciences, has had a similar experience with software supplier Meditech.

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The message, then, is that everybody has to be open to change. The usual suspects — nurses, pharmacists and physicians — sometimes take heat for lacking flexibility, but successful implementations also require patience and buy-in from the IT suppliers and hospital administrators. In fact, expecting input from clinicians, an absolute must for a successful CPOE implementation, means it’s often the non-medical participants who must take a back seat.

It’s also important to implement CPOE in steps, ideally in simple modules. A sensible approach is to go live first in laboratories and clinics — wait for something tried and true before moving it into emergency and the ICU.

“You need to manage expectations,” says Shojania. “Give them some candy, like automated dictation. It’s not right to string something along for years, to tell people that they can’t do things because they’re waiting for CPOE, and then to unveil something that’s so-so.”

Decision support is something of a holy grail for CPOE, but it’s also the hardest and potentially most dangerous aspect. Obvious examples of safeguard prompts are for allergies, complications related to kidney function, and contraindications across order sets. In long-term-care facilities, where people have extensive medical histories and multiple conditions, CPOE can be a blessing. In high-stress environments, however, where physicians may be less inclined to consider overrides, it has to be approached with caution.

One of the better-known Canadian CPOE success stories can be found at Toronto’s University Health Network (UHN), which has reached 90% CPOE usage and brought in its system on budget (\$5 million) and on time. The initial system was provided by Misys Healthcare (recently acquired by QuadraMed Corp.).

Stephanie Saull-McCaig, director of acute care information management, shared information management services, at UHN, emphasizes the importance of having a dedicated team to support project management. This team must involve key areas, with leaders who speak on behalf of their departments.

“There was a big effort from the project management standpoint to build and roll this out,” says Saull-McCaig. “It’s



Photo: Mike Pinder

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ongoing for maintenance and changes to existing groups. Pharmacy is the main owner for new order sets for standards and drugs.”

Change management can't be a buzzword for coercion; it has to be well integrated into project management. Historically, CPOE budgets have tended to underestimate support requirements, with project managers caught off-guard by the plethora of glitches and scenarios encountered by physicians.

But if teams are listened to, and the resulting system reflects how they work — recall it was a physician revolt that brought down Cedars Sinai — the results can be dynamic, powerful and efficient. At Baycrest, physicians can use a wireless computer on wheels, and order with each patient visit, or do it at one time at a workstation. And at North York, which launched multiple initiatives in January 2007, the plan is to have nurses scanning patient armbands using PDAs by November 2008, all within a fully closed-loop order process.

“The nurse will have access to medication with bar codes, and can order in real time,” says Cornacchia. “He or she will proceed through five rights levels, then scan an armband for documentation.”

Rights levels and fine-tuning of order sets are crucial, and standardization should only be universal where appropriate, with allowances for order sets and screens specific to each clinical service. These can be customized to specialized care, such as psychiatry, yet still fully searchable. Systems require feedback that allows for constant improvement, fixing such reported CPOE errors as orders without stop limits and lab results without time stamps.

Dr. Shojania emphasizes that decision support is by far the hardest part of CPOE, and an area where physician involvement

is a must. Over-building safety mechanisms can lead to unforeseen risks.

“The problem with alarms is that if too many go off, people eventually ignore them,” he says. “This is true in ICU, and it's true in internal medicine where there are a lot of medications.”

Shojania adds that when it comes to the dangers of “cry wolf” complacency, “Even a 20% false-warning rate might be too high.”



Photo: Stephen Ultranev

Mary Cornacchia, involved in a complex CPOE implementation, works with her hospital's software supplier to build in changes as they go.

Fragmented order display is an inherent problem: what might take a few seconds in a hard-copy environment can result in 30 seconds to a minute of scrolling screens for relevant data. The solution — standards-based decision support on one interface — is, according to Shojania, “infuriatingly difficult” and not something to be taken lightly. In Canada some small hospitals have initiatives led by individual physicians, almost as a hobby. This is a bad idea. CPOE needs group involvement — the smallest mistake, such as an error in decimal placement, could prove fatal.

In the end, slow and big are the only ways to go to make CPOE safe

and effective, mainly because this is more about efficiency than improved outcomes. Done wrong, everything falls apart; done right, big investments turn into long-term savings and modest safety improvements.

“When you look at safety studies, and compare before and after CPOE, the error rates aren't that much different,” says Shojania. “There aren't a lot of problems with messy handwriting, but it does

waste time, because pharmacists have to confirm.”

As a final example, William Osler Health Centre recently opened its new Brampton [Ont.] Civic Hospital. Billed as Canada's most advanced healthcare facility, it doesn't have CPOE. It does, however, have a bar-code system with automated dispensing to set the stage for CPOE, which ideally will be implemented in the context of physician, nursing and pharmacy input based on the realities of a functioning hospital. Go slow, go big — Osler may also be setting the stage for success. ■

Tim Wilson is our healthcare IT columnist.