

Physician Order Entry: The Wave That Never Breaks

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I GREW UP LISTENING AND WATCHING WAVES break along the shores of Nova Scotia. But it was not until I actually ventured out into the cold Atlantic water that I realized the power and forces of change that were working below the surface. As a physician, the same can be said about my decade long experience with physician order entry (POE). There have been moments when I have wondered if the wave will ever break, hoping for the time when this powerful tool would become ubiquitous in clinical practice. There have been moments when I have seen the forces of POE change medical practice for the better, helping ensure safer, faster and more efficient delivery of care. And there have been moments when I have seen the wave crash violently, causing chaos, frustration and harm. Yet I remain absolutely convinced that without POE, pursuit of the electronic patient record (EPR) is simply a bad idea, a poor use of technology and a tool of limited value, with a questionable return on investment.

It is an indisputable fact that physician order entry is key to improving patient safety through the utilization of real-time clinical alerting and other clinical decision support (CDS) interventions. Without POE it is impossible to achieve the benefits described by the Institute of Medicine, the Leapfrog Initiative and, for that matter, the clinical information strategies

of the most healthcare organizations (HCOs). It is also a fact that POE remains the exception rather than the rule in clinical practice. At first glance, this is surprising to some and bewildering to many, for it is not new. POE and the EPR are ideas that have been around for more than 20 years. The IOM's decade-old report on the computer-based patient record clearly defines POE, CDS and the needed requirements to be successful. (Institute of Medicine 1991). Health IT vendors with applications that work for the most part have been in business for some time. So why is it that the wave has never broken? What has prevented us riding a POE wave to success? And why do I think the tide has finally turned?

There are many reasons for the lack of success, and here are five of my favourites. The first is that only recently have investments in clinical information systems made it to the top of the priority list for the CEO and boards of HCOs. It is only in the last year that the overwhelming reason for such an investment has been patient safety. Historically, patient safety and POE were never the drivers for such investments; instead, the predefined goals of EPR implementations were nebulous or focused on a reduction in health record processing and storage, the reviewing of laboratory results, the documentation of nursing notes and more recently the integration of

clinical data. All of these are worthwhile, but alone result in not much more than a ripple of benefit and hardly enough to warrant rave reviews from physicians.

A second reason for lack of success is that investments have been insufficient. Physician order entry cannot be achieved without the necessary investment in an information technology (IT) infrastructure that is reliable, accessible and pervasive throughout the HCO. Physicians cannot and will not adopt these tools into practice if the computing power isn't available and accessible at the point of care, if the network is neither modern nor reliable, and if there are limited IT professionals to support them. As a result, many EPR projects simply run out of cash well before the POE phase of the project can begin.

A third reason is that we continue to allow individual HCOs to go it alone. Given the scarcity of healthcare dollars and the reality that a significant investment is required to be successful, the need to combine forces, standardize on solutions and achieve economies of scale is critical. Not to mention that many physicians are delivering care across more than one HCO. It is simply absurd to insist that we use multiple EPRs. Who has time to learn how to use the "Apple" EPR at one site and the "IBM" EPR at another? This could result in not only wasted time, but also unsafe patient care. Yet there are very few examples of HCOs that have taken advantage of proven POE solutions, banded together and "invested in success." Instead, we continue to invest in single HCO projects with limited success, projects that are weak, unable to cause a ripple of benefit, lack physician enthusiasm and often result in a sucking vortex of failure.

A fourth reason for limited success is that physician involvement in POE projects has historically been an afterthought. It is impossible to achieve success if the physicians are not involved from the start, understand the benefits, recognize the hurdles and commit to overcoming them. It doesn't matter how good the strategy is, how functional the EPR is and how effective the IT team may be – without physician buy-in, the project will fail.

A fifth reason is that healthcare informatics professionals are a rare breed. The number of colleges and universities that offer undergraduate and postgraduate training in healthcare informatics is growing, but remains insufficient. Without these professionals, it is difficult to enrol physicians in the effort, demystify POE, battle the myths and improve patient care.

I believe that if you take a close look at those HCOs which over the last decade have implemented successful EPR projects including POE, you will discover that they share the following common characteristics:

- steadfast support from the CEO and board;
- a significant initial investment, both in terms of capital and operating budget;
- the ability to achieve economies of scale to support the ongoing investment;
- initial and ongoing physician leadership and commitment to POE;
- educated and experienced healthcare informatics professionals.

So given this history, why is there reason to be optimistic and believe that the timing is right, that the stars are aligned and POE will become a tidal wave that sweeps the country from sea to sea to sea? Perhaps I am being overly optimistic, but for the first time there appears to be an accumulation of levers, drivers and forces in support of POE. Patient safety has made it to the boardroom table and is now a priority. POE has been recognized as a proven but underutilized technology that can not only decrease medical errors and enhance patient safety but also decrease unwanted practice variation and help control spiralling healthcare expenditures. The Leapfrog Group, an organization committed to improving patient safety through POE and other initiatives, has over 90 large healthcare purchasers as members covering more than 28 million Americans and spending in excess of \$52 billion in healthcare – truly a force to be reckoned with, a force that is demanding the adoption of POE. In Canada, for the first time we are seeing significant movement away from the "go it alone" philosophy. Regionalization of healthcare is providing the basis for initiatives that can be supported

through economies of scale. In addition, we are seeing a greater recognition and increased commitment of government to health informatics as an essential component to healthcare reform. Finally, we have begun to educate more health informatics professionals.


But what about the docs – are they onboard, are they committed? As a physician, I can tell you that physicians by nature are not averse to change, but they don't get onboard until the advantages are clearly demonstrable. New technologies, new diagnostic tests, new therapies are introduced into practice every day and readily, occasionally too readily, accepted by physicians. The esteemed Editor-in-Chief of this journal, a man who got me tangled up in this dream almost a decade ago, has suggested "that clinicians' reluctance to adopt clinical information systems is a good and rational thing because we have yet to offer them anything of significant clinical value" (Guerriere 2001). He has a point, but the offerings are improving, and I would politely suggest that he needs to take another look. However, without question, physician adoption and acceptance of POE needs to be approached the same way as any technology. Advantages must be demonstrated and benefits clearly shown that will result in better patient care.

First and foremost, physicians need to be convinced that POE is neither a waste of time nor simply clerical work. Although this may seem difficult to show, it doesn't have to be – provided a physician is willing to evaluate how much extra time is consumed by follow-up calls resulting from that scribbled pen-and-paper-based order that requires clarification and resubmission. If the negative impact on the other clinicians on the healthcare team is also considered, then the resistance becomes less. Add to that the power of common order sets (the ability to order numerous tests at once) and customized disease-specific protocol, and you can begin to win the argument. When doctors can order faster on-line and renew prescriptions with one click, then you're helping them get through the day. Then show physicians the value of real-time CDS, such as drug-drug interaction checking, dose and

allergy checking and drug cost comparisons, and most physicians will say, "Okay, I'll give it a try. "Next, begin to link their favourite evidence-based resources, such as the *New England Journal of Medicine*, into the process and some extra added value is seen. Finally, start providing them with analytical reports of their ordering patterns and they'll see that it closes the loop and helps improve patient care.

I do not mean to suggest that this is all it takes. It is essential that the EPR being offered has POE and CDS functionalities that are proven and comprehensive. A recent Leapfrog Report evaluating EPR vendors, specifically POE and CDS capabilities, clearly demonstrated there are at least three proven solutions available today (Metzger and Turisco 2001). Of course, response times must be sufficient, and an intuitive flexible graphic user interface and an integrated clinical desktop all add to the benefits and make the physician's acceptance much more likely. Furthermore, physician steering committees are essential, a sensitivity to change management is needed, and physician-specific education and training methods are required. In addition, a reliable IT infrastructure and accessibility to clinical workstations at all points of care is a must. If these prerequisites are met and the benefits to improving the quality of patient care are clearly demonstrable, then physicians will change and introduce the powerful tool of physician order entry into clinical practice.

To conclude, I would like to offer a potential storm-warning advisory. With all this needed attention on patient safety and the value of POE, there has been increased interest in stand-alone POE solutions – solutions that are not part of a comprehensive EPR strategy. This is an unproven approach and potentially misguided. Although stand-alone POE solutions can assist in decreasing errors related to transcription, they cannot take advantage of the wealth of EPR data to provide real-time clinical alerting such as drug-lab, drug-drug and drug-condition interaction checking. Without this, there is, at best, a missed opportunity to utilize technology to assist the physician in delivering patient care and, at

worst, the potential to increase medical errors and cause patient harm. A wave this doc hopes never to be under. 

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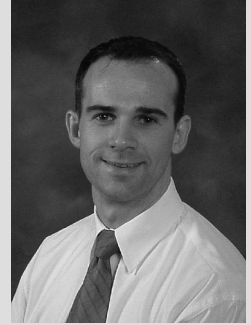
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MATTHEW W. MORGAN, MD, MSc, FRCPC is director of healthcare informatics for Per-Sé Technologies. He also performs dual roles as an assistant professor with the University of Toronto's Department of Medicine and a practicing general internist at University Health Network (UHN), one of the largest teaching hospitals in Canada comprising Toronto General Hospital, Toronto Western Hospital and Princess Margaret Hospital. Prior to joining Per-Sé in October 2000, he was director of clinical informatics at UHN.



Morgan provides healthcare informatics leadership for Per-Sé's clinical solutions. His development and research focus is the establishment of intelligent, computerized clinician order entry and real-time clinical decision support, and clinical data warehouse capabilities to support best practices including: prevention of medical errors to increase patient safety, and enhancement of clinician decision-making to produce measurable improvements in the quality and efficiency of healthcare delivery.

Morgan has served as a faculty member of the American College of Physicians' Medical Informatics Annual Symposium; co-investigator of a Medical Council of Canada grant titled *Do Web Accessible Evidence-Based Medicine Summaries Improve Internal Medicine Residents' Clinical Competence?*; and senior author of several peer-reviewed posters and papers presented at the American Medical Informatics Association (AMIA) 1999 and 2000 annual symposiums and at Canada's Health Informatics Association (COACH) and the American Health Information Management Association (AHIMA) 2001 annual conferences. Morgan is a co-author of *Electronic Medical Records: A Guide for Clinicians and Administrators*, a book published in 2001 by the American College of Physicians and the American Society of Internal Medicine (ACP-ASIM).

Morgan received his doctorate in medicine from Dalhousie University. While specializing in internal medicine at the University of Toronto, he earned his fellowship from the Royal College of Physicians and Surgeons of Canada and a Master's Degree in clinical epidemiology from the University of Toronto.