



Editorial

The Institute of Medicine's (IOM) report, *To Err Is Human*, published in 1999, revealed how tens of thousands of Americans needlessly die each year as a result of medical errors. "The Canadian Adverse Events Study," published in the *Canadian Medical Association Journal* in 2004, suggested that 9,000–23,000 Canadians die each year as a result of preventable adverse events. These and other studies have brought tremendous attention to turning the tide on this patient safety epidemic. One promising approach to addressing this medical error crisis – beyond laudable attempts to create "blameless cultures" in healthcare organizations – is the migration toward computerized physician order entry (CPOE).

This approach is further endorsed by the IOM's 2006 report that adverse drug events in the U.S. occur at a rate of 1.5 million per year. The report's authors argue that the promise of CPOE will only be fully realized if pharmacists, nurses and physicians are prepared to change how they work, they are able to work collaboratively in the design and implementation of CPOE, and healthcare executives are willing to make substantial financial investments in these systems. As experienced healthcare executives and clinicians know, having all of these conditions come together at one time is challenging, possibly explaining why only about 2% of hospitals in North America have a CPOE rate of greater than 50%. Toronto's University Health Network (UHN), featured in this special issue, has a CPOE rate of over 85%. There is much to learn from the UHN experience.

With this in mind, this issue of *Healthcare Quarterly* is devoted to the subject of how to implement major change in healthcare organizations, and specifically, the implementation of CPOE. It originated from conversations among UHN's Lydia Lee, Stephanie Saull-McCaig and Joe Nguyen, all of whom were frustrated by the dearth of published advice on CPOE implementation. Lee, Saull-McCaig and Nguyen proposed this special issue to the editors of *Healthcare Quarterly*, and for this, and their tireless efforts throughout this issue's production, they deserve a special acknowledgment.

This issue documents a five-year planning and implementation initiative at UHN. It is written for all healthcare leaders charged with major organization change, in general, and the implementation of CPOE, in particular. We have taken an unusual approach here, attempting to present this initiative from the various perspectives of the management and clinician groups involved. UHN's senior leadership, project managers, pharmacists, nurses, physicians, information technology (IT) professionals and program evaluation experts have written papers for this issue of *HQ*. This "story" moves from the UHN's leaders' decision of whether or not to invest \$5 million in UHN's version of CPOE – Medication Order

Entry/Medication Administration Record (MOE/MAR) – to the process of implementation as seen by different stakeholder groups, to an assessment of benefits to date. Each paper, with the exception of the introductory paper, concludes with a summary of "Lessons Learned" and is followed by a commentary from an industry leader.

The first paper, written by me, is intended to interest all healthcare leaders responsible for implementing complex, politically charged change. The paper is written as a "how-to" guide for change leaders in healthcare; it is tactical, and is based on my prior research and consulting experiences in healthcare organizations, on the vast literature on change management in public and private sector organizations and on the experiences (both positive and sometimes less than positive) of UHN's MOE/MAR implementers. While the change framework is brought to life with illustrations from UHN, I have written it to guide various types of change in healthcare organizations.

"The Executive Perspective: The Business Case for Patient Safety," by Matthew Anderson, Dr. Michael Baker, Dr. Robert Bell (UHN's President and Chief Executive Officer), Mary Ferguson-Paré, Lydia Lee, Emily Musing and Dr. Bryce Taylor, reveals how UHN's Executive Team made the decision to invest in MOE/MAR. Despite the IOM's call for CPOE, the decision to invest in such a decision is far from simple. UHN, regardless of its size, like all healthcare organizations, faces numerous demands on its scarce financial and human resources. This paper reports on how, in the face of several opportunities to improve clinical and operational performance, UHN's leadership determined that MOE/MAR would be the most effective way to support its patient safety mandate. Specifically, the authors address why MOE/MAR was needed at UHN; they consider the capabilities, finances and interest required to maintain and support the project and how they would sell the idea to their Board and staff. David Collins of the Healthcare Information Management and Systems Society (HIMSS), and an expert on the *return on investment* from information technology, provides a commentary on this paper.

The second paper, by Stephanie Saull-McCaig, RoseAnn Pacheco, Pakizah Kozak, Susan Gauthier and Rebecca Hahn, provides a project management perspective on the MOE/MAR implementation. While all the clinician groups were undoubtedly critical to UHN's successful implementation of MOE/MAR, the Project Management leaders were, to my mind, the unsung heroes in this story. The discipline that they and their colleagues provided to this multi-year project substantially contributed to the project's completion on-time and on-budget. Change leaders throughout healthcare can benefit from a description of the methodology they employed to keep the various MOE/MAR plates spinning in

the air (with only one, instructive, crash!). Denise Zarn provides additional thoughts on the importance of project management when implementing CPOE. Zarn is a partner in the Health and Life Sciences Practice at Accenture, Inc.

The paper by pharmacists Monique Pitre, Karen Ong, Jin-Hyeun Huh and Olavo Fernandes delves into many of the most fundamental issues of developing a medication order and administration system. Among its many important contributions, this paper raises issues about how to allocate clinician staff to the development process, the clinical challenges of system design and the profound impact MOE/MAR has on the work processes of pharmacists.

Nurses represent the largest group of employees and clinicians at UHN, and the paper by Brenda Laurie-Shaw, Wendy Taylor and Carol Roach reveals the challenges that MOE/MAR posed for this group. As with other professional groups, MOE/MAR represented substantial change in how clinical care would be provided. Yet, nurses experienced some unique challenges relating to training and education, staff shortages at a time when MOE/MAR development required extra staffing and nurses' concerns that they would be seen as less efficient during the transition from a paper-based medication system. Dr. Lynn Nagle, a Health Informatics Consultant, provides commentary.

As readers familiar with the disastrous effort to implement CPOE at Los Angeles' Cedars-Sinai Medical Center know, the support of physicians will make or break CPOE implementation. For this reason, the paper by Drs. Peter Rossos, Howard Abrams, Robert Wu and Peter Bray is a must read. These UHN physicians, all strong supporters of MOE/MAR from the start, were instrumental in ensuring that the system met the requirements of their physician colleagues. Among the questions they address are, "How can one capture the attention of already stretched physicians?" "Why would/should physicians support a change to their practice?" "Which physicians should be pursued initially?" "How can physician expectations be managed?" "How can physician support be sustained?" These authors quite rightly reveal that the process of enlisting physicians is as much a political challenge as it is a technical/clinical challenge. All change leaders will be well served by understanding how physicians are likely to see the introduction of CPOE. Two commentaries accompany this paper, one by Dr. Ben Davoren, Director of Clinical Informatics at the San Francisco Veterans Administration Hospital, the second by Dr. William Fera, Medical Director of the Wellness Center and Quality Liaison at St. Margaret Hospital, in Pittsburgh.

The final paper by a distinct professional group is written by Penny Hackenbrook-Rogers, Trevor Godfrey, David Eagan, Monique Pitre and Anna Barbosa. While especially instructive for IT professionals, this paper gets at the heart (some would say "guts") of what UHN attempted to design and implement. These authors portray the extreme complexity of adapting two

commercial vendor systems to meet the requirements of clinicians. In addition, they describe – in a style accessible to non-IT professionals – issues such as mapping paper-based processes into a computerized system, the development of thousands of medication order screens, data warehousing, the implementation of point-of-care device strategies and the challenges of balancing the varied interests of pharmacists, nurses and physicians. Denni McColm, Chief Information Officer of Citizens Memorial Healthcare in Bolivar, Missouri, a winner of the prestigious HIMSS Davies Organizational Award, provides commentary.

Readers will naturally wonder whether the seemingly Herculean efforts and vast expenses incurred by UHN were worth it. The paper by Nick Zamora, Michael Carter, Stephanie Saull-McCaig and Joe Nguyen addresses this question. The authors quantify the benefits to UHN attributable to MOE/MAR, focusing on such metrics as order and transcription errors, medication incident reporting, clinical decision support utilization and medication order processing cycle time. Not only does this paper suggest that MOE/MAR has begun to live up to its patient-safety promise at UHN, providing greater confidence to other organizations as they consider a similar initiative, but it also provides a useful methodology for measuring performance effects. Professor Denis Protti, founding Director of the University of Victoria's School of Health Information Science, comments on UHN's successes as well as on experiences beyond Toronto.

The final paper in this series by Dr. Robert Bell, Brian Golden and Lydia Lee takes a look back on the five-year initiative, from all perspectives, in order to provide a final set of observations for organizations considering the implementation of a MOE/MAR-type initiative. In that paper, we attempt to pull together a set of "Lessons Learned" that could only be gleaned by simultaneously examining the UHN change from *all* perspectives.

As will no doubt be clear from the papers in this issue, leading effective change requires not only a mastering of one's own professional domain (e.g., project managers must understand project management methodologies), but also putting oneself in the shoes of those who are being asked to change. Thus, while each paper in this issue of *HQ* was written as a stand-alone piece, and physicians will no doubt have a special interest in the article written by physician authors, pharmacists by pharmacist authors, etc., we encourage readers to explore all papers in this issue. Only then will they grasp the true complexity of the change process and draw useful lessons for their own organizations.

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