

Path Innovation: Transcending Automation

After a brief reprieve during the 1990s, healthcare again faces the vexing problem of rising healthcare costs with accompanying increases in premiums and out-of-pocket costs for consumers. At the same time, payors are expecting higher levels of service with concomitant better outcomes delivered by providers. Reimbursements to individual and organization providers are declining, although some new programs based on pay for performance attempt to reward exemplary care.

Most surprising is the recently reported evidence of clinical IT delivering increased medical errors, a result intuitively not expected and, for many, quite disappointing.

For some time now, clinical information technology has been seen as the solution to the challenges of rising costs and the need to improve quality and patient safety. Increasing numbers of organizations invest millions of dollars in clinical systems such as computerized physician order entry (CPOE), electronic medical records, clinician portals, wireless networks, and medication administration systems.

Clinical IT Struggles

Although some anecdotal reports have proved these new solutions to be promising, others have reported on delayed implementations, low clinician adoption and the delivery of poorer outcomes. While the failure to implement a CPOE system at Cedars-Sinai Medical Center in Los Angeles a few years back has been widely publicized, additional failed or lagging clinical IT implementations are not uncommon. Many clinical IT vendors report privately about their struggles to get systems up and running. Most surprising is the recently reported evidence of clinical IT delivering increased medical errors, a result intuitively not expected and, for many, quite disappointing.

In a study published in the *Journal of the American Medical Association*, Koppel, et al. (2005) reported how a CPOE system installed at an academic medical institution facilitated medication errors. The authors attributed many of the 22 types of errors to a variety of factors, including poor system design coupled with incompatible care delivery processes. These results highlight the importance of processes in the delivery of expected outcomes.

It is well known that the application of best practices and evidence-based medicine (EBM) can significantly improve clinical and financial outcomes. Many informatics experts have long thought that the implementation of clinical IT systems would bring these best practices more effectively to the physician, thereby reducing unnecessary variation in care, accelerating the adoption of new, proven diagnostic and therapeutic approaches,

and decreasing costs associated with ineffectual or inappropriate care. What we are finding is that the results delivered by this new technology are falling far short of their promise.

The failure of these clinical IT tools to deliver safer, more efficient care is due to many factors, yet all of them have origin in the concept inherent in the phrase “path innovation.” Although the theories and expertise that form the basis of path innovation are not new, their interaction with and subsequent impact on clinical IT is.

Three Key Factors of Path Innovation

Path innovation depends on three key factors:

- process improvement or re-engineering;
- clinical guidelines, clinical paths, and evidence-based medicine; and
- IT system design.

Although subject matter experts exist in all these areas, it is unclear how well these experts worked together historically in the design and implementation of clinical IT systems.

Process improvement experts understand how processes impact outcomes and what analytical steps are needed to evaluate processes. They are able to suggest changes in processes and predict the potential improvements such changes will deliver.

Experts in clinical content understand what various clinical paths deliver as outcomes. They are able to

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link various interventions with probabilistic results.

Designers of IT systems understand the flow of digital information within computer systems and the user interfaces that receive and deliver data to users. They are able to conceptualize how a data point can be stored or reformatted with other data points.

Experts Worked Independently

Almost universally, these experts work and apply their expertise independently of each other. IT system designers develop clinical IT systems using specifications developed by product managers who attempt to bridge IT with healthcare. These product managers are rarely experts in clinical medicine or clinical processes.

Clinical content experts develop clinical content focused solely on clinical issues, rarely incorporating IT system design or clinical process considerations in their work. This is evident in the effort invested by many organizations to modify existing guidelines to fit their newly implemented clinical IT systems. Their reported struggles are indicative of the difficulty of this type of work.

Process redesigners often appear on the scene late in implementations if at all. Working within the environment as presented to them, they try to change existing processes without the advantage of being able to change the inputs (e.g., clinical path) or tools (e.g., clinical IT system and its functionality) of the processes.

To implement and effectively leverage clinical IT systems, a new approach in the use of experts is required. Path innovation integrates different subject matter experts in unique ways to leverage their expertise throughout the design and implementation of clinical IT systems. Even for systems already built, path innovation can be used to better leverage existing functionality in these clinical IT systems. It can help enhance outcomes while reducing the probability of unacceptable results such as system-related medical and medication errors.

Form a Path Innovation Team

Path innovation requires the formation of a team of subject matter experts who apply their skills during an entire clinical IT system project. During the system design phase, clinical and process design experts share their understanding of their discipline with the IT system developer.

During the implementation phase, the IT system designer and the clinical content expert act as consultants to the process redesigner to develop new processes that are both radically different from existing processes and that could only be implemented utilizing functionality made available by the new clinical IT system. In addition, the clinical content expert can use this functionality to conceive of clinical paths impossible without this digital healthcare capability.

Although path innovation builds upon existing approaches, it reflects a new way of thinking and approaching problems. Instead of looking at how an existing process could be modified,

path innovation requires the birth of brand new processes, formerly impossible in the institution before the installation of the new clinical IT system. To accomplish this, organizations need to identify subject matter experts who are also able to achieve a basic understanding of the disciplines of their expert colleagues. Then together, these experts work to create new processes that incorporate the needs of the institution with the promise of new IT systems and clinical content.

An expert in clinical processes once said, "Every system is perfectly designed to achieve exactly the results it gets." Assuming this to be true, only through the creation of truly new systems (e.g., processes) using path innovation can we expect to impact results to achieve the safer and higher-quality healthcare that we all desire. 🚩

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