



Source: J. Cylus and G.F. Anderson, *Multinational Comparisons of Health Systems Data, 2006* (New York: the Commonwealth Fund, april 2007).

The idea of a paperless office never materialised as many printed out each and every email message, handling correspondence as they would a mailed letter or an interoffice memo. Then sometime in the mid-1990s, that all changed. Rather over a three-year period, using computers to communicate purchases and transfer documents became normal business. Developers and users together conceived more and more that could be conducted online.

Across most industries that deployed IT, a lag period occurred where quality and costs savings did not appear. As frustration period was, companies that continued to invest in IT, slowly began to experience the jumps in productivity and profit that was expected. Each organisation reached a tipping point where processes and workflow evolved to take advantage of the new technology to deliver unprecedented results. To look at the benefit of IT on these companies in isolation is to miss the true lesson to be learned from their experiences. Early on, the deployment of IT was viewed as the solution. Only after companies recognised it to be just a tool, they formulated the real solutions based upon revised processes and workflow which then provided much of the benefits.

Focus of revolutionary IT

Revolutionary HIT requires a focus on three key areas: 1) processes and workflows, 2) information technology tools and 3) provider tasks, duties and responsibilities.

Solutions come from an in-depth understanding of tools and creative thinking around what healthcare professionals can do best to use their individual skills. Bringing together experts in clinical medicine, information technology and process redesign to create an environment where the best processes and workflows effectively leverage the new HIT tools. Such diverse working groups facilitate meaningful knowledge transfer and the development of solutions that transcend the expertise inherent in each silo of knowledge.

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

Three key factors of path innovation

Path innovation is dependent upon three key factors: 1) Process improvement or re-engineering, 2) Clinical guidelines, clinical evidence-based medicine, and 3) IT system design. Although subject matter experts exist in all these areas, it is unclear how these experts historically worked together 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. Clinical content experts understand what various clinical paths deliver as outcomes. They are able to 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 conceptualise 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 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 focussed solely on

issues, rarely incorporating IT system design or clinical process considerations in their work. This is evident in the effort in many organisations to modify existing guidelines to fit their newly implemented clinical IT systems. Their reported struggle: 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, they try to change existing processes without the advantage of being able to change the inputs (e.g., clinical path) of the 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 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 that apply their skills during an entire clinical IT project. During the system design phase, clinical and process design experts share their understanding of their discipline with the system developer.

During the implementation phase, the IT system designer and the clinical content expert act as consultants to the process 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 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 nonexistent in the institution before the installation of the new clinical IT system. To accomplish this, organisations need to identify subject matter experts who are also able to achieve a basic understanding of the disciplines of their expert colleagues. Then together, they work to create new processes that incorporate the needs of the institution with the promise of new IT systems and clinical

Valued solutions offer these professionals HIT tools that leverage their unique skills, while organising the processes and workflow to deliver a consistently high quality, safe and efficient healthcare outcome.

Need to Change

Inherent in revolutionary HIT is the need for change; change in what professionals do and how they do it. Therefore, effective management techniques must be utilised to facilitate the acceptance of the new processes and workflows, in addition to their responsibilities and duties.

Currently patient delivery relies upon an unreliable system of poorly integrated and highly variable healthcare professional skills. Revolutionary HIT solutions provide needed support tools that increase the reliability of the human components, while integrating these components through effective processes and efficient workflows.

Revolutionary HIT fundamentally changes what physicians, nurses and other healthcare professionals do. Physician activities become more challenging on a cognitive level as other routine tasks such as drug dose recall, use of best practice orders and drug-allergy checking become automated. Physician expertise is assigned to more important tasks including solving difficult diagnostic problems, devising customised patient treatment plans, and influencing patient adherence to chronic disease care regimens.

Work for nurses and other healthcare professionals changes dramatically too. These professionals, guided by intelligent processes and workflows that include meaningful HIT, complete more tasks formerly done by physicians or other healthcare specialists.

Revolutionary HIT places the right professional, with the right knowledge in the right process, utilising the right workflow to deliver the best evidence-based care to the patient. Care delivery

is focussed on the patient and their needs rather than the requirements of unchanged, ineffective workflows established by the dawn of information technology.

For information technology to play a valuable role in reducing healthcare costs while enhancing quality of care, it must be used in a revolutionary way that completely reinvents how care is delivered, how professionals provide the care, and how technology is leveraged throughout care delivery. In addition, if we embrace path innovation, and incorporate it proactively into our deployment of information technology, we will then be able to accrue the huge increases in quality, patient safety and efficiency we expect from these revolutionary tools.

References

- Chaiken, B. P. (2005). Path innovation: Transcending automation. *Patient Safety and Quality Healthcare*, 2(3), 47
- Chaiken, B. P. (2007). *Patient flow: A powerful tool that transforms care. Patient Safety and Quality Healthcare* (3), 6-7
- Reinhardt, U.E. (2004). *U.S. health care spending in an international context. Health Affairs*, 23(3), 10-25
- World Health Organization. *The world health report 2006*
- Commonwealth Fund. *Healthcare spending and use of IT in OECD countries, May/June 2006*