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The Clinical Information System

At the Heart of Healthcare IT

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Clinical Information Systems (CIS) are becoming critical to hospital IT infrastructure, in terms of their impact on the security of healthcare delivery in an increasingly open, networked environment. The key technical challenges are to reconcile conflicting requirements, such as providing privacy of patient-specific information while giving patients control over their personal health information. However, a buy-in by its eventual users is also a major challenge, which must be accommodated upfront. Given below are personal accounts by two IT experts in the CIS field, one from European another from the US.

A Risky Business

Landing on the Moon is Easier than Putting It to Work in the Hospital

The introduction of information systems in health care organisations is a risky business.

The grandfather of medical informatics in the United States, Dr Morris Collen, once wrote that putting a man on the moon is easier than implementing an information system in a hospital.

It is needless to point out that the track record of such initiatives has been dismal. Sometimes a botched-up project is widely published, such as the failed implementation of a computerised physician order entry system in Cedars-Sinai Medical Center in Los Angeles. Most, however, remain anonymous.

Barriers to Openness

Issues of shame, blame, reputation and litigation often prevent organisations to be open about their IT experiences. The situation is, moreover, unlikely to change in the near future. I have studied the introduction of computerized physician order entry systems (CPOE) in Dutch and American hospitals. CPOE is about physicians entering medical requests and retrieving after some time the results. 70% of medical requests (or orders) are about medication. The rest concerns radiology and laboratory tests.

In a 2004 survey of CPOE implementation in the United States [J Am Med Inform Assoc 2004;11 (2): 95-9], Joan Ash and her team showed that less than 10% of the hospitals have adopted the technology, and there is no indication that the figure has improved since then.

Often poor physician involvement is cited as a failure factor. While non-involvement of physicians will certainly result in implementation failure, it is however only a part of the whole story. Currently, there is no major clinical IT implementation project that does not involve physicians.

Same Systems, Different Outcomes

I have done an in-depth investigation on the implementation of a CPOE system at two Dutch hospitals ['Same systems, different outcomes - comparing the implementation of computerized physician order entry in two Dutch hospitals', Methods Inf Med 2006;45 (1) : 53-61].

One ended in failure. The other became, after some time, a success. In both projects, physicians were involved, from the very beginning of identifying needs to the actual acquisition and configuring the system for use in practice.

When – during my study – it became clear that the implementation in one hospital was going to fail, I decided to look precisely at what doctors do. There were obvious problems. The implementers thought that a Windows interface would facilitate use. The opposite was true. It slowed down work and secretaries handling appointments for patients were not par ticularly happy. The older, command-key based system had been accommodated seamlessly in their daily work. But when the doctors realised that they had to use the system as well, then they started to rebel. One of them said that the system required doctors to send electronic notes. “Doctors don’t send notes. They have other people doing that for them.” This remark prompted me to conclude that doctors are not necessarily looking at the properties of a system, but are concerned how their way of practicing medicine might change as a result of a putting a new system in place.

Guidelines and Waypoints: A Reality Check for Success

In this case the doctors considered it not to be in their best interest to adopt the system. I conclude therefore that discussions about implementing a new clinical system should address primarily the practice of medicine, and do so along the following lines:

Ó Are we, doctors, doing the right thing?

Ó How do we know that we take our patients seriously?

Ó How about the quality of our way of prescribing medication?

Ó How about collaboration with our colleagues and nurses?

Design and implementation, in consequence, should not necessarily heed to the wishes and whims of doctors. Hard questions about the practice and organisation of medicine need to asked and resolved.

It is upon acceptance of possible changes in the way doctors practice medicine that the implementation of clinical information system can increasingly become more successful than it has so far.

The Drivers Seat

For that reason alone the doctors need to be in the driver’s seat. They must be leading the way for the introduction of clinical systems, knowing that society requires them to deliver the best quality care they can and holds them accountable.

CPOE is a very interventionist technology because it relates directly to decisions that doctors make about patient care, and holds promise to improve the quality of care. In my study I found that implementation trajectories take many years to complete. Managers, doctors, government are often impatient and want to see quick results.

Imperatives of Patience

I believe that these long periods are intrinsically part of getting clinical systems to work successfully. It is a learning period for all involved, for doctors to adopt new practices and responsibilities, for IT staff to accept that the systems will not look like how they were originally conceived and hospital administrators to find out how clinical data can be used to govern their institutions effectively.

The best way to implement clinical systems is not by adherence to detailed organisational and technological blueprints, but to harbor a vision of high quality patient care, and institute an implementation path that is characterised by improvisation to cope with new and unexpected challenges and problems of health care delivery.

This process was aptly described as ‘bricolage’, by Claudio Ciborra in the 2002 Oxford University Press publication ‘The Labyrinths Of Information: Challenging The Wisdom Of Systems’. The underlying philosophy is to allow users to tinker with a system in order to find how it fits best in their new emerging practices.

The Clinical Information System

The clinical information system (CIS) sits at the crossroads of a wide variety of healthcare IT applications. At the baseline, CIS systems consist of a centralised database on patients and their current healthcare status, treatment history and conditions. Modern, state-of-the-art CIS systems provide access and updates to such information in close to real-time, and do so increasingly across distributed locations – including those outside the physical boundaries of a specific hospital. Eventually, CIS systems will also hold genetic, socio environmental and other forms of information about a patient.

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