

# The Importance of Leadership in the Clinical Information System Implementation Process

## Introduction

Healthcare organizations are searching for ways to improve the quality of care they deliver while simultaneously attempting to reduce costs and improve levels of service. Such efforts require important changes in the way healthcare organizations function. Following publication of an Institute of Medicine (IOM) report (*The Computer-based Patient Record – An essential technology for health care*) in 1991, many organizations began development of large-scale, integrated clinical information systems (CIS) to improve coordination of care and management of clinical practices [1].

Another IOM report (*Crossing the Chasm: A New Health System for the 21<sup>st</sup> Century* [2]) made it apparent that the U.S. healthcare system is in need of fundamental change. This report notes that the adoption of robust clinical information systems is key to achieving these fundamental changes.

**While a CIS can play a vital role in this process, they are very costly to develop or purchase, and there is considerable evidence that implementation of them is difficult to achieve, with reported failure rates of 30% or more [3].** This brief review of the literature focuses on the importance of senior leadership and local champions \* during the difficult period of system implementation and organizational change.

## Key Factors that Predict CIS Implementation Success

Much research has been done in an attempt to identify the key factors that predict CIS implementation success. **Over 150 factors have been identified, but only two "top management support" and "user involvement" are consistently associated with successful implementations [4].** Several additional key elements have been repeatedly identified:

1. "Buy-in" of the organization [5] is important. All users must clearly see the need for the change if they are to support it.
2. There must be a clear understanding that significant change occurs in multiple stages, and that errors in any of the stages can have devastating consequences [6].
3. Local champions must actively and enthusiastically promote the system, build support, overcome resistance, and ensure that the system is actually installed and used [7].
4. Senior management must be able to understand and address the challenges ahead and capitalize on opportunities for quality improvement and cost reductions [8].

5. Finally, it must be recognized that it can take at least 6 months of CIS usage before any decisions about the success of the technology introduction (particularly in terms of individual worker productivity) can be made [9].

## **Organizational Change vs. the Match between the CIS and the Environment**

Various evaluations of both successful and unsuccessful CIS implementations conclude that in order to be successful the CIS must "match" the organization in relation to a variety of technical (e.g., does the new CIS work on the currently installed hardware?), social (e.g., does the CIS provide all the features and functions required to replace the current elaborately designed formal and informal communication networks?), and organizational (e.g., does the CIS support the mission of the organization?) factors, including the perceptions of key stakeholders (i.e., the clinical users of the system) and organizational leadership.

Unfortunately, since the goal of the CIS is to change the organization so as to bring about cost reductions and improvements in quality, the CIS by definition must NOT match the current environment [10]. Change management and organizational development activities must accompany the introduction of a CIS, and the CIS, while often "ahead of the organization" in this regard, must not be so far ahead of the process that it causes the organization to give up before the race is over.

Therefore, a key requirement of senior leadership is to carefully manage the trade-off between the healthy changes introduced by the CIS and the increased risk that the CIS implementation will fail because of those changes. Studying notable system failures can yield as much information as learning from successful CIS implementations. The following sections briefly describe two such events.

### **Notable System Failures and Near Misses**

In 1988 the implementation of a clinical information system at the University of Virginia (UVA) required physicians to use the new system for order entry. This proved to be so unexpectedly difficult that the house staff staged a two-day work-action, resuming their normal work routines only when their superiors insisted that the system was strategically important and would continue in operation.

There were practical problems with delays, cost overruns, and awkward technology, but all were minor compared to the resistance of employees to the disruption of their traditional work practices and institutional assumptions. The CIS finally started to work only after a team comprised of both staff and administration started to regularly discuss the problematic issues that were arising because of the new system\* [11].

In 1989 the New South Wales Health System, Australia, , a large (7 million patients, 100,000 employees, \$5 billion budget), geographically distributed (area larger than Texas) system, began implementation of a patient accounting (PAS) and clinical information system throughout all of its hospitals and clinics. The pilot implementations of the PAS generally went off successfully. The clinical order communication system was a much greater challenge because:

1. Order entry required a substantial involvement of the medical staff.
2. The principal gain for clinicians lay in the reporting of pathology results, which required an effective integration with the pathology system.

In many ways the system was not well designed for this specific healthcare system. Tasks that had previously taken 20 seconds now took several minutes. Although there were several important successes due to improvements in clinical operations, dissension among the clinical staff increased as work on the system progressed, and following a change in local government, the implementation was stopped. While the losses were substantial including financial costs, delays in implementing the strategy with their associated opportunity costs, and the distrust generated by centralized information technology services, there were significant gains in the form of the communication infrastructure, installed hardware, and increased familiarity of staff with computers.

They also learned a lot about the complexities of large-scale CIS implementations and the importance of intense senior-level management effort [12]. A key lesson that can be extracted from this report is the importance of proven fit between the CIS and the healthcare organization. One of the most important selling points for the in-house development of a CIS project is that it can be specifically designed with a particular institution's model of healthcare operations in mind. No commercially available CIS can make that claim.

## **Summary**

Implementing a CIS is always difficult. The requirements to balance the multitude of trade-offs between the various factions involved in the process puts senior leadership in a vital, but unenviable, position.

One of the most important lessons that pioneers in this field have learned is that people-based skills such as cooperation, leadership, and creative thinking are just as important as the technology itself.

Finally, one should keep focused on the overall goal of CIS implementation: improving the quality of care delivered while lowering its costs. It is worth the effort.

## References

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