Chapter XIII
Operationalizing the Science:
Integrating Clinical Informatics into the Daily Operations of the Medical Center

Joseph L. Kannry
Mount Sinai Medical Center, USA

ABSTRACT

Healthcare IT (HIT) has failed to live up to its promise in the United States. HIT solutions and decisions need to be evidence based and standardized. Interventional informatics is ideally positioned to provide evidence based and standardized solutions in the enterprise (aka, the medical center) which includes all or some combination of hospital(s), hospital based-practices, enterprise owned offsite medical practices, faculty practice and a medical school. For purposes of this chapter, interventional informatics is defined as applied medical or clinical informatics with an emphasis on an active interventional role in the enterprise. A department of interventional informatics, which integrates the science of informatics into daily operations, should become a standard part of any 21st century medical center in the United States. The objectives of this chapter are to: review and summarize the promise and challenge of IT in healthcare; define healthcare IT; review the legacy of IT in healthcare; compare and contrast IT in healthcare with that of other industries; become familiar with evidence based IT: Medical informatics; differentiate medical informatics from IT in healthcare; distinguish medical, clinical, and interventional informatics; justify the need for operational departments of interventional informatics.

INTRODUCTION: THE PROMISE AND CHALLENGE OF INFORMATION TECHNOLOGY IN HEALTHCARE

The promise has always been that healthcare information technology (HIT) should be able to deliver rapid, relevant, and accurate information to clinical providers thereby providing greater efficiencies in patient care, facilitating excellence in patient care, and making improvements in patient safety possible (Bates & Gawande, 2003; Chaudhry et al., 2006; Millenson, 1997; Pizzi, 2007). Healthcare is an information intense industry (Stead, 1999) and by its very definition information technology "…specializes in the delivery and the management of information" (*IT Definition*, 2007). Not surprisingly HIT is frequently cited as the solution to all that ails healthcare (Coye, 2005; Institute of Medicine (U.S.) Committee on Improving the Patient Record, Dick, & Steen, 1991; Institute of Medicine (U.S.) Committee on Improving the Patient Record, Dick, Steen, & Detmer, 1997; Marchibroda & Gerber, 2003).

This belies a repeated inability of industry vendors to fully deliver on that promise as noted in a 1997 panel in Healthcare IT. In 1997 a panel of CEOs from Cerner, Eclipsys, HBOC and MedicaLogic noted only 60 percent of implementations of stable clinical products occurred on time and in budget, only 50 percent of available clinical function is used (Kuperman, Leavitt, McCall et al.,1997). There is general agreement that implementation problems stem from inability to integrate projects into existing workflow (Stead, 1999; Stead, Miller, Musen, & Hersh, 2000). This author and Ms. Kristin Myers have similarly noted that its process, people and workflow integration that are the key and not technology (Kannry, Mukani, & Myers, 2006; "Thinking About…Implementing the EMR," 2006).

At the same time there is general agreement that healthcare in the United States is in crisis whether it be due to the cost of healthcare, the lack of standardization and delivery of best practices, or issues of patient safety. Healthcare is an information intense domain (Kleinke, 2005) and clearly needs the efficiencies that IT can deliver. If information technology should be good at one task that task is managing information.

A frequent rejoinder by industry regarding the Internet around the turn of the century was that the Internet was providing information "just in time" which is defined as arriving just as needed (Strategos Inc.). For example, manufactured goods would arrive in the store based on information on sales, stock, and so on and thus reduce holding and storage costs (Wikipedia). In healthcare, where clinical information is a mission critical commodity, this could mean that when a test is ordered, the results of all previous tests of the same time are presented just in time to perhaps avoid re-ordering of the test. However, just in time information and applications never reached the shores of healthcare.

Few would disagree that IT in the rest of the world (ROW) seems to achieve efficiencies that HIT cannot. For purposes of this chapter, ROW is broadly defined as IT in any domain except healthcare meaning business, banking, industry, etc. A significant portion of this disparity between ROW IT and HIT can be traced to the beginning and evolution of healthcare IT. The earliest applications of information technology in healthcare were designed for support of financial transactions. In the later 1950s and early 1960s HIT began in earnest in response to a U.S. Government request to provide documentation for reimbursement. In the early 1990s, before the advent of managed care, sending just enough information to meet federal reimbursement requirements was good enough. Clinical information had little or no cost as tests could be re-ordered if lost or done at another center. Clinical applications such as computerized order entry, electronic medical records, and clinical repositories were just being developed and deployed with only one famous exception which dates back to the late 1970s TDS/Eclipsys 7000 (Bukunt, Hunter, Perkins et al., 2005).

Related Content

Phase Unwrapping Using Energy Minimization Methods for MRI Phase Image
Kusworo Adi, Tati L. R. Mengko, Andriyan B. Suksmonoand H. Gunawan (2010). *International Journal of E-Health and Medical Communications (pp. 50-56).*
www.irma-international.org/article/phase-unwrapping-using-energy-minimization/46060

The Benefits of Wireless Enabled Applications to Facilitate Superior Healthcare Delivery: The Case of DiaMonD
Nilmini Wickramasinghe, Suresh Chalasani, Steve Goldbergand Sridevi Koritala (2012). *International Journal of E-Health and Medical Communications (pp. 15-30).*
www.irma-international.org/article/benefits-wireless-enabled-applications-facilitate/73704

The M-Health Reference Model: An Organizing Framework for Conceptualizing Mobile Health Systems
Phillip Ollaand Joseph Tan (2006). *International Journal of Healthcare Information Systems and Informatics (pp. 1-19).*
www.irma-international.org/article/health-reference-model/2180

The Mechanism Used for Classifying Heart Disease and Detecting Abnormality Using Electronic Data
Rohit Raviand P. Madhavan (2024). *Computational Convergence and Interoperability in Electronic Health Records (EHR) (pp. 117-136).*
www.irma-international.org/chapter/the-mechanism-used-for-classifying-heart-disease-and-detecting-abnormality-using-electronic-data/355574

Factors Affecting the Sustainability of Computer Information Systems: Embedding New Information Technology into a Hospital Environment
Donald C. McDermid, Linda J. Kristjansonand Nigel Spry (2012). *Advancing Technologies and Intelligence in Healthcare and Clinical Environments Breakthroughs (pp. 48-62).*
www.irma-international.org/chapter/factors-affecting-sustainability-computer-information/67854