



Healthcare Informatics

Abstract

Healthcare Informatics is defined as “the integration of healthcare sciences, computer science, information science, and cognitive science to assist in the management of healthcare information” (Saba & McCormick, 2015, p. 232). Nursing Informatics is a subset of informatics, specific to the field and the role of the nurse in the healthcare setting. The American Nurses Association (ANA) identified nursing informatics as “a specialty that integrates nursing, science, computer science, and information science to manage and communicate data, information, and knowledge in nursing practice” (ANA, 2001, p.17). Healthcare and nursing informatics are both vastly growing fields within the medical field and are continuously incorporating new and evolving technology. Both have been around for the past three decades, at least. The technology boom at the turn of the century has helped informatics and information systems further evolve. Enhanced delivery of care, improved health outcomes, and advanced patient education are just a few aspects that have improved. With any new technology or innovation there are implications, some foreseeable and some that come to light after the unveiling of the new process or product: some impacts that are most notable are clinical, managerial, and policy implications. This paper explores the implications, (both constructive and adverse), that are the most notable in today’s healthcare world within the healthcare and nursing informatics fields.

Introduction

Healthcare Informatics is defined as “the integration of healthcare sciences, computer science, information science, and cognitive science to assist in the management of healthcare information” (Saba & McCormick, 2015, Pg. 232). Nursing Informatics is a subset of informatics, specific to the field and the roll of the nurse in the healthcare setting. The American Nurses Association (ANA) identified nursing informatics as “a specialty that integrates nursing, science, computer science, and information science to manage and communicate data, information, and knowledge in nursing practice” (ANA, 2001, Pg.17). Healthcare and nursing informatics are both vastly growing fields within the medical field and are continuously incorporating new and evolving technology. Both have been around for the past three decades, at least. The technology boom at the turn of the century has helped informatics and information systems further evolve. Enhanced delivery of care, improved health outcomes, and advanced patient education are just a few aspects that have improved. With any new technology or innovation there are implications, some foreseeable and some that come to light after the unveiling of the new process or product. Some impacts that are most notable are clinical, managerial, and policy implications. This paper will explore the implications, both constructive and adverse, most notable in today’s healthcare world within the healthcare informatics and nursing informatics fields.

Clinical Implications

The use of informatics is seen in a multitude of processes within the clinical setting. Whether inpatient or outpatient, clinicians and patients utilize online portal systems, electronic medical records, data collection devices such as vital sign machines and glucometers, as well as personal data devices and email, to name a few. When considering these systems and how they affect the process and flow of the clinical setting, it is important to not only consider the technology at hand but also the workflow and the data collection process. Norris, Hinrichs, & Brown, tell us “gaps are present between the technology and the process. Informatics can help bridge that gap. Skills needed include understanding of data collection, storage, and extraction, in addition to an appreciation for the power of data to drive and inform practice” (2015, p. 11-12). Healthcare informaticists, especially nursing informaticists, are the prime group to help bridge that gap. Without a strong clinician presence in the building and implementation process, gaps will remain. With healthcare informaticists involved in the development, a strong product can be delivered that is usable to all members of the healthcare team.

President Obama signed the *American Recovery and Reinvestment Act* (ARRA) into law in 2009. This law includes the *Health Information and Technology for Economic Clinical Health Act* (HITECH). HITECH formulated the Meaningful Use (MU) program under the Centers for Medicare and Medicaid Services (CMS). Meaningful Use incentivizes providers to use their Electronic Health Records (EHR) by financially rewarding them when demonstrating their use, but also poses a threat by penalizing them if not used in the future (Norris, Hinrichs, & Brown, 2015). These Acts greatly impact both nursing and the healthcare field clinically. Providers who do not typically use an EHR are now finding themselves in a learning curve while still maintaining their patient caseload, and providing comprehensive care. However this vast amount of data collection across a multitude of healthcare settings has provided opportunity in enhancements of care. While the initial rollout of these initiatives may cause chaos, the benefits of these initiatives will allow clinicians to provide comprehensive, safe, evidence-based care to all of their patients. Health care staff will be able to quickly and safely access pertinent information on their patients throughout the health institution and beyond.

In addition to enhancements in care and improved evidence-based practice, the increased amount of data collected by EHRs and other data systems has created a massive amount of data that hospitals and health care organizations now have to manage and analyze. "This has led to increased demand for professionals who are well versed in both informatics and medicine. To meet this demand, the American Medical Informatics Association spearheaded the establishment of professional-level education and certification for physicians in informatics" (Simpao, Ahumada, Galvez, & Rehman, 2014, p. 45). We are now seeing a new influx of healthcare professionals entering this sub-specialty. The needs for these professionals to collect, interpret, and study the data and the operation of information systems is crucial to the success and usability of these systems. Lehman, Shorte, & Gundlapalli (2013) stated that "it is reasonable to predict that the number of leadership positions in clinical informatics with titles and roles such as chief medical informatics officer, chief health informatics officer, directors of clinical informatics, and lead of EHR implementation, etc., will increase in the near future" (p. 528).

Managerial Implications

The use of healthcare informatics is not only prevalent in the clinical setting but also in the managerial setting. In our society, communication comes in a multitude of applications: verbal, physical, and now electronic. We often find that individuals can contact us by using various applications such as telephone, fax, pager, instant messenger, email, and so on. It is crucial for those in managerial positions to utilize these information systems to aid their work and the work of their staff while being mindful to set limits and standards. Time management is a prevalent issue in the healthcare setting, thus the use of informatics to aid and organize and not create barriers is essential. However, these expansive communication tools can create stress and feelings of intake overload. Marquis & Huston (2013) suggested "to reduce interruptions and distractions, individuals should shut off their email, isolate themselves, and make sure the environment around them is working to strengthen their willpower and focus" (p. 189). Healthcare professionals need to ensure that they are utilizing informatics to aid their work and time management, not impeding them. Marquis & Huston (2013) go on to note that "creating a workspace that has a desk with enough clear space to do your work, good lighting, and a comfortable chair" is crucial (p.190).

Information systems in the managerial role often consist of interpreting information and modifying data to be utilized in decision-making processes. Managerial programs facilitate payroll functions, streamline material control, and assist with financial and administrative factors of their role (Pacheco de Souza, Santiago & Izu, 2015, p.7284). As seen in clinical implications, Meaningful Use also plays a role in the role of the manager. It is important for "nurse managers to utilize information from the EHR to show Meaningful Use and are important to the process of determining how information is organized and categorized within the EHR" (Biddle & Milstead, 2016, p.12). Without a nurse manager and other administrator identification of how to best capture and report Meaningful Use information, the healthcare organization may not be compliant with this aspect of the HITECH Act.

The continuously growing field of informatics is of great benefit to healthcare managers at all levels. Using this growing technology can greatly benefit their role and improve the function of their staff. Pacheco de Souza, Santiago, & Izu (2015) go on to acknowledge that this advancing technology "should be utilized as a management tool, giving power and autonomy to nurse managers in more efficient use of available technological resources" (p.7285). One example of this is where a unit may identify incomplete documentation on a given point of care. The nurse manager can then construct a workgroup of colleagues who are involved in the process including an IT specialist. Once this group identifies the issues and improved processes, they can present their recommendations to administration, ultimately improving documentation in the EHR (Biddle & Milstead, 2016). Thus, healthcare information systems can improve communication, time-management, and delivery of information amongst staff and patients.

Policy Implications

As previously noted in clinical implications and managerial implications, the amount of data that is now available from EHRs and other forms of information systems, is larger than healthcare providers have ever dealt with. Policy makers are now able to utilize this data to inform their decision-making about public-health issues. It is crucial now, more than ever, that public health staff are available at various levels of the health system to develop skills and knowledge to better utilize existing datasets. Adair (2012) identified guidelines to help public health officials understand, interpret, and best utilize this influx of information. “These guidelines were developed to assist public health officials assess the quality of existing health data, and effectively utilize such data to compute indicators to inform health sector policy-making” (p. 53). If policymakers are not able to thoroughly understand data derived from the utilization of electronic health records, patient portals, and other data sources, then people cannot expect them to make sound judgments when voting on new laws.

In this age of technology it is important that healthcare providers, managers, and informaticists are mindful of adhering to HIPAA regulations to ensure that growing technology is incorporated in current policies. With the use of EHRs and mobile health applications there is an increased “liability for healthcare organizations if there is a breach in patient confidentiality or privacy, which is why organizations must have policies in place that guide the use of telehealth and communication” (Biddle & Milstead, 2016). Ensuring proper policy is in place and that changes are made as needed when new technology is introduced is crucial.

McGowan, Cusack, and Bloomrosen (2012) wrote, “since 2006, the American Medical Informatics Association (AMIA) has convened an annual investigational Health Policy meeting to examine Cutting edge issues in healthcare and health information technology (health IT) policy” (p. 460). These meetings will identify and discuss potential issues with health IT and informatics as well as develop a plan and report to present to our nation’s policymakers so they are well informed when making and voting for pertinent policies and laws (McGowan, Cusack, & Bloomrosen, 2012). It is important that health professionals, information technology developers, and policymakers are able to communicate and work together in the interest of delivering the most efficient and safest patient care.

Meaningful Use is one example of health policy and health informatics working together. The initiative behind Meaningful Use was to encourage the use of Electronic Health Records in all health systems nationwide. However with this initiative, some providers may find themselves not being truthful in their documentation in order to meet the incentives set by the HITECH legislation. McGowan, Cusack, and Bloomrosen (2012), identified that “with the mandate for meaningful use of health IT by providers, there is ample opportunity for inappropriate and even fraudulent or illegal activities, ranging from lack of oversight to deliberate misrepresentation” (p. 461). Although dishonorable, some providers may lie to ensure their practice is able to receive the best monetary incentive by adhering to Meaningful Use measures and may alter their documentation to fit the criteria.

McGowan, Cusack, and Bloomrosen (2012) also identified policy concerns with health IT and informatics when discussing federal and state roles. Often federal and state regulations and health IT initiatives lack coordination. “Without explicit guidelines, proprietary state systems may be created, with many not being able to connect to the national health information infrastructure and some not acknowledging the healthcare systems that cross state lines” (McGowan, Cusack, and Bloomrosen, 2012, p.462). It is crucial that not only health professionals and government coordinate their objectives and policy, but also governing officials of the state and federal government. Conflicting or uncoordinated health initiatives may lead to patient and public mistrust as well as financial complications with both the government and health organizations.

Summary

Health informatics and nursing informatics are very relevant in evolving health systems. New technology and initiatives are constantly being developed. These new innovations do not go without implications in the clinical setting, managerial setting, and the policy setting. It is crucial that all participants whether it is the nurse, manager, provider, politician, lobbyist, or President of the United States remain coordinated. Multidisciplinary unity is crucial to ensure public trust in our health systems and to provide safe and effective patient care.

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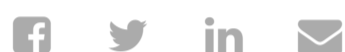
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