Current Technological Changes in Health Care

Introduction

New technologies and medical developments have reformed the setup of healthcare system, over the centuries. Medical field combines the best factors of the society to meet the needs and demands of the service users. Starting from cancer treatment, delivering babies, managing heart attacks and so on, the health care researchers have developed technologies to improve various techniques. A prominent example in this context would be the application of HER (Electronic Health Record), PCEHR (Personally Controlled Electronic Health Record), telemedicine and telehealth technologies (Issel, 2015). This literature review would demonstrate the current state of knowledge on the selected topic and develop further queries, which need to be rapidly addressed.

Discussion

Medical professionals who are working with coding and medical billing understand the developments that technologies have made. Since the last few decades, coding and medical billing have switched from simply a paper-based system to computerized format. In accordance with the HIPAA regulations, the health care practitioners need to develop innovative software to give out electronic bills. Doctors are immensely benefiting from the shift to EHR (Bixby, 2011).

Sullivan (2015) explored technological advancements in nursing care delivery. She has carried out a systematic literature review considering health information technology keeping a focus on its effective application (Sullivan, 2015). It was found that incentives encourage the health care organizations to execute EHRs. The nurses are working in a high-tech environment that necessitates the application of these resources in order to provide quality patient care. According to Yee et al., (2012), EHRs can incorporate other digital methods and transform health care delivery and compensation. The quality of care and convenience have also been improved for the service providers and the users with rapid access to the health records. It is evident that EHRs save time by effectively retrieve records and increased confidentiality of the data. By implementing EHRs, hospitals could save almost $38million to $60million within 5years along with incentive payments (Cho, Park, Choi, Hwang, & Bates, 2014). This further enables the professionals to track the extent of usage of hospital resources by the patients that include supplies, medication, staff, and equipment that are hard to maintain in paper-based systems. Cho et al., (2014) added that EHRs improve patient safety

by reducing errors and support improved patient outcomes by providing reminders, alerts, information analysis and evidence-based care. On the contrary, Palma et al., (2015) have pointed out some flaws of using EHRs in medical practice. They have recognized difficulties in sharing information between service providers, patients and organizations as the entire process includes many vendors of EHRs and security risk of sharing information. Financial restraint has also been identified that comprise the purchase of software and hardware, implementation expenditure along with system setup, training, IT support, maintenance and upgradation of the existing system. This could further lessen the productivity. Autofill, copy-paste functions save time but lack of sincerity could cause error in documentation and thereby, putting safety of the patients at risk. Palma, (2013) in this regard have mentioned that being aware of the limitations and effective planning would help in making decision on purchase, execution, maintenance and costs less painful. Adler-Milstein et al., (2014) have stated that there is no stable association between EHRs application and better hospital performance. They have carried out a randomized control trial of almost 325 hospitals and found no link between HER adoption and examined outcomes, which were length of hospital stay, acute myocardial infarction, and payment per discharge (Adler-Milstein, Scott, & Jha, 2014). Improved care quality and less error have been found in patient level, which gave rise to the conclusion that EHRs could benefit society and the patients while adopted widely and applied meaningfully.

Technological improvements have allowed services like telehealth that present innovative ways to access and educate patients. Ohashi et al. (2014) opined that telehealth eases the communication between the care providers and service users that further allow concurrent health care. For instance mHealth applies mobile devices in order to communicate with the care professionals, obtain information and support self-help based applications. Goldwater and Harris (2011) have mentioned that remote monitoring tracks environmental alterations, which offers independence to the senior members. Application of telehealth with mobile devices reduced cost to health care by replacing expensive face-to-face visits. The wide variety of offered services include transfer of medical images, video consultation and application of monitoring devices (Goldwater & Harris, 2010). These can transmit important signs and medical data to obtain opinions and monitoring. It is also seen that Medicare has permitted payment for home-based health care that also include telehealth application. Pinciroli et al., (2011) pinpointed that electronic gadgets like mobile phone, tablet, laptops are not only used to educate people on maintaining good health, but also provide options for

acquiring training on improving the health of the vulnerable communities. Otu et al., (2016) demonstrated that how telehealth has been used as tutorial application for developing the attitude and knowledge of the healthcare providers and eliminate the risk of epidemic like Ebola in developing countries (Otu, Ebenso, Okuzu, & Osifo-Dawodu, 2016).

The scope of telehealth is broad and could be categorized into different groups: treatment and disease management, collection of data and disease examination, health support system, promotion of health and disease prevention, communication among the care providers, patients and their family members and medical education. Extensive use of mobile phone technologies has emerged as an active communication medium to reinforce the health information system. It is especially beneficial in developing countries, considering their limited financial capacity, because of their less flexible operation and start-up cost.

Ghazi and Cross (2015) have explored the role of telemedicine in managing inflammatory bowel disease (IBD). Their experiment was based on the gastroenterology field, which demonstrated that telemedicine is well accepted and feasible in patient monitoring. They have carried out randomized controlled trials in Ireland and Denmark in order to evaluate the effectiveness of conventional care versus web-based care system in ulcerative colitis (Cross & Ghazi, 2015). It was seen that web-based group had higher adherence to treatment, which in turn increased the quality of life of the patients, knowledge about IBD, vitality, social, emotional functioning and overall health. Though major advancements continued in the IBD treatment, certain problems still exist in health care delivery, which necessitates some factors beyond improved medical therapy in order to achieve effective patient outcomes. These were adverse drug reaction, nonadherence, inadequate patient education, suboptimal monitoring and discordance between patients and the physicians. Thus, it was concluded that in the changing health care environment, patients and the physicians have increasing demands of time, hence, explosion of IT along with emerging techniques like telemedicine are important in improving quality of care.

The present healthcare system includes both paper-based an electronic-based medical records. It is evident that the federal government of many countries like Australia, approved the funding for the development of universally accepted online health source and individual health identifier. Based on this, Armani et al. (2016) have explored the beliefs and attitudes of the health care workers and the patients on the application of medical data and PCEHR. In order to accomplish this study the researchers have conducted qualitative survey of both the

care providers and the patients to assess the attitude, awareness and hindrances to use PCEHR. Majority of the care professionals believed that existence of shared health record would increase the appropriateness of care along with patient safety by lessening 'adverse drug events' and developing the relevance of recommended care. Simultaneously, it was also revealed that almost 40% professionals were unaware of PCEHR (Armani et al., 2016). This experiment enabled to understand the perception of PCEHR in acute care setup. Willingness for adoption of PCEHR related strategies necessitates motivation to register for PCEHR and more information on potential benefits on efficient and timely care provision.

Conclusion

In a digitally connected world, innovative technologies brought drastic changes in the healthcare field, which streamlined the entire system. Software programs support in tracking population statistics and relevant diagnoses. Additionally, new methods of billing and tracking make it simpler to recognize patients' past medical history. New technologies reduces paper- or manual-based record, thereby, chance of errors that contribute to an increase in the rate of successful treatments. Irrespective of the developments, it is still based on the professionals to ensure care quality. The health care professionals focus on providing quality care and constant improvement in care quality while caring for their patients, which necessitates implementation and proper application of new technologies to complement patients' care. In the era of rapidly transforming environment, technology and care should go conjointly to generate certain values in nursing, which includes transformative technologies emerging each day. Irrespective of the geographical location, mHealth is applied as reactive as well as preventive measure for developing people's health condition across the globe. It plays an important role in improving relationship between service users and service providers and thus, increasing the access of the common people to the health care resources. This shows the power of the present day technologies in facilitating 'multi-way' interactions.

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