[18-19]. They respectively presented a typology for workarounds and a taxonomy of causes of implementation delays to help clarify important aspects of implementation and facilitate the process. Finally, Mitchell, *et al.,* [20] discussed five key challenges to explain why incident reporting has not reached its potential yet. They explored how the processes and the systems of incident reporting can be optimized to increase the likelihood of safer patient care.

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Summary of Best Papers Selected for the 2017 Edition of the IMIA Yearbook, Section HFOI

Castro G, Buczkowski L, Hafner J

The contribution of socio-technical factors to health information technology-related sentinel events

Jt Comm J Qual Patient Saf 2016; 42(2):70-6

An understanding of how health information technology (HIT) can contribute to sentinel events is necessary to learn how to safely implement and use HIT. Castro, Buczkowski, and Hafner conducted an analysis to explore how HIT may contribute to adverse events that result in death or severe harm to the patient. They showed that HIT-related events are primarily associated with the socio-technical dimensions of human-computer interface, workflow and communication, and clinical content. The authors advocate that improved identification of HIT-related contributing factors in the context of the socio-technical dimensions may help software developers, device manufacturers, and end users in healthcare organizations proactively identify vulnerabilities and hazards, ultimately reducing the risk of harm to patients.

Horsky J, Ramelson H

Development of a cognitive framework of patient record summary review in the formative phase of user-centered design

J Biomed Inform 2016;64:147-57

A User-Centered Design (UCD) process increases the usability of products in order to insure human performance and patient safety. However, this design process is challenging and tricky. In this report, Horsky and Ramelson describe the initial stage of a UCD process in which foundational design concepts are formulated. They designed and developed a functional prototype of an ambulatory electronic health record interface that allows clinicians to briefly review patient data prior to the office visit. Cognitively-based studies were performed and results are used to develop a cognitive framework that subsequently guides the design of a prototype.

Kobayashi L, Gosbee J, Merck D

Development and application of a clinical microsystem simulation methodology for human factors-based research of alarm fatigue

HERD 2017 Jul;10(4):91-104

Patient monitoring systems with telemetry features are widespread. However, problems with the design, implementation, and real-world use of these systems result in alarm fatigue. Therefore, clinical alarms may be ignored or not noticed causing potential harmful situations to patient safety. Kobayashi, Gosbee, and Merck developed a clinical micro-system simulation methodology for alarm fatigue research with a human factors engineering assessment framework. This novel methodology allows not only the assessment of systems but also supports experimental research purposes.

Percival J, McGregor C

An evaluation of understandability of patient journey models in mental health

JMIR Hum Factors 2016 Jul 28;3(2):e20

Little awareness exists about the challenges of integrating information systems with clinical practice. Recently some work has focused on process modeling through the lens of the patient, using patient journey modeling techniques. These models can help understand the potential consequences of the changes in processes and information flows due to HIT implementation. Percival and McGregor demonstrated the value of a relatively new patient journey modeling technique called the Patient Journey Modeling Architecture when compared with traditional manufacturing-based process modeling tools.

Schnittker R, Schmettow M, Verhoeven F, Schraagen JMC

Combining situated cognitive engineering with a novel testing method in a case study comparing two infusion pump interfaces

Appl Ergon 2016;55:16-26

Infusion pumps contribute to patient care but several adverse drug events have been associated to their use. Many of those use-related hazards were related to user-interface design deficiencies. Design solutions using human factors engineering have proven to be effective to enhance positive performance outcomes. In this regard, Schnittker, *et al*., validated the usability of a new infusion pump interface designed with a situated Cognitive Engineering approach by comparing it to a reference interface using a novel testing method. The observed reduction of errors, normative path deviations, task completion times, and keystrokes demonstrated that this method addresses various shortcomings of previous testing methods.