[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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References

10. Percival J, McGregor C. An Evaluation of Under-
**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**

*JMI R 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.