In 2011 the Institute of Medicine published the report Health IT and Patient Safety. It addressed the growing concern that health information technology may not only benefit for patients but also pose risks for patient safety. The report emphasizes that patient safety can be understood from a sociotechnical perspective integrating technology, people and organizational context [1, p. 3]. It is a high level recognition of the fact the role that organizational context and health systems at large play a role in shaping technology and particularly health information technology. Berg et al. wrote in the introductory of the special issue to the first ITHC: “As information require interaction with people and thereby inevitably affect them, understanding information systems requires a focus on the interrelation between technology and its social environment” [2]. The theme of the fourth ITHC was “From safe systems to patient safety.” The organizers invited papers for the conference addressing the theme, but other submissions were welcomed as well. Seven papers have been selected for this special issue.

The papers reflect a wide variety of health IT issues involving patients and professionals. Four papers address quality and safety issues. One paper describes how global nursing classifications are localized in a nursing practice, and two papers cover e-health.

Medication errors are the largest category of errors in medicine [3]. It should not come as a surprise that many studies focus on reducing errors in the medication loop from prescribing by professionals to administering to patients. Pelayo et al. studied how the implementation of a computerized physician order entry (CPOE) systems impacted cooperation and communication between doctors and nurses [4]. The study consisted of two parts. In one part they identified different factors influencing doctor-nurse communication in the workplace. In the second part they compared these factors with medication related doctor-nurse communication in the context of CPOE. The authors found that CPOE had no significant impact on the identified factors. They interpreted that characteristics of successful teamwork influenced the success of cooperation and communication after implementation of CPOE. Novak et al. found how the implementation of barcode medication administration (BCMA) required nurses to adapt to new work procedures and how these procedures collided with the requirements that originate from the BCMA system [5]. The collision of what they call the practice frame of nurses and the system frame of BCMA may affect the safety of administering medications to patients. They propose that a thorough understanding of the frames of clinical workers is necessary when new technology is designed and implemented. Just as communication about medication helps to ensure patient safety, communication at patient handovers requires conservation of patient data to ensure good continuity of care and safe practice. Errors or omissions during handovers may have severe consequences [6]. Balka et al. report ethnographic case studies of information handovers in three different settings [7]. They found significant variations how handovers were defined because of differences how professionals construe patient problems, which point to the contextual nature of patient data. Health information systems however require a standardized view. The authors suggest that the contextual nature of information, ethical and legal underpinnings of information handovers and issues of data standards and system interoperability need to be addressed before improvements can be expected from health IT. Clinical guidelines can help to improve standards of practice, reduce variations and as a result improve patient safety [8,9]. Lyng however found that the details of clinical practice guidelines based on either a research or standard treatment protocol were rarely used in practice [10]. Only when these guidelines were translated in a number of separate protocols with paper forms, templates and order sets to guide localized clinical activities they became accepted. She concludes that this ‘localization’ of clinical guidelines should be taken into account when developing and implementing computerized guidelines.

Classification systems have been an important topic in sociotechnical informed health informatics research, because they order human interaction [11]. Classification is a part of the information infrastructure and reflects morals and choices of those who develop them. Meum et al. examined the interplay between global standards and local practice in nursing [12]. They studied how over time nursing
classifications were implemented, adapted and used in nursing information systems. They found to their surprise that high proportion nursing diagnoses was consistent with global standards despite adaptation to local practices of nursing. They conclude that standardization is an iterative process in close relationship with practice. Development is also a theme in the study by Petersen et al. [13]. They addressed challenges of cooperation and communication between clinicians and IT professionals in the ‘bottom up’ development of e-health projects initiated and managed by clinicians. Each group has different perspectives on the outcomes of the development and the quality of the systems. The authors describe different strategies to find a common ground between the intended users and developers. Finally, communication is again the topic of a study by Wentzer and Bygholm [14]. New technologies such as patient support groups on the Internet enable new forms of patient participation in health care. The authors studied postings in two online groups to see how patients empowered each other as a critical voice of the public or helped each other in complying with treatment recommendations. They conclude that patients are empowered as a group to comply with ‘doctor’s recommendations’.

The papers in this special issue are quite diverse. Yet, they share common characteristics. Foremost they show that technology and context are intertwined as would be expected from a sociotechnical perspective. The studies are interpretive. They are either informed by a theoretical framework or theory developed from data analysis (grounded theory). Research methods include interviewing, observations, and study of documents, including postings on the Internet. Qualitative research is not predictive in the sense that it aims to test hypotheses. It aims to gain a thorough understanding of a problem at hand and develop a rich description informed by theory. It may help generate hypotheses that may be tested quantitatively. Conversely, quantitative studies may contribute to a sociotechnical understanding, because the results may contribute to a ‘rich picture’ of a situation at hand as evidenced by a study of the impact of health IT on a clinical care [15]. As I wrote in my opening paragraph, the notion of a sociotechnical perspective is becoming mainstream. A tendency can be observed to ‘measure’ sociotechnical perspective. Singh and Sittig proposed a sociotechnical model that is decomposed in eight dimensions addressing the sociotechnical challenges involved in design, implementation, use and evaluation of health IT within complex adaptive health care systems [16]. While such models have the charm of simplicity, reality is messy [2]. However difficult, it is possible to measure the impact of health IT on clinical outcomes, e.g. reduction of adverse drug events, on process, e.g. timesaving in completing tasks, and structure, e.g. financial benefits. The sociotechnical approach is not a single theory, because of its diverse roots and different authors have chosen different routes. Aarts et al. in their study of implementing a CPOE system argued that implementation can be construed in terms of emergent change and success and failure as negotiated judgments [17]. Cresswell et al. examined how Latour’s Actor-Network Theory helped to understand the organizational complexity and active role of technology of implementing electronic health record systems [18].

The sociotechnical perspective has proven to be fruitful to understand health IT in complex environments and has inspired many researchers. To guarantee the success of widespread use of health IT necessitates a sociotechnical perspective on its implementation and use. Such perspective is complementary to the accepted research traditions upon which health informatics is based.

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