

Optimization of and the Use of IT for Healthcare Processes

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Healthcare processes (e.g. patient pathways) and services are often very complex and can involve various parties within an organization or between organizations such as hospitals and other caregivers, as well as the patients. The design of services is often different from traditional service design – as for many healthcare services patients receive care, but insurance companies pay for it. Implementing processes in this domain should result in providing faster, safer and more effective care, necessitating organizing and sharing information among all participants involved in patient care. While the need for well-defined healthcare processes is clear, there are many obstacles and opportunities for research, including technical, behavioral, and organizational topics.

Information technology (IT) has played an important role in enhancing productivity through coordination in many industries, such as manufacturing and services. Nowhere is this role more critical than in healthcare, where IT has the potential to improve patient health and, in many cases, save lives, through improved coordination between various parties such as hospitals, providers, and patients. However, use of IT in healthcare presents some unique challenges and issues.

This minitrack focuses on the analysis, design and optimization of healthcare processes, the use of IT to support and improve those processes as well as non-IT assets such as process changes, innovative IT artefacts, and interoperability standards.

The minitrack comprises 4 papers that show the variety of potential applications and research questions around healthcare processes and services, providing different perspectives on the role of information technology in improving healthcare processes and enabling healthcare coordination. Covered topics include healthcare transformation, machine learning, analytics, patient-physician interaction and value-based healthcare

The first paper titled “Maternal Healthcare Service Transformation: Exploring Opportunities for IT Use in Task Shifting” presents a case study

approach that was applied to three districts in Uganda, due to the high maternal mortality in this country. It investigates how tasks are shifted from midwives to other healthcare workers or the patients as a strategy of service transformation, and how IT can support it.

The authors of the second paper “Constituting Factors of a Digitally Influenced Relationship between Patients and Primary Care Physicians in Rural Areas” conducted semi-structured interviews with primary care physicians in Germany. The paper aims to answer which factors constitute the perspectives of physicians on the utilization of patient-empowering digital technologies in rural areas.

Paper number 3 investigates to which extent analytics dashboards are used to support value-based healthcare delivery (“Investigating Analytics Dashboards’ Support for the Value-based Healthcare Delivery Model”). The authors perform a systematic literature review. They analyze and summarize the purpose of dashboard studies, the end-users of dashboards, the dashboards’ visual and functional features, and the outcomes of dashboard applications.

Finally, the fourth paper “Towards a Unified Understanding of Data-Driven Support for Emergency Medical Service Logistics” proposes a taxonomy for data-driven support in emergency medical service (EMS) systems using three dimensions (service, entity and planning level) and three external factors (data, application and geography). The authors present initial results of strategic demand forecasting through machine learning for a EMS German region.