# Assessment Metrics for Successful Implementation of Health Technology

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**Abstract.** Implementation of digital health innovations faces many challenges. Setbacks due to a lack of implementation planning and monitoring can cause substantial resource expenditure. Implementation metrics such as change readiness can help mitigating these costs. In this workshop, participants will discuss approaches to improve implementation performance, including metrics to apply during the implementation process, trying to bridge the gap between clinical ("people") and technological integration.

**Keywords.** Change Management, Change Readiness, Digital Health, Human Factors

## 1. Introduction

Implementation projects of digital innovations in healthcare have failed repeatedly due to low involvement and commitment of professionals, as well as dissatisfaction with new technology and associated processes (1,2). In Germany, the Hospital Future Act (Krankenhauszukunftsgesetz, KHZG) has dictated many hospitals to quickly and competently integrate existing technologies. Similar efforts are underway at the EU level (3). Common pitfalls in implementing digital technologies in clinical settings include a lack of knowledge regarding planning and monitoring, uncertainty around metrics for measuring implementation readiness, and difficulty demonstrating tangible and sustainable benefits (4).

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In line with current trends in the US, Canada and UK (5), our institution is increasingly integrating multi-method, multi-professional, human-centered implementation science into digital health projects and procurement and integration of health technologies. Particularly, the consolidation of the positions of Director of the Institute of Medical Informatics and Chief Medical Information Officer (CMIO) supports a stronger translation of research into practice. For implementation research, both qualitative approaches (interviews, user testing, design conceptualization, ethnographic shadowing, and site visits) and quantitative methodology (online questionnaires and retrospective data analysis) are essential. To identify barriers and facilitators to implementation, we develop implementation frameworks and metrics for digital technologies (6–10).

## 2. Proposed solution / Results

For successful implementation planning, we strive to seamlessly integrate change readiness assessment into project lifecycles. We created a change readiness survey for health technology implementation. The methodology and final survey will be presented, discussed, and contextualized to the workshop participants.

## 3. Expected learning outcomes

After completion of the workshop, participants
- are able to discuss the relevance of change readiness in clinical settings for health technology implementation projects.
- are able to explain approaches to measure change readiness in healthcare professionals.
- have discussed experiences regarding successful or failed health technology implementation projects and the role of organizational change readiness among hospitals across Europe.

## 4. Specific contributions of authors to the tutorial

After introducing the workshop participants and instructors, we will present and discuss the topic of implementation science and its relevance to the digital transformation of healthcare (5). In addition, we will present the survey on readiness for change that we have developed and discuss it with the participants. During the second half of the interactive workshop, participants and instructors will discuss the role of implementation science and change readiness in health technology implementation projects. The debate will focus on the role of medical informatics specialists in the implementation of health technologies and software solutions (e.g., clinical decision support systems using artificial intelligence).

**Table 1.** Proposed structure of the workshop.

| Block | Topic | Description | Materials | Duration (min) |
|---|---|---|---|---|
| Introduction | Introduction of workshop instructors and participants | Welcome and introduction of instructors, Slido (https://www.slido.com/) survey to get to know the workshop participants (institution, country, professions, positions) | Slides, Slido | 5 |
| Implementation science and health technologies | Implementation science for health technologies | Interactive introduction to the topic of implementation science and its role in the digital transformation of healthcare | Slides, Slido | 10 |
| | Change readiness as a metric for implementation planning | Presentation of the change readiness survey and the methodology used to develop it | Slides | 10 |
| Practice exchange and learnings | Discussion in groups, each group can choose two focus areas from the bullet point list | • What do you extrapolate from the presentation of the change readiness survey? What is the relevance for health IT / medical informatics department?<br>• Sharing of best and worst health technology implementation practices.<br>• What role can medical informatics play for health technology and AI implementation?<br>• Development of a "technical readiness checklist" for healthcare technology implementation. | Slides, flipcharts, pens | 15 |
| | Presentation and discussion | Each group will present their findings, followed by a brief discussion, and then the key messages (checklist for technical integration of healthcare technologies) will be developed in plenary. | Flip charts | 10 |
| Conclusion | Conclusion | Wrap-up and take-home messages presented by the instructors | Slides | 5 |

**5. Biographies of the organizers/lecturers**

Dr. med. Lina Mosch is a resident physician in anesthesiology and completing a fellowship in medical informatics. Since July 2023, she is funded within the BIH Charité Junior Digital Clinician Scientist program. As part of the CMIO team, she supports the digital transformation of patient care with a focus on patient monitoring and vital sign collection.

> Research interests:
- Implementation of digital technologies in various clinical settings
- Intelligent (machine learning-assisted) monitoring of vital signs
- Impact of the digital transformation of healthcare on healthcare professions and workflows in hospitals

Louis Agha-Mir-Salim, BMBS is a resident physician completing his fellowship in medical informatics while pursuing a PhD in Health Data Sciences. He is also part of the CMIO team driving digital transformation at Charité.

Research interests:
- Fairness in machine learning assisted clinical decision support systems
- Secondary analysis and visualization of electronic health records
- Education, change management, and implementation in medical data science and digital health

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