Policy Paper on Digital Transformation in the Swiss Healthcare System

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1. Summary

The Swiss healthcare system stands at a crossroads. While it offers high quality care, it is lacking in the area of digitalization.[1] For swimsa, digital transformation serves two main goals: ensuring safer, more effective, and more personalized patient care and improving the working conditions of healthcare professionals.

The current Swiss system, with its challenges in operability between digital tools and high administrative burdens, leads to inefficiencies and poses risks to patient safety. To address these challenges, Switzerland must approach digitalization strategically, with coordination across institutions and cantons, and on federal levels. It is essential to establish the necessary regulatory and ethical frameworks, allocate adequate financial and structural resources, and ensure that digital tools and systems truly optimize care delivery while safeguarding security, equity and usability.

swimsa believes medical students — the future practitioners in the healthcare system — must have a strong voice in its development. Medical education must reflect a more digitized working environment and provide students with a strong foundation.

Digitalization is not a silver bullet, but if implemented strategically, it can lead to a safer, more connected and more resilient healthcare system.

2. Background

The current situation in the Swiss Healthcare System

Digitalization is present in nearly all aspects of life nowadays. Even in the healthcare system, digitalization is a constant topic of discussion. Many agree there is room for improvement when it comes to the digital transformation of the system, however there is not one clear solution. Often criticized are not necessarily the lack of tools or possibilities, but rather the coordination, interoperability and strategic implementation thereof.

Healthcare professionals are often confronted with a multitude of systems that are not compatible with one another. A recent survey by the vsao showed a third of hospitals operate with multiple clinical information systems, and four out of five physicians report that these systems are not compatible with each other.[2] This leads to duplicated data entry and inefficient workflows. In addition, the administrative burden is a particularly urgent issue. Nearly two-thirds of physicians answered that they spend too much time on documentation, with the biggest obstacles being a lack of standardized guidelines, inefficient data entry processes, and a system interface that requires information to be entered several times in multiple places.[2]

It is important to notice that the bureaucratic workload, which often seems to prevail in the healthcare profession stems from multiple sources, included but not limited to:

- Regulatory and legal requirements
- Requests and conditions imposed by health insurers and other stakeholders
- Internal hospital issues due to poor or incompatible systems
- Department-specific demands

While digitalization alone is not the solution to all of the problems in the healthcare system, it can significantly streamline and simplify processes if implemented strategically.

Definitions

- **Digitization:** The conversion of information from analog into digital form.[3]
- **Digitalization:** The broad process of leveraging digital technologies to transform operations, enhance efficiency, and create new value.[3]
- **Interoperability:** The ability of different information systems, devices and applications (systems) to access, exchange, integrate and cooperatively use data in a coordinated manner, within and across organizational, regional and national boundaries, to provide timely and seamless portability of information and optimize the health of individuals and populations globally.[4]
- **Electronic patient record:** The systematized collection of electronically stored patient information in a digital format.[5]
    - ***Elektronisches Patientendossier (EPD):*** In Switzerland, the electronic patient record is defined as personal collection of health-related documents.[6]
- **Clinical information systems (CIS):** Computer systems that provide immediate access to current patient data regarding clinical notes, medication history, laboratory reports, images, and reports either directly or via data networks. They are parts of a hospital information system, which facilitates direct patient care.[7]
- **Digital transformation:** The process of adoption and implementation of digital technology by an organization in order to create new or modify existing products, services and operations.[8]
- **AI (Artificial-Intelligence):** technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy.[9]
- **Digital care tools:** tools that use software to respectively treat or manage/prevent a specific disease or condition.[10]
- **Digital health literacy:** The convergence of health and digital literacy.[11] The first is the ability to obtain, read, understand, and use health-care information to make appropriate/informed health decisions.[12] The second is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.[13]

Why is digitalization important?

Digitalization is not the end-goal in the healthcare system, but rather the means to achieve the two following objectives: quality care for patients and improved working conditions for healthcare professionals.

For patients, digitalization offers safer, more personalized, and better coordinated care. When medical data is accessible and up-to-date, medical decisions can be taken more quickly and more informed. Tools such as an electronic patient record have the potential to improve continuity of care, reduce errors and improve communication between healthcare providers. The current state – fragmented and inefficient – can pose a danger to patient care, as information that is outdated or not accessible due to the current system could lead to delays or errors in treatment.

For healthcare professionals, digitalization can significantly improve efficiencies and, thus, working conditions. Inefficiencies stemming from issues, such as the current status of digitalization, consume valuable time and also decrease the attractiveness of the profession. With an aging population and a growing lack of physicians, it is essential to create a framework and a system in which physicians are supported to allow them to focus on what matters most: patient care.

To create a system that benefits patients and providers, digitalization must be coordinated, well-funded, and strategically prioritized. Digitalization is like a moving train – we must not only board it now but ensure we stay on track.

Barriers to digitalization

Even though it might seem that healthcare digitalization benefits patients as well as healthcare workers, there are several barriers to a digital transformation.

Firstly, investing in clinical information systems, electronic patient records, artificial intelligence tools, and telemedicine entails substantial and ongoing costs. It is **not a one-time cost** but it requires **continuous maintenance and training**. Assessing the cost-effectiveness and profitability of such investments in digital health initiatives can often be difficult for institutions like hospitals or public authorities.[14] Often, the necessary financial resources are lacking or not sufficiently prioritized, resulting in delays in implementation. This leads to outdated IT infrastructure, which disproportionately affects smaller hospitals or healthcare facilities in rural areas with lower financial resources. In addition, the organizational frameworks needed to ensure the effective use of digital tools are frequently undeveloped or entirely absent.

Secondly, one of the key challenges in driving digital transformation lies in varying **degrees of willingness to change** and the generally **low levels of digital health literacy** among stakeholders.[15,16,17]

In many cases, digitalization is not yet seen as a top priority. Limited financial resources lead to delay of essential investments in digital infrastructures until change becomes unavoidable. This hesitation might often stem from the difficulty of reconciling short-term costs[14,19] with long-term improvements in efficiency.[20,19]

Change is inherently challenging – especially in complex systems such as healthcare. Successful implementation calls for a proactive preparation and an open mindset for change and adequate support for stakeholders. Equitable digital transformation also requires that all

individuals, including healthcare workers and the general population are supported and prepared. For healthcare professionals already working under significant pressure, the effort required to adopt new systems may seem overwhelming. Comprehensive and ongoing training in digital tools, data use and system navigation are therefore essential. Social disparities must also be addressed proactively. Access to digital tools is not universal. Older adults, individuals with disabilities, people from diverse linguistic backgrounds and those from socioeconomically disadvantaged groups may face additional barriers. Such gaps should be addressed proactively through inclusive design and support services.
Moreover, a lack of trust in digital systems can hinder implementation. Without a clear understanding of the purpose and value of digital tools, users may focus only on the risks. Promoting digital health literacy across all age groups is a crucial part in advancing digital transformation in order to allow people to weigh the risks and benefits.

Thirdly, promoting healthcare digitalization requires special efforts to ensure **robust data security and clear regulatory frameworks.** Public concern about data privacy is widespread and must be taken seriously. Building and maintaining trust is essential; people are more likely to share their health data if they trust that the system will protect it.[21]
Digital technologies inherently carry risks, including data leakages, data misuse, and unauthorized access, especially without clear security systems. New technologies must comply with data protection regulations and must consider ethical concerns, such as those related to use of AI on health data.[22] Such safeguards are important in ensuring responsible innovation and should not be seen as barriers to progress of digitalization.
Nevertheless, these challenges should not serve as excuses for inaction. Our current systems are often inoperable and complicated. This complexity can drive healthcare workers and patients to turn to more simple, widely available – but less secure – digital tools, particularly under time pressure or in emergencies. Each transfer of data between systems, often necessary due to non-interoperable systems, increases the risk of data loss or breach.
It is important to find the optimal balance: protecting sensitive health data while enabling the efficient, high-quality and reliable medical care that digital transformation can deliver.

Fourth, the **structure of the Swiss healthcare system**, with its cantonal responsibilities for healthcare delivery, presents both strengths and challenges in the context of digitalization.[23,24]
While this decentralized system provides stability and adaptability to individual needs, it also complicates the creation of a unified, nationwide approach to healthcare technology. Cantons – and even individual hospitals – often work independently, rather than collaborating on a national scale.
While federalism may pose challenges to achieving harmonized digitalization, it is not an insurmountable obstacle. Rather, it requires additional effort to coordinate and align initiatives. Improving communication between cantons and across language barriers becomes even more crucial. Currently, issues such as data transfer issues between hospitals and even within clinical information systems of a single hospital, remain common. To reduce these inefficiencies and duplications, workflows should be standardized under the “once-only” principle – meaning that it is sufficient for healthcare professionals to note a piece of information only once. A harmonized digital solution would not only streamline processes but additionally reduce the risk of health data being lost during transfers.

Current efforts towards healthcare digitalization

While Switzerland excels in healthcare quality and innovation, its digital health adoption and integration are areas needing attention.[25] Compared to other EU- and OECD-nations, Switzerland takes place 14 out of 17 in the Digital Health Index.[18] Switzerland has an ongoing political discussion and some efforts towards healthcare digitalization have been made.

On a national level, DigiSanté, a programme and strategy for digital transformation, runs from 2025-2034.[26] This is a Swiss national platform that coordinates the harmonization of digital transformation. It aims at increasing the quality of patient care, data security and efficiency in the healthcare system. It involves stakeholders from many areas, including hospitals, industry and politics. swimsa supports these efforts and hopes that it brings the needed actions in a timely manner.

The federal council has adopted a new health political strategy (Gesundheit2030[25]), which aims at promoting technological and digital change, besides others. Concretely, the goal is to increase the use of technologies and health data as well as health literacy.
Further, the electronic patient record (EPD[27]) has been available in Switzerland since 2020. Revisions are already planned. The federal office for health created a strategy (Strategie eHealth 2.0[28], 2018-2024) to promote the introduction of the EPD and coordinate the digitalization around the EPD. swimsa supports the use of an electronic patient record, under the condition that it is a functioning system and does not create unnecessary work but optimizes workflows.

There are a variety of other proposals and initiatives, including: a Federal Health Act[29] from the Swiss Association for Medical Sciences (SAMS), which, among other goals, aims at making healthcare more efficient, as well as the Plateforme Tripartite Suisse from the Federal Office for Communication, which[30] encourages multi-actor exchange regarding Internet and digital governance and artificial intelligence.[31]
Several parliamentarians have proposed motions to foster digitalization and structures for applying AI-programs.[32,33,34] While some are still in discussion, others have been declined.

Some digital tools have already been shown to be effective in Switzerland. Examples include electronic prescriptions and medication plans. Many companies in the private industry have also developed digital solutions for the healthcare sector. Applying them more widely could improve the interprofessional collaboration between hospital workers, pharmacists, and home care deliverers. This might increase the compliance of patients, a critical issue in modern healthcare.

3. Call to Action

swimsa demands...

… of the Swiss Hospitals association H+, hospitals, and medical education institutions to…

1. Prioritize digital transformation as a strategic goal in healthcare by:
    a. Investing resources, including financial resources and infrastructure, in digital health initiatives
    b. Providing sufficient training opportunities for healthcare workers to effectively use digital tools and strengthen digital health literacy
    c. Implementing and encouraging usage of digital tools in clinical work
2. Promote interoperability between systems
3. Promote open dialogue and coordination between stakeholders in the healthcare system, including healthcare institutions, IT providers and users.
4. Optimize how patients are informed about their health and treatment options

… of swissuniversities, universities, and especially of the medical schools, that they…

1. Better integrate digital health into the medical curriculum by:
    a. Preparing future physicians to understand and efficiently work in a digitalized healthcare environment.
    b. Training future physicians asto recognize the possibilities and limitations of digitalization and to handle data appropriately.
2. Involve students in development of new digital medical applications.
3. Promote continued research into digital health and medicine including:
    a. Measuring the impact on patient outcomes, system efficiency, and health workers' well-being

... of the Confederation and the Swiss health directors conference, that they…

1. Establish clear legal and regulatory frameworks to support sustainable digital transformation
2. Prioritize digital transformation as a strategic goal in healthcare
    a. Continuing to support (national) digital health initiatives
    b. Investing resources, including financial resources and infrastructure, in digital health initiatives
3. Promote safe interoperability among patient data and clinical information systems (KIS)
4. Facilitate collaboration between all stakeholders involved in the digital healthcare system

... of the media and the public, that they…

1. Advocate for digital transformation and consider a holistic picture of healthcare digitalization by
    a. Acknowledging current redundancies and costs resulting from inefficient systems.
    b. Visualizing examples of effective digitalization.
2. Encourage the general population to adopt and actively engage with existing digital tools.

3. Raise awareness about the benefits of healthcare digitalization by
    a. Promoting its safe and conscientious use
    b. Promoting digital health literacy

4. Further remarks

Harmonized systems and interoperability

The largest aspect of harmonization and interoperability in healthcare relates to the storing of electronic medical records. Currently, patient data is too often stored in formats or servers only accessible to the healthcare provider that created or assembled the data, e.g., the general practitioner or the hospital.[35] When the patients are treated by another provider – a very common situation – the electronic records cannot simply be accessed by the provider currently in need of the records. In the vsao survey, 67.6% of the respondents said they work with softwares that are not even compatible with those used by other services within the same hospital.[2] The consequences can vary from simple inefficiencies to dramatic barriers to proper medical care. In addition, the burden of making sure the data is transmitted between the providers too often falls on patients themselves. Healthcare providers, on the other hand, have to ensure that the data they receive is copied and stored in their own system in the right format, which can be very time demanding. The vsao survey showed that 47.4% of the respondents said that both they and the nurses have to copy prescription drugs more than once for each patient.[2]

Digitalization can offer the opportunity for all providers within a healthcare system to store the data in an accessible format. This task is challenging but offers a range of advantages and opportunities. Interoperability improves patients' outcomes. For example, studies have shown it reduces duplicate errors and improves treatment compliance in chronic diseases.[36] It can also greatly reduce the time spent by healthcare providers on paperwork and manual entries in electronic systems, increasing the time providers spend with patients and decreasing costs[37].

The concept of Interoperability also applies to the different electronic services within an institution, beyond the storing of patient data. This includes electronic health records, the billing software, the multiple portals (radiology software, archives, emails, etc.), and individual medical equipment with their user interfaces. Interoperability in that context can help significantly reduce costs by improving efficiency in the workflow.[38]

Education & training in digital health for medical students

There has already been extensive reflection on how technology and digitalization changed medical curricula, fundamentally changing the way classes can be taught and how students access knowledge.[38] But less attention is paid to how medical students should be prepared for a working environment in which digitalization will be ubiquitous.

A survey from 2020 looking at how digitalization is approached in Swiss medical faculties found that even though it is generally recognized that digitalization is an important topic, several factors hinder its inclusion in the curricula. The study particularly cites the lack of staff qualified

to give classes in that particular field between technology and medicine, the lack of clear guidelines on what content such classes should teach, and the lack of funding. Among the proposed solutions is the promotion of peer-teaching where students would teach each other about the topic after doing their own research. That method tackles the staffing and cost challenges.

This challenge is still one that universities should tackle, with a focus on establishing a continuum with postgraduate education, a time where young healthcare workers are working everyday with clinical information systems and the digitalization it entails.

AI and machine learning

AI tools and machine learning can improve patient care and workflows in healthcare.[38,39] Machine learning can help in clinical decision-making and in reducing resources used by healthcare professionals for data analytics.[40] Additionally, it can assist in making predictions about disease risk, diagnosis, and prognosis.[40] AI-tools could drastically reduce bureaucracy tasks of healthcare workers by assisting the writing of reports, coordinating patient visits, or finding specific healthcare data in the system.

Beside technical challenges, ethical considerations concerning big data, such as medico-legal questions, healthcare workers digital literacy, and data privacy need to be taken into account.[41] Unawareness, lack of privacy, de-anonymized data can lead to unethical use of health data. Trust, clear ownership and control of data, and limitations in data sharing can increase patients' will to provide health data.[42]

Telemedicine

Telemedicine, as a new way to provide care, could increase access to healthcare for patients from more rural areas or patients being immobile, ease controls for patients with chronic diseases, or reduce emergency visits by providing online appointments. Thus, telemedicine benefits patients by reducing health inequity and increasing universal health coverage, reduces healthcare costs, and reduces shortage of clinicians time.[42]

5. Resources

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