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# Digital Health Safety Matters: A Promising Practice Study into the Adoption of Patient Safety Guidelines in Australia

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**Abstract.** A foundation for digitally enabling healthier living is the safe development and use of technology. The practice of digital health safety has emerged from patient harm attributed to failing technologies. The study aimed to investigate how to adopt and implement digital health safety guidelines at scale. Data was collected through an online survey, semi-structured interviews, focus groups, document review, and data mining of artefacts. The findings of this study capture the emerging practice from Australia in a way that offers insights into the problem of practice, patient safety practice, safety culture, and socio-technical factors. The research findings contribute to better understanding of the complexities of balancing digital innovation with patient safety. The four recommendations from the study and the provision of a logic model will support the audience to implement actions toward a safer digital health ecology.

**Keywords.** Digital health, patient safety, clinical safety, eSafety, safety culture, Australia, England

## 1. Introduction

It has been recognised that the Corona Virus (Covid-19) pandemic positively accelerated digital adoption [1,2]. Whilst the use of healthcare information technologies can improve access and quality of care, it can also introduce risk. Due to the breadth of digital technologies used in health services, the potential magnitude of harm to patients is high [3]. Often the rapid deployments of technology do not assess patient safety risks; resulting in harm, which have ethical and legal considerations [4]. Therefore, healthcare decision makers need to be cognisant of the potential liability of digital health safety incidents [5].

Health information technology has caused a multi-faceted challenge in identifying and preventing safety incidents [6]. As a science, measuring digital health and safety remains basic [7]. The health science community recognises the challenges, and international efforts are being made to understand the socio-technical dynamics to ensure patient safety [8]. Further countries including Australian and England have published patient safety guidelines to be used when deploying digital technologies, however awareness and adoption has been limited. The current practice challenges

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were worthy of further study, in particular identifying factors that support the promising adoption and implementation of safety guidelines to aid the maturity of the professional practice. This study explored the unique assets of the Australian healthcare system and provided an opportunity for international shared learning.

## 2. Methods

Conducted for a Master's Dissertation in Digital Health Leadership with The Institute of Global Health Innovation Imperial College, this study used a promising practice model to identify assets of the Australian healthcare system to achieve patient safety when deploying digital health technologies. The question guiding the study was: What factors need to be evaluated to support the scaled adoption and implementation of digital health safety guidelines as a professional practice in Australia? The research strategy used mixed methods to generate a creative and innovative study. Research participants included Australasian Institute of Digital Health (AIDH) members and Certified Health Informatician Australasia (CHIA) Alumni.

The data collected via a survey, interviews, and focus groups was analysed alongside data mined from Australian and English safety guidelines and artefacts from the Australian Commission on Safety and Quality in Health Care. The study findings were inductively mapped to the literature review themes; problem of practice, patient safety practice, safety culture, and socio- technical factors. The analysis identified further sub-themes. These were deductively categorised as the analysis progressed across the multiple data collection methods. The thematic analysis results were validated following the triangulation of the data.

## 3. Results

The online survey was completed by forty-one AIDH members. 58% of the health informatic respondents had a clinical background. There was considerable consensus from the members regarding the importance of governance data metrics and safety culture. 100% of the online survey respondents 'strongly agreed' that establishing governance for patient safety concerning digital health is important. 81% of the online survey respondents strongly agreed that baselining patient safety metrics with digital health systems is essential. 97% of the online survey respondents 'strongly agreed' that promoting cultures conducive to patient safety in digital health is needed.

The study's resultes were grouped into themes and sub-themes. Theme validation was supported by an assessment greater than three methods and are presented below (Figure 1).

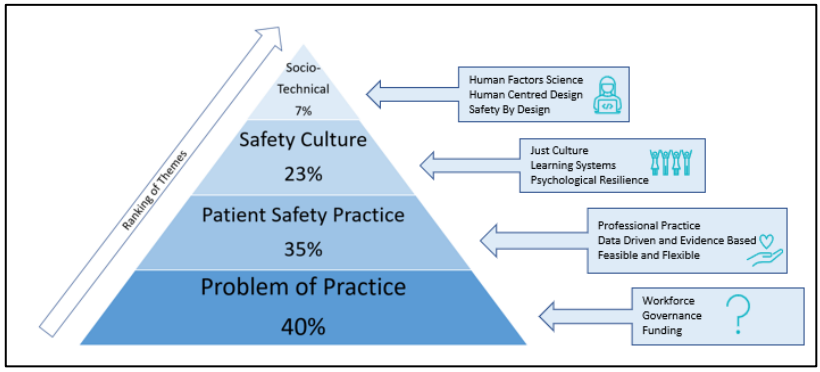


**Figure 1.** Theme and sub-theme rankings.

The findings confirmed that overcoming the barriers to adopting guidelines will be achieved by investing in the workforce, improving governance, and securing adequate funding. The findings highlighted that digital health safety requires a new professional identity with recognised skills to support adoption. A notable finding was that a safety culture that is 'just,' learns, and looks after the psychological wellbeing of the digital health safety workforce is vital. Findings also showed that employing design thinking will humanise digital health safety and the adoption of guidelines because it puts the person at the centre of the practice.

## 4. Discussion

The study found that overcoming the barriers to adopting digital health safety guidelines will be achieved by investing in the workforce, improving governance, and securing adequate funding. It is recommended to uplift the competency and capability of the workforce from ground level. Healthcare providers must integrate digital health safety with clinical governance and patient safety processes. At a national level, the Government must ensure digital health safety is supported so it can mature. Furthermore, prioritising adequate funding for digital health safety education, the life cycle management of technologies, and levelling up funding with other essential assurances such as Cyber Security is vital.

The findings revealed that digital health safety requires a new professional identity with recognised skills and approaches. The study recommended that the healthcare system plan and prepare for the emerging patient safety specialist. This professional profile consists of a hybrid talent that combines multiple domains of knowledge and attributes to do digital health safety effectively. The safety professional will need to lean into data science to ensure useful metrics capture data and obtain evidence to demonstrate that the practice is making care safer. Further, the professional will possess the skills to locally interpret and modify guidelines to accommodate the size, risk, and complexity of digital health deployments to support the feasible adoption and implementation.

Underpinning safety culture are standards and guidelines [9], but it takes collective action and shared commitments to see guidelines normalised into practice [10]. This study showed that a safety culture revolution is required. The study recommended that a 'Just Culture' is adopted to generate broader engagement, shared

responsibility, and accountability [11]. The study recommended implementing a system to facilitate reporting and learning to support a digital health safety culture. Additionally, leadership is needed to provide psychological and wellbeing support for a resilient digital health safety workforce.

High quality healthcare services that are safe do not happen organically; they are achieved through good design [12]. The findings indicate that design thinking is the key to unlocking the proactive adoption of digital health safety guidelines. Investing in the digital health safety guidelines at the early stages of design and development is recommended rather than leading up to deployment. The study recommended using human factors science and human centred design principles to influence the usability and safety of digital technologies.

The final recommendation of the study provided a logic model to help healthcare providers adopt and implement digital health safety guidelines at scale. The logic model unites recommendations from the literature, the Australian healthcare system assets, and the study's findings. In addition, the model integrates the outcomes from the document review and data mining and links the desired impact of national and international priorities. Finally, the model's foundation is grounded in the commitment to evaluate and evolve the maturity of digital health safety practice.

## 5. Conclusions

Digital health safety matters. Patient lives are put at risk when digital health errors occur [4]. The pace of healthcare digitisation needs a professional patient safety practice that evolves and embraces technological changes. This original research is at the heart of investing in the practice, process, and professional skills to ensure technology can improve the quality and safety of care. The future of healthcare will be accessible if we design, develop, and use technology safely. The scaled adoption of digital health safety will positively impact the ability to realise the transformative benefits of digital health. The study's logical model translates the research findings into actions for a safer digital health landscape.

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