Current perspectives on Safety Informatics: the patient safety challenges posed by emerging health information technologies (proposed title)

# Purpose and key messages of the paper

As information technology progresses , healthcare is becoming increasingly digital and connected (Wickramasinghe & Bodendorf, 2020). Technologies like electronic healthcare records, decision-support tools and handheld medical devices have been developed and used for many years with reported benefits for patient health but also with concerns for patient safety (Sittig et al., 2018). As existing health information technologies become increasingly ubiquitous and interact with new-and-emerging technologies, it is unclear what the implications are for patient safety in rapidly developing health information systems.

To this end, a national, expert, consensus-building collaboration began in April 2020 to provide a robust academic appraisal of the evidence and theory of patient safety in health information systems. The collaborative intends to host a series of workshops that deliver publications to engage those involved in the delivery and study of healthcare, and to provide recommendations to address theoretical and practical gaps in the informatics of safety. The first publication will 1) highlight the need for research in the transdisciplinary domain of Safety Informatics, which connects safety science, health science and digital innovation, 2) provide a definition of Safety Informatics, 3) synthesise the perspectives of the collaboration’s expert members on the challenges and patient-safety implications of emerging health information technologies, and 4) recommended techniques, theories, approaches and frameworks that might address the patient-safety implications identified.

# Target audience/journal

The first publication is intended for decision makers, developers and users of health information technology, along with patient-safety researchers and practitioners who may be interested in the implications of recent developments in informatics for quality and safety of healthcare. We will target field-leading informatics and quality/safety journals by considering two publication strategies. The first is to frame the work for the patient-safety audience and target *BMJ Quality and Safety* (probably as a 2,000-word Viewpoint article). The second is to frame the work for an informatics audience and target *Journal of Medical Internet Research* or *Journal of the American Medical Informatics Association*, potentially offering the editors the option of publishing a series of articles linked to each workshop theme. An article written for either of these journals would similarly fit the format of *International Journal of Medical Informatics* or *Health Informatics Journal*.

# Our collaborative process

## What have we done so far?

In the first workshop, a set of new and emerging health information technologies were collated from a scoping review of the academic, commercial and grey literature relating to health information systems. These technologies provided the substrate for breakout discussions about the patient-safety challenges that might arise from use of these technologies, alone and in conjunction with existing, new and emerging technologies.

## What is yet to do?

As a follow-up to the workshop, we will use the Well-Sorted process to elicit and group the challenges posed by new and emerging health information technology. Collaborators will then use the resulting groups of challenges to inform a collective viewpoint on the patient-safety implications that could arise consequently. Finally, collaborators’ experience and expertise will inform recommended techniques, theories, approaches and frameworks that can help to address the patient-safety implications identified. These will likely include the use of safety cases for prospective evaluation of safety; developments in approaches to regulation and standards; dynamic and causal modelling; automated methods to evaluate data quality; and a Human-Factors approach for evaluating technologies. The challenges, patient-safety implications and recommendations will each form a section of the final publication.

Sittig, D. F., Wright, A., Coiera, E., Magrabi, F., Ratwant, R., Bates, D. W., & Singh, H. (2018). Current challenges in health information technology–related patient safety. *Health Informatics Journal*, (2), 1–9. https://doi.org/10.1177/1460458218814893

Wickramasinghe, N., & Bodendorf, F. (Eds.). (2020). *Delivering Superior Health and Wellness Management with IoT and Analytics*. https://doi.org/10.1007/978-3-030-17347-0