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

# Purpose

Healthcare is becoming increasingly digital and connected (Wickramasinghe & Bodendorf, 2020). Technologies like electronic health records, decision-support tools and handheld medical devices have been developed and used for many years with reported benefits for patient care but also with concerns for patient safety (Sittig et al., 2018). It is currently unclear what the implications are for patient safety as existing health information technologies become ubiquitous with increasing pace and interact with new and emerging technologies.

In April 2020, we set up a national, expert, consensus-building collaboration to appraise the academic evidence for patient safety in health information systems. The collaborative will host a series of workshops that deliver publications to engage those directly involved in the delivery and study of healthcare, and to provide recommendations to address theoretical and practical gaps in the safety of informatics.

# Key messages

This paper will 1) define the Safety Informatics domain, which connects safety science and health informatics 2) highlight the need for research in 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) recommend theoretically-informed frameworks to address these patient-safety implications.

# Target audience/journal

The first paper is targeted at 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*. We will seek the editors opinion on an option to publish a series of articles linked to each workshop theme. Papers 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 expand upon our discussions to produce a collective viewpoint on the patient-safety implications of the challenges posed by new and emerging health information technology. 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.

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