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# DIGITAL HEALTH SAFETY MATTERS: EARLY INSIGHTS FROM A PROMISING PRACTICE STUDY IN AUSTRALIA

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**Objective** It has been recognised that the Covid -19 pandemic positively accelerated digital adoption (Greenway et al., 2021; Issa, 2020). However, rapid deployments of technology do not often assess and understand patient safety risks; resulting in harm, which have ethical and legal considerations (HEE, 2019). The NHS has received caution of the potential risks of the use of new digital solutions during the pandemic (Hutchings, 2020). To nurture digital health safety, clinical safety risk management practice is worthy of study. Further, identifying factors that support the promising adoption and implementation of safety guidelines will develop maturity of the professional practice.

**Methods** Conducted for a Master's Dissertation in Digital Health Leadership with The Institute of Global Health Innovation Imperial College, this study uses 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 is: what are the factors that need to be evaluated to support the scaled adoption and implementation of digital health safety guidelines as a professional practice in Australia? Taking into consideration the socio-technological factors of digital health safety, the research strategy uses a mixed method to generate a creative and innovative study. Qualitative data has been collected from stakeholders including the Australasia Institute of Digital Health (AIDH) members and Certified Health Informatician Australasia (CHIA) Alumni via surveys, interviews and focus group. This will be analysed alongside data mined from existing documents and artifacts to understand trends, implications and what is grounded in national policy and strategy. It is expected data mining of resources will provide further insights into the maturity digital health safety practices.

**Results** The promising practice investigation is related to the larger problem of the adoption of safety standards to ensure innovative new ways of working do not compromise patient safety. The presentation will share results from the international literature review and early insights of the first phase of data analysis. Evidence from the literature has exposed the current healthcare information technology safety practice challenges. There were few studies that focused on the factors influencing the adoption of digital health safety standards. However, the review surfaced six key areas that need to be understood to improve safety practice and culture, which will be summarised in the presentation. A comparison of safety frameworks from England and Australia will be presented. In addition, a review of the unique assets of the Australian healthcare system will be provided. Finally, a maturity model to guide the professional practice to assist organisations determining their status in adopting digital health safety into governance, policy, process, culture, and other facets of operations will be shared (Rowlands, Zelcer & Williams, 2017).

**Conclusion** As a science, measuring the impact digital health and patient safety remains rudimentary (Singh & Sittig, 2016). The health science community recognises digital health safety is challenging and international efforts are being made to understand the socio-technical dynamics to ensure patient

safety (Sittig et al., 2020). Given the national focus 'to embed digital clinical safety across health and care' (NHS X, 2021, p. 25), it is timely to look beyond to source exemplar organisations and best practice to participate in research (Gandhi et al., 2016). In contrast to the approach taken by the NHS Digital to mandate digital clinical safety standards, in Australia the Patient Safety Electronic Health (E-Health) Professional Practice Guidelines empowers organisations to establish 'best fit' with their strategic and operating context. This study is framed alongside the NHS Digital Clinical Safety Strategy and searches for evidence of a promising practice related to the Australian healthcare system and patient safety culture. This presentation will be beneficial for Digital Clinical Safety Officers and Chief Clinical Information Officers developing a clinical safety risk management process, investing in team building, recourses, and capability.

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# THE DATA LITERACY LEARNING AND DEVELOPMENT NEEDS OF OCCUPATIONAL THERAPISTS

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**Objective** There is a lack of national occupational therapy impact data and occupational therapists report challenges collecting, using, and sharing information as part of professional practice. All occupational therapists need a firm grasp of data, but little is known about how confident occupational therapists feel working with data at different points in their career and in different roles and contexts.

The objective of this research is to better understand the challenges facing occupational therapists and to consider what activities will support the development of the professions data literacy skills as part of a two-year programme of activity led by the Royal College of Occupational Therapists.

**Methods** The research method is a UK survey open to every occupational therapist working in the UK (open throughout the duration of January). The survey is being shared through the monthly professional magazine (OT News), email networks, health and care digital forums as well as social media.

This is a descriptive study that will help the researcher to understand the confidence of occupational therapists to use, collect and share professional data alongside any barriers to improving data practices. The survey captures demographic and personal characteristics information which enables the researcher to identify differences between occupational therapists employed in different contexts in different geographical locations e.g. NHS and Local Authority as well clinical specialism e.g. physical and mental health. Occupational therapists are asked about their access to data literacy CPD opportunities and what they think they need from a professional body to improve their data literacy. The data will be analysed through descriptive statistics and the content analysis of open comments.

**Results** There were 349 responses to the survey with good representation from every region of the UK and different areas of practice. 60% of the occupational therapists who responded to the survey reported that they had satisfactory data knowledge skills to use systems in clinical practice. Occupational therapists are high users of multiple systems to collect and share information across organisational boundaries with

only 18% of information sharing occurring through the electronic record keeping system. The most surprising finding was the skills and confidence gap. Despite 60% reporting good confidence to use systems, only 14% of occupational therapists felt confident to capture the impact of occupational therapy. Analysis of the survey findings identified that there was no significant difference in self-reported data knowledge confidence in different contexts of practice or at different points in an occupational therapists career. Those that rated themselves as having proficient data knowledge skills were employed in roles that were closer to data e.g. quality improvement and fellowships.

**Conclusion** Occupational therapists are high users of multiple electronic record keeping systems and the most frequently accessed professional development activity was system specific training. 60% of occupational therapists feel confident to use different systems in practice, however it is concerning that confidence drops to 14% when asked how this data is used to evidence the impact of occupational therapy. Occupational therapy information has three components, information that relates directly to the person e.g. ability or impairment and information that relates to a persons occupations and the environments in which these are carried out. As a profession, we need to increase our data literacy knowledge and skills in relation to knowing when it is appropriate to format our information in a structured, unstructured or semi structured way. Occupational therapists need to grow in confidence around how information needs to be structured to aid information sharing and if other formats are required for secondary purposes e.g. extracting and analysing information that relates to participation in occupations. The survey findings could be useful insights for pre and post registration providers of occupational therapy education, system developers, professional bodies and organisations who employ occupational therapists.

## 16 A FRIENDLY ACCESSIBLE DESCRIPTION OF THE 'L-TEST' – MEASURING (DIS)INFORMATION IN INCOMPLETE INCIDENT REPORTING

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**Objective** Incomplete incident reporting is concerning. England's Mental Health Units Use of Force Act 2018 (Seni's Law), responding to deaths and incomplete reporting, will mandate central restraint reporting per-person including ethnicity. 'L' is a proposed test for disinformation, i.e. 'false surprise' regarding true reports. Information, or 'surprise', is measurable as  $H = -\log(p)$  'bits', as defined by Shannon (1948).

The author explains his conjectured 'L-test', in a friendly accessible way. It is generalisable from incomplete restraint reports to other incomplete centralised safety reports. L is increased if complete reports seem falsely surprising consequent to noise from incomplete reports.

**Methods** Incident registers and minimum data sets are ubiquitous. Each hospital reports diverse incidents alongside measures of size or need. Notionally then data may include a) restraints; b) detentions ... m) bed days n) injuries.

L postulates that each hospitals' report of  $\{a, b, \dots m, n\}$ , implies signals of ratios  $(\log a/\log b)$ ,  $(\log a/\log m)$ ... which each can be received from the set of reports and combined to

estimate e.g. a typical ratio of safety events per-patient per-month. Omissions are noise.

Procedure:

1. Split the ordered list of complete report estimates into alternate halves E 'even' and O 'odd'.
2. Derive a probability  $p(E \sim O)$  that E and O are similar using Mann-Whitney U test, approaching  $p(E \sim O) = 1.0$  for large similar E and O. The test tolerates non-normally distributed estimates.
3. Calculate  $h(E \sim O)$  information as  $-\log(p(E \sim O))$ , approaching zero as O and E seem unsurprisingly similar.
4. Construct a noisy odd group 'NO' made of O mixed with estimates from incomplete reporters.
5. Calculate  $h(E \sim NO)$  information, approaching high values as incomplete reporters make E seem falsely surprising.

L is the proportional increase in  $h(E \sim O)$  due to noise:  $h(E \sim NO) - h(E \sim O)$

$$L = \frac{h(E \sim NO) - h(E \sim O)}{h(E \sim O)}$$

**Results** Estimate signals support funnel plotting, scatter plotting, and coefficients of determination ( $R^2$ ) as a measure of correlation.

The author will show that omissions (allowing for size and Poisson distribution) can be obvious on visual inspection of funnel and scatter plots and aid categorisation.

Where the estimates follow a normal distribution among reasonably complete reporters, this can be used to plot a typical ratio and infer incidents, with confidence intervals, even in null reporters, from measures of size and need.

Funnel plots from safety reports may have interesting properties such as innate asymmetry; they may reflect institutional-social processes such as regulation and closure as much as academic processes such as purported 'publication' bias.

H varies with the effect of incomplete reports and has other desirable features such as being zero when there are no omissions.

**Conclusion** Omitted reports have a measurable effect upon the standing of complete reports.

The author responds to this observation quantitatively, showing the roots and reasoning behind their conjectured 'L-test', in a friendly accessible way, with reference to papers under submission, other public data, and toy data sets.

In summary, L can tell investigators which incomplete reports skew the overall picture most.

In a context of restricted resource, regulatory efforts could concentrate on the omissions which have the most distorting effect – the biggest L score.

## 17 ELECTRONIC RECORDING OF PATIENT OBSERVATIONS WITH SAFETY FUNCTIONALITY IN THE ELECTRONIC HEALTH RECORD (EHR) FOR THE CHILDREN'S HOSPITAL AT IN LEEDS

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**Objective** Electronic observations incorporating ePAWS (Paediatric Advanced Warning Score) was developed as a bespoke functionality within the EHR for implementation across the Children's Hospital. ePAWS supports the identification of patients at risk of deterioration using a graded