JOURNAL OF
INNOVATION IN
HEALTH INFORMATICS

## *In this issue*

# Innovation to build learning health systems

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## INNOVATION OR EVIDENCE? BOTH!

Evidence-based thinking is sometimes misconceived as a barrier to innovation, when in fact both are vital.[1,2] Merlo *et al*.[3] demonstrate the synergy of evidence and innovation, showing how a mobile application for children with attention-deficit hyperactivity disorder supports evidence-based practice. The app enables systematic collection of behavioural observation data from people in the child's 'network'. Clinicians analyse this data to formulate intervention strategies and evaluate their effectiveness. Their results from the app show improved collaboration between clinicians, teachers and family members and a positive association with modified behaviours.

## ELECTRONIC HEALTH RECORDS: IMPLEMENTING, OPTIMISING AND TRUSTING

Several aspects of electronic health records (EHRs) are discussed in this issue. Priestman *et al*.[4] offer an evidence synthesis of EHR implementation barriers, success factors and operational impacts. Moon *et al*.[5] report a qualitative study of EHR optimisation in a set of US hospitals known for their advanced usage of health information technology, emphasising that in many respects the work only starts after go-live and that dedicated resources are needed to drive the optimisation of workflow, processes and practice. Millares Martin[6] raises the question of how far we can trust EHRs, using the simple method of assessing the reliability of smoking status recording in primary care systems.

## CONCEPTS AND PRIORITIES FOR LEARNING HEALTH SYSTEMS

McLachlan *et al*.[7] introduce the Heimdall framework as a unifying nomenclature for learning health systems. The authors contend that most work on learning health systems is not identified as such and that the lack of an agreed taxonomy hinders collaboration and progress in the field. This is an important contribution towards acquiring a common language that will improve knowledge sharing and convergence of research in learning health systems.

Another barrier to building learning health systems is the gulf between the worlds of 'Big Data' and 'Digital Health'.[8] The limitations of routinely collected data for

research purposes are not always recognised.[9] Debate on this topic at a workshop held at Medical Informatics Europe 2017 provides the basis for our leading article. We expand that discussion and propose that in fact *clinical* informatics comprises a greater part of a learning health system than the high profile data science aspects.[10]

## INFORMATICS LEADERSHIP

Learning health systems also need digital leaders. With the recent formation of the UK Faculty of Clinical Informatics and the Federation of Informatics Professionals,[11] the importance of professional qualifications and leadership has an increasing profile for practitioners in our discipline. Sridharan *et al*.[12] review the evolution of the roles of hospital Chief Information Officer and Chief Clinical Information Officer and discuss the emergence of a new senior role in academic institutions: Chief Research Information Officer.

## DATA SETS IN CONTEXT TO INFORM PROGNOSIS

Atashi *et al*.[13] report work in Iran to develop a core data set for intensive care patients, specifically designed to form the basis of a prognostic model that fits a developing country. Again, their work brings both evidence (the literature review that informed their project) and innovation (the expert consultation that took into account the developing country variance from models based on data from developed nation contexts). We look forward to seeing the empirical findings of their model in future publications.

## ROBOTS FROM THE FUTURE

In our last issue, we published a fascinating report on robot ward rounds in surgery.[14] Our current editorial reflects on that paper, discusses the prospect of wider adoption and notes both limitations and opportunities to enrich clinical utility of the robotic ward round experience.[15]

## REFERENCES


1. Auerbach AD, Landefeld CS and Shojania KG. The tension between needing to improve care and knowing how to do it. *The New England Journal of Medicine* 2007;357(6):608–13.
2. Wyatt JC. Evidence-based Health Informatics and the Scientific Development of the Field. In: Ammenwerth E, Rigby M (Eds.), *Evidence-Based Health Informatics: Promoting Safety and Efficiency through Scientific Methods and Ethical Policy*. Amsterdam, Netherlands: IOS Press, pp. 14–24, 2016.
3. Merlo G, Chiazzese G, Sanches-Ferreira M, Chifari A, Seta L, McGee C, *et al*. The WHAAM application: a tool to support evidence-based practice in functional behaviour assessment. *Journal of Innovation in Health Informatics* 2018;25(2):63–70.
4. Priestman W, Sridharan S, Vigne H, Collins R, Seamer L and Sebire NJ. What to expect from electronic patient record system implementation: lessons learned from published evidence. *Journal of Innovation in Health Informatics* 2018;25(2):92–104.
5. Moon MC, Hills R and Demiris G. Understanding optimisation processes of electronic health records (EHRs) in select leading hospitals: a qualitative study. *Journal of Innovation in Health Informatics* 2018;25(2):109–25.
6. Millares Martin P. Can we trust electronic health records? The smoking test for commission errors. *Journal of Innovation in Health Informatics* 2018;25(2):105–8.
7. McLachlan S, Potts HWW, Dube K, Buchanan D, Lean S, Gallagher T, *et al*. The Heimdall framework for supporting characterisation of learning health systems. *Journal of Innovation in Health Informatics* 2018;25(2):77–87.
8. Scott PJ, Cornet R, McCowan C, Peek N, Fraccaro P, Geifman N, *et al*. Informatics for Health 2017: advancing both science and practice. *Journal of Innovation in Health Informatics* 2017;24(1):1–185.
9. Hemkens LG, Contopoulos-Ioannidis DG and Ioannidis JP. Routinely collected data and comparative effectiveness evidence: promises and limitations. *Canadian Medical Association Journal* 2016;188(8):E158–64.
10. Scott PJ, Dunscombe R, Evans D, Mukherjee M and Wyatt J. Learning health systems need to bridge the 'two cultures' of clinical informatics and data science. *Journal of Innovation in Health Informatics* 2018;25(2):126–31.
11. De Lusignan S, Barlow J and Scott PJ. Genesis of a UK Faculty of Clinical Informatics at a time of anticipation for some, and ruby, golden and diamond celebrations for others. *Journal of Innovation in Health Informatics* 2018;24(4):344–6.
12. Sridharan S, Priestman W and Sebire NJ. Chief Information Officer team evolution in university hospitals: interaction of the three 'C's (CIO, CCIO, CRIO). *Journal of Innovation in Health Informatics* 2018;25(2):88–91.
13. Atashi A, Ahmadian L, Rahmatinezhad Z, Miri M, Nazeri N and Eslami S. Development of a national core dataset for the Iranian ICU patients outcome prediction: a comprehensive approach. *Journal of Innovation in Health Informatics* 2018;25(2):71–6.
14. Croghan SM, Carroll P, Reade S, Gillis AE and Ridgway PF. Robot assisted surgical ward rounds: virtually always there. *Journal of Innovation in Health Informatics* 2018;25(1):41–56.
15. Gatenby PAC. The robot will see you now? *Journal of Innovation in Health Informatics* 2018;25(2):60–2.