AUSTRALIAN INSTITUTE
OF HEALTH INNOVATION
Faculty of Medicine and Health Sciences

MACQUARIE
University

Health futures

THE SYSTEM IN 2035

E-health safety, telehealth and aged care

E-HEALTH

Part of the legacy of the past is the new information technology systems have developed separately, fragmented across different parts of the hospital. Today's challenge is to integrate these systems, to avoid replication and inefficiency. AIHI research has shown, that e-Health can introduce unforeseen errors that may lead to patient harm. We need to monitor e-Health systems better so that problems can be detected before patients come to harm.

TELEHEALTH

Can integrate care across locations, making services available to more people.

AGED CARE

An AIHI survey published in 2012 found care centre staff use a median of six forms a day. 70% of staff spend 30 minutes a shift transferring information from paper to computer. Community aged care service providers are currently struggling with the major change to consumer directed care, which allows aged care clients to make choices about their care. For that to work, people have to be given information. Aged care information systems need to be geared to coordinate and integrate care for older people.

Laboratory medicine

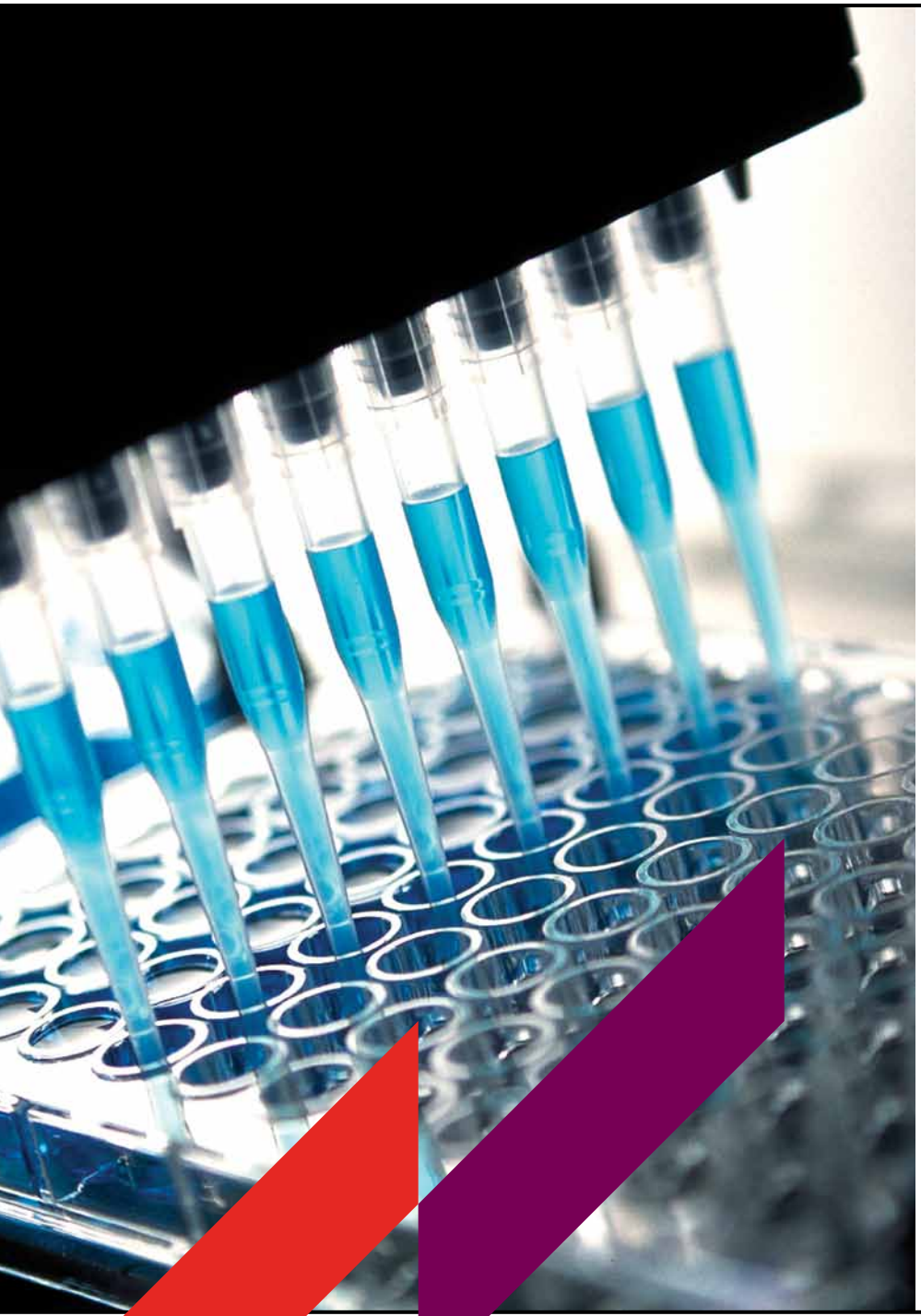
Obviously, we cannot know the future, but we can see glimpses of it in trends which are visible now.

In the world of medical imaging and pathology make up the great bulk of all data in a hospital. These data sources can contribute important information about how the health care system works, the resources it requires and its impact on patient care.

AIHI's study of four hospitals found that the introduction of the electronic medical record has led to important gains. It reduced turnaround times and repeat testing, and improved error rates compared with a paper-based system.

One example of where e-Health systems are headed: the failure to follow up test results continues to be a major problem in hospitals. Brisbane's Mater Mothers' Hospital introduced a result acknowledgement system in which, if three days go by and a result has not been acknowledged, the case is escalated. An AIHI study showed the system led to the acknowledgment of all results, and more than 60% within 24 hours.

Learning systems and electronic patient portals



LEARNING SYSTEMS

Enable us to learn from every patient admitted and every system installed, and feed that information back to those involved in running the system to create cycles of continuous improvement. Using electronic systems which track each event from order to test and receipt of results, we can look at errors and delays in clinical processes. AIHI has been researching how evaluation and adjustment can be automated, because unless these are done in a timely manner the potential for improvement cannot be realised. Real-time monitoring can detect disruptions to processes including IT incidents. Based upon syndromic surveillance, which is well established for disease outbreaks, we have shown IT systems can be monitored in real time to detect early any IT incidents that might lead to an adverse event.

ELECTRONIC PATIENT PORTALS

Allow a patient to access their results securely, make appointments, and contact clinicians. The health care system has only just begun to engage with this technology. Further studies are needed to show how it affects the quality and effectiveness of care, including through measures such as the number of hospitalisations, length of stay and readmissions.

Who we are

ASSOCIATE PROFESSOR ANDREW GEORGIOU

Is a health informatics researcher with an acclaimed international research profile in the areas of outcome measurement, quality and safety, pathology informatics, aged care and organisational communications research. He is a Fellow of the Australasian College of Health Informatics (2005) and the Australasian College of Health Service Managers (2009).

ASSOCIATE PROFESSOR FARAH MAGRABI

Is internationally recognized for her work on the *safety of e-health* (health informatics). Her Australian group initiated, and still leads, the analysis of critical incidents and IT safety, and the work is translating to policy around the world. She serves on the Editorial Board of the Journal of the American Medical Informatics Association.

EXAMPLES OF WHAT WE'VE PUBLISHED

1. Byrne M, Vecellio E, **Georgiou A**, **Westbrook J**. Using telephone triage protocols to support nurse video triage [Abstract]. Guidelines International Network Conference. Melbourne, Australia, 2014.

2. **Callen J**, Giardina T, Singh H, **Li L**, Paoloni R, **Georgiou A**, **Runciman W**, **Westbrook J**. Emergency physicians' views of direct notification of laboratory and radiology results to patients using the internet: A mulisite survey. *Jorunal of Medical Internet Research* 2015;17(3):e60.

3. **Coiera E**, Wang Y, **Magrabi F**, **Perez Concha O**, **Gallego B**, **Runciman W**. Predicting the cumulative risk of death during hospitalization by modeling weekend, weekday and diurnal mortality risks. *BMC Health Services Research* 2014;14:226.

4. Forster M, Dennison K, **Callen J**, **Georgiou A**, **Westbrook J**. Maternity patient's access to their electronic medical records: Use and perspective of a patient portal. *Health Information Management Journal* 2014;44(1).

5. **Gallego B**, **Magrabi F**, **Perez Concha O**, Wang Y, **Coiera E**. Insights into temporal patterns of hospital patient safety from routinely collected electronic data. *Health Information Science and Systems* 2015;3(Suppl 1).

6. **Georgiou A**. Improving health information and data management - The evidence of e-health's impact [Abstract]. 15th Annual Health Congress. Sydney, Australia, 2014.

7. **Georgiou A**, Hains I, Mississ D, Ridley L, **Westbrook J**. Integrating PACS and CPOE in the ICU - The challenge of delivering health information technology-enabled innovation. In: Lumb P, Karakitsos D, eds. *Critical Care Ultrasound*. Philadelphia: Elsevier, 2014:295-97.

8. **Georgiou A**, Lymer S, Forster M, Strachan M, Graham S, Hirst G, **Callen J**, **Westbrook J**. Lessons learned from the introduction of an electronic safety net to enchance test result management in an Australian mothers' hospital. *Jorunal of the American Medical Informatics Association* 2014;21(6):1104-08.

9. **Georgiou A**, Vecellio E, **Li L**, Eigenstetter A, Wilson R, Toouli G, **Westbrook J**. Monitoring health IT integration - the effect of an EMR on laboratory service timeliness across six Australian hospitals. In: Lovis C, Sérroussie B, Hasman A, Pape-Hauggard L, Saka O, Anderson S, eds. E-Health - For Continuity of Care. Amsterdam, the Netherlands: IOS Press, 2014:955-56.

10. Hyppönen H, Schreiber R, **Georgiou A**, Ammenwerth E. Monitoring eHealth benefits - Dream or reality? [Abstract & Workshop]. Medical Informatics Europe. Istanbul, Turkey, 2014.

11. **Li L**, **Georgiou A**, **Vecellio E**, Eigenstetter A, **Toouli G**, Wilson R, **Westbrook J**. What is the effect of electronic pathology ordering on test re-ordering patterns for paediatric patients? In: Grain H, Martin-Sanchez F, Schaper L, eds. *Studies in Health Technology and Informatics*. Amsterdam, the Netherlands: IOS Press, 2014:74-79.

12. **Li L**, **Georgiou A**, **Vecellio E**, Eigenstetter A, Wilson R, **Toouli G**, **Westbrook J**. What is the effect of electronic pathology ordering on test re-ordering patterns for paediatric patients? [Abstract]. Health Informatics Conference. Melbourne, Australia, 2014.

13. **Magrabi F**, Sinha I, Ong M, Harrison S, Kidd M, **Runciman W**, **Coiera E**. Clinical safety of England's national programme for IT: A retrospective analysis of all reported safety events 2005-2011. *International Journal of Medical Informatics* 2015;84(3):198-206.

14. **Tariq A**, **Douglas H**, Smith C, **Georgiou A**, Osmond T, Armour P, **Westbrook J**. A descriptive analysis of incidents reported by community aged care workers. *Western Journal of Nursing Research* 2014;37(7):859-76.

15. **Tariq A**, **Georgiou A**, **Westbrook J**. Coping with information silos: An examination of the medication management process in residential aged care facilities (RACFs). In: Grain H, Martin-Sanchez F, Schaper L, eds. *Studies in Health Technology and Informatics*. Amsterdam, the Netherlands: IOS press, 2014:156-62.

16. **Tariq A**, Lehnbom E, Oliver K, **Georgiou A**, Rowe C, Osmond T, **Westbrook J**. Design challenges for electornic medication administration record systems in residential ages care facilities. *Applied Clinical Informatics* 2014;5(4):971-87.

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