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RESEARCH IMPROVES THE EARLY DETECTION OF SEPSIS

Sepsis is a blood-borne infection that triggers a potentially fatal response by the body's immune system, damaging organs. More than 5,000 people die from sepsis every year in Australia.

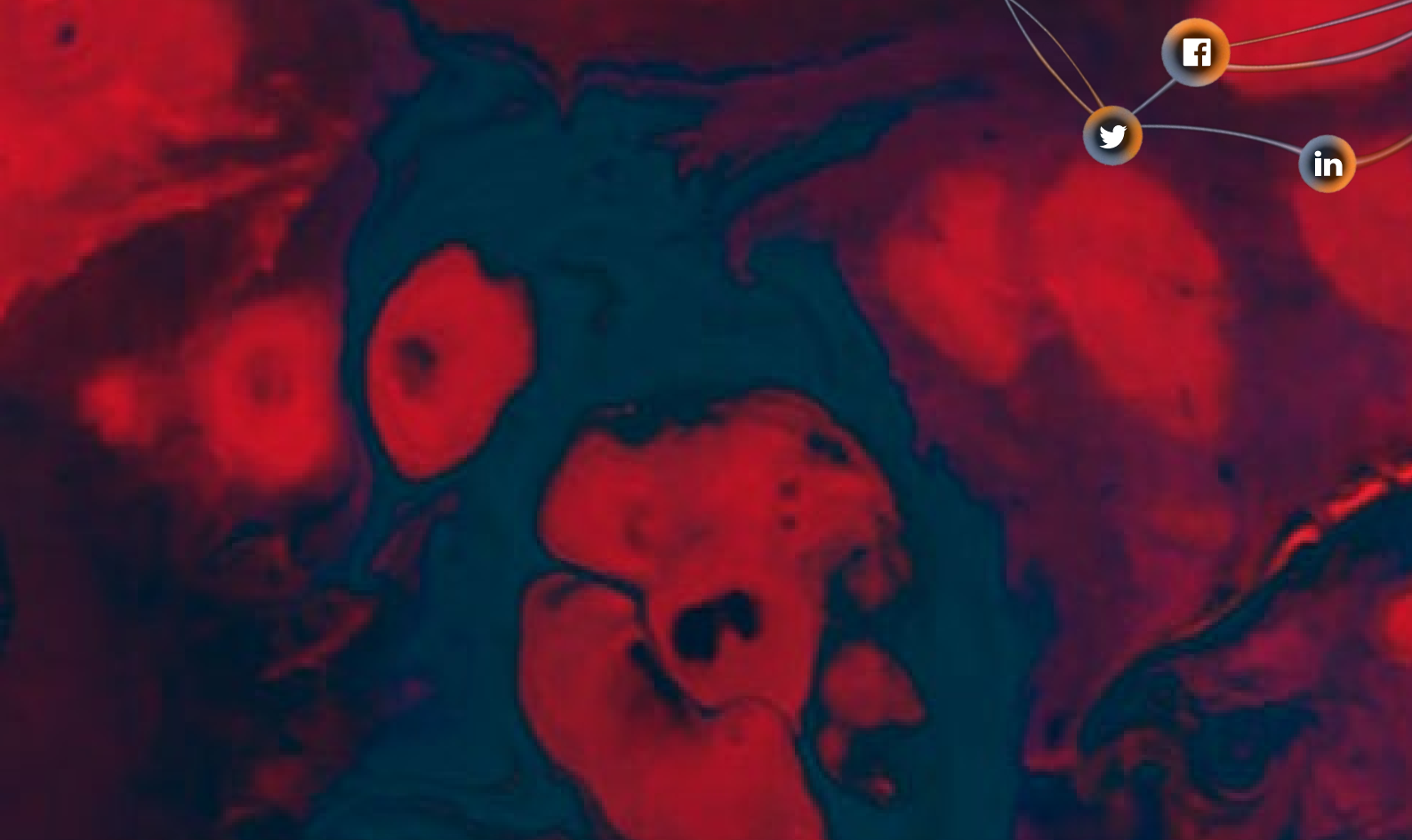
More than from prostate cancer, more than from breast cancer. It can affect anyone, from the very young to the elderly, the fit and the infirm. The best defence against sepsis is the early detection of people at risk. Supporting and improving the ability of hospital staff to do this has been the priority of Associate Professor Ling Li from the Australian Institute of Health Innovation, Macquarie University.

Associate Professor Li's research is the first to compare the performance of commonly accepted tools for the early detection of sepsis in adult inpatients on hospital wards.

Now and as a result of findings, Associate Professor Li warns against adoption of the internationally recommended Quick Sequential (Sepsis-related) Organ Failure Assessment (qSOFA) for early detection of suspected sepsis in hospital patients.

qSOFA was developed by a team from the International Society of Critical Care Medicine and the European Society of Intensive Care Medicine and while not yet widely used in Australian hospitals, it is recommended by the international taskforce of the Third International Consensus Definition for Sepsis and Septic Shock (2016).

"qSOFA has been put forward as an effective tool for early detection of sepsis however our research shows it is not adequate. Instead, we are calling on all Australian hospitals to use SEPSIS KILLS Adult Sepsis Pathway (ASP) to improve the timeliness of detection," Associate Professor Li said. ASP was devised to prompt nurses and doctors at a patient's bedside to consider certain criteria, such as changes in blood pressure, respiratory rate and consciousness, in assessing the possibility of sepsis.



"For a patient with sepsis, every hour of delay in the commencement of treatment with antibiotics significantly reduces their chance of survival," Associate Professor Li explained.

THE RESEARCH

Associate Professor Li's research was conducted using more than 10 million clinical records from over 130,000 patient admissions in 34 healthcare facilities across metropolitan, rural and regional locations in NSW. The aim was threefold:

- Evaluate the effectiveness of different sepsis recognition tools for the early detection of sepsis in adult inpatients
- Develop algorithms to utilise big data collected from the electronic health record for scenario testing
- Optimise an electronic clinical decision support system to be rolled out in NSW hospitals

THE RESULTS

In evaluating the effectiveness of tools, research results led to the recommendation that hospitals use ASP, which was developed in NSW and implemented by the Clinical Excellence Commission, ahead of qSOFA.

The study found for two thirds of cases in the study, qSOFA would not have triggered a warning of sepsis prior to the patient's death.

On the other hand, ASP would have triggered a warning for more than 90% of cases who died in hospital and the warning would have been triggered 8 days before death for half of cases.

THE IMPACT

ASP is a paper-based system and Associate Professor Li says the future will be in developing automated systems.

Recently, Associate Professor Li and a team from the Australian Institute of Health Innovation completed an evaluation and optimisation of automated clinical systems to improve early sepsis diagnosis and rapid treatment.

The optimised electronic decision support system increased the chance of sepsis patients being recognised early by 35%. Associate Professor Li presented this published research at the 17th World Congress of Medical and Health Informatics (a worldwide key event in digital health) in August 2019. This research has been adopted by the Clinical Excellence Commission and eHealth NSW for future rollout in NSW.

The research was published in the *Internal Medicine Journal* , *Studies in Health Technology and Informatics* (book series), and on the *Clinical Excellence Commission Website*. This article was co-authored by Chrissy Clay, Research Outreach Coordinator, Australian Institute of Health Innovation.

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