

A NanoBioLab Symposium 2021 Webinar

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TRANSLATING DIAGNOSTIC AND PROGNOSTIC MARKERS OF ACUTE KIDNEY INJURY TO FORTHCOMING CLINICAL PRACTICE



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ABSTRACT

Acute kidney injury (AKI) develops in 4–10% of hospitalized patients and is a marker of underlying illness severity. Multiple illnesses contribute to AKI causation, including sepsis, heart failure, cardiac and major surgery, iodinated contrast, nephrotoxic antimicrobials and chemotherapy. AKI increases in prevalence with the complexity of cardiovascular diseases and cancers in an ageing population. Conventionally, the management of AKI is purely salvage upon its diagnosis following significant elevation of serum creatinine, a late marker of kidney dysfunction, with high risk of mortality, dialysis, and long term kidney failure. Automated AKI alerts based on electronic serial creatinine criteria facilitates prompt case identification with implementation of evidence based measures including fluid management and reconciliation of AKI-inciting drugs to reduce AKI complications. We have today, urinary biomarkers of early kidney tubular injury that predicts AKI onset by a 12 – 48 hour lead time, as well as predicts subsequent death and dialysis. The timing and frequency of urine biomarker surveillance remains unclear, however, since the onset of AKI in hospital is highly variable, and this limits the translation to practice. Healthcare data analytics and machine learning would improve our subclinical AKI risk stratification, and identify on daily basis, a high risk subcohort for targeted urine biomarker assessment. This combined clinical and biochemical profiling may provide us a cost-effective approach to hospital wide AKI risk screening. Clinicians may finally have a temporal advantage in initiating upstream efforts to prevent AKI ahead of the patient's clinical deterioration and improve their long term kidney disease outcomes.

ABOUT THE SPEAKER

Dr Chua Horng Ruey obtained his Bachelor of Medicine and Surgery in 2002 and his Master of Medicine (Internal Medicine) in 2007, both from the National University of Singapore. He is a certified Specialist in Renal Medicine, appointed by the Singapore Medical Council in June 2011. Dr Chua was appointed to be on the Specialists Accreditation Board, Ministry of Health in June 2011. He was elected Fellow of Academy of Medicine (Singapore) and Fellow of Royal College of Physicians (Edinburgh) since 2015, and Fellow of American Society of Nephrology since 2017. He was awarded the Healthcare Manpower Development Program by Ministry of Health Singapore in 2010 for his post-graduate training in critical care nephrology at the department of intensive care in Austin Health, Melbourne, Australia. He is a recipient of the Transition Award by the National Medical Research Council, Singapore, in 2019 for his studies on acute kidney injury and nephrotoxicity. He has obtained further graduate certification in digital health and healthcare analytics from Singapore Management University Academy in 2020. His clinical interests are in acute kidney injury, both preventive care and organ failure support, cancer and kidney disease, as well as metabolic syndrome and cardiovascular disease. Dr Chua is currently a Senior Consultant with the Division of Nephrology at the National University Hospital.

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