



WA HEALTH HACKATHON 2022

CHALLENGE 2: Earlier Sepsis Detection

Background

Sepsis is the life-threatening condition that arises when the body's response to an infection damages its own tissues and organs. It can lead to shock, failure of multiple organs, and death. Organ failure and death are more likely if sepsis is not recognized early and not treated promptly.

Patients continue to die from sepsis, which is partly due to delayed recognition when they present. Mortality from sepsis remains high despite increasing recognition and efforts to institute early treatment. Current sepsis algorithms focus on providing the correct treatments and safe disposition to patients with sepsis, but delayed recognition and identification remains a significant problem. Detection or flagging of patients at-risk of developing sepsis may increase the likelihood of earlier intervention and prevention of sepsis progression.

Challenge

How can we detect sepsis earlier so it can be treated effectively?

Possible Approaches

The approaches outlined below have been included for information and inspiration only and are by no means prescriptive. Approach the challenge in whatever way you feel will address the problem statement understood by your team.

- Can we predict patients who are at risk of developing sepsis from information available to frontline clinical staff at the point of presentation (including free text notes taken from triage nurses)
- Are we able to predict a patient's probability of developing sepsis prior to diagnosis and update this prediction based on clinical inputs?
- What tools would help clinicians manage at risk patients?
- If new processes are required, what's the minimum change required?

Data Available

De-identified EDIS data and hospital admissions data (linkage of two datasets will be required).

Additional Resources

Hornig S, Sontag DA, Halpern Y, Jernite Y, Shapiro NI, Nathanson LA. [Creating an automated trigger for sepsis clinical decision support at emergency department triage using machine learning](#). PLOS ONE. 2017 Apr 6;12(4):e0174708.

[Epidemiology of Sepsis in Australian Public Hospitals](#) (provides a good overview of ICD-10 codes associated with sepsis)

Domain Expertise/Challenge Owner

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