Severe sepsis is common, deadly & costly

Severe sepsis is organ failure and SIRS due to infection [1].

NZ and AUS ICU [2]
11.8% incidence
0.77 per 1000 prevalence
26.5% mortality
6x treatment cost [3]
$16.7B USD total cost [4]

A need for real-time diagnostics

Sepsis severity increases with concurrent

- sepsis
- severe sepsis
- septic shock

SIRS due to infection,
organ failure,
and clinical intervention [5].

However, hierarchical criteria fails when physiological responses are resolved, yet the underlying infection remains. Thus, to enable hour-to-hour sepsis classification, we examined the diagnostic performance of a continuous sepsis score, where each category was scored independently, rather than hierarchically.

Classification using bedside data

A severe sepsis biomarker was developed from:
- 36 patients at the Christchurch Hospital ICU
- 6550 hours (1690 severe sepsis, 4860 non-severe sepsis
- insulin sensitivity, temperature, heart & respiratory rate, MAP, SIRS

Kernel density estimates were used for classification [6]. A ROC curve was used to determine diagnostic performance.

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