



Appendix

This appendix was part of the submitted manuscript and has been peer reviewed.

Appendix to: Heldens M, Schout M, Hammond NE, et al. Sepsis incidence and mortality are underestimated in Australian intensive care unit administrative data. *Med J Aust* 2018; 209: 255-260. doi: 10.5694/mja18.00168.

Table 1. Accuracy of the ANZICS CORE database definition of sepsis with respect to the clinical definition of sepsis for 864 patients admitted to the intensive care unit (ICU) at Royal North Shore Hospital, Sydney, 1 October – 31 December 2016

	Clinical sepsis	No clinical sepsis	Clinical septic shock	No clinical septic shock
All patients				
Database sepsis	76 ^A	22 ^B	Database septic shock	32 ^A
No database sepsis	70 ^C	696 ^D	No database septic shock	17 ^C
Sensitivity, 52%		Sensitivity, 65%		
Specificity, 97%		Specificity, 94%		
Positive predictive value, 78%		Positive predictive value, 39%		
Negative predictive value, 91%		Negative predictive value, 98%		
Patients diagnosed with clinical sepsis/septic shock during first 24 hours of admission to the ICU				
Database sepsis	76 ^A	22 ^B	Database septic shock	28 ^A
No database sepsis	45 ^C	721 ^D	No database septic shock	5 ^C
Sensitivity 63%		Sensitivity 85%		
Specificity, 97%		Specificity, 93%		
Positive predictive value, 78%		Positive predictive value, 34%		
Negative predictive value, 94%		Negative predictive value, 99%		

ANZICS CORE = Australian and New Zealand Intensive Care Society Centre for Outcome and Resource Evaluation.

Sensitivity = (A/[A + C]); specificity = (D/[B + D]); positive predictive value = (A/[A + B]); negative predictive value = (D/[C + D]).

Table 2. Identified sources of infection in patients diagnosed with sepsis by clinical or database criteria

Source of infection	Diagnostic criteria		P
	Clinical*	Database [†]	
Number of episodes	156	105	
Pulmonary	76 (49%)	34 (32%)	0.009
Intra-abdominal	31 (20%)	22 (21%)	0.88
Blood	17 (11%)	11 (10%)	0.99
Skin	8 (5%)	8 (8%)	0.44
Urinary	18 (12%)	15 (14%)	0.57
Intravenous fluid catheter	1 (0.6%)	0	0.99
Central nervous system	4 (3%)	4 (4%)	0.72
Gut	5 (3%)	2 (2%)	0.71
Endocarditis	3 (2%)	1 (1%)	0.65
Other	3 (2%)	9 (9%)	0.012
Unknown	8 (5%)	5 (5%)	0.99

* 156 episodes in 146 patients. More than one site was reported for 17 episodes (11% of episodes): two sources for 16 episodes, three sources for one episode.

[†] 105 episodes in 98 patients. More than one site was reported for nine episodes (9% of episodes): two sources for eight episodes, three sources for one episode. For four episodes, there was no clinical suspicion of an infection, so no source of infection was identified.

Table 3. Organisms cultured from patients diagnosed with sepsis by clinical or database criteria

Organism cultured	Diagnostic criteria	
	Clinical*	Database†
Number of episodes	156	105
Gram-positive bacteria	60 (38%)	43 (41%)
MSSA	12 (7.7%)	8 (8%)
MRSA	8 (5%)	4 (4%)
Pneumococcus	5 (3%)	3 (3%)
Other streptococci	14 (8.9%)	15 (14%)
<i>Enterococcus</i> sp.	14 (8.9%)	11 (10%)
Coagulase-negative staphylococci	6 (4%)	1 (1%)
Other gram-positive bacteria	1 (0.7%)	1 (1%)
Gram-negative bacteria	53 (34%)	35 (33%)
<i>Pseudomonas</i> sp.	9 (6%)	7 (7%)
<i>Haemophilus</i> sp.	8 (5%)	4 (4%)
<i>Acinetobacter</i> sp.	3 (2%)	1 (1%)
<i>Klebsiella</i> sp.	9 (6%)	5 (5%)
<i>Enterobacter</i> sp.	16 (10%)	15 (14%)
<i>Serratia</i> asp.	2 (1%)	1 (1%)
Other gram-negative bacteria	6 (4%)	2 (2%)
Others	33 (21%)	17 (16%)
<i>Candida</i> sp.	14 (8.9%)	9 (9%)
<i>Aspergillus</i> sp.	1 (0.7%)	0
<i>Clostridium difficile</i>	5 (3%)	2 (2%)
Mixed	4 (3%)	3 (3%)
Other	9 (6%)	3 (3%)
No pathogen identified	45 (29%)	24 (23%)
No culture attempted	4 (3%)	8 (8%)

MSSA = methicillin-sensitive *Staphylococcus aureus*; MRSA = methicillin-resistant *S. aureus*.

* 146 organisms cultured during 107 episodes of sepsis; in 25 episodes, two organisms were identified, and in seven episodes, three.

† 95 organisms cultured during 73 episodes of sepsis; in eight episodes, two organisms were identified, and in seven episodes, three.

Table 4. Mortality during the first 24 hours in the intensive care unit (ICU) of patients diagnosed with sepsis by clinical or database sepsis criteria

	Diagnostic criteria		P
	Clinical sepsis	Database sepsis	
Total number of patients	121	98	
Died in ICU	25 (21%)	16 (16%)	0.49
Died in hospital	32 (26%)	17 (17%)	0.14
Died within 28 days	27 (22%)	14 (14%)	0.16
Septic shock	33 (27%)	83 (85%)	< 0.001
Died in ICU	8 (24%)	12 (14%)	0.28
Died in hospital	8 (24%)	13 (16%)	0.29
Died in hospital within 28 days	6 (18%)	11 (13%)	0.56