Supporting Information

Supplementary tables and figures

**This appendix was part of the submitted manuscript and has been peer reviewed.
It is posted as supplied by the authors.**

Table 1. Data linkage information

Linkage between ICU (AORTIC) and SA Health (ISAAC) datasets was performed in a deterministic sequential tiered manner:
1. All matching variables were transformed to identical format, e.g. uppercase surname, and stripped of blank characters.
2. Full match = {SA Health / Hospital patient unique identifier number (URN) + Surname + DOB + Hospital admission date}
3. Surname + DOB + Hospital admission date + manual interrogation of non-matched URN (i.e. searching for ICU data entry errors)
4. URN + DOB + Hospital admission date + manual interrogation of non-matched Surname (i.e. searching for ICU data entry errors)
5. URN + Surname + DOB + manual interrogation of non-matched hospital dates
6. URN + Surname + hospital dates + manual interrogation of non-matched DOB
7. Above deterministic matching was cross-checked with probabilistic matching in Stata (module reclink2)
Linkage between ICU (AORTIC) and the SA death registry (BDM) was performed in a deterministic sequential tiered manner:
1. All matching variables were transformed to identical format, e.g. uppercase surname, and stripped of blank characters.
2. As the BDM dataset lists all given names and patients not-uncommonly select their first-name, matching was taken as the recorded AORTIC first-name was any of the listed BDM given names.
3. All in-hospital deaths were cross-checked against the BDM date-of-death.
4. All matches required {date-of-death >= hospital discharge date}, with manual interrogation where {date-of-death > hospital admission date}. This is pertinent to ICU as patients suffering brain death are frequently declared deceased 1-2 days prior to hospital discharge.
5. Full match = {Surname, Firstname, Gender, DOB}
6. Sequential interrogation for partial matching in #5 as per AORTIC-ISAAC matching above.
7. Deterministic matching cross-checked with probabilistic matching in Stata (module reclink2).

ICU: Intensive Care Unit
SA: South Australia
AORTIC: Australasian Outcomes Research Tool for Intensive Care
ISAAC: Integrated South Australian Activity Collection
URN: Unit Record Number
DOB: Date of Birth
BDM: Births, Deaths and Marriages

Table 2. Demographic data for Indigenous patients admitted to intensive care, by postcode state

Variable	Postcode	
	South Australian	Other
Number of patients	1461 (72%)	574 (28%)
Age (years), median (IQR)	46 (34–58)	45 (34–55)
Sex (men)	801 (55%)	297 (52%)
APACHE II score, median (IQR)	17 (12–23)	16 (11–22)
Without age component	15 (10–21)	14 (10–20)
APACHE IIIj risk of death score		
Median (IQR)	0.09 (0.02–0.34)	0.10 (0.03–0.27)
Mean (SD)	0.22 (0.26%)	0.21 (0.25%)
IRSAD, median (IQR)	907 (869–960)	893 (690–1010)
Diabetes	446 (31%)	211 (37%)
Pregnant/post partum	32 (2.2%)	24 (4.2%)
Chronic health flags (APACHE II/IIIj)		
Immunosuppressed (disease)	9 (0.6%)	6 (1.0%)
Immunosuppressed (drugs)	40 (2.7%)	20 (3.5%)
HIV/AIDS	5 (0.4%)	0
Chronic liver disease	104 (7.1%)	23 (4.0%)
Acute hepatic failure	12 (0.8%)	3 (0.5%)
Metastatic cancer	15 (1.0%)	5 (0.9%)
Haematological malignancy	9 (0.6%)	3 (0.5%)
Lymphoma	4 (0.3%)	2 (0.3%)
Respiratory	85 (5.8%)	11 (1.9%)
Cardiac	89 (6.1%)	33 (5.7%)
Renal	105 (7.2%)	67 (11.7%)
ICU admission: source		
Accident and emergency	728 (50%)	124 (22%)
Operating theatre	263 (18%)	150 (26%)
General ward	206 (14%)	96 (17%)
Other ICU (any hospital)	7 (0.5%)	11 (1.9%)
Other hospital	245 (17%)	186 (32%)
Other	12 (0.8%)	7 (1.2%)
ICU admission: diagnostic group		
Post-operative	289 (20%)	171 (30%)
Cardiothoracic surgery	25 (1.7%)	52 (9.1%)
Trauma	200 (14%)	96 (17%)
Sepsis	169 (12%)	55 (9.6%)
Post-arrest	98 (6.7%)	29 (5.1%)
Length of stay (days), median (IQR)		
ICU	2.1 (0.95–4.6)	3.0 (1.4–7.1)
Hospital	8.4 (3.8–16)	17.0 (8.3–28)
Mechanical ventilation	747 (51%)	366 (64%)

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	Postcode	
Variable	South Australian	Other
Deaths		
ICU	140 (9.6%)	58 (10%)
Hospital	201 (14%)	74 (13%)
Hospital separation type		
Died	201 (14%)	74 (13%)
Home	801 (55%)	172 (30%)
Other acute care	313 (21%)	313 (55%)
Residential aged care	9 (0.6%)	2 (0.4%)
Self-discharge	109 (7.5%)	11 (1.9%)
Other	28 (1.9%)	2 (0.3%)

APACHE = Acute Physiology and Chronic Health Evaluation; HIV/AIDS = human immunodeficiency virus infection/acquired immunodeficiency syndrome; IQR = interquartile range; IRSAD = Index of Relative Socio-economic Advantage and Disadvantage; SD = standard deviation.

Table 3. State of recorded residence postcode, by Indigenous status

State	Non-Indigenous	Indigenous*	Total
South Australia	36 200	1461 (3.9%)	37 661
Northern Territory	388	472 (55%)	860
New South Wales	554	65 (11%)	619
Victoria	315	20 (6.0%)	335
Queensland	181	12 (6.2%)	193
Western Australia	63	5 (7.4%)	68
Missing data	48	0	48
Total	*37 749*	*2035 (5.1%)*	*39 784*

* Proportion of state figure.

Table 4. Hospital admissions with associated intensive care unit admissions, by self-discharge status

	Self-discharges		
Hospital admissions	No	Yes	Total
1	34 441 (88%)	589 (81%)	35 030 (88%)
2	3503 (9.0%)	102 (14%)	3605 (9.1%)
3	718 (1.8%)	20 (2.8%)	738 (1.9%)
4 or more	394 (1.0%)	17 (2.3%)	411 (1.0%)

Figure 1. Survival curves to 8 years after discharge from hospital for Indigenous intensive care patients by discharge type (solid line: self-discharge; dashed line: medical discharge). A. Univariate Kaplan–Meier survival curves; B. Cox proportional hazards model, adjusted for age, sex, APACHE II score, and APACHE IIIj diagnostic group, with ICU as a shared frailty
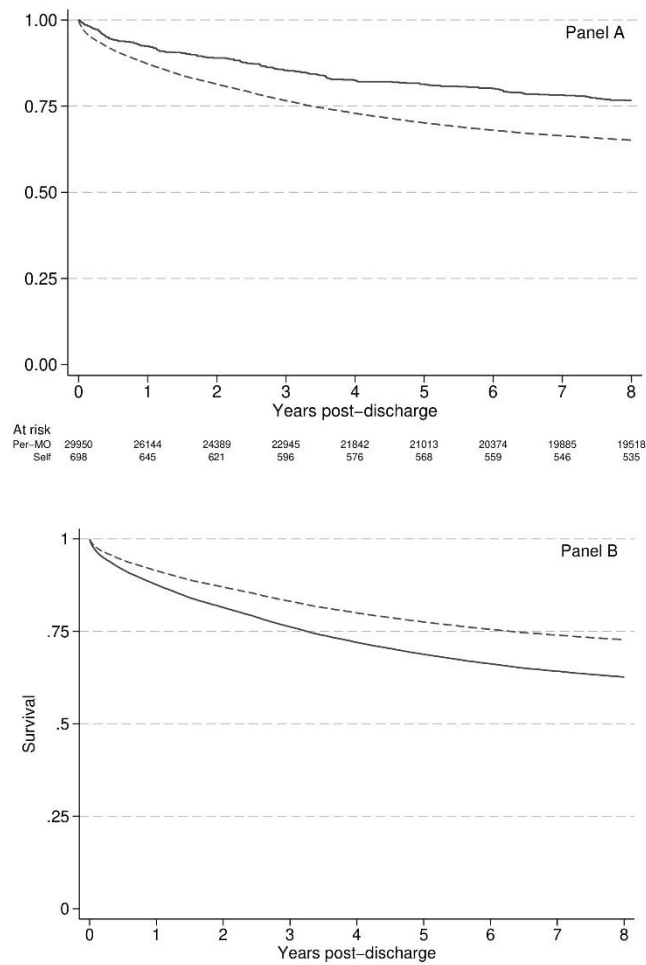

At risk									
Per–MO	29950	26144	24389	22945	21842	21013	20374	19885	19518
Self	698	645	621	596	576	568	559	546	535

Figure 2. Excess mortality after discharge from hospital for intensive care patients, relative to Australian Bureau of Statistics life tables for general and Indigenous South Australian populations
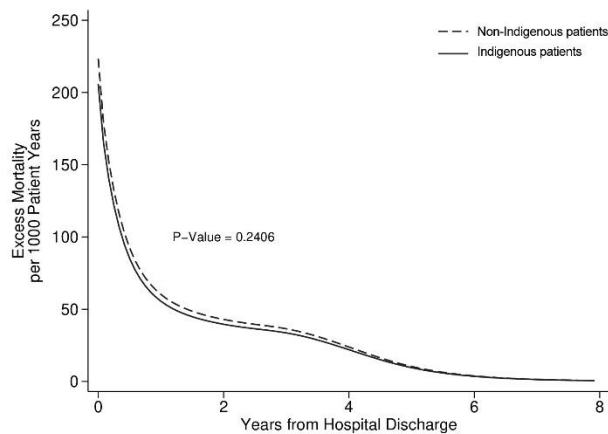
Figure 3. Cumulative relative survival after discharge from hospital (with 95% confidence intervals for non-Indigenous (panel A) and Indigenous (panel B) intensive care patients, relative to Australian Bureau of Statistics life tables for general and Indigenous South Australian populations
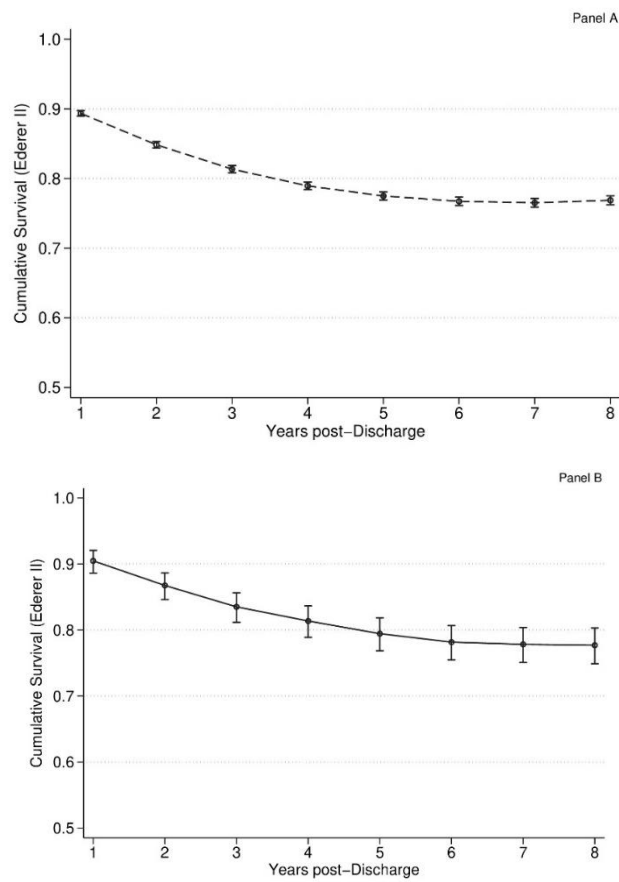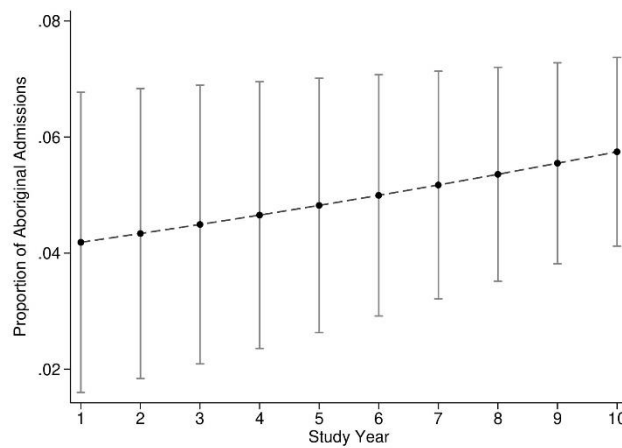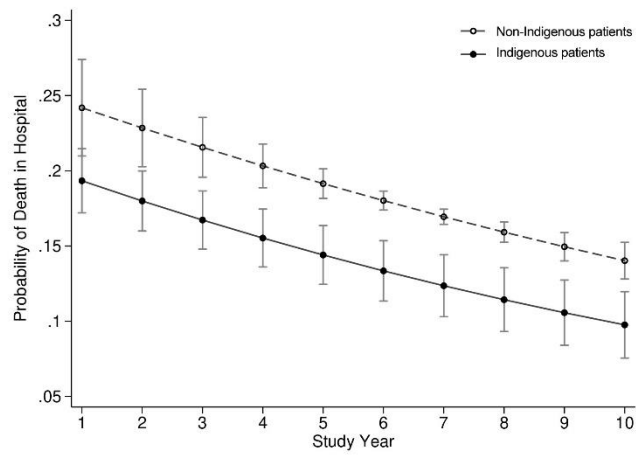

Panel A

Panel B

Figure 4. Proportion of patients admitted to intensive care units (ICUs) who identified as Indigenous Australians, with 95% confidence intervals*

* Logistic regression model, with ICU as a random effect and study year as a continuous variable from 2007: odds ratio (per year), 1.04; 95% confidence interval, 0.99–1.09.

Figure 5. Marginal probability of death in hospital (with 95% confidence intervals), by year from 2007*

* Interaction between Indigenous status and study year: *P* = 0.50.