

Sex differences in vital organ support provided to ICU patients
Electronic Supplementary material

Table E1. ICU Admission Diagnoses: ANZICS modification of the APACHE-IV diagnosis list

Cardiovascular		Gastrointestinal	
Non-operative Cardiogenic shock Cardiac arrest Aortic aneurysm Congestive heart failure Peripheral vascular disease Rhythm disturbance Acute myocardial infarction Hypertension Other cardiovascular disease Cardiomyopathy Unstable angina	Operative Peripheral vascular disease Peripheral artery bypass graft Elective AAA Carotid endarterectomy Valvular heart surgery Coronary artery bypass grafts Other cardiovascular diseases Dissecting aortic aneurysm Ruptured aortic aneurysm Aorto-femoral bypass graft CABG with valve repair/replacement Endoluminal aortic repair	Non-operative Hepatic failure GI bleeding – varices GI bleeding – ulcer/laceration GI bleeding – diverticulosis Other GI disease GI perforation GI obstruction GI vascular insufficiency Pancreatitis GI cancer Other GI inflammatory disease	Operative GI perforation/rupture (not peritonitis) GI bleeding GI obstruction GI neoplasm Cholecystitis/Cholangitis Liver transplant Other GI diseases Fistula/Abscess surgery GI vascular ischaemia resection surgery Pancreatitis Peritonitis Other GI inflammatory disease
Respiratory		Neurological	
Non-operative Aspiration pneumonia Respiratory neoplasm including larynx/trachea Respiratory arrest Pulmonary oedema – non-cardiac Chronic obstructive pulmonary disease Pulmonary embolism Mechanical airway obstruction Asthma Parasitic pneumonia Other respiratory diseases Bacterial pneumonia Viral pneumonia	Operative Respiratory infection Respiratory neoplasm – lung Respiratory neoplasm – mouth, larynx, sinus, trachea Other respiratory diseases	Non-operative Intracerebral haemorrhage Subarachnoid haemorrhage Stroke Neurologic infection Neurologic neoplasm Neuromuscular disease Seizure Other neurologic disease Epidural haematoma Coma	Operative Intracerebral haemorrhage Subdural/Epidural haematoma Subarachnoid haemorrhage Laminectomy/Spinal cord surgery Craniotomy for neoplasm Other neurologic disease

Sepsis	
Non-operative Sepsis, other than urinary Sepsis of urinary tract origin Sepsis with shock, other than urinary Sepsis of urinary tract origin with shock	
Trauma	
Non-operative Head trauma +/- multi trauma Multiple trauma excluding head Burns Multi trauma with spinal injury Isolated cervical spine injury	Operative Head trauma +/- multi trauma Multiple trauma excluding head Burns Multi trauma with spinal injury Isolated cervical spine injury
Metabolic	
Non-operative Metabolic coma Diabetic ketoacidosis Drug overdose Other metabolic disorders	Operative Metabolic disease
Haematological	

Non-operative Coagulopathy/Neutropaenia/ Thrombocytopenia Other haematologic disorders	Operative Haematological disease
Renal/Genitourinary	
Non-operative Renal disorders Pre-eclampsia Haemorrhage, post-partum (female only)	Operative Renal neoplasm Other renal diseases Kidney transplant Genitourinary surgery/procedure
Gynaecological	
	Operative Hysterectomy Pregnancy-related disorder Other gynaecological disease
Musculoskeletal/skin disease	
Non-operative Musculoskeletal/Skin disease Cellulitis/Soft tissue infection	Operative Orthopaedic surgery Skin surgery Cellulitis/Soft tissue infection

* reproduced from the ANZICS CORE Adult Patient Database Data Dictionary. Version 6.1 2022. ANZICS CORE, Melbourne, Australia. Available at: <https://www.anzics.com.au/wp-content/uploads/2021/03/ANZICS-APD-Data-Dictionary.pdf>.

Table E2: Full regression models^a

	Hospital Mortality (n=694,857)	Invasive ventilation (n=697,785)	Non-invasive ventilation (n=583,077)	Vasoactive medication (n=587,709)	Renal Replacement therapy (n=575,376)	ECMO (n=574,751)	Any treatment (n=609,329)
Sex: female	0.94 (0.91 to 0.97)	0.64 (0.63 to 0.65)	0.96 (0.93 to 0.98)	0.78 (0.77 to 0.79)	0.85 (0.82 to 0.88)	0.95 (0.82 to 1.09)	0.73 (0.72 to 0.74)
APACHE III risk of death ^b	1.06 (1.059 to 1.061)	1.024 (1.024 to 1.025)	1.014 (1.014 to 1.015)	1.039 (1.038 to 1.04)	1.045 (1.044 to 1.046)	1.038 (1.036 to 1.041)	1.049 (1.048 to 1.05)
LoMT	3.6 (3.46 to 3.74)	0.29 (0.28 to 0.30)	2.22 (2.14 to 2.29)	0.84 (0.81 to 0.86)	0.48 (0.45 to 0.51)	0.08 (0.04 to 0.14)	0.99 (0.96 to 1.02)
Year ^c	0.97 (0.96 to 0.99)	0.97 (0.96 to 0.98)	0.9 (0.89 to 0.91)	1.06 (1.05 to 1.07)	0.99 (0.98 to 1.01)	1.05 (0.98 to 1.11)	0.92 (0.92 to 0.93)

Data are presented as odds ratios with 99% confidence intervals. *LoMT* Limitation of medical treatment, *APACHE* Acute physiology and chronic health evaluation, *ECMO* extracorporeal membrane oxygenation

^a excluding odds ratios for individual hospital sites

^b incorporates APACHE III score and admission diagnosis; the odds ratio represents the increased risk associated with a 1% increase in risk of death.

^c Odds ratio represents annual change in risk over duration of study

Table E3: Complete data included in regression models for provision of vital organ support

	Complete data in regression model, n (%) N=699,535	Missing data, n (%) N=699,535	Missing data–women, n	Missing data–men, n	% Women among patients with missing data
Invasive ventilation	697,785 (99.7)	1,750 (0.3)	836	914	47.8
Non-invasive ventilation	583,077 (83.4)	116,458 (16.6)	49,946	66,512	42.9
Vasoactive medication	587,709 (84)	111,826 (16)	48,970	62,856	43.8
Renal replacement therapy	575,376 (82.3)	124,159 (17.7)	53,637	70,522	43.2
ECMO	574,751 (82.2)	124,784 (17.8)	53,657	71,127	43

ECMO Extra-corporeal membrane oxygenation

Table E4: Subgroup analysis according to illness severity

Illness severity category	Invasive ventilation use, unadjusted		Use of invasive ventilation, adjusted OR women compared to men ^a (99% CI)	Hospital mortality, unadjusted			Hospital mortality of women compared to men, adjusted OR ^a (99% CI)		
	Women	Men		All patients	Women	Men	All patients	Received ventilation	No ventilation
Low ^b (n=350,638)	26,220 (16.2%)	54,053 (28.6%)	0.53 (0.52 to 0.55)	3,294 (0.9%)	1,369 (0.9%)	1,925 (1%)	0.83 (0.75 to 0.91)	1.17 (1.01 to 1.36)	0.72 (0.64 to 0.83)
High (n=348,460)	52,249 (36.3%)	92,644 (45.3%)	0.76 (0.74 to 0.77)	45,539 (13.1%)	18,286 (12.8%)	27,253 (13.4%)	0.97 (0.94 to 1)	1.03 (0.99 to 1.08)	0.93 (0.89 to 0.97)

Data are presented as number with percentages or odds ratios with 99% confidence intervals

^a adjusted for APACHE III score, diagnosis, LoMT, admission year and hospital site.

^b below median APACHE III score for overall study population

Table E5: E-values for association between sex and vital organ support

	Odds ratio for sex, Point estimate (99% CI)	Inverse odds ratio, (99% CI)	E-value, (E value associated with confidence interval)
Invasive ventilation	0.64 (0.63 to 0.65)	1.56 (1.54 to 1.59)	1.81 (1.79)
Non-invasive ventilation	0.96 (0.93 to 0.98)	1.04 (1.02-1.08)	1.17 (1.11)
Vasoactive medication	0.78 (0.77 to 0.79)	1.28 (1.27-1.30)	1.52 (1.5)
Renal replacement therapy	0.85 (0.82 to 0.88)	1.18 (1.14-1.22)	1.63 (1.53)
ECMO	0.95 (0.82 to 1.09)	1.05 (0.92-1.22)	1.29 (1)
Any treatment	0.73 (0.72 to 0.74)	1.37 (1.35-1.39)	1.62 (1.6)

E6: Contributing ICU sites

The authors and the ANZICS CORE management committee would like to thank clinicians, data collectors and researchers at the contributing sites listed below:

Albury Wodonga Health ICU, Alfred Hospital ICU, Alice Springs Hospital ICU, Angliss Hospital ICU, Armadale Health Service ICU, Ashford Community Hospital ICU, Auckland City Hospital CV ICU, Auckland City Hospital DCCM, Austin Hospital ICU, Ballarat Health Services ICU, Bankstown-Lidcombe Hospital ICU, Bathurst Base Hospital ICU, Bendigo Health Care Group ICU, Blacktown Hospital ICU, Bowral Hospital ICU, Box Hill Hospital ICU, Brisbane Private Hospital ICU, Broken Hill Base Hospital & Health Service ICU, Buderim Private Hospital ICU, Bunbury Regional Hospital ICU, Bundaberg Base Hospital ICU, Caboolture Hospital ICU, Cabrini Hospital ICU, Cairns Hospital ICU, Calvary Adelaide Hospital ICU, Calvary Bruce Private Hospital HDU, Calvary Hospital (Canberra) ICU, Calvary Hospital (Lenah Valley) ICU, Calvary John James Hospital ICU, Calvary Mater Newcastle ICU, Calvary North Adelaide Hospital ICU, Campbelltown Hospital ICU, Canberra Hospital ICU, Casey Hospital ICU, Central Gippsland Health Service (Sale) ICU, Christchurch Hospital ICU, Coffs Harbour Health Campus ICU, Concord Hospital (Sydney) ICU, Dandenong Hospital ICU, Dubbo Base Hospital ICU, Dunedin Hospital ICU, Echuca Regional Hospital HDU, Epworth Eastern Private Hospital ICU, Epworth Freemasons Hospital ICU, Epworth Geelong ICU, Epworth Hospital (Richmond) ICU, Fairfield Hospital ICU, Fiona Stanley Hospital ICU, Flinders Medical Centre ICU, Flinders Private Hospital ICU, Footscray Hospital ICU, Frankston Hospital ICU, Gold Coast Private Hospital ICU, Gold Coast University Hospital ICU, Gosford Hospital ICU, Gosford Private Hospital ICU, Goulburn Base Hospital ICU, Goulburn Valley Health ICU, Grafton Base Hospital ICU, Greenslopes Private Hospital ICU, Griffith Base Hospital ICU, Hawkes Bay Hospital ICU, Hervey Bay Hospital ICU, Hollywood Private Hospital ICU, Holmesglen Private Hospital ICU, Hornsby Ku-ring-gai Hospital ICU, Hurstville Private Hospital ICU, Hutt Hospital ICU, Ipswich Hospital ICU, John Fawkner Hospital ICU, John Flynn Private Hospital ICU, John Hunter Hospital ICU, Joondalup Health Campus ICU, Kareena Private Hospital ICU, Knox Private Hospital ICU, Latrobe Regional Hospital ICU, Launceston General Hospital ICU, Lingard Private Hospital ICU, Lismore Base Hospital ICU, Liverpool Hospital ICU, Logan Hospital ICU, Lyell McEwin Hospital ICU, Mackay Base Hospital ICU, Macquarie University Private Hospital ICU, Maitland Hospital HDU/CCU, Maitland Private Hospital, Manly Hospital & Community Health ICU, Manning Rural Referral Hospital ICU, Maroondah Hospital ICU, Mater Adults Hospital (Brisbane) ICU, Mater Health Services North Queensland ICU, Mater Private Hospital (Brisbane) ICU, Mater Private Hospital (Sydney) ICU, Melbourne Private Hospital ICU, Middlemore Hospital ICU, Mildura Base Hospital ICU, Monash Medical Centre-Clayton Campus ICU, Mount Hospital ICU, Mount Isa Hospital ICU, Nambour General Hospital ICU, National Capital Private Hospital ICU, Nelson Hospital ICU, Nepean Hospital ICU, Nepean Private Hospital ICU, Newcastle Private Hospital ICU, Noosa Hospital ICU, North Shore Hospital ICU, North Shore Private Hospital ICU, North West Regional Hospital (Burnie) ICU, Northeast Health Wangaratta ICU, Northern Beaches Hospital, Norwest Private Hospital ICU, Orange Base Hospital ICU, Peninsula Private Hospital ICU, Pindara Private Hospital ICU, Port Macquarie Base Hospital ICU, Prince of Wales Hospital (Sydney) ICU, Prince of Wales Private Hospital

(Sydney) ICU, Princess Alexandra Hospital ICU, Queen Elizabeth II Jubilee Hospital ICU, Redcliffe Hospital ICU, Robina Hospital ICU, Rockhampton Hospital ICU, Rockingham General Hospital ICU, Rotorua Hospital ICU, Royal Adelaide Hospital ICU, Royal Brisbane and Women's Hospital ICU, Royal Darwin Hospital ICU, Royal Hobart Hospital ICU, Royal Melbourne Hospital ICU, Royal North Shore Hospital ICU, Royal Perth Hospital ICU, Royal Prince Alfred Hospital ICU, Ryde Hospital & Community Health Services ICU, Shoalhaven Hospital ICU, Sir Charles Gairdner Hospital ICU, South West Healthcare (Warrnambool) ICU, Southern Cross Hospital (Wellington) ICU, St Andrew's Hospital (Adelaide) ICU, St Andrew's Hospital Toowoomba ICU, St Andrew's Private Hospital (Ipswich) ICU, St Andrew's War Memorial Hospital ICU, St George Hospital (Sydney) ICU, St George Private Hospital (Sydney) ICU, St John of God (Berwick) ICU, St John Of God Health Care (Subiaco) ICU, St John Of God Hospital (Ballarat) ICU, St John of God Hospital (Bendigo) ICU, St John Of God Hospital (Geelong) ICU, St John Of God Hospital (Murdoch) ICU, St John of God Midland Public & Private ICU, St Vincent's Private Hospital Northside ICU, St Vincent's Hospital (Melbourne) ICU, St Vincent's Hospital (Sydney) ICU, St Vincent's Hospital (Toowoomba) ICU, St Vincent's Private Hospital (Sydney) ICU, St Vincent's Private Hospital Fitzroy ICU, Sunnybank Hospital ICU, Sunshine Coast University Hospital ICU, Sunshine Coast University Private Hospital ICU, Sunshine Hospital ICU, Sutherland Hospital & Community Health Services ICU, Sydney Adventist Hospital ICU, Sydney Southwest Private Hospital ICU, Tamworth Base Hospital ICU, Taranaki Health ICU, Tauranga Hospital ICU, The Bays Hospital ICU, The Chris O'Brien Lifehouse ICU, The Memorial Hospital (Adelaide) ICU, The Northern Hospital ICU, The Prince Charles Hospital ICU, The Queen Elizabeth (Adelaide) ICU, The Wesley Hospital ICU, Timaru Hospital ICU, Toowoomba Hospital ICU, Townsville University Hospital ICU, Tweed Heads District Hospital ICU, University Hospital Geelong ICU, Wagga Wagga Base Hospital & District Health ICU, Waikato Hospital ICU, Wairau Hospital ICU, Warringal Private Hospital ICU, Wellington Hospital ICU, Werribee Mercy Hospital ICU, Western District Health Service (Hamilton) ICU, Western Hospital (SA) ICU, Western Private Hospital ICU, Westmead Hospital ICU, Westmead Private Hospital ICU, Whakatane Hospital ICU, Whangarei Area Hospital - Northland Health Ltd ICU, Wimmera Health Care Group (Horsham) ICU, Wollongong Hospital ICU, Wollongong Private Hospital ICU, Women's and Children's Hospital PICU, Wyong Hospital ICU