Supporting Information

Supplementary results

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

Appendix to: Ey J, Kollias V, Lee O, et al. Non-technical errors associated with deaths in surgical care, Australia, 2012–2019, by surgical specialty (Australian and New Zealand Audit of Surgical Mortality): a retrospective cohort study. *Med J Aust* 2025; doi: 10.5694/mja2.70055.

Supplementary results

Table 1. Non-technical errors for the seven Australian surgical specialties not included in our main analysis

Specialty	Number (proportion of deaths)
Urology	82/138 (59.4%)
Plastics	33/58 (56.9%)
Otolaryngology head and neck	17/39 (43.6%)
Obstetrics & gynaecology	18/24 (75%)
Oral and Maxillo/facial	1/5 (20%)
Paediatric surgery	3/5 (60%)
Ophthalmology	1/4 (25%)

Table 2. Non-technical errors identified in deaths in five surgical specialties, Australia (except New South Wales), 2012–2019, by patient and admission characteristics

Characteristic	General surgery	Orthopaedic surgery	Cardiothoracic surgery	Neurosurgery	Vascular surgery
Sex					
Men	575/854 (67.3%)	135/258 (52.3%)	244/384 (63.5%)	109/180 (60.6%)	160/234 (62.5%)
Women	499/715 (69.8%)	131/252 (52%)	160/242 (66.1%)	89/151 (58.9%)	96/151 (63.6%)
Hospital status					
Private	166/262 (63.4%)	66/109 (60.6%)	125/185 (67.6%)	33/52 (64%)	45/72 (62%)
Public	885/1277 (69.3%)	198/397 (49.9%)	276/431 (64%)	162/276 (58.7%)	210/310 (67.7%)
Dual*	16/22 (73%)	2/3 (70%)	3/10 (30%)	3/3 (100%)	1/2 (50%)
Patient status					
Private	214/332 (64.5%)	67/121(55.4%)	141/213(66.2%)	37/58 (63.8%)	56/83 (68%)
Public	798/1153 (69.2%)	179/352(50.9%)	255/397(64.2%)	152/260 (58.5%)	189/283 (66.8%)
Veteran	10/13 (77%)	10/15 (67%)	1/1 (100%)	0	3/5 (60%)
Admission type					
Elective	275/394 (69.8%)	55/89 (62%)	193/305 (63.3%)	33/58 (57%)	78/128 (60.9%)
Emergency	790/1164 (67.9%)	208/418 (49.8%)	208/316 (65.8%)	164/272 (60.3%)	176/254 (69.3%)

* Omitted from the analysis reported in Box 8 in the main article, as their inclusion led to non-convergence of model because of the small number of cases in this category.

STROBE Statement

Note: The page numbers in this checklist refer to the submitted manuscript, not to the published article or its Supporting Information file

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1,2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	2,3
Objectives	3	State specific objectives, including any prespecified hypotheses	3
Methods			
Study design	4	Present key elements of study design early in the paper	3,4,5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	3,4
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants	a) 3,4
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case	N/A
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	3,4,5
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	*3,4,5*
Bias	9	Describe any efforts to address potential sources of bias	4,5
Study size	10	Explain how the study size was arrived at	N/A
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	4,5
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	5
		(*b*) Describe any methods used to examine subgroups and interactions	5
		(*c*) Explain how missing data were addressed	N/A
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy	N/A
		(*e*) Describe any sensitivity analyses	N/A
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5
		(b) Give reasons for non-participation at each stage	5
		(c) Consider use of a flow diagram	N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5,6
		(b) Indicate number of participants with missing data for each variable of interest	N/A
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)	N/A
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time	*5,6,7*
		Case-control study—Report numbers in each exposure category, or summary measures of exposure	*N/A*

		Cross-sectional study—Report numbers of outcome events or summary measures	*N/A*
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	5,6,7
		(*b*) Report category boundaries when continuous variables were categorized	N/A
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	6,7
Discussion			
Key results	18	Summarise key results with reference to study objectives	7,8,9
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	10
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	11
Generalisability	21	Discuss the generalisability (external validity) of the study results	10,11
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	11