Royal Australasian
College of Surgeons

The Western Australian Audit of Surgical Mortality (WAASM)

2025 Report Data Definitions

5-year review
Jan 2020 - Dec 2024

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Data definitions

Figure 1: WAASM deaths, by quarter	
Definition	Counts of deaths reported to WAASM by quarter.
Data included	All deaths falling within WAASM criteria (n = 3,041).
Data excluded	All 'excluded error' cases (n = 142).
Figure 2: WAASM deaths and mortality rate per 100,000 WA population, by quarter	
Definition	Number of deaths falling within WAASM criteria per quarter and mortality rates per 100,000 WA population.
Data included	All deaths falling within WAASM criteria (n = 3,041).
Data excluded	All 'excluded error' cases (n = 142).
Figure 3: Case status, by year	
Definition	Deaths falling within WAASM criteria and audit case status by year. Audit process complete comprised all cases that have completed the entire audit process. Pending cases comprised all 'surgical case pending', 'first-line assessment pending', 'first-line assessment complete', 'second-line assessment pending', 'medical records pending' and 'medical records received' cases. Terminal care cases comprised 'excluded terminal care' cases.
Data included	All deaths falling within WAASM criteria (n = 3,041).
Data excluded	All 'excluded error' cases (n = 142).
Figure 4: Deaths by hospital status, by year	
Definition	Percentages of all cases by hospital status per year. Co-location hospitals are those that provide privately and publicly funded surgical services; data for co-location hospitals includes public and private patients.
Data included	All deaths falling within WAASM criteria where hospital status was reported (n = 2,737).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. Data missing; n = 1.
Figure 5: Deaths by surgical specialty and hospital admission, 2020–2024	
Definition	Percentages of surgical mortality data in relation to surgeon specialty and hospital admission.
Data included	All deaths falling within WAASM criteria where hospital admission was reported (n = 2,736).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. Data missing; n = 2.

Figure 6: Cases with specific comorbidities, 2020–2024	
Definition	Percentages of cases with comorbidities.
Data included	All deaths falling within WAASM criteria where comorbidities were reported. Some cases reported more than one type of comorbidity.
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. All cases where no comorbidities were reported.
Figure 7: Frequency of American Society of Anesthesiologists grades, 2020–2024	
Definition	Percentages of cases by ASA grade.
Data included	All deaths falling within WAASM criteria where ASA grade were reported (n = 2,706).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. All cases where no ASA grades were reported on. Data missing; n = 32.
Figure 8: Most common causes of death 2020–2024, by Read code*	
Definition	Percentages of the 5 most common causes of deaths.
Data included	All deaths falling within WAASM criteria. Some cases had more than one cause of death reported (n = 4,397).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases.
Figure 9: Preoperative hospital transfers, by quarter	
Definition	Percentages of hospital transfers per quarter.
Data included	All deaths falling within WAASM criteria where transfers were reported (n = 2,736).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. Data missing; n = 2.
Figure 10: Preoperative transfer issues, 2020–2024	
Definition	Percentages of issues associated with hospital transfers.
Data included	All deaths falling within WAASM criteria where transfer issues were reported (n = 811).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. All cases where transfers and transfer issues were not reported. Data missing; 'inappropriate level of care' n = 4; 'insufficient clinical information' n = 3; 'inappropriate transfer' n = 2; 'delay in transfer' n = 2.
Figure 11: Critical care unit use, by quarter	
Definition	Percentages of CCU use per quarter.
Data included	All deaths falling within WAASM criteria where CCU use (n = 1,574) was reported.
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. All cases where non-use of CCU was reported. Data missing; n = 3.

Figure 12: Cases with preoperative diagnostic delays, by quarter	
Definition	Percentages of cases with preoperative diagnostic delays per quarter.
Data included	All deaths falling within WAASM criteria where preoperative diagnostic delays were reported (n = 2,737).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. All cases where no preoperative diagnostic delays were reported. Data missing; n = 1.
Figure 13: Operative and nonoperative cases, by quarter	
Definition	Percentages of operative and nonoperative cases by quarter.
Data included	All deaths falling within WAASM criteria where operative and nonoperative status was reported (n = 2,737).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. Data missing; n = 1.
Figure 14: Consultant surgeon involvement in operations, by quarter	
Definition	Percentages of consultant surgeons deciding, operating, assisting and supervising in theatre per quarter.
Data included	All deaths falling within WAASM criteria where the number of operations performed was reported (n = 2,267).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. All cases where an operation was not reported.
Figure 15: Unplanned return to operating theatre, by quarter	
Definition	Percentages of unplanned returns to operating theatre per quarter.
Data included	All deaths falling within WAASM criteria where unplanned returns to operating theatre were reported (n = 246).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. All nonoperative cases and all operative cases where unplanned return to theatre was not reported.
Figure 16: Postoperative complications, by quarter	
Definition	Percentages of postoperative complications per quarter. It is possible for patients to have more than one postoperative complication.
Data included	All deaths falling within WAASM criteria where postoperative complications were reported (n = 430).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. All cases where an operation was not reported and all operative cases where a postoperative complication was not reported.

Figure 17: Reasons for not operating, by year	
Definition	Percentages of cases with reasons for not operating per year. Some cases reported more than one reason for not operating.
Data included	All nonoperative deaths (n = 1,037) falling within WAASM criteria where reasons for no operation were reported.
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. All cases where an operation was reported. Data missing; n = 1.
Figure 18: Deep vein thrombosis prophylaxis use, by quarter	
Definition	Percentages of DVT prophylaxis use per quarter.
Data included	All deaths falling within WAASM criteria where use of DVT prophylaxis was reported (n = 2,137).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. Data missing; n = 2.
Figure 19: Type of deep vein thrombosis prophylaxis used, 2020–2024	
Definition	Percentages of type of DVT prophylaxis used.
Data included	All deaths falling within WAASM criteria where DVT prophylaxis was used. Some cases reported more than one type of DVT prophylaxis used (n = 2,137).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. All cases where non-use of DVT prophylaxis and type of DVT prophylaxis were not reported.
Figure 20: Clinically significant infections during admission, 2020–2024	
Definition	Percentages of cases with timing of the clinically significant infections acquired during admission.
Data included	All deaths falling within WAASM criteria where clinically significant infections acquired during admission were reported (n = 393).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. All cases where a clinically significant infection was not reported.
Figure 21: Type of clinically significant infection reported, 2020–2024	
Definition	Percentages of type of clinically significant infections reported.
Data included	All deaths falling within WAASM criteria where type of clinically significant infections was reported on (n = 843).
Data excluded	All 'excluded error', 'surgical case pending', and 'excluded terminal care' cases. All cases where a clinically significant infection was not reported.

Figure 22: Assessor perception of areas for patient management improvement, 2020–2024	
Definition	Percentages of cases where areas for improvement in the care of the patient were reviewed, as reported by assessors.
Data included	All deaths falling within WAASM criteria using the highest level of assessment in completed cases where patient management improvement was reported (n = 2,255).
Data excluded	All 'excluded error', 'surgical case pending', 'first-line assessment pending', 'second-line assessment pending', 'excluded terminal care', 'medical record pending', and 'medical records received' cases. All Neurosurgery cases. Data missing; 'preoperative management' n = 32; 'decision to operate' n =31; 'timing of operation' n 32; 'postoperative care' n =33; 'choice of operation' n = 32; 'intraoperative management' n = 33; 'operating surgeon experience' n = 41; 'deciding surgeon experience' n = 33.
Figure 23: Cases with any clinical management issues identified, by quarter	
Definition	Percentages of cases with CMI, as reported by assessors per quarter.
Data included	All deaths falling within WAASM criteria using the highest level of assessment in completed cases where CMI were reported (n = 2,677).
Data excluded	All 'excluded error', 'surgical case pending', 'first-line assessment pending', 'second-line assessment pending', 'excluded terminal care', 'medical record pending', and 'medical records received' cases; and all cases where CMI were not reported.
Figure 24: Categories of clinical management issues, by quarter	
Definition	Percentages of categories of CMI, as reported by assessors. Based on the number of incidents of CMI, not the number of patients.
Data included	All deaths falling within WAASM criteria using the highest level of assessment in completed cases where categories of CMI were reported (n = 603).
Data excluded	All 'excluded error', 'surgical case pending', 'first-line assessment pending', 'second-line assessment pending', 'excluded terminal care', 'medical record pending', and 'medical records received' cases; and all cases where CMI were not reported.
Figure 25: Assessor perception of impact of adverse event on clinical outcome, by year	
Definition	Numbers of perceived impacts of adverse events, as reported by assessors per year. Based on the number of incidents of CMI, not the number of patients.
Data included	All deaths falling within WAASM criteria using the highest level of assessment in completed cases where the perceived impact of adverse events was reported (n = 68).
Data excluded	All 'excluded error', 'surgical case pending', 'first-line assessment pending', 'second-line assessment pending', 'excluded terminal care', 'medical record pending', and 'medical records received' cases; all cases where CMI were not reported; and all cases where 'areas for consideration' and 'areas of concern' were reported.

Figure 26: Assessor perception of preventability of adverse event causing death, by year	
Definition	Numbers of perceived preventability of adverse events causing death, as reported by assessors per year. Based on the number of incidents of CMI, not the number of patients.
Data included	All deaths falling within WAASM criteria using the highest level of assessment in completed cases where preventability of adverse events causing death was reported (n = 30).
Data excluded	All 'excluded error', 'surgical case pending', 'first-line assessment pending', 'second-line assessment pending', 'excluded terminal care', 'medical record pending', and 'medical records received' cases; all cases where CMI were not reported; all cases where 'areas for consideration' and 'areas of concern' were not reported; and all cases where adverse events not causing death were reported.
Figure 27: Most frequently reported clinical management issues 2020–2024, by Read code*	
Definition	Percentages and descriptions (in Read code) of the 10 most common CMI, as reported by assessors.
Data included	All deaths falling within WAASM criteria where CMI were reported (n = 365).
Data excluded	All 'excluded error', 'surgical case pending', 'first-line assessment pending', 'second-line assessment pending', 'excluded terminal care', 'medical record pending', and 'medical records received' cases; and all cases where CMI were not reported.

Table 1: Deaths reported to WAASM, by year	
Definition	Counts of deaths reported to WAASM by year.
Data included	All data collected between 2020 and 2024. Total numbers of deaths reported to WAASM, including 'excluded error' cases (n = 3,183).
Data excluded	No exclusions.
Table 2: WAASM deaths by surgical specialty, 2020–2024	
Definition	Counts and percentages of surgical mortality data in relation to surgeon specialty.
Data included	All deaths falling within WAASM criteria (n = 3,041).
Data excluded	All 'excluded error' cases (n = 142).
Table 3: Median age by sex, 2020–2024	
Definition	Median age by sex for all cases.
Data included	All deaths falling within WAASM criteria (n = 3,041).
Data excluded	All 'excluded error' cases (n = 142).
Table 4: Peer-review assessments, by year	
Definition	Counts of FLAs returned, and counts and percentages of cases where SLAs were recommended.
Data included	All deaths falling within WAASM criteria where an FLA was returned.
Data excluded	All 'excluded error', 'surgical case pending' and 'excluded terminal care' cases.

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ACN 004 167 766 | NZCN 6235298
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