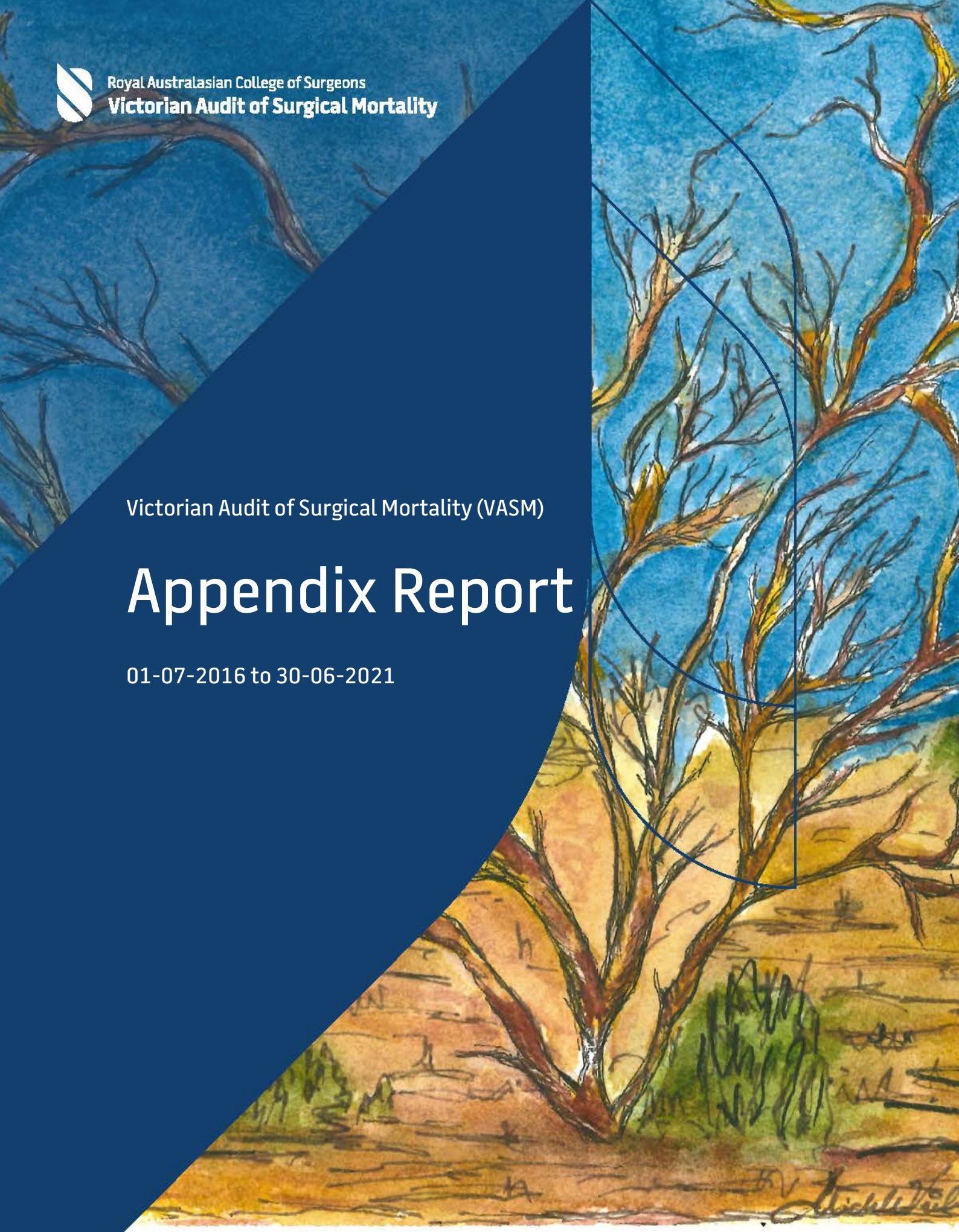
Royal Australasian College of Surgeons
Victorian Audit of Surgical Mortality

Victorian Audit of Surgical Mortality (VASM)

Appendix Report

01-07-2016 to 30-06-2021



Royal Australasian College of Surgeons
Australian and New Zealand Audits of Surgical Mortality

VICTORIA State Government | Health and Human Services

SCV Safer Care Victoria

Victorian Perioperative Consultative Council

RANZCOG Excellence in Women's Health

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Front cover image: *Mulga tree – the extension of life* by Michelle Vinluan (watercolour, April 2022).

The information contained in this annual report has been prepared by the Royal Australasian College of Surgeons, Victorian Audit of Surgical Mortality Management Committee. Safer Care Victoria provides the funding for the project and guidance through the complexities of the health systems.

List of figures and tables

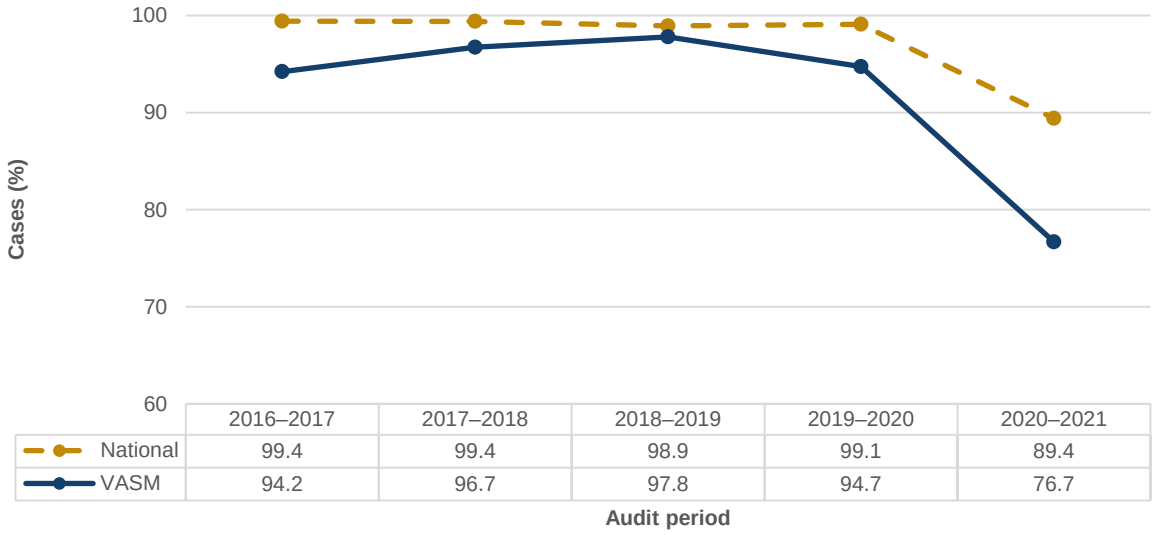
Table 1: Aspex recommendations and progress

Aspex recommendation	Progress
VASM works with SCV and the department to develop appropriate qualified privilege arrangements for the sharing of information in Victoria.	Completed. VPCC recognised under QP – registered 30 June 2021.
Additional information be included in the published objectives of VASM to emphasise that: a) the audit is a method of case detection to identify areas for improvement in the care delivered by health services in Victoria; b) the audit recognises a range of different professionals are involved in the delivery of care to surgical patients and fosters a no-blame culture of reporting and c) the audit findings are used with other information to maximise the quality and safety of healthcare and the outcomes experienced by patients.	Completed. Added to the VASM webpage.
Requirements for de-identification of hospital records are removed in order to streamline provision of information by health services to VASM, and the forwarding of information to surgeons undertaking second-line assessments.	Completed. VASM's de-identification processes removed in 2019. The responsibility now falls on the individual health services.
VASM develops a system of identifying flags in case reports and expediting 'flagged' cases for more urgent review.	Completed. Cases are flagged for discussion with the Perioperative Mortality Committee (PMC), which will identify cases to be triaged for escalation to SLA.
VASM develops a method of recognising clusters of potentially preventable adverse events that are characterised by common underlying issues.	Completed. Reported in Table 5.
VASM undertakes further analysis and reporting of information about the care pathway in feedback provided to individual surgeons, hospitals and other stakeholders.	In progress.
Surgeons are asked directly about any changes in clinical management that have been implemented (by themselves or others) in response to the outcomes of each case.	Completed. Feedback evaluation survey implemented allowing surgeons to respond to the feedback received.
All cases in which potentially preventable events are considered to have caused the death of a patient are referred for assessment by an independent panel of reviewers.	Completed. A PMC has been established to screen cases for multidisciplinary review.
Reports provided by VASM to surgeons, hospitals and other stakeholders are restructured to convey a narrative outlining: a) the objectives of VASM; b) a description of the types of patients receiving surgical care in Victoria; c) an outline of the proportion of surgical procedures resulting in patient mortality and how this has changed over time (including non-preventable and potentially preventable deaths); d) an outline of the main stages of care delivered to patients and a summary of potentially preventable events identified at each stage; e) the sequence of major steps that happen within each stage and number of potentially preventable events identified in each step; and f) any trends identified in each main stage of the patient journey (from year to year) to demonstrate that issues are monitored on an ongoing basis.	Completed. Reports produced by VASM have been restructured to incorporate the suggested areas of interest, except for point c), which will be present in the next report.
Annual comparisons of public hospitals are undertaken and reported by VASM to identify unexpected variations in outcomes across the Victorian health system.	Completed. Individualised hospital reports are produced and discussed with public and private hospitals.

Table 2: Mortalities identified by VAED and VASM, 2016–2021

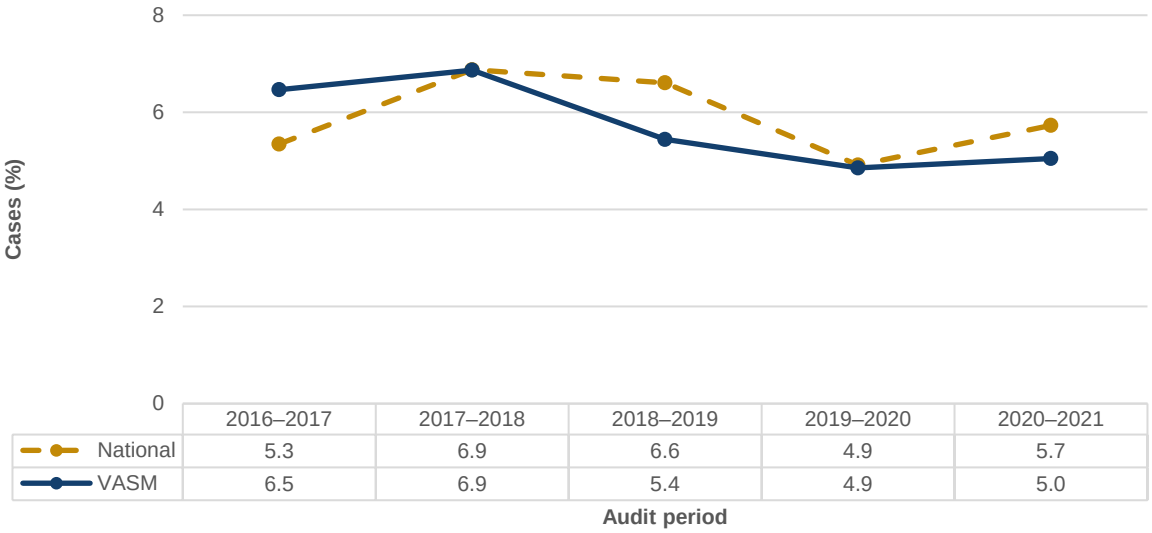
Audit period	Total interventional procedures	VAED-reported interventional mortalities	VASM-reported surgical mortalities	VASM-reported mortality per 1,000 interventional procedures
2016–2017	693,970	2,018	1,728	2.49
2017–2018	703,530	2,041	1,774	2.52
2018–2019	709,906	1,989	1,769	2.49
2019–2020	660,583	1,901	1,770	2.68
2020–2021	678,254	1,982	1,754	2.59
Total	**3,446,243**	**9,931**	**8,795**	**2.55**

Figure 1: Return rate of SCFs, VASM compared to national data, 2016–2021



Notes:
n=8,094 SCFs returned out of 8,793 reported cases in Victoria (1 July 2016 to 30 June 2021).
n=13,220 SCFs returned out of 13,590 reported cases reported nationally (1 July 2016 to 30 June 2021).
National is defined as other participating jurisdictions, exclusive of Victoria and New South Wales data.
The percentage drop in returned SCFs for the current audit period (2020–2021) is due to the data extraction date. In the next report, the 2020–2021 figures will be more complete as more time is available for surgeons to return their SCFs.

Figure 2: Deaths with delay in surgical diagnosis, VASM compared to national data, 2016–2021

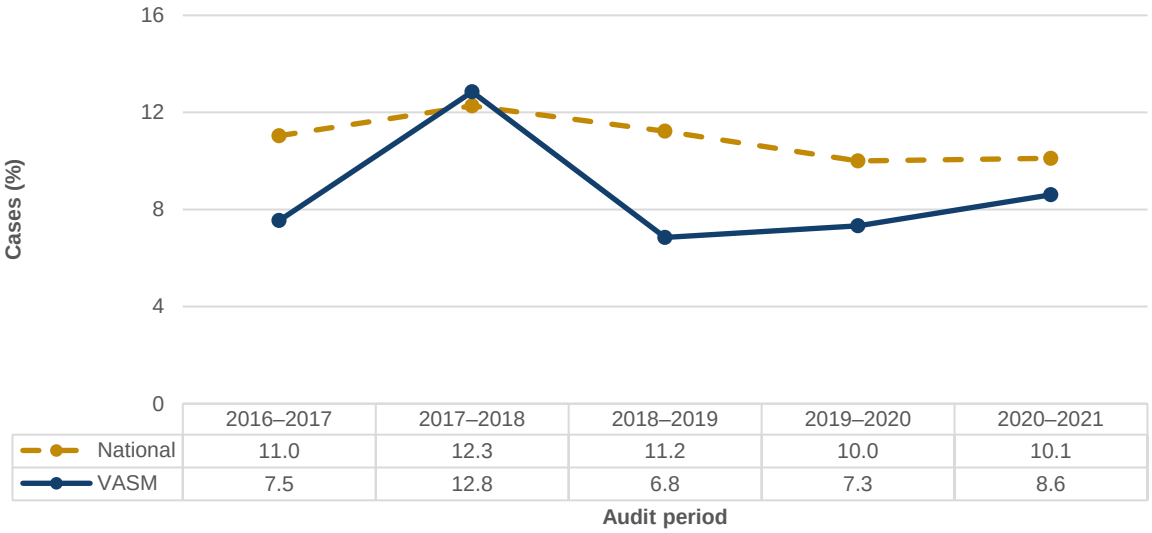


	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
National	5.3	6.9	6.6	4.9	5.7
VASM	6.5	6.9	5.4	4.9	5.0

Audit period

Notes:
n=346 out of 5,949 Victorian audited deaths had delays in surgical diagnosis (1 July 2016 to 30 June 2021). Data not available: n=21.
n=646 cases out of 10,891 national audited deaths had delays in surgical diagnosis (1 July 2012 to 30 June 2020). Data not available: n=25.
From 12 March 2015, data collection changed from gathering data on both delay and errors in surgical diagnosis, to focus only on delay.
National is defined as other participating jurisdictions, exclusive of Victoria and New South Wales data.
The 2020–2021 data will be more complete in the next report as more cases become available for analysis.

Figure 3: Deaths with delay in hospital transfer, VASM compared to national data, 2016–2021

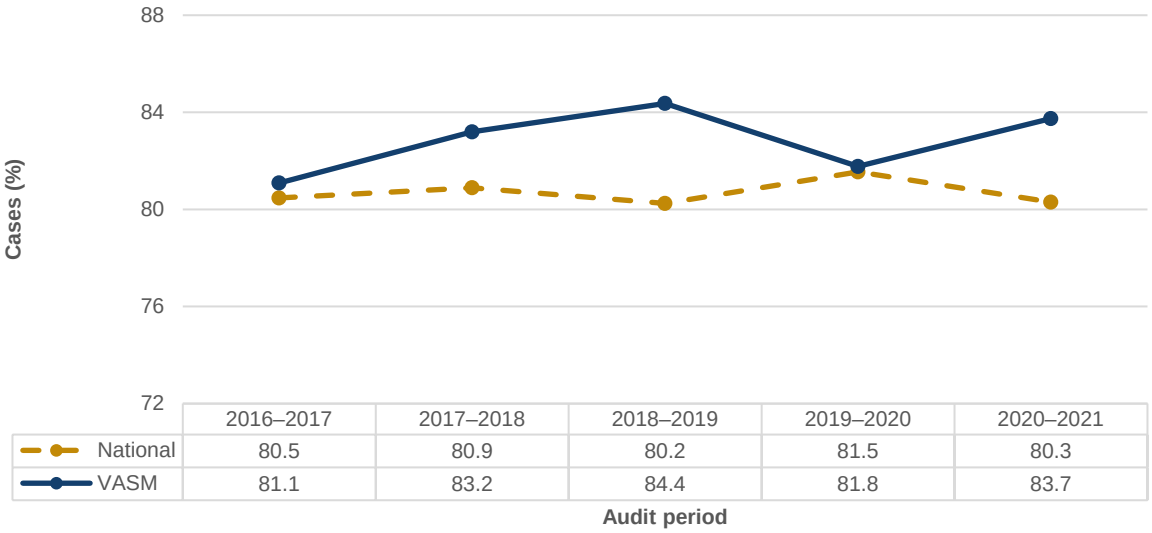


	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
National	11.0	12.3	11.2	10.0	10.1
VASM	7.5	12.8	6.8	7.3	8.6

Audit period

Notes:
n=107 audited deaths out of 1,228 Victorian patients with delays in transfer (1 July 2016 to 30 June 2021). Data not available: n=78.
n=305 audited deaths out of 2,777 national patients with delays in transfer (1 July 2016 to 30 June 2021). Data not available: n=147.
National is defined as other participating jurisdictions, exclusive of Victoria and New South Wales data.
The 2020–2021 data will be more complete in the next report as more cases become available for analysis.

Figure 4: Deaths with use of DVT prophylaxis, VASM compared to national data, 2016–2021

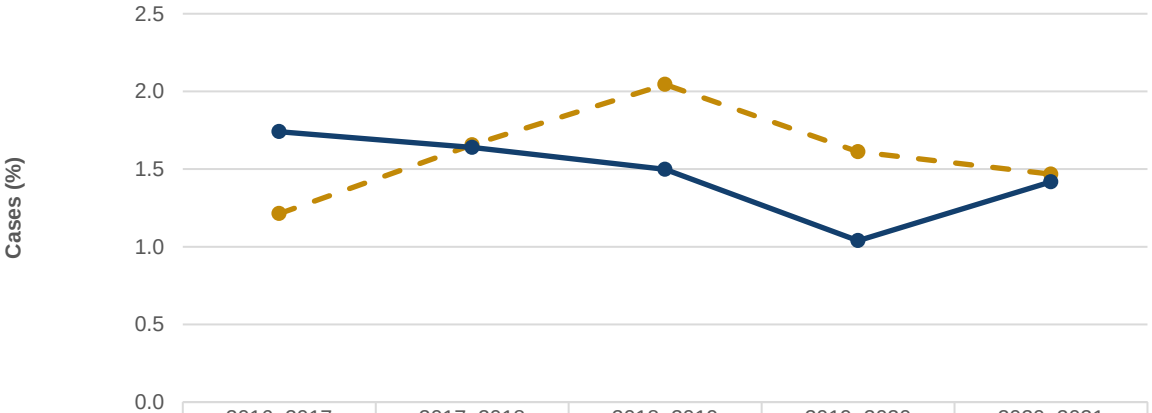


	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
National	80.5	80.9	80.2	81.5	80.3
VASM	81.1	83.2	84.4	81.8	83.7

Audit period

Notes:
n=4,873 out of 5,885 Victorian audited deaths had DVT prophylaxis (1 July 2016 to 30 June 2021). Data not available: n=85.
n=8,698 out of 10,779 national audited deaths had DVT prophylaxis (1 July 2016 to 30 June 2021). Data not available: n=137.
National is defined as other participating jurisdictions, exclusive of Victoria and New South Wales data.
The 2020–2021 data will be more complete in the next report as more cases become available for analysis.

Figure 5: Assessor finding of inappropriate choice of DVT prophylaxis, VASM compared to national data, 2016–2021

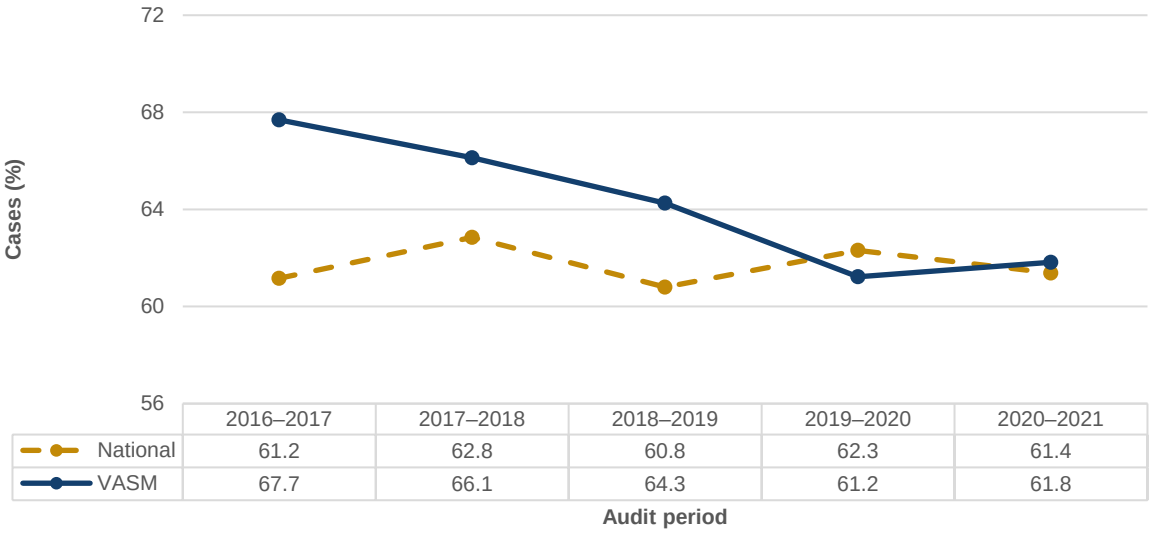


	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
National	1.2	1.7	2.0	1.6	1.5
VASM	1.7	1.6	1.5	1.0	1.4

Audit period

Notes:
n=87 out of 5,872 Victorian audited deaths were considered to have an inappropriate choice of prophylaxis (1 July 2016 to 30 June 2021). Data not available: n=43.
n=167 out of 10,412 national audited deaths were considered to have an inappropriate choice of prophylaxis (1 July 2016 to 30 June 2021). Data not available: n=469.
National is defined as other participating jurisdictions, exclusive of Victoria and New South Wales data.
The 2020–2021 data will be more complete in the next report as more cases become available for analysis.

Figure 6: Deaths with use of critical care support, VASM compared to national data, 2016–2021

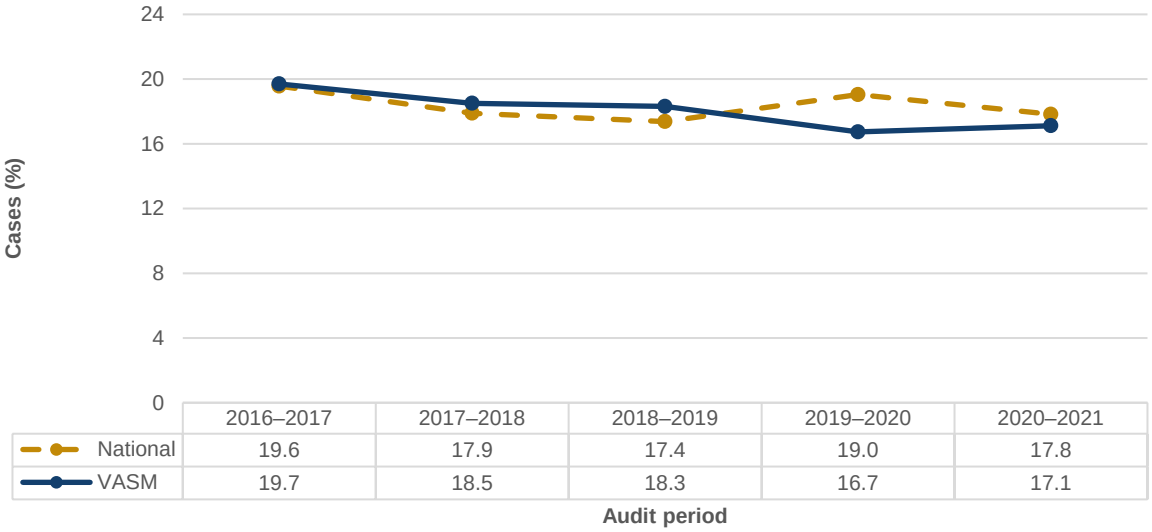


	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
National	61.2	62.8	60.8	62.3	61.4
VASM	67.7	66.1	64.3	61.2	61.8

Audit period

Notes:
n=3,844 out of 5,961 Victorian audited deaths received critical care support (1 July 2016 to 30 June 2021). Data not available: n=9.
n=6,726 out of 10,899 national audited deaths received critical care support (1 July 2016 to 30 June 2021). Data not available: n=17.
National is defined as other participating jurisdictions, exclusive of Victoria and New South Wales data.
The 2020–2021 data will be more complete in the next report as more cases become available for analysis.

Figure 7: Deaths with unplanned admission to CCU, VASM compared to national data, 2016–2021

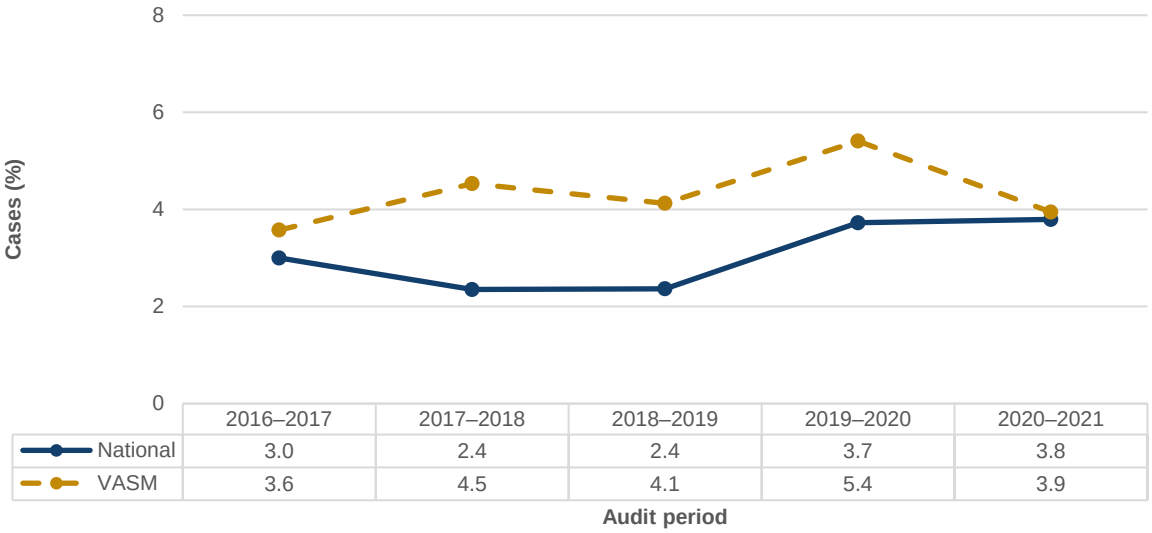


	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
National	19.6	17.9	17.4	19.0	17.8
VASM	19.7	18.5	18.3	16.7	17.1

Audit period

Notes:
n=1,079 out of 5,936 Victorian audited deaths had an unplanned CCU admission (1 July 2016 to 30 June 2021). Data not available: n=34.
n=1,988 out of 10,835 national audited deaths had an unplanned CCU admission (1 July 2016 to 30 June 2021). Data not available: n=81.
National is defined as other participating jurisdictions, exclusive of Victoria and New South Wales data.
The 2020–2021 data will be more complete in the next report as more cases become available for analysis.

Figure 8: Deaths with unplanned readmission, VASM compared to national data, 2016–2021

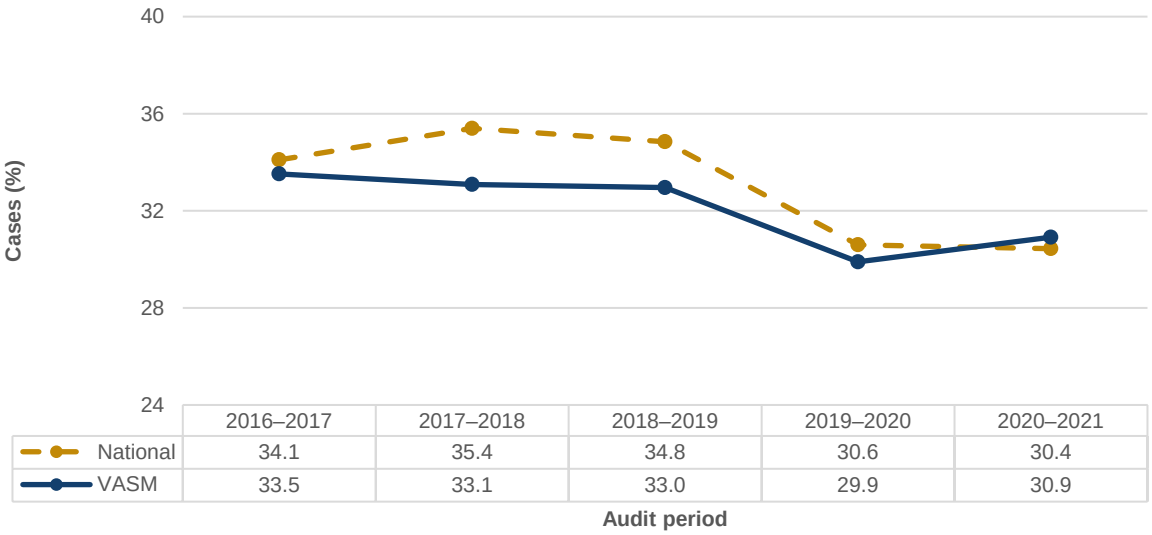


	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
National	3.0	2.4	2.4	3.7	3.8
VASM	3.6	4.5	4.1	5.4	3.9

Audit period

Notes:
n=256 out of 5,914 Victorian audited deaths had an unplanned readmission (1 July 2016 to 30 June 2021). Data not available: n=56.
n=324 out of 10,824 national audited deaths had an unplanned readmission (1 July 2016 to 30 June 2021). Data not available: n=92.
National is defined as other participating jurisdictions, exclusive of Victoria and New South Wales data.
The 2020–2021 data will be more complete in the next report as more cases become available for analysis.

Figure 9: Deaths with clinically significant infection, VASM compared to national data, 2016–2021

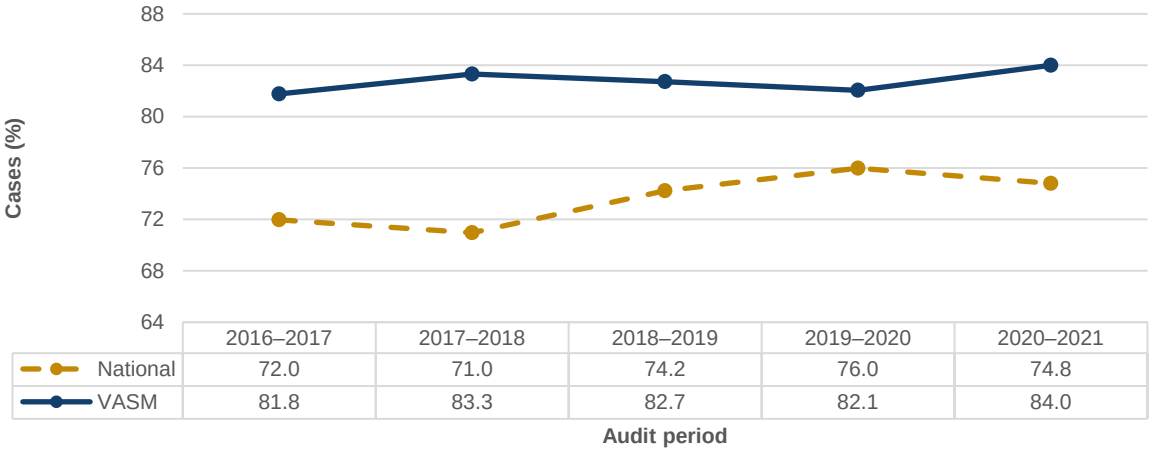


	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
National	34.1	35.4	34.8	30.6	30.4
VASM	33.5	33.1	33.0	29.9	30.9

Audit period

Notes:
n=1,903 out of 5,907 Victorian audited deaths had a clinically significant infection (1 July 2012 to 30 June 2020). Data not available: n=63.
n=3,612 out of 10,857 national audited deaths had a clinically significant infection (1 July 2012 to 30 June 2020). Data not available: n=59.
National is defined as other participating jurisdictions, exclusive of Victoria and New South Wales data.
The 2020–2021 data will be more complete in the next report as more cases become available for analysis.

Figure 10: Operative deaths with consultant surgeon present in theatre, VASM compared to national data, 2016–2021



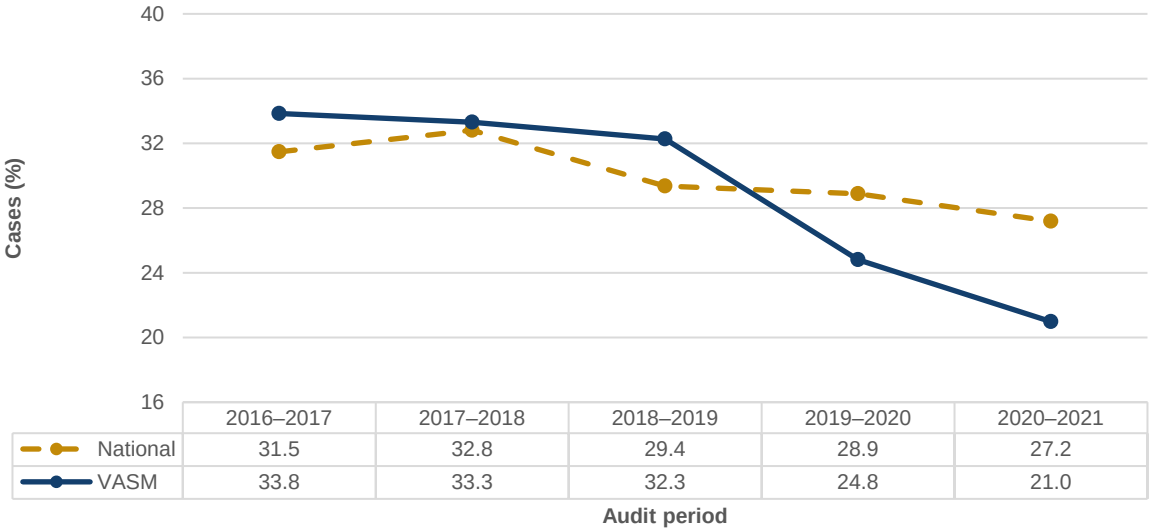
Notes:
n=6,334 out of 7,660 operative episodes for 5,526 operative Victorian patients had a consultant present in theatre (1 July 2016 to 30 June 2021).
n=8,562 out of 11,656 operative episodes for 8,330 operative national patients had a consultant present in theatre (1 July 2016 to 30 June 2021).
National is defined as other participating jurisdictions, exclusive of Victoria and New South Wales data.
The 2019–2020 data will be more complete in the next report as more cases become available for analysis.

Table 3: Operative deaths with consultant surgeon present in theatre and hospital status, VASM compared to national data, 2016–2021

	Private		Public	
Audit period	**VASM**	**National**	**VASM**	**National**
2016–2017	88.1% (384/436)	89.9% (356/396)	79.4% (977/1,230)	68.6% (1,402/2,044)
2017–2018	94.3% (416/441)	90.8% (432/476)	80.0% (1,129/1,411)	66.5% (1,417/2,130)
2018–2019	91.5% (376/411)	93.0% (387/416)	80.0% (1,050/1,313)	70.4% (1,445/2,052)
2019–2020	92.5% (258/279)	97.4% (419/430)	79.6% (926/1,164)	70.8% (1,271/1,794)
2020–2021	95.9% (208/217)	94.1% (288/306)	80.5% (590/733)	71.1% (1,143/1,607)
Total	**92.0% (1,642/1,784)**	**93.0% (1,882/2,024)**	**79.8% (4,672/5,851)**	**69.4% (6,678/9,627)**

Note:
National is defined as other participating jurisdictions, exclusive of Victoria and New South Wales data.

Figure 11: Deaths with postoperative complications, VASM compared to national data, 2016–2021

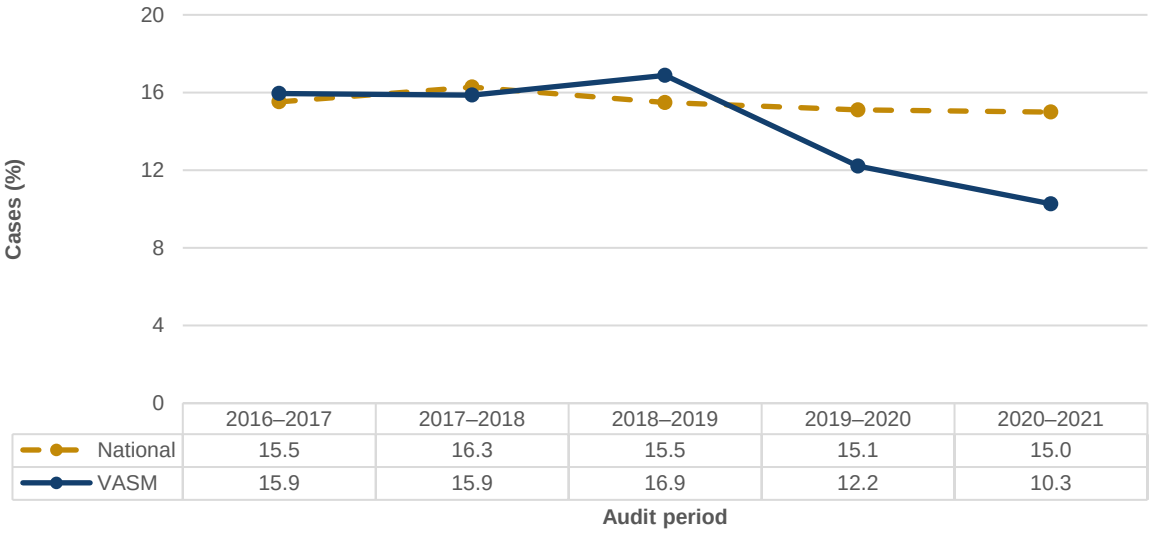


	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
National	31.5	32.8	29.4	28.9	27.2
VASM	33.8	33.3	32.3	24.8	21.0

Audit period

Notes:
n=1,631 out of 5,460 Victorian audited deaths had postoperative complications (1 July 2016 to 30 June 2021). Data not available: n=66.
n=2,494 out of 8,282 national audited deaths patients had postoperative complications (1 July 2016 to 30 June 2021). Data not available: n=48.
National is defined as other participating jurisdictions, exclusive of Victoria and New South Wales data.
The 2020–2021 data will be more complete in the next report as more cases become available for analysis.

Figure 12: Deaths with unplanned return to theatre, VASM compared to national data, 2016–2021



	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
National	15.5	16.3	15.5	15.1	15.0
VASM	15.9	15.9	16.9	12.2	10.3

Audit period

Notes:
n=807 out of 5,515 Victorian audited deaths had an unplanned return to theatre (1 July 2016 to 30 June 2021). Data not available: n=11.
n=1,289 out of 8,308 national audited deaths had an unplanned return to theatre (1 July 2016 to 30 June 2021). Data not available: n=22.
National is defined as other participating jurisdictions, exclusive of Victoria and New South Wales data.
The 2020–2021 data will be more complete in the next report as more cases become available for analysis.

Table 4: Areas of VASM CMIs, 2016–2021

Year	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
No issues identified	70.0% (884/1,262)	68.5% (929/1,356)	70.1% (940/1,341)	73.4% (860/1,172)	78.9% (641/812)
Area of consideration	14.7% (186/1,262)	15.0% (204/1,356)	12.9% (173/1,341)	13.1% (153/1,172)	11.1% (90/812)
Area of concern	8.9% (112/1,262)	8.4% (114/1,356)	6.3% (85/1,341)	5.5% (65/1,172)	4.2% (34/812)
Adverse event	5.9% (74/1,262)	8.0% (108/1,356)	10.5% (141/1,341)	7.9% (93/1,172)	5.5% (45/812)
Preventable issues	17.2% (217/1,262)	18.8% (255/1,356)	17.3% (232/1,341)	14.2% (167/1,172)	11.2% (91/812)
Adverse event or concern that was preventable	11.3% (142/1,262)	12.6% (171/1,356)	12.0% (161/1,341)	9.1% (107/1,172)	7.4% (60/812)
Adverse event or concern that was preventable that contributed to the death	3.4% (43/1,262)	3.0% (41/1,356)	3.4% (46/1,341)	2.3% (27/1,172)	2.3% (19/812)

Table 5: Preventable CMIs that caused VASM deaths identified by assessors, 2020–2021

Admission phase	Incident category
Preoperative	
	Decision to operate
	Delay in diagnosis
	Delay in transfer to tertiary hospital
	Operation should not have been done or was unnecessary
Perioperative	
	Arterial bleeding related to open surgery
	Arterial complication of radiological operation
	Heart complication
	Naso gastric tube not used
	Perforation of colon during endoscopic operation
	Theatre acquired infection
Postoperative	
	Anastomotic leak after open surgery
	Aspiration pneumonia
	Delay in recognising complications
	Injury caused by fall in hospital (3 instances)
	Post-operative bleed after laparoscopic operation
	Secondary haemorrhage
	Wound infection

Table 6: Areas of clinical management, VASM and national data, 2020–2021

Variable	VASM	National	p value
Audited deaths with delay in surgical diagnosis	5.0%	5.7%	0.480
Audited deaths with delay in transfer	8.6%	10.1%	0.590
Audited deaths without use of intensive care (ICU) or high dependency unit (HDU)	61.8%	61.4%	0.830
Audited deaths with unplanned admission to intensive care (ICU)	17.1%	17.8%	0.660
Audited deaths with unplanned readmission	3.9%	3.8%	0.853
Audited deaths with a clinically significant infection	30.9%	30.4%	0.809
Operation with the consultant surgeon present in theatre	84.0%	82.1%	**<0.001**
Audited operative deaths with unplanned return to theatre	10.3%	15.0%	**0.002**
Inappropriate DVT prophylaxis treatment as viewed by the assessor	1.4%	1.5%	0.905
Audited deaths with fluid balance issues as viewed by the assessor	7.1%	6.0%	0.296

Notes:
Audit period 1 July 2020 to 30 June 2021.
Denominator varies due to different criteria for each row.
Bold entries indicate statistically significant differences between VASM and national data ($p < 0.05$ using χ^2 tests).
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