

Can the VASM audit improve patient outcomes?

The Gippsland region perspective.

*From sad to bad patient journeys,
VASM case studies*

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Victorian Audit of Surgical Mortality (VASM)
Wednesday, 5th September 2018
Latrobe Regional Hospital

The Sad - Case study 51698

28 yo female

8 weeks pregnant. Right ear pain for ~1/52, saw GP. Likely ear infection prescribed amoxicillin.

Husband returned from getting antibiotic patient not verbally responsive.

AV - febrile 40C, sinus tachy 120, normotensive, increased RR. GCS initially 14 (E4, V4, M6) then 11 (E2 V4 M5).

ED - fever 39.4C, HR 90, BP 180/90. Lactate 3.6. GCS 10 (E4 V2, M4) WCC 16.6 , CRP>250. Antibiotics/DXM

CTB - diffuse cerebral oedema with effacement of the cerebral sulci, suprasellar cistern, ambient cistern and mild L uncal herniation. L and R mastoid air cell opacification very suspicious for oto-mastoiditis.

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Patient intubated - GCS 5 (E1, V2, M2) with abnormal extensor posturing noted

Transfer for further Neurosurgery, ENT and ID input

Both pupils became fixed and dilated - IV mannitol (extravasated into RUL).

ICU: mannitol, 3% normal saline, DXM + acyclovir. Unsuccessful EVD insertion, Cogmann inserted. Initial ICP 60 then 116mmHg.

Intra-Operative course:

- Neurosurgery: Bi-coronal craniotomy, bi-frontal craniectomy and duroplasty with insertion of right frontal subdural intracranial pressure monitor and subgaleal drain.
- ENT inserted bilateral grommits - finding of bilateral middle ear pus
- R forearm fasciotomy.

ICU - Pupils remained fixed and dilated. Consensus of nil meaningful neurological recovery. Brain dead testing.

Case study 44985

80 yo male

Flight into Australia (for TURP). Acute difficulty swallowing.
Continued until presented to hospital 14 days after the flight.

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Oesophagoscopy could not find the dental plate.
CT - denture had eroded through the back wall of the laryngopharynx.
Open approach to the retropharyngeal space successfully removed the dental plate.



Developed Cardiorespiratory issues with significant ST changes on ECG. Trans-thoracic echo which showed massive pulmonary embolism.

Likely developed DVT/PE flight over to Australia.
Surgical removal of the plate was successful and ultimately it was not the main factor causing his death although it was an additional factor working against him along with his age.

Case study 50450

83 yo female

Passenger on multi-deck bus that rolled over. Patient trapped for 1 hour.

ED - bilateral femur fractures, open highly comminuted left tibia and fibula fractures with extensive soft tissue loss, open left mid foot fractures with extensive un-reconstructable soft tissue injury, closed right midfoot fractures. Required massive blood transfusion.

Case study 50450

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Orthopaedic injuries fixed with external fixation.

Group opinion by orthopaedic unit that injuries would be unsurvivable without though knee amputation on the left lower limb and IM Nail Fixation of Lt femur fracture and Below knee amputation of Lt Lower Limb and IM Nail fixation of Rt femur.

Patient did not want to go through surgery. Transitioned to palliative care and died following day

Case study 48569

16-yo male

Sudden collapse and GCS of 3 with fixed dilated right pupil

CT brain - large right fronto-parietal ICH with 9mm of midline shift.

No vascular lesion visible on CTA.

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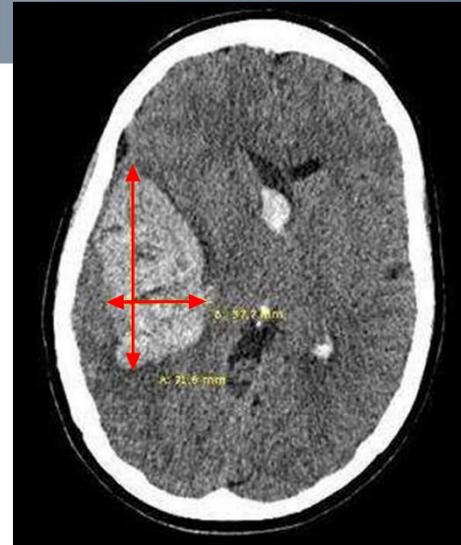
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Surgery - urgent clot evacuation and decompression.

Deep seated basal ganglia AVM coagulated and resected.

ICP probe inserted with pressure readings of 4mm Hg.

Right pupil initially became smaller.



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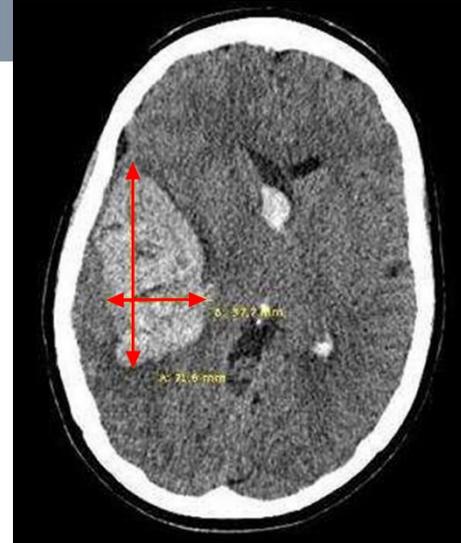
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Over the next days, intractable ICP increase despite maximum therapy. No re-bleed identified on CT but absent intracranial blood flow. Bilaterally dilated pupils and brain death diagnosis. Therapy ceased



The Bad

93 yo male

Can walk 50-100 meters with a stick. Muscle invasive bladder cancer, obstructed left kidney (nephrostomy in place) and incontinent of urine.

Pre-anaesthetic Clinic - ASA 4 and a “very high risk”.

Radical cystoprostatectomy and ileal conduit.

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ICU - hypotensive. Ongoing bleeding

Return to theatre - widespread oozing, abdomen packed. 22 units of blood transfused.

Day 3 second look laparotomy with closure of the wound.

Day 9 the patient became febrile and developed an entero-cutaneous fistula - managed conservatively

Deterioration with sepsis, renal failure and pneumonia - palliation.

Day 19 - died



Case study 40606

78 yo female

Polymyalgia rheumatica, osteoporosis. Long term steroids/MTX. Breast cancer. Previous LS laminectomy

Operation 1 - transforaminal interbody and posterolateral fusion/decompression in segments L4/5 and L5/S1

Discharged home with supportive brace

Day 18, readmitted with pain. Operation 2 – anterior approach partial corpectomy. ? L4 collapse following that

Day 36, operation 3 – open reduction spinal fracture, L4 corpectomy, titanium plate

Patient anaemic, 8kg wt loss and UTI

Boston brace but further hip and back pain

Day 55, operation 4 – anterior L3/4 corpectomy, posterior spinal fusion T12-L5

Deteriorated over next month died of multi-organ failure/chest infection.

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Deteriorated over next month died of multi-organ failure/chest infection.

SLA: “anterior operations were ill-conceived and likely to fail and should never have been done.....One wonders whether the surgeon had undertaken the appropriate level of training for such major and extensive spinal surgery..... If the patient had been managed in a decisive fashion with carefully managed analgesia, mobilization in an appropriate brace, and rehabilitation, she would not have died.”

Inclusion Gippsland region services

- Bairnsdale Regional Health Service,
- Bass Coast Regional Health,
- Central Gippsland Health Service,
- Gippsland Southern Health Service,
- Latrobe Regional Hospital,
- Maryvale Private Hospital,
- South Gippsland Hospital,
- West Gippsland Healthcare Group.

Combination of peer category:

- Private acute group D hospitals,
- Public acute group A hospitals,
- Public acute group B hospitals,
- Public acute group C hospitals.

Surgeon compliance

Year	Hospitals % of notified deaths with completed SCF	State % of notified deaths with completed SCF	National % of notified deaths with completed SCF
2012-2013	94.4% (34/36)	80.2% (405/505)	89.7% (1,088/1,213)
2013-2014	97.3% (36/37)	87.2% (441/506)	93.4% (1,129/1,209)
2014-2015	97.2% (35/36)	91.8% (458/499)	95.9% (1,147/1,196)
2015-2016	100% (42/42)	91.4% (459/502)	95.8% (1,116/1,165)
2016-2017	92.9% (39/42)	76.3% (428/561)	80.2% (923/1,151)
Total	96.4% (186/193)	85.2% (2,191/2,573)	91.1% (5,403/5,934)

- Through the reporting period, **62.4% (116/186)** of notified deaths to **VASM** with returned SCF have completed the audit. The remainder of cases are still in progress.

Second-line inquest due to deficiency of care identified

Year	Hospitals	Like state hospitals	Like national hospitals
2012-2013	14.8% (4/27)	17.7% (59/333)	13.1% (124/950)
2013-2014	30.8% (8/26)	21.5% (76/353)	15.6% (156/998)
2014-2015	16.7% (3/18)	19.9% (71/356)	15.2% (147/966)
2015-2016	13% (3/23)	20.9% (68/325)	14.9% (132/885)
2016-2017	0% (0/22)	8.2% (21/255)	8% (47/591)
Total	15.5% (18/116)	18.2% (295/1,622)	13.8% (606/4,390)

- A second-line assessment was performed for **15.5% (18/116)** of patients overall.
- Lack of sufficient information in the surgical case form was cited as a reason for referral to second-line assessment in **55.6% (10/18)** of cases that underwent a second-line assessment.

Delay in transfer

Year	Hospitals	Like state hospitals	Like national hospitals
2012-2013	33.3% (3/9)	11.7% (7/60)	10.2% (17/166)
2013-2014	16.7% (1/6)	18.2% (10/55)	15.3% (29/189)
2014-2015	33.3% (1/3)	9.7% (7/72)	9.5% (18/189)
2015-2016	50% (1/2)	15.8% (9/57)	16.1% (27/168)
2016-2017	20% (1/5)	8.9% (4/45)	13.9% (14/101)
Total	28% (7/25)	12.8% (37/289)	12.9% (105/813)

- From **1 July 2012** to **30 June 2017**, **25** audited deaths had been transferred **to** your hospital, and **28% (7/25)** of those were reported to have had delays in the transfer.
- There were **118** audited deaths involving a transfer **from** your hospital to another hospital, and **13.6%** of those were reported to have had delays in the transfer.

Delay in diagnosis

Year	Hospitals	Like state hospitals	Like national hospitals
2012-2013	14.8% (4/27)	8.5% (28/330)	9% (85/941)
2013-2014	11.5% (3/26)	6.8% (24/351)	8.1% (80/992)
2014-2015	11.8% (2/17)	5.9% (21/354)	7.2% (69/960)
2015-2016	4.3% (1/23)	10.8% (35/324)	9.4% (83/883)
2016-2017	4.5% (1/22)	8.3% (21/253)	6.5% (38/586)
Total	9.6% (11/115)	8% (129/1,612)	8.1% (355/4,362)

- From **1 July 2012** to **30 June 2017**, surgeons reported delay and/or error in the confirmation of surgical diagnosis in **9.6% (11/115)** of audited deaths at your hospital.
- From **12 March 2015** the data collection changed from gathering data on both delay and errors in surgical diagnosis to focus only on delay.

Inappropriate DVT prophylaxis

Year	Hospitals	Like state hospitals	Like national hospitals
2012-2013	0% (0/27)	1.2% (4/323)	1.7% (16/918)
2013-2014	4% (1/25)	1.5% (5/340)	2.6% (25/971)
2014-2015	0% (0/18)	1.4% (5/345)	1.2% (11/945)
2015-2016	4.3% (1/23)	0.9% (3/320)	1.4% (12/874)
2016-2017	4.5% (1/22)	2.4% (6/253)	1.7% (10/586)
Total	2.6% (3/115)	1.5% (23/1,581)	1.7% (74/4,294)

- Assessors considered the use or non-use of DVT prophylaxis inappropriate in **2.6% (3/115)** of audited deaths at your hospital from **1 July 2012 to 30 June 2017**.
- Assessors considered the DVT prophylaxis appropriate in **86.1% (99/115)** of audited deaths at your hospital from **1 July 2012 to 30 June 2017**.
- In **11.3% (13/115)** of cases, the assessors could not comment on the appropriateness of DVT prophylaxis.

Operation with the consultant surgeon in theatre

Year	Hospitals	Like state hospitals	Like national hospitals
2012-2013	72.7% (24/33)	78.5% (295/376)	72.1% (682/946)
2013-2014	76.9% (20/26)	80.7% (330/409)	76.8% (789/1,028)
2014-2015	81.8% (18/22)	76.8% (322/419)	73% (737/1,009)
2015-2016	72.4% (21/29)	81.6% (329/403)	76.5% (720/941)
2016-2017	83.3% (20/24)	81.5% (225/276)	76% (439/578)
Total	76.9% (103/134)	79.7% (1,501/1,883)	74.8% (3,367/4,502)

- The consultant surgeon was present in theatre, i.e. operating, assisting or supervising the operation in **76.9% (103/134)** of audited operations at your hospital from **1 July 2012** to **30 June 2017**.

Return to theatre

Year	Hospitals	Like state hospitals	Like national hospitals
2012-2013	15.4% (4/26)	12% (33/276)	12.6% (85/676)
2013-2014	8.3% (2/24)	13.7% (40/291)	15% (110/735)
2014-2015	11.1% (2/18)	10.7% (34/319)	11.1% (84/754)
2015-2016	4.5% (1/22)	15.3% (45/294)	13.5% (96/711)
2016-2017	9.5% (2/21)	13.8% (31/224)	13.1% (59/452)
Total	9.9% (11/111)	13% (183/1,404)	13% (434/3,328)

- Surgeons reported an unplanned return to theatre in **9.9% (11/109)** of audited operative deaths at your hospital from **1 July 2012** to **30 June 2017**.

Postoperative complications

Year	Hospitals	Like state hospitals	Like national hospitals
2012-2013	26.9% (7/26)	31.6% (86/272)	31.8% (218/685)
2013-2014	25% (6/24)	32.8% (95/290)	33.2% (246/740)
2014-2015	27.8% (5/18)	32.8% (104/317)	30.8% (232/754)
2015-2016	31.8% (7/22)	34.8% (102/293)	34.9% (247/708)
2016-2017	23.8% (5/21)	26.7% (59/221)	25% (112/448)
Total	27% (30/111)	32% (446/1,393)	31.6% (1,055/3,335)

- Surgeons reported postoperative complications in **27% (30/111)** of audited operative deaths at your hospital from **1 July 2012 to 30 June 2017**.
- Surgeons reported delay in recognising the postoperative complications in **17.9% (5/28)** of these deaths.

Clinically significant infections

Year	Hospitals	Like state hospitals	Like national hospitals
2012-2013	28% (7/25)	33.7% (91/270)	38% (242/637)
2013-2014	54.2% (13/24)	40.8% (118/289)	41.1% (303/737)
2014-2015	33.3% (6/18)	44% (140/318)	43.5% (327/752)
2015-2016	40.9% (9/22)	47.9% (140/292)	44.6% (314/704)
2016-2017	38.1% (8/21)	40.4% (90/223)	40.6% (181/446)
Total	39.1% (43/110)	41.6% (579/1,392)	41.7% (1,367/3,276)

- Surgeons reported a clinically significant infection in **39.1% (43/110)** of audited operative deaths at your hospital from **1 July 2012 to 30 June 2017**.

Top deficiencies of care

Issue	Regional	No
Delay in diagnosis		4
Pre-operative assessment inadequate		4
Delay to surgery		3
Better to have done different procedure		2
Delay in transfer to tertiary hospital		2
Delay starting DVT prophylaxis		2
Injury to organ		2
Unsatisfactory medical management		2
Failure to investigate patient fully		1
Anastomotic leak after open surgery		1
Delay in recognising a bleeding complication		1
Delay starting antibiotics		1
Protocol issues		1
Poor communication		1

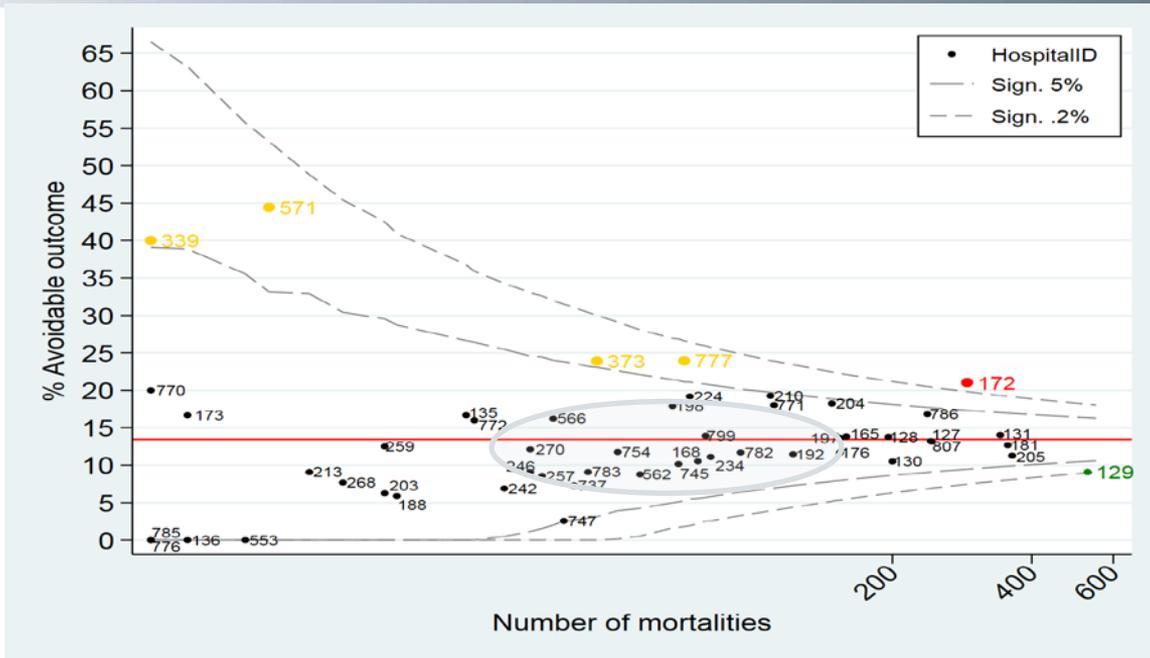
Issue	Victoria	No
Operative management issues		218
Delay issues		158
Postoperative care issues		134
Preoperative care issues		99
Protocol issues		70
Poor communication		50
Adverse Events		48
Anaesthetic and Critical care issues		19
General complications of surgery		15
Septicaemia and wound		6

Issue	National	No
Delay in definitive treatment		4462
Decision to operate		2934
Poor choice of operative procedure		2090
Poor documentation		1323
Postoperative care		1314
Diagnosis-related complications		1163
Management issues*		938
Communication issues		684
Preoperative assessment inadequate		608
Miscellaneous complications of treatment		589
Aspiration pneumonia		304
Fluid balance unsatisfactory		295
Surgeon too junior		234
Transfer should not have occurred		188
Failure to use DVT prophylaxis		177
Haemorrhage		138
Anastomotic leak after open surgery		128
Injury caused by fall in hospital		125
Septicaemia		111

VASM assessors identified for your region **27** issues in **15.5% (18)** of **116** cases with potential deficiencies of care that were definitely, or probably preventable.



Cases where the death was considered preventable



Cases originating from Gippsland region where the death was considered preventable flagged within 2-3 STD of the Victorian mean 13.4%.

Issues raised where the death was considered preventable

- Transfer with inadequate information
- Spigot of NGT for oral meds
- Perhaps the wrong operation
- Maybe early operation on re admission
- Lack of input from medical unit
- Pre-operative assessment issues
- Fluid management
- Failure to obtain medical input
- Early investigation and surgical intervention
- Dose of LMWH
- Delay to surgical diagnosis made by medical team x 2
- Decision to operate x 3
- Avoiding colonoscopy in this elderly high risk patient
- Anti-coagulation in bleeding patient
- Use of DVT prophylaxis if indeed patient had PE

Value to services with no surgical deaths or less than 5 deaths

Deficiency of care	2012-2015	2015-2016	2016-2017	Total
Decision to operate	234	82	38	354
Better to have done different operation or procedure	175	58	26	259
Delay to surgery (ie earlier operation desirable)	131	51	26	208
Delay in diagnosis	106	32	14	152
Unsatisfactory medical management	67	22	10	99
Pre-operative assessment inadequate	66	18	4	88
Poor documentation	52	16	10	78
Post-operative care unsatisfactory	52	12	7	71
Communication failures	39	13	11	63
Delay in transfer to surgical unit	41	15	3	59

- The report outlines the top ten preventable deficiencies of care identified nationally.
- VASM disseminates Case Note Review booklets, annual reports and publications to all sites.

Future directions

- Enhance current processes and collaboration with SCV
- Increase educational activities in regional Victoria
- Improve patient care and surgical experience
- Monitor the audit quality loop

Acknowledgments



Acknowledgments

- Collaborators,
- Participating Victorian hospitals,
- Participating Victorian Fellows and IMGs,
- Participating Victorian hospital stakeholders,
- Management committee,
- Safer Care Victoria (SCV),
- Victorian Surgical Consultative Council (VSCC),
- Victorian Consultative Council on Anaesthetic Mortality and Morbidity (VCCAMM) ,
- Australian Orthopaedic Association (AOA),
- The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG),
- Royal Australasian College of Surgeons (RACS),
- VASM and ANZASM staff.

*Thank
You*