Can the VASM audit improve patient outcomes? - A regional perspective.

Wednesday, 5th September 2018
Auditorium, Latrobe Regional Hospital
10 Village Avenue, Traralgon West, Victoria
‘A *regional* perspective, to improve patient outcomes’.

Mr Peter F. Burke.
Senior Consultant General Surgeon: LRH
*VASM involves the clinical review of all cases, where patients have died while under the care of a surgeon.
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*Issues in 29% cases: Minor 17% / Areas of concern 8% / ‘Adverse event’ 4.2%
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*Issues in 29% cases: Minor 17% / Areas of concern 8% / ‘Adverse event’ 4.2%

*Assessors identified more clinical management issues than the treating surgeons!
Can the VASM audit improve patient outcomes? - A regional perspective.

Free Seminar,
Wednesday, 5th September 2018
Auditorium, Latrobe Regional Hospital
What is an audit?

• From Latin, ‘auditus’: hearing/listening.

• Today, we are in an ‘auditorium’.

• In Court, judges ‘hear’ a case.

• Hence, an audit is an official/searching examination of accounts.

• A ‘hearing’ of facts.
1987, the move to the Latrobe Valley.
Truck crashes over bridge, falls 20 metres into South Gippsland river

A man is in a critical condition after his truck crashed over a bridge on a highway in Victoria's south-east and fell 20 metres into a river.

PHOTO: The truck driver is in a critical condition. (ABC News)
July 18, 2018.

Truck accident.

3 local CFA Units attended.
Bass
San Remo
Kernot
The Tyranny of Distance
Speed: 310km/h. Range: 1,000km. Endurance: 5h.

SIMPLY NO RIVALS

THE BENCHMARK FOR EMERGENCY RESPONSE

Designed specifically to meet the multi-mission demands of a new world, the AW139, a member of the AgustaWestland Family, surpasses all other intermediate twin-engine helicopters in capability, speed, range and versatility.

The AW139 can be equipped with either a dedicated EMS interior or with quick change self contained units and MEDEVAC equipment for maximum flexibility. Furthermore the avionic system reduces pilot workload, allowing the crew to concentrate on EMS operations.
VASM Executive Summary

Audited deaths (1 July 2012 to 31 June 2017) (n= 5,348)

Demographics

Age
- Mean age: 73 years
- Median (IQR): 78 (66-86) years

Gender
- Male: 55.6% (n=2,973)
- Female: 44.4% (n=2,375)
* Involved in 23% of total cases.

**Trauma**

Occurred in 1,224 cases.

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
<th>Count (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall at home</td>
<td>39.5%</td>
<td>483</td>
</tr>
<tr>
<td>Fall in a care facility</td>
<td>32.2%</td>
<td>394</td>
</tr>
<tr>
<td>Fall in hospital</td>
<td>5.8%</td>
<td>71</td>
</tr>
<tr>
<td>Other falls</td>
<td>8.9%</td>
<td>109</td>
</tr>
<tr>
<td>Road accident</td>
<td>11.0%</td>
<td>135</td>
</tr>
<tr>
<td>Violence</td>
<td>2.6%</td>
<td>32</td>
</tr>
</tbody>
</table>
5,348 VASM cases. 1 July 2012 - 30 June 2017.

### Comorbidities

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
<th>Count (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>90.7%</td>
<td>4,849</td>
</tr>
<tr>
<td>No</td>
<td>9.0%</td>
<td>482</td>
</tr>
<tr>
<td>Unknown</td>
<td>0.3%</td>
<td>17</td>
</tr>
</tbody>
</table>

Total comorbid factors identified 14,703

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
<th>Count (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>22.2%</td>
<td>3,271</td>
</tr>
<tr>
<td>Respiratory</td>
<td>11.5%</td>
<td>1,692</td>
</tr>
<tr>
<td>Renal</td>
<td>9.7%</td>
<td>1,427</td>
</tr>
<tr>
<td>Hepatic</td>
<td>2.5%</td>
<td>367</td>
</tr>
<tr>
<td>Neurological/psychiatric</td>
<td>6.5%</td>
<td>961</td>
</tr>
<tr>
<td>Advanced malignancy</td>
<td>6.3%</td>
<td>931</td>
</tr>
<tr>
<td>Diabetes</td>
<td>6.6%</td>
<td>974</td>
</tr>
<tr>
<td>Obesity</td>
<td>3.5%</td>
<td>521</td>
</tr>
<tr>
<td>Age</td>
<td>19.2%</td>
<td>2,820</td>
</tr>
<tr>
<td>Other</td>
<td>11.8%</td>
<td>1,739</td>
</tr>
</tbody>
</table>
Risk

Admission status

- Elective: 17.8% (n=942)
- Emergency: 82.2% (n=4,361)

Transfers

- Patient transfer: 20.6% (n=1,104)
- Transfer delays: 9.4% (n=104)
In the past year, 805 clinical reviews of patients who died whilst under the care of a surgeon.

The majority of surgical deaths occurred in elderly patients admitted as emergencies with significant co-morbidities.

Actual cause of death often unpreventable and directly linked to their pre-existing health status.

* From more than 632,000 surgical procedures, 1,945 deaths, representing 0.3% mortality rate.

Unplanned return to O.R., often necessitated by a complication of the initial procedure, associated with increased risk of death.
Leading causes of death in perspective

- war
- pregnancy & birth
- medical complications
- murder
- undetermined events
- mental health disorders
- transport accidents
- suicide
- musculoskeletal disorders
- diabetes
- non-transport accidents
- infections
- kidney disorders
- digestive disorders
- nervous system disorders

- heart & circulatory disorders
- cancer
- respiratory disorders
Epidemiology

Trimodal Distribution of Trauma Deaths

- Golden Hour = 80% of trauma deaths in first hour after injury
- Rapid trauma care has greatest level of impact in these patients
‘The Golden Hour’.

The hour immediately following traumatic injury, in which medical treatment for preventing irreversible internal damage, and optimizing the chance of survival is most effective.
Tri-modal distribution of Trauma Death

- First peak: second - minutes
  - brain injury, high spinal cord, large vessels, cardiac arrest
  - best treated by prevention
- Second peak: minutes - hours
  - sub/epidurals, HTX/PTX, spleen, liver lac
  - best treated by applying principles of ATLS
- Third peak: days-weeks
  - sepsis, multi-organ failure
  - directly correlated to earlier Rx
Parameters change rapidly, in an exponential fashion.
# Glasgow Coma Scale

<table>
<thead>
<tr>
<th>BEHAVIOR</th>
<th>RESPONSE</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye opening response</td>
<td>Spontaneously</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>To speech</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>To pain</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>No response</td>
<td>1</td>
</tr>
<tr>
<td>Best verbal response</td>
<td>Oriented to time, place, and person</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Confused</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Inappropriate words</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Incomprehensible sounds</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>No response</td>
<td>1</td>
</tr>
<tr>
<td>Best motor response</td>
<td>Obey s commands</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Moves to localized pain</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Flexion withdrawal from pain</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Abnormal flexion (decorticile)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Abnormal extension (decerebrate)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>No response</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total score:</strong></td>
<td><strong>Best response</strong></td>
<td><strong>15</strong></td>
</tr>
<tr>
<td></td>
<td>Comatose client</td>
<td>8 or less</td>
</tr>
<tr>
<td></td>
<td>Totally unresponsive</td>
<td>3</td>
</tr>
</tbody>
</table>
Physiological exhaustion: The triad of death

Hypothermia

Coagulopathy  Acidosis
Case 1: 94 year old male tripped over his wife and fell at home.

Diagnosis: #surgical neck left humerus.
Admitted to hospital for conservative management and pain relief.

Multiple comorbidities.

Admitted under medical unit.

No orthopaedic opinion sought.

On Day 4 of admission surgical team called.

Major abdominal surgery on days 4 and 6.

Admitted to ICU. Multi-organ failure.

DEATH
Non compound fracture of humerus.

Why did he die?
Constipation.

Colonic pseudo obstruction

Ischaemic caecal perforation.

Operation 1. Right hemicolecotomy and ileocolic anastomosis.

Operation 2. Resection of failed ileocolic anastomosis with loop colostomy, mucous fistula and end ileostomy.

Post-extubation, aspirated, progressed to multiorgan failure.

DEATH
Audit findings.

- Orthopaedic opinion may have advised internal fixation of fracture.
- Reduced pain/reduced need for opiate analgesia.
- Patient had abdominal discomfort/distension two days prior to review.
- Peritonitis confirmed: immediate transfer to Theatre for laparotomy.
- Should patient have been reviewed early in admission by surgical team?
- Was there adequate protection of the airway post-extubation?
- Aspiration occurred with N/G tube in place: well documented risk associated.
- Why not utilise jejunal feeding tube?
LESSONS:

• OBSERVE

• RECORD

• REACT/RESPOND
Case 2: 39 year old male came off motorbike at approx. 80km/h: slid into traffic pole.

Assisted by bystander, brought to E.D. Initial obs. GCS=15. b.p. 130 systolic. Pulse 80.
CT scans: Subcapsular haematoma segment five of liver. Subcapsular haematoma of spleen.

Starburst fracture of right kidney. No evidence of free gas.

Haematoma and stranding around the mesentery, distal ileum and ileo-caecal valve.
Admitted to High Dependency Unit.

Treated conservatively with analgesia, fasting and IV fluids.

12/24 later: increasing abdominal pain and distension, tachycardia, right flank bruising. Falling Hb. Tachypnoea.

17/24 post admission: tachycardia, b.p. 93/62

36/24 post-admission: hypoxic, febrile 39.4. Antibiotics commenced

Despite increased IV fluids, renal function deteriorating.
Clinical progression.

Creatine Kinase=10,259 (Normal: <200)=significant rhabdomyolysis.

60/24 post admission: increasingly agitated, extensive right abdominal bruising, bruising extending to right thigh.

Day 4, CT scan confirmed much increased right flank haematoma containing gas.

Patient intubated.

Early Day 5: major hypotension, despite massive inotropes;

   bradycardic; pH 6.9.

DEATH
Death Spiral of Shock

- Vasoplegia
- 3rd space fluid extravasation

Myocardial dysfunction

- Release of vasodilators (i.e. nitric oxide)
- Systemic inflammation

Tissue hypoperfusion
Audit findings.

- Initial management reasonable: injuries at time of admission appeared survivable.
- CT scan raised possibility of ileo-caecal injury: noted several times in the notes.
- Despite steady deterioration/increasing signs of sepsis, conservative management.
- Sepsis suggested significant small bowel injury: urgent laparotomy indicated.
- Treating Surgical Unit persisted with conservative management: what was the reasoning?
- Failure to see intraperitoneal gas on CT scanning = no bowel perforation or injury.
- Possibilities included caecal/terminal ileal ischaemia, retroperitoneal perforation.
SEEK
...and you shall find
**Some Issues for Surgeons.**

*Is the surgery futile?*

*What are the risks of surgery?*

*Will there be a return to an acceptable quality of life?*

*What is the expectation of the natural history of the illness?*

*What are the views of the patient?*

*Are there alternatives to an operation?*

*What are the legal implications of refusing surgical treatment?*

*Consider a Second Opinion from a colleague.*
THINGS THAT MATTER

THINGS YOU CAN CONTROL

WHAT YOU SHOULD FOCUS ON
'A regional perspective, to improve patient outcomes'.

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