Contents

1. Background ................................................................................................................. 4
2. National distribution of cases....................................................................................... 4
3. ANZASM case status.................................................................................................... 5
4. Demographics ............................................................................................................. 6
5. American Society of Anesthesiologists (ASA) grade ................................................ 7
6. Comorbidities ............................................................................................................. 7
7. Malignancy ................................................................................................................ 8
8. Operations .................................................................................................................. 9
9. Clinical incidents ....................................................................................................... 10

Conclusion ..................................................................................................................... 11
Acknowledgments ......................................................................................................... 12

Tables

Table 1: ASA distribution of O&G patients (n=57).......................................................... 7

Figures

Figure 1: Audit case status 2009-2015 (n=137) .............................................................. 5
Figure 2: Age distribution by year 2009-2015 (n=137) .................................................. 6
1. Background

The Royal Australasian College of Surgeons (RACS) became responsible for the management of the Western Australian Audit of Surgical Mortality (WAASM) in 2005. WAASM was modeled on the Scottish Audit of Surgical Mortality, which has operated since 1988. The RACS has expanded the program to all other states and territories under the umbrella of ANZASM.

Completed RANZCOG data for the period 1 January 2009 to 31 December 2014 are included in this report from Australian Capital Territory, Northern Territory, Queensland, South Australia, Tasmania, Victoria and Western Australia.

Objectives

The principal aims of the audit are to inform, educate, facilitate change and improve quality of practice within surgery. The primary mechanism is peer review of all deaths associated with surgical care. The audit process is designed to highlight system and process errors, and to identify trends in surgical mortality. It is intended as an educational rather than punitive process.

Structure and governance

ANZASM is managed by the Research, Audit and Academic Surgery Division of RACS. ANZASM oversees the implementation and standardisation of each regional audit, to ensure consistency in audit processes and governance structure across all jurisdictions.

The individual regional audits are funded by their respective departments of health. The RACS provides infrastructure support and oversight to the project.


As at the end of 2014, a total of 556 gynaecologists have agreed to participate in the ANZASM audit process. Participation for the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) surgeons is voluntary under their continuing professional development program.

2. National distribution of cases

There were 137 obstetric and gynaecology (O&G) cases reported to ANZASM between 2009 and 2015.

The national distribution of cases:

- Victoria 36.5% (50/137)
- Western Australia 27.7% (38/137)
- Queensland 15.3% (21/137)
- Tasmania 11.7% (16/137)
- South Australia 6.6% (9/137)
- ACT 2.2% (3/137)
- NT 0.0% (0/137)

This distribution may change as the number of cases reported increases over time.

New South Wales does not provide data for obstetrics and gynaecology to ANZASM and therefore is excluded from this report.
3. ANZASM case status

The graph below highlights the case statuses of all the obstetric and gynaecological cases (see Figure 1).

A large proportion of cases were “excluded – terminal care” - 27% (37/137). These cases are not included in the following analysis.

**Figure 1: Audit case status 2009-2015 (n=137)**
4. Demographics

Age: Obstetric and gynaecological surgical patients’ age distribution is as follows (see Figure 2).

- Median age = 79 years
- Interquartile range (IQR) = 65 years to 87 years
- Minimum age = 21 years
- Maximum age = 100 years
- Mean = 74 years (standard deviation (SD) 18 years)

Figure 2: Age distribution by year 2009-2015 (n=137)
5. American Society of Anesthesiologists (ASA) grade

For obstetric and gynaecological patients, the most common ASA grade was three (see Table 1). All non-gynaecological patients had an ASA grade of four.

Table 1: ASA distribution of O&G patients (n=57)

<table>
<thead>
<tr>
<th>ASA grade</th>
<th>Number</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA 1</td>
<td>9</td>
<td>15.8%</td>
</tr>
<tr>
<td>ASA 2</td>
<td>12</td>
<td>21.1%</td>
</tr>
<tr>
<td>ASA 3</td>
<td>24</td>
<td>42.1%</td>
</tr>
<tr>
<td>ASA 4</td>
<td>11</td>
<td>19.3%</td>
</tr>
<tr>
<td>ASA 5</td>
<td>1</td>
<td>1.8%</td>
</tr>
</tbody>
</table>

The nine obstetric and gynaecological cases of ASA grade one had the following surgical diagnoses stated on admission*:

- query ectopic pregnancy
- amniotic fluid embolism
- pyelonephritis; inevitable miscarriage
- sepsis from chorioamnionitis
- toxic shock
- twin pregnancy

*Three cases did not record admission diagnoses.

6. Comorbidities

The most common reported comorbidity was advanced malignancy.

- Advanced malignancy 66.2% (45/68)
- Cardiovascular disease 29.4% (20/68)
- Age 10.3% (7/68)
- Neurological issues 7.3% (5/68)
7. Malignancy

Malignancy was present in 66.2% (45/68) of obstetric and gynaecological cases whose cases were peer-reviewed. (note: 69 questions were not answered)

Surgeons felt that in 72.5% (37/51) of cases the malignancy contributed to the deaths of the patients (note: 3 surgeons could not confirm whether the malignancy contributed to the death of the patient.)

Non-malignancy

Obstetric and gynaecological patients who did not have malignancy had the following surgical diagnoses stated:

- query haemorrhoids
- 16 cm ovarian fibroma
- amniotic fluid embolism (not confirmed)
- ascites, para-ovarian cyst
- benign bilateral ovarian cysts
- Caesarean section for twins
- due to unexpected major vascular injury
- peritonitis with pyometra
- sepsis from tubo-ovarian abscess
- sterilisation
- suspected pelvic abscess – not found at operations
- uterine fibroid
- uterine fibroids

Those obstetric and gynaecological patients who did not have a malignancy had the following age distribution:

- Median age = 81 years
- Interquartile range (IQR) = 66 years to 89 years
- Minimum age = 49 years
- Maximum age = 100 years
- Mean = 77 years (standard deviation (SD) 15 years)
8. Operations

- 88.3% (68/77) of obstetric and gynaecological patients who died had had operations.
- 10.4% (8/77) of obstetric and gynaecological patients did not have operations.

The most frequent operations were stated as:

- laparotomy approach 18.8% (13/69)
- exploratory laparotomy 11.6% (8/77)
- diagnostic laparotomy of female pelvis 10.1% (8/77)
- total abdominal hysterectomy 7.2% (5/77)
- abdominal hysterectomy and bilateral salpingoophorectomy 7.2% (5/77)
- radical hysterectomy 4.3% (3/77)

Complications:

Of the patients who had operations, 46.4% (32/69) had a postoperative complication (note: data missing on eight questions).

- Four cases had procedure-related sepsis: 12.5% (4/32).
- Three cases had significant postoperative bleeding: 9.4% (3/32).
- Two cases had a delay in recognising the complication: 6.2% (2/32).
- In closed cases for patients who had an operation, 14.3% (7/49) had an unplanned return to theatre.
- 71.9% (23/32) of complications were stated as “other” (as listed below):
  - acute renal failure & aspiration pneumonia.
  - amniotic fluid embolism
  - cardiovascular compromise from gastrointestinal perforation
  - chest infection, pulmonary embolus, pleural effusions.
  - confusion, atelectasis
  - infection/sepsis
  - paralytic ileus
  - post-op abdominal sepsis (resection of gynaecological cancer associated with small bowel and rectal obstruction, malignant fistula. Rectal stump leak.
  - postoperative massive cerebral vascular accident
  - probably pelvic collection following her diagnostic hysteroscopy
  - progressive deterioration of pre-existing liver disease
  - 2 x pulmonary emboli
  - recurrent ascites and problems with gastrointestinal tract function
  - renal failure, urinary tract infection
  - respiratory compromise
  - small bowel injury
  - small bowel perforation
  - substantial troponin leak followed by severe congestive cardiac failure and pulmonary oedema
  - Wound breakdown
  - Wound collection
  - Wound infection

For all cases, when asked: “in retrospect, would you have done anything differently?”, 30.8% (20/65) of surgeons said they would have done something differently for these patient.
9. Clinical incidents

There was 25.8% (16/62) of obstetric and gynaecological patients with preventable clinical incidents (CI).

- Seven CIs were areas of consideration.
- Six CIs were areas of concern.
- Three CIs were adverse events.

<table>
<thead>
<tr>
<th>area for consideration:</th>
<th>area of concern:</th>
<th>adverse event:</th>
</tr>
</thead>
<tbody>
<tr>
<td>where the clinician believes an area of care could have been improved or different, but recognises that this may be debated</td>
<td>where the clinician believes that an area of care should have been better</td>
<td>an unintended ‘event’ caused by medical management, rather than the disease process. This event is sufficiently serious to contribute to or cause death.</td>
</tr>
</tbody>
</table>

Only the most serious CI for each patient are included in the list below. (note: many patients had more than one CI).

**The most frequent, preventable CIs were:**

- *the decision to operate* 18.8% (3/16)
- *preoperative assessment inadequate* 12.5% (2/16)
- *postoperative inadequate respiratory monitoring* 6.3% (1/16)
- *failure to use deep vein thrombosis prophylaxis* 6.3% (1/16)
- *inadequate surgical assistance* 6.3% (1/16)
- *delay starting medical treatment* 6.3% (1/16)
- *intraoperative bleeding related to endoscopic operation* 6.3% (1/16)
- *perforation of small bowel during laparoscopic operation* 6.3% (1/16)
- *vascular injury to duodenum during laparoscopic operation* 6.3% (1/16)
- *open surgery, technical* 6.3% (1/16)
- *pulmonary embolus with no prophylaxis given* 6.3% (1/16)
- *injury to small bowel during endoscopic operation* 6.3% (1/16)

In non-gynaecological ANZASM patients, the “decision to operate” is also the most frequent preventable clinical incident.
Conclusion

Involvement in ANZASM is a recent phenomenon for the Royal Australian and New Zealand College of Obstetricians and Gynaecologists. Surgical mortality audit is extremely important in obstetrics and gynaecology and should be a mandatory activity for practitioners in an effort to improve outcomes.

There are some factors that should be noted in the delivery of obstetric and gynaecological services:

- Obstetric and gynaecological services can be offered by practitioners who have variable experience and training – particularly in the rural setting.
- Very simple gynaecological surgical procedures can rarely result in life threatening complications (for example: unrecognised bowel perforation during a uterine curettage or simple laparoscopic procedure). These simple gynaecological procedures tend to be done on reasonably healthy women. Of note even though the age of the obstetric and gynaecological cohort was no different to the non-obstetric and gynaecological cohort, their most common ASA status was in fact better, being ASA 3 versus ASA 4 for the non-obstetric and gynaecological patients.
- Life threatening conditions resulting from pregnancy can rarely but rapidly occur in otherwise young and fit women.

From the data presented there seems to be three main causes of mortality in obstetrics and gynaecological patients: haemorrhage, sepsis and thromboembolic events. Within each of these areas there are certain common themes that may have led to a patient’s poor outcome (namely delay in diagnosis or treatment, lack of surgical skill and failure to implement standard perioperative preventative strategies). Within each of these areas, audit and education will assist in reducing deaths in obstetrics and gynaecology and are therefore essential to improving healthcare outcomes for Australian women.

Dr Susan Valmadre
RANZCOG/ANZASM Representative
Acknowledgments

ANZASM would like to acknowledge the support and assistance of those individuals and institutions that have helped in the continuation and development of this project, including:

- participating RANZCOG surgeons
- first-line assessors
- second-line assessors
- hospital medical records departments
- state and territory departments of health for funding the project
- the regional departments of health for their continual commitment and support to ANZASM
- Royal Australasian College of Surgeons for their infrastructure and oversight of the project.

ANZASM Steering Committee members

- Professor Guy Maddern (Chair, ANZASM)
- Associate Professor Ian Bennett (Chair, Research, Audit and Academic Surgery)
- Mr Barry Beiles (VASM)
- Professor Peter Zelas, OAM (CHASM)
- Mr Tony Sparnon (Councilor)
- Mr James Aitken (WAASM)
- Mr Glenn McCulloch (SAAPM)
- Dr Cathy Ferguson (Perioperative Mortality Review Committee representative, NZ)
- Dr John North (QASM/ NTASM)
- Mr Rob Bohmer (TASM)
- Dr John Tharion (ACTASM)
- Dr Sue Valmadre (RANZCOG Representative)
- Reverend Anthony Taylor (Consumer Representative)

Regional Obstetrics and Gynaecology representatives

- Dr Steve Robson ACTASM
- Dr Margaret O’Brien NTASM
- Dr Lew Perrin QASM
- Dr Roy Watson SAAPM
- Dr Brett Daniels TASM
- Dr Rachael Knight VASM
- Dr Stuart Salfinger WAASM

Special thanks

- Queensland Audit of Surgical Mortality (QASM) for data analysis and review.
Contact
Royal Australasian College of Surgeons
Australian and New Zealand Audit of Surgical Mortality
199 Ward Street
North Adelaide SA 5006
Australia

Telephone: +61 8 8219 0900
Facsimile: +61 8 8219 0999
Email: mortality.audits@surgeons.org
Website: www.surgeons.org