

# How the ANZGOSA audit can benefit your practice: a look at GIST surgery from an Australian and NZ perspective

*Aravind Suppiah; Sarah K. Thompson*



ANZGOSA  
Australia & New Zealand  
Gastric & Oesophageal  
Surgery Association

# ANZGOSA database



ANZGOSA  
Australia & New Zealand  
Gastric & Oesophageal  
Surgery Association

- Commenced 2010; 1469 cases (2002 – 2014)
- Current user accounts: 77
  - Individual surgeon or institutional upload
  - Diagnosis, procedures, pathology, morbidity
- Data accessible by data request
  - Surgeon consent



# Accessing the database

- Internet portal:  
[www.anzgos.org/anzgosa-audit-data-requests.html](http://www.anzgos.org/anzgosa-audit-data-requests.html)
- Executive Board Approval
- Data provided in required format by Officers
- De-identified data, unless surgeon consent



# For members use...

- Sample outputs:

Categories	Number of cases
Oesophageal cancer	488 (36%)
Oesophageal (OG) junction cancer	292 (21%)
Gastric cancer	443 (32%)
Gastrointestinal stromal tumour (GIST)	140 (10%)
No preoperative diagnosis	10 (1%)
Total	1373

- Used for
  - Research tool
  - Audit of practice
  - Benchmark

POST-OPERATIVE COMPLICATIONS	ANZGOSA Audit [N=1289]
Total Surgical	216 (17%)
Anastomotic leak (Clinical)	63 (5%)
Anastomotic leak (Radiological)	24 (2%)
Wound infection	29 (2%)
Peritonitis	2 (0%)
Chylothorax	21 (2%)
Pancreatic Fistula	3 (0%)
Plural Effusion Requiring Drainage	34 (3%)
Abscess	5 (0%)
Bleeding	20 (2%)
Jejunal Tube Complication	13 (1%)
Other	73 (6%)
Total Non-Surgical	257 (20%)
Cardiac Ischaemic Event	19 (1%)
Cardiac Arrhythmia	76 (6%)
Other CVS	10 (1%)
LRTI Req Antibiotics	63 (5%)
DVT/PE	6 (0%)
Other pulmonary	57 (4%)
Hepatic	0 (0%)
Renal	28 (2%)
CNS	12 (1%)
Other	85 (7%)



# To something more complex...

Complication	TOTAL	Oesophageal	OG Junction	Gastric	GIST
<b>Postoperative complication</b>	402/979 (41%)	175/291 (60%)	100/192 (52%)	112/381 (29%)	15/115 (13%)
<b>Anastomotic leak (Clinical)</b>	73 (7%)	44 (15%)	16 (8%)	12 (3%)	1 (1%)
<b>Anastomotic leak (Radiological)</b>	25 (3%)	12 (4%)	7 (4%)	6 (2%)	0 (0%)
<b>Wound infection</b>	37 (4%)	12 (4%)	8 (4%)	16 (4%)	1 (1%)
<b>Chylothorax</b>	18 (2%)	12 (4%)	6 (3%)	0 (0%)	0 (0%)
<b>Pleural effusion requiring drainage</b>	31 (3%)	20 (7%)	8 (4%)	2 (1%)	1 (1%)
<b>Bleeding</b>	23 (2%)	5 (2%)	3 (2%)	14 (4%)	1 (1%)
<b>Other surgical complication</b>	97 (10%)	37 (13%)	14 (7%)	40 (10%)	6 (5%)
<b>Cardiac arrhythmia</b>	72 (7%)	41 (14%)	20 (10%)	11 (3%)	0 (0%)
<b>LRTI req antibiotics</b>	64 (7%)	28 (10%)	19 (10%)	15 (4%)	2 (2%)
<b>Other pulmonary</b>	62 (6%)	25 (9%)	21 (11%)	13 (3%)	3 (3%)
<b>Renal</b>	26 (3%)	12 (4%)	10 (5%)	3 (1%)	1 (1%)
<b>Other non-surgical complication</b>	118 (12%)	58 (20%)	31 (16%)	25 (7%)	4 (3%)
<b>Unplanned return to theatre</b>	126/1206 (10%)	64/433 (15%)	29/255 (11%)	28/398 (7%)	5/120 (4%)
<b>Readmission within 30 days</b>	53/787 (7%)	17/205 (8%)	11/137 (8%)	18/336 (5%)	7/109 (6%)
<b>In-hospital death</b>	26/828 (3%)	11/220 (5%)	11/151 (7%)	4/346 (1%)	0/111 (0%)
<b>30-day mortality</b>	14/1029 (1%)	5/339 (1%)	6/214 (3%)	3/364 (1%)	0/112 (0%)



# Current data: All Cases

Region	u/k	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	TOTAL
NSW	8						10	12	12	54	94	44	45	23	<b>302</b>
QLD										6	28	20	8	5	<b>67</b>
SA		31	43	33	33	28	32	39	36	48	42	68	50	1	<b>484</b>
TAS												6	3	3	<b>12</b>
VIC	1							3	11	45	69	56	57	17	<b>259</b>
WA	1									11	17	24	27	14	<b>94</b>
Australia	10	31	43	33	33	28	42	54	59	164	250	218	190	63	<b>1218</b>
N. Zealand	1									4	10	19	29	6	<b>69</b>
India										1	15	78	75		<b>169</b>
Unknown	1									1	11				<b>13</b>
<b>TOTAL</b>	<b>12</b>	<b>31</b>	<b>43</b>	<b>33</b>	<b>33</b>	<b>28</b>	<b>42</b>	<b>54</b>	<b>59</b>	<b>170</b>	<b>286</b>	<b>315</b>	<b>294</b>	<b>69</b>	<b>1469</b>

Categories	Number of cases
Oesophageal cancer	488 (36%)
Oesophageal (OG) junction cancer	292 (21%)
Gastric cancer	443 (32%)
Gastrointestinal stromal tumour (GIST)	140 (10%)
No preoperative diagnosis	10 (1%)
<b>Total</b>	<b>1373</b>

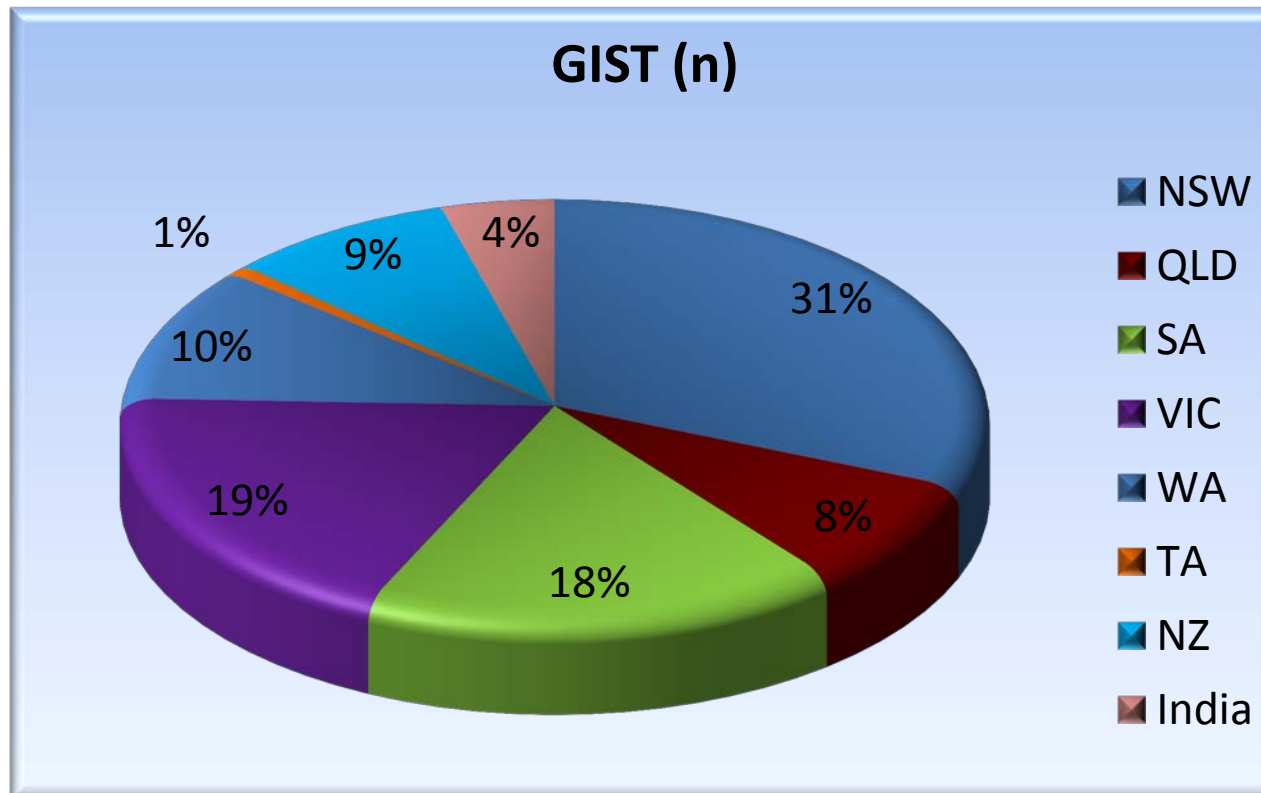
# GIST reports from the ANZGOSA audit

A sample of information available  
from the ANZGOSA audit



# Case Distribution

- Total= 135; 66 Male : 68 Female
- Median age 67 years (22-88)

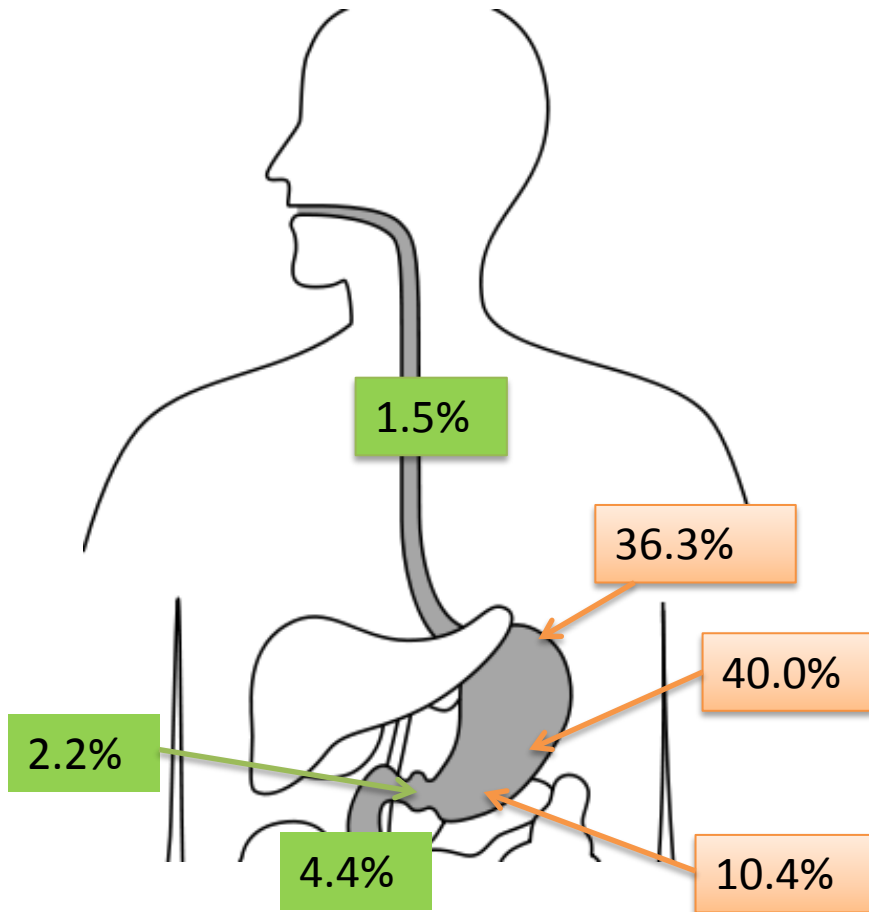


	n	%
<b>NSW</b>	42	31.1
<b>VIC</b>	25	18.5
<b>SA</b>	24	17.8
<b>WA</b>	14	10.4
<b>NZ</b>	12	8.8
<b>QLD</b>	11	8.1
<b>India</b>	6	4.4
<b>Tasmania</b>	1	0.7





# Diagnosis

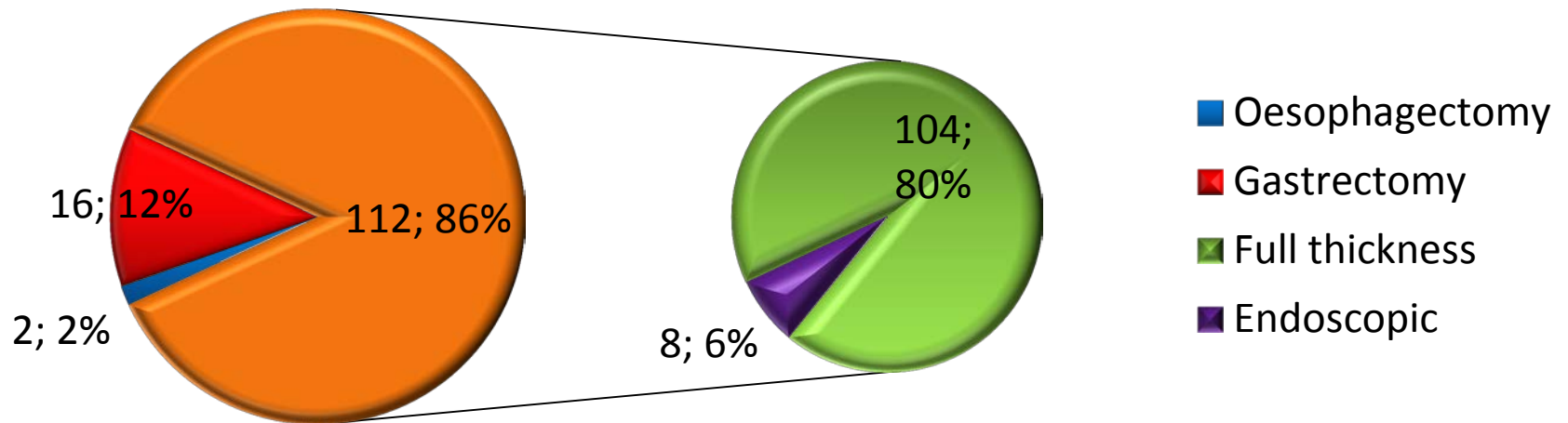
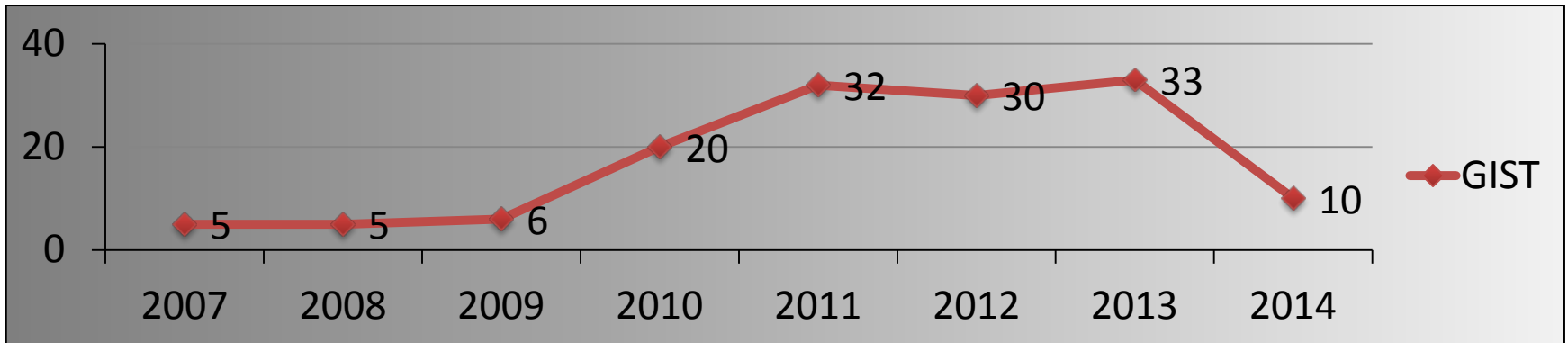


Site	n	%
Oesophagus	2	1.5
<b>Stomach</b>		
Fundus	49	36.3
Body	54	40
Antral	14	10.4
Pylorus	3	2.2
Small bowel	6	4.4
Unknown	7	5.2
Total	135	

Most common diagnosis: Endoscopy (84 / 135, 62%)

Pre-operative: CT (121; 90%), EUS (29), Laparoscopy (15) PET (20)

# Procedures



Most frequent procedure: Full thickness local excision (104/112);  
64% (71/112) of local excisions were laparoscopic



# Endoscopic Resection

Patient	Stage	Closest Margin	Pathology
1	T3 N1 M1?	Not recorded	T3 N1 M0
2	T3 N0 M0	Not recorded	T3 N0 M0
3	T2 N0 M0	Not recorded	T2 N0 M0
4	T3 N0 M0	Not recorded	T2 N0 M0
5	T3 N0 M0	Not recorded	T3 N0 M0
6	T1 N0 M0	Not recorded	T1 N0 M0
7	T2 N0 M0	Negative	T2 N0 M0
8	T2 N0 M0	Negative	T2 N0 M0

8 procedures

All performed with curative intent

Resection margin recorded in 2 patients



# Staging Accuracy

	Pre-treatment, n (%)	Pathology	
<u>T-stage: Tx</u>		1 (0.7%)	<i>Under-staging or data recording?</i>
<2cm	6 (4.4%)	9 (6.7%)	
2-5cm	54 (40%)	58 (50%) ↑	
5-10cm	32 (23.8%)	34 (25.2%) ↑	
>10cm	13 (9.6%)	18 (13.3%) ↑	
Not recorded	30 (22.2%)	15 (11.1%) ↓	
<u>N-stage: Nx</u>		29 (21.5%)	<i>Assuming Nx = N0, 93 patients (Nx + N0): <u>69%</u>, good N-stage accuracy</i>
N0	97 (71.9%)	64 (47.4%)	
N1	4 (3%)	4 (2.9%)	
Not recorded	34 (25.1%)	38 (28.1%)	
<u>M-stage</u>			<i>6% upstage</i>
M0	100 (74.1%)	108 (80%)	
M1	9 (6.7%)	5 (4%)	
Not recorded	26 (19.2%)	22 (16%)	

Staging: CT (127), EUS (35), PET (23) and Laparoscopy (14)



# Neo-adjuvant therapy (9)

Patient	Stage	Re stage	Post	Risk	
1	T4 N0 M0	T4 N1 M1	T4 N1 M1		Progressed during imatinib
2	T4 N0 M0		T4 N0 M0		No effect
3	T4 N0 M0	T4 N0 M0	T4 N0 M0	High	No effect
4	T4 N0 M0	T4 N0 M0	T4 N0 M0	High	No effect
5	T3 N0 M0	T? N0 M0	T? N0 M0	Very low	Downstaged
6	T1 N0 M0		T0 N0 M0		Complete response
7	T3 N0 M1	T1 N0 M1	T1 Nx M1		Downstaged
8			Tx N0 Mx	High	Not recorded
9	T2 N0 M0				Not recorded

3 downstaged 

3 no effect 

1 progressed 



# Adjuvant therapy

Patient	Pre-operative Stage	Pathology	Risk
1	T4 N0 M0	T4 N0 M0	High
2	T4 N0 M0	T4 N0 M0	High
3	T2 N0 M0	T2 Nx M0	Intermediate
4	T4 N0 M0	T4 N0 M0	High
5	T2 N0 M0	T3 N1 M0	High
6	T3 N0 M0	T3 N0 M0	Very low ?
7	T3 N0 M0	T4 Nx M0	Intermediate ?
8	T2 N0 M0	T2 N0 M0	Intermediate
9	T3 N0 M1	T3 N0 M1	High
10	T3 N0 M0	T3 N0 M0	High

Accurate TNM staging in almost all cases  
Additional risk conferred by mitotic count  
Automatic risk score calculation introduced



# Post-operative Morbidity

<b>Surgical morbidity 10.4% (14/135)</b>	
<b>Morbidity</b>	<b>1° Procedure</b>
Anastomatic leak	Oesophagectomy
Peri-splenic collection	Local Excision
Delayed gastric emptying	Local Excision
Delayed gastric emptying	Gastrectomy
Ileus	Gastrectomy
Wound infection	-
Abscess – unspecified	-
Bleeding – unspecified	-
Caecal Volvulus	Local Excision

<b>Return to theatre</b>	
Endoscopic dilatation	Local
Anastomatic leak	Oes'ectomy
Bleeding staple line (R1)	Local
Caecal Volvulus (R1)	Local
Staple line resection (R1)	Local

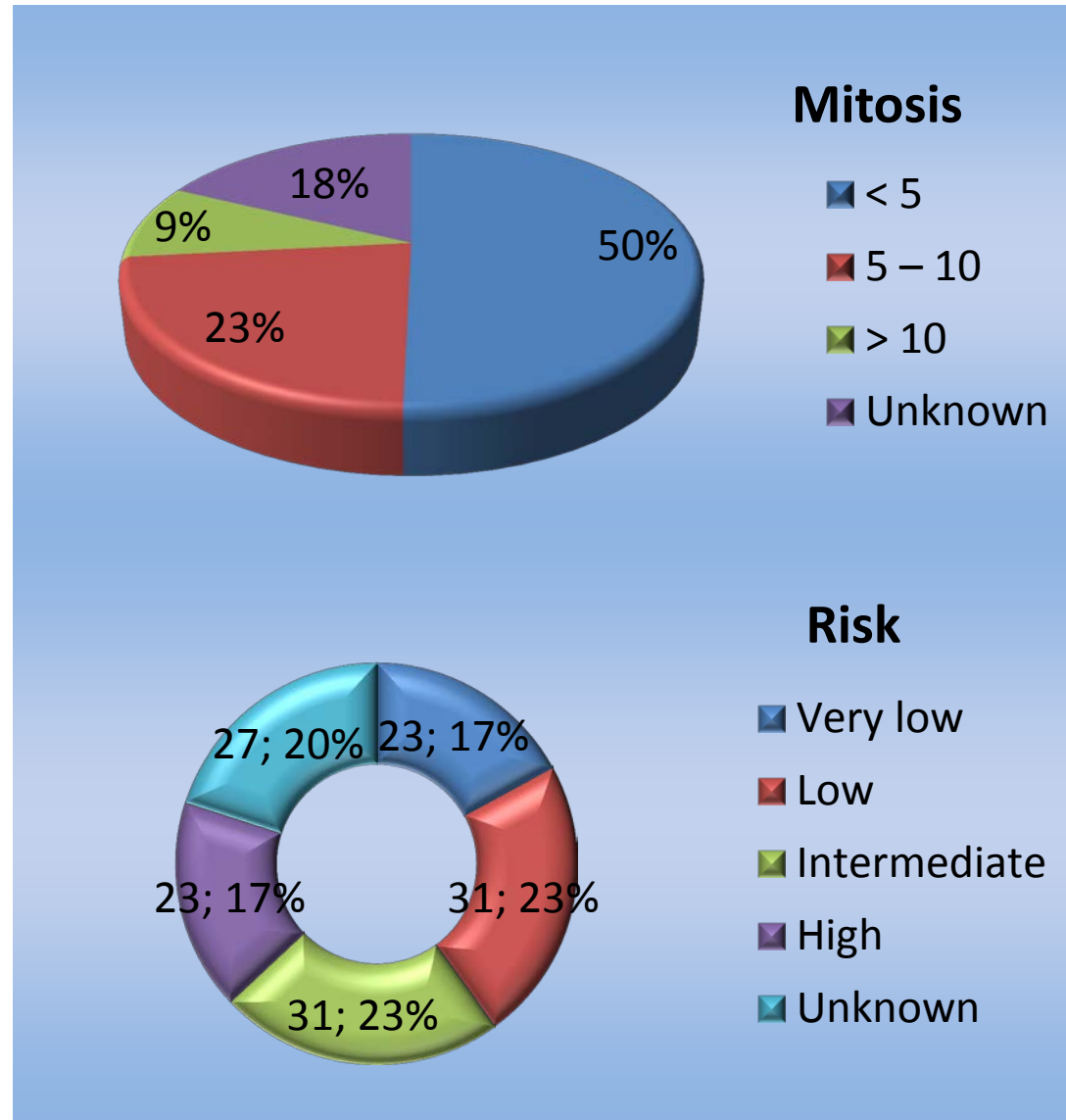
**Non-surgical morbidity 11%:**  
Respiratory (5), Urinary (3), renal (1), phlebitis (1), unrecorded (5)

**0% in-hospital and 30-day mortality**



# Pathology

	Pathology
<b>T stage</b>	1 (0.7%)
<b>T1: &lt;2cm</b>	9 (6.7%)
<b>T2: 2-5cm</b>	58 (50%) ↑
<b>T3: 5-10cm</b>	34 (25.2%) ↑
<b>T4: &gt;10cm</b>	18 (13.3%) ↑
<b>Unknown</b>	15 (11.1%) ↓
<b>N stage</b>	<b>29 (21.5%)</b>
<b>N0</b>	<b>64 (47.4%)</b>
<b>N1</b>	4 (2.9%)
<b>Unknown</b>	38 (28.1%)
<b>M stage</b>	
<b>M0</b>	108 (80%)
<b>M1</b>	5 (4%)
<b>Unknown</b>	22 (16%)
<b>R1 % (n = 6) = 4.4 – 6.5%</b>	





# Summary

- ANZGOSA audit: Research / audit / benchmark
- > 75% GIST in gastric fundus/body and amenable to laparoscopic local resection
- Accurately staged (?)
- Endoscopic resection: R1 margins / rupture
- 0% mortality but R1-related surgical morbidity

# Limitations

- Representative data
- Data improvements
  - GIST specific: Adjuvant treatment / R1
  - Liaise directly with data officers
- Continued funding pathways?



# Acknowledgments

Assoc. Professor Garrett Smith

Michelle Ogilvy, Senior Project Officer

Louise Kennedy, Data Administrator

Katherine Economides, Manager

Morbidity Audits, Royal Australasian College of Surgeons

Novartis

Johnson & Johnson

*“The Authors acknowledge the data reported here has been supplied by the Royal Australasian College of Surgeons from the ANZGOSA Audit. The interpretation and reporting of these data are the responsibility of the authors and should not be seen as an official interpretation by the ANZGOSA Audit, the Australia & New Zealand Gastric & Oesophageal Surgery Association or the College.”*