



To Operate or Not - Pre-operative Assessment

DR IVAN WARD

CONSULTANT ANAESTHETIST

FLINDERS MEDICAL CENTRE

PULSE ANAESTHETICS

About me



pulse 
anaesthetics

Disclosure

I am married to a Palliative Physician

Risk of Death

- ▶ Historical perspective
 - ▶ 1850-1870's
 - ▶ Chloroform anaesthetics
 - ▶ 1 death for every 3000 cases
 - ▶ Ether anaesthesia
 - ▶ 1 death for every 12,000 cases

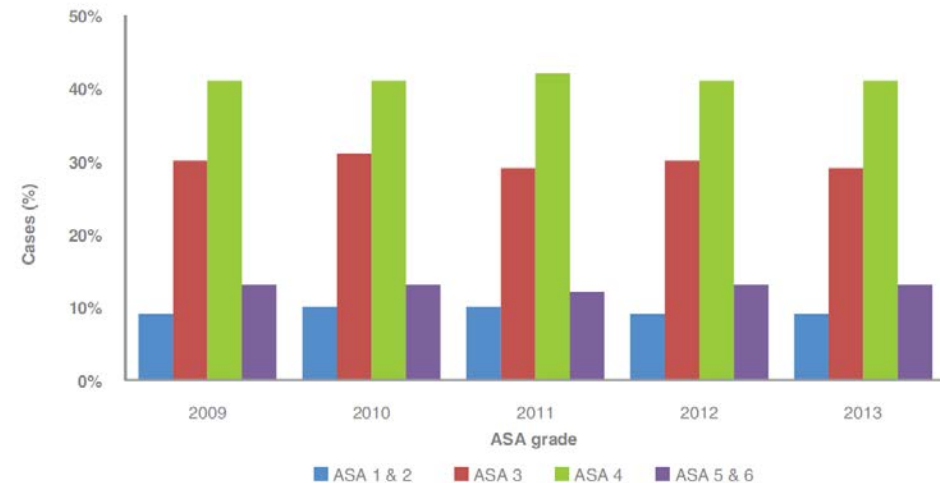
Australian Anaesthetic Mortality

- ▶ Australian and New Zealand College of Anaesthetists
 - ▶ Longitudinal data
 - ▶ 1960's – 1 deaths per 10,000 cases
 - ▶ End of 1980's – 1 death per 25,000 cases
 - ▶ 2010 – 1 death per 58,039 cases

Australian Anaesthetic Mortality

- ▶ Estimated anaesthesia related mortality in Australia
 - ▶ 17 Deaths per million

Figure 14: Distribution of ASA grades by year (N=18,583)



Missing data: n=1,198 (6%).
ASA: American Society of Anesthesiologists.

A review of anaesthesia-related mortality reporting in Australia and New Zealand 2009-2011
Australian and New Zealand Audit of Surgical Mortality – National Report 2013

Risk of Death

▶ Summary

- ▶ Overall risk of intraoperative death
 - ▶ 1 in 58,000
- ▶ Risk of death in ASA 1
 - ▶ Approximately 1 in 200,000
- ▶ Risk of death solely due to anaesthetic related factors
 - ▶ 1 in 411,000

Annual Risk Of Death During One's Lifetime

<u>Disease and Accidental Causes of Deaths</u>	<u>Annual Deaths</u>	<u>Death Risk During One's Lifetime</u>
<i>Heart disease</i>	652,486	1 in 5
<i>Cancer</i>	553,888	1 in 7
<i>Stroke</i>	150,074	1 in 24
<i>Hospital Infections</i>	99,000	1 in 38
<i>Flu</i>	59,664	1 in 63
<i>Car accidents</i>	44,757	1 in 84
<i>Suicide</i>	31,484	1 in 119
<i>Accidental poisoning</i>	19,456	1 in 193
<i>MRSA (resistant bacteria)</i>	19,000	1 in 197
<i>Falls</i>	17,229	1 in 218
<i>Drowning</i>	3,306	1 in 1,134
<i>Bike accident</i>	762	1 in 4,919
<i>Air/space accident</i>	742	1 in 5,051
<i>Excessive cold</i>	620	1 in 6,045
<i>Sun/heat exposure</i>	273	1 in 13,729
<i>Lightning</i>	47	1 in 79,746
<i>Train crash</i>	24	1 in 156,169
<i>Fireworks</i>	11	1 in 340,733
<i>Shark attack</i>	1	1 in 3,748,067

Risk of Death

► Summary

- Overall risk of intraoperative death
 - 1 in 58,000
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The Reason Study

STORY D, *ET AL.* COMPLICATIONS AND MORTALITY IN OLDER SURGICAL PATIENTS IN AUSTRALIA AND NEW ZEALAND (THE REASON STUDY): A MULTICENTRE, PROSPECTIVE, OBSERVATIONAL STUDY. ANAESTHESIA, 2010; **65**: 1022-1030

REASON Study

- ▶ Inclusion Criteria
 - ▶ Non-cardiac surgical patients aged > 70 years
 - ▶ Expected to stay at least one night in hospital
 - ▶ Admitted to one of 23 hospitals in Australia and New Zealand

ORIGINAL ARTICLE

Complications and mortality in older surgical patients in Australia and New Zealand (the REASON study): a multicentre, prospective, observational study*

D. A. Story,¹ K. Leslie,² P. S. Myles,³ M. Fink,⁴ S. J. Poustie,⁵ A. Forbes,⁶ S. Yap,⁷ V. Beavis⁸ and R. Kerridge⁹; on behalf of the REASON Investigators, Australian and New Zealand College of Anaesthetists Trials Group

¹ Head of Research, Department of Anaesthesia, 4 Hepatobiliary Surgery, Austin Health, Heidelberg, Australia
² Head of Research, Department of Anaesthesia and Pain Management, Royal Melbourne Hospital, Melbourne, Australia
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⁵ Head, Biostatistics Unit, Department of Epidemiology and Preventive Medicine, School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia
⁷ Director, Preoperative Unit, Prince of Wales Hospital, Sydney, Australia
⁸ Director, Anaesthesia and Operating Rooms, Auckland City Hospital, Auckland, New Zealand
⁹ Director, Preoperative Service, John Hunter Hospital, Newcastle, Australia

Summary

We conducted a prospective study of non-cardiac surgical patients aged 70 years or more in 23 hospitals in Australia and New Zealand. We studied 4158 consecutive patients of whom 2845 (68%) had pre-existing comorbidities. By day 30, 216 (5%) patients had died, and 835 (20%) suffered complications. 390 (9.4%) patients were admitted to the Intensive Care Unit. Pre-operative factors associated with mortality included: increasing age (80–89 years: OR 2.1 (95% CI 1.6–2.8), $p < 0.001$; 90+ years: OR 4.0 (95% CI 2.6–6.2), $p < 0.001$); worsening ASA physical status (ASA 3: OR 3.1 (95% CI 1.8–5.5), $p < 0.001$; ASA 4: OR 12.4 (95% CI 6.9–22.2), $p < 0.001$); a pre-operative plasma albumin $< 30 \text{ g L}^{-1}$ (OR: 2.5 (95% CI 1.8–3.5), $p < 0.001$); and non-scheduled surgery (OR 1.8 (95% CI 1.3–2.5), $p < 0.001$). Complications associated with mortality included: acute renal impairment (OR 3.3 (95% CI 2.1–5.0), $p < 0.001$); unplanned Intensive Care Unit admission (OR 3.1 (95% CI 1.9–4.9), $p < 0.001$); and systemic inflammation (OR 2.5 (95% CI 1.7–3.7), $p < 0.001$). Patient factors often had a stronger association with mortality than the type of surgery. Strategies are needed to reduce complications and mortality in older surgical patients.

Correspondence to: Associate Professor David A. Story

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*Presented in part, at the Australian and New Zealand College of Anaesthetists' Annual Scientific Meetings, Cairns, Australia, May 2009 and Christchurch, New Zealand, May 2010. Published in proceedings only.

Accepted: 3 July 2010

In a study of 1100 older surgical patients in three hospitals in one Australian city (Melbourne) we previously found that 208 (19%) patients had complications and 61 (6%) died within 30 days [1]. This was one of a few prospective studies to examine the association of mortality with both patient factors and defined complications across a wide

range of surgical specialties [2]. Our findings were broadly consistent with the small number of published North American and European studies [3–6]. Previous studies, including ours, have found that high rates of complications were associated with prolonged hospitalisation, increased hospital costs, and mortality [1, 7, 8].

REASON Study

- ▶ Results
 - ▶ Studied 4158 consecutive patients
 - ▶ By day 30
 - ▶ 216 (5%) of patients had died
 - ▶ 835 (20%) suffered complications

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range of surgical specialties [2]. Our findings were broadly consistent with the small number of published North American and European studies [3-6]. Previous studies, including ours, have found that high rates of complications were associated with prolonged hospitalisation, increased hospital costs, and mortality [1, 7, 8].

REASON Study

- ▶ Independent pre-operative patient factors associated with an increased 30-day mortality included
 - ▶ Increasing Age
 - ▶ 80–89 years: OR 2.1 [95% CI 1.6–2.8]
 - ▶ 90+ years: OR 4.0 [95% CI 2.6–6.2])
 - ▶ Worsening ASA Status
 - ▶ ASA 3: OR 3.1 [95% CI 1.8–5.5]
 - ▶ ASA 4: OR 12.4 [95% CI 6.9–22.2]
 - ▶ ASA 5: OR 40.8 [95% CI 16.5–101.2]

REASON Study

Table 2 Association between 30-day mortality and patient factors. Odds ratios are adjusted for age, ASA status and comorbidity. Comorbidities are ranked by frequency. Values are number (proportion) or number (95% CI).

Variable		Mortality	OR	p value	Adjusted OR	p value
Age						
70–79	2532 (61%)	90 (4%)	1.0 Reference	Reference	Reference	Reference
80–89	1380 (33%)	96 (7%)	2.0 (1.5–2.7)	< 0.001	2.1 (1.6–2.8)	< 0.001
90+	246 (6%)	30 (12%)	3.8 (2.5–5.9)	< 0.001	4.0 (2.6–6.2)	< 0.001
Sex						
Male	2086 (50%)	117 (6%)	1.2 (0.9–1.5)	0.25	1.3 (1.0–1.8)	0.04
Comorbidity						
Diabetes	913 (22%)	47 (5%)	1.0 (0.7–1.3)	0.97	0.9 (0.6–1.2)	0.38
Ischaemic heart disease	826 (20%)	53 (6%)	1.4 (1.0–1.6)	0.06	0.8 (0.5–1.1)	0.15
Albumin <30 g.l ⁻¹	556 (17%)	82 (15%)	4.2 (3.1–5.8)	< 0.001	2.5 (1.8–3.5)	< 0.001
Renal impairment	687 (16%)	63 (9%)	2.2 (1.6–2.9)	< 0.001	1.3 (0.9–1.8)	0.15
Cerebrovascular disease	592 (14%)	43 (7%)	1.5 (1.0–2.1)	0.01	1.1 (0.8–1.6)	0.75
Cognitive impairment	551 (13%)	58 (10%)	2.5 (1.8–3.5)	< 0.001	1.4 (1.0–2.0)	0.06
Obesity	496 (12%)	15 (3%)	0.5 (0.3–0.9)	0.02	0.7 (0.4–1.2)	0.17
Cardiac failure	401 (9%)	46 (11%)	2.7 (1.9–3.8)	< 0.001	1.4 (0.9–2.0)	0.13
Respiratory insufficiency	353 (8%)	39 (11%)	2.5 (1.7–3.6)	< 0.001	1.8 (1.2–2.6)	0.006
Aortic stenosis	136 (3%)	12 (9%)	1.8 (1.0–3.3)	0.49	1.0 (0.5–2.0)	0.99
ASA physical status						
1,2	1315 (32%)	15 (1%)	1.0 Reference	Reference	Reference	Reference
3	2177 (52%)	96 (4%)	4.0 (2.3–6.9)	< 0.001	3.0 (1.7–5.2)	< 0.001
4	540 (13%)	90 (17%)	17 (9.9–30.3)	< 0.001	12.4 (6.9–22.1)	< 0.001
5	32 (1%)	11 (34%)	45 (18.6–111.2)	< 0.001	40.8 (16.5–101.2)	< 0.001

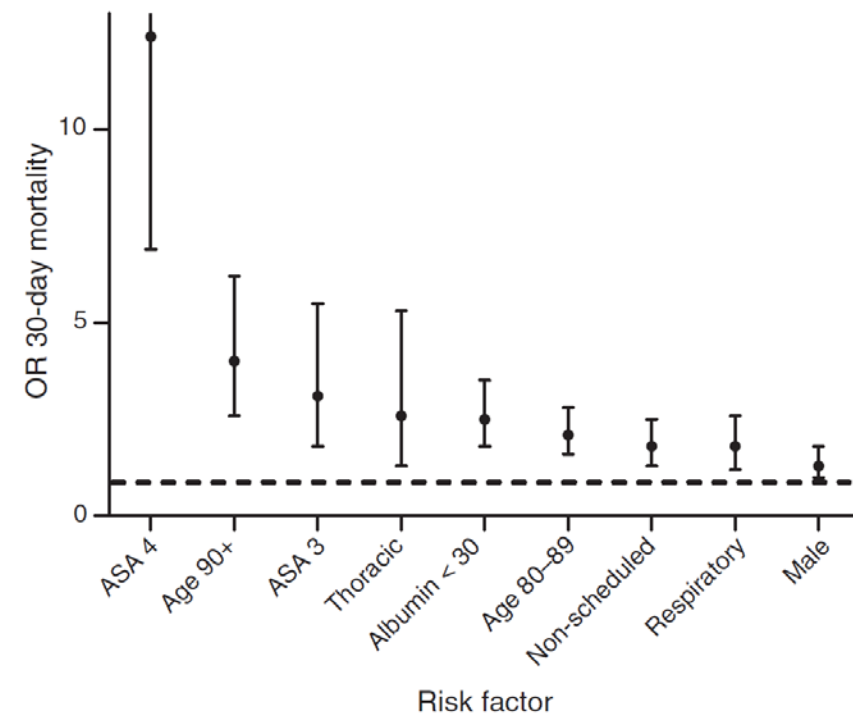
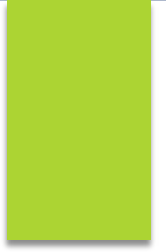


Figure 1 Adjusted odds ratios (OR) for 30-day mortality (dots) with 95% CI (bars) for pre-operative and operative factors associated with increased mortality ranked by OR point estimate. The dotted line represents an OR of 1. Thoracic, thoracic surgery; non-scheduled, non-scheduled surgery.

REASON Study

- ▶ Applicable to our patient group
 - ▶ Local hospitals
 - ▶ Open inclusion criteria
 - ▶ Inclusive of both elective and emergency surgery
- ▶ Difficult to apply to specific patients

Population based risk assessment



Australian Bureau of Statistics

- ▶ Life expectancy tables and likelihood of dying
 - ▶ Most recent tables are from 2011-2013
 - ▶ Based on age-specific death rates

Australian Bureau of Statistics

Australian Bureau of Statistics

3302055001DO001_20112013 Life Tables, States, Territories and Australia, 2011-2013

Released at 11:30 am (Canberra time) Thurs 6 Nov 2014

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More information available from the [ABS website](#)

Life Tables, States, Territories and Australia, 2011–2013

[Summary](#)

[Explanatory Notes](#)

Inquiries

For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070.

Australian Bureau of Statistics

3302DO001_20112013 Life Tables, States, Territories and Australia, 2011-2013

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Table 1.9 Life Tables, Australia, 2011–2013

	Males				Females			
	ix	qx	Lx	ex	ix	qx	Lx	ex
Age	no.	rate	no.	years	no.	rate	no.	years
70	82,409	0.01690	81,722	15.3	89,117	0.01019	88,670	17.9
71	81,016	0.01865	80,271	14.6	88,209	0.01138	87,715	17.0
72	79,505	0.02066	78,695	13.9	87,205	0.01274	86,659	16.2
73	77,862	0.02298	76,980	13.1	86,095	0.01428	85,490	15.4
74	76,073	0.02564	75,112	12.4	84,865	0.01598	84,198	14.6
75	74,122	0.02869	73,074	11.8	83,509	0.01783	82,776	13.9
76	71,995	0.03218	70,853	11.1	82,020	0.01992	81,215	13.1
77	69,679	0.03614	68,437	10.4	80,386	0.02235	79,502	12.4
78	67,160	0.04061	65,814	9.8	78,589	0.02523	77,614	11.6
79	64,433	0.04564	62,980	9.2	76,606	0.02865	75,528	10.9
80	61,492	0.05126	59,934	8.6	74,412	0.03271	73,216	10.2
81	58,340	0.05759	56,677	8.1	71,978	0.03753	70,650	9.6
82	54,980	0.06473	53,217	7.5	69,276	0.04318	67,806	8.9
83	51,421	0.07279	49,564	7.0	66,285	0.04976	64,662	8.3
84	47,678	0.08186	45,739	6.5	62,987	0.05735	61,207	7.7
85	43,775	0.09203	41,770	6.1	59,375	0.06603	57,440	7.1
86	39,747	0.10338	37,697	5.6	55,455	0.07587	53,374	6.6
87	35,638	0.11599	33,570	5.2	51,248	0.08693	49,039	6.1
88	31,504	0.12992	29,451	4.8	46,793	0.09927	44,483	5.7
89	27,411	0.14520	25,408	4.5	42,148	0.11293	39,774	5.2
90	23,431	0.16150	21,518	4.2	37,388	0.12755	34,998	4.8
91	19,647	0.17699	17,879	3.9	32,619	0.14211	30,287	4.5
92	16,170	0.19169	14,590	3.6	27,984	0.15849	25,748	4.1
93	13,070	0.21134	11,661	3.3	23,549	0.17845	21,425	3.8
94	10,308	0.23453	9,069	3.1	19,346	0.20068	17,374	3.5
95	7,890	0.25799	6,839	2.9	15,464	0.22331	13,698	3.3
96	5,855	0.27885	5,004	2.7	12,011	0.24466	10,495	3.1
97	4,222	0.29261	3,574	2.6	9,072	0.26046	7,845	2.9
98	2,987	0.30638	2,505	2.5	6,709	0.27627	5,743	2.7
99	2,072	0.32014	1,722	2.4	4,856	0.29207	4,113	2.6
100	1,408	0.33390	3,204	2.3	3,437	0.30787	8,550	2.5

Australian Bureau of Statistics

- ▶ Gives a population based prediction of yearly mortality
 - ▶ Independent of surgical intervention
 - ▶ Not individualised to the patient
 - ▶ Can be considered baseline

Individualised risk assessment



Individualised risk assessment

- ▶ Numerous risk stratification tools
 - ▶ Specific for surgical procedures
 - ▶ Euroscore II for cardiac surgery
 - ▶ Specific post operative complications
 - ▶ Lees' Revised Cardiac Risk Index
 - ▶ Specific patient populations
 - ▶ APACHE II risk index for ICU patients
 - ▶ General preoperative risk assessment
 - ▶ POSSUM / P-POSSUM
 - ▶ ACS – NSQIP

ACS - NSQIP

AMERICAN COLLEGE OF
SURGEONS: NATIONAL
SURGICAL QUALITY
IMPROVEMENT PROGRAM

ACS - NSQIP

- ▶ American College of Surgeon – National Surgical Quality Improvement Program
 - ▶ Collects high-quality, standardised clinical data from more than 500 hospitals in the US
 - ▶ Preoperative risk factors
 - ▶ Post operative complications
 - ▶ Originally used
 - ▶ Risk-adjusted 30 day outcome comparisons.
 - ▶ Generate procedure specific risk prediction tools for a limited number of postoperative outcomes

ACS - NSQIP

- ▶ Universal ACS - NSQIP surgical risk calculator
 - ▶ Developed using data from
 - ▶ 393 ACS NSQIP hospitals
 - ▶ 1,414,006 patients
 - ▶ Subspecialties included

Specialty	Cardiac surgery	11,170	0.8
	General surgery	840,071	59.4
	Gynecology	74,737	5.3
	Neurosurgery	44,603	3.2
	Orthopaedics	170,280	12
	Otolaryngology	32,489	2.3
	Vascular	137,678	9.7
	Plastics	29,284	2.1
	Thoracic	14,939	1.1
	Urology	58,749	4.2

ACS - NSQIP

- ▶ Universal ACS - NSQIP surgical risk calculator
 - ▶ Data Source
 - ▶ Collects reliable and validated data on patient demographics, laboratories, comorbidities and 30-day postoperative outcomes
 - ▶ Standardised data definitions
 - ▶ Thirty-day outcomes are assessed from the medical record, or patients are contacted after discharge

ACS - NSQIP

- ▶ Universal ACS - NSQIP surgical risk calculator
 - ▶ Preoperative risk factors
 - ▶ Preoperative risk factors were selected a priori based on
 - ▶ Predictive value
 - ▶ Routine availability to the surgeon before the procedure
 - ▶ Clinical face validity

ACS - NSQIP

- ▶ Universal ACS - NSQIP surgical risk calculator
 - ▶ Used individual Current Procedural Terminology (CPT) codes for each surgical procedure
 - ▶ CPTs with more than 25 cases were used in the calculator

Appendix 2. Distribution of Current Procedural Terminology Codes and Cases

Number of Cases within each CPT \geq	Number of CPTs	Cases, n (%)
1	2,805	1,414,006 (100.0)
25	1,557	1,403,137 (99.2)
50	1,227	1,391,627 (98.4)
75	1,022	1,379,094 (97.5)
100	894	1,368,155 (96.8)
200	633	1,331,357 (94.2)
500	373	1,247,717 (88.2)
1,000	224	1,143,523 (80.9)

CPT, Current Procedural Terminology.

ACS - NSQIP

- ▶ Risk Prediction Models
 - ▶ Models for 8 surgical outcomes were evaluated
 - ▶ Mortality
 - ▶ Pneumonia
 - ▶ Cardiac event (cardiac arrest or myocardial infarction)
 - ▶ Surgical site infection
 - ▶ Urinary tract infection
 - ▶ Deep vein thrombosis
 - ▶ Renal failure
 - ▶ Other Morbidity

ACS - NSQIP

- ▶ Surgeon Risk Adjustment
 - ▶ Allows modification based on comorbidities not accounted for
 - ▶ Increase the risk of surgery within the confidence interval for each CPT
 - ▶ Surgeon Adjustment Score (SAS)
 - ▶ SAS 1 = default estimated risk from the model
 - ▶ SAS 2 = adjusted to +1 standard deviation of predicted risks
 - ▶ SAS 3 = adjusted to +2 standard deviations of predicted risks

ACS - NSQIP

▶ Performance of the risk calculator

▶ Three metrics

▶ C-statistic

- ▶ Is a measure of discrimination
- ▶ Ranges from 0.5 (chance) to 1.0 (perfect)

▶ Brier score

- ▶ The average squared difference between patients' predicted probabilities and observed outcomes (1 or 0 depending on event or non-event)
- ▶ The Brier score will approach 0.0 with perfect prediction

▶ Hosmer-Lemeshow (HL) Statistic

- ▶ Measure of calibration that reflects bias in predicting risk across the range of risk

Table 2. Complication Rates and Model Statistics for the Universal Surgical Risk Calculator Model (n = 1,414,006)

Outcomes	Events, n (%)	c-statistic*	Brier score*	Brier score (null model)*
Mortality	18,909 (1.3)	0.944	0.011	0.0132
Morbidity	126,921 (9.0)	0.816	0.069	0.0817
Pneumonia	17,183 (1.2)	0.870	0.011	0.0120
Cardiac	10,676 (0.8)	0.895	0.007	0.0075
SSI	50,611 (3.6)	0.817	0.032	0.0346
UTI	20,777 (1.5)	0.806	0.014	0.0145
VTE	12,671 (0.9)	0.819	0.009	0.0089
Renal failure	8,996 (0.6)	0.903	0.006	0.0063

*The c-statistic is a measure of discrimination, that **ranges from 0.5 (chance) to 1.0 (perfect)**, which reflects the extent to which cases are properly classified as having or not having an event. The Brier score describes the averaged squared difference between patients' predicted probability and the actual outcome (0 for a nonevent and 1 for an event). If all patients without an event are assigned a predicted probability of 0, and all patients with an event are assigned a predicted probability of 1, the **Brier score will be 0, indicating perfect prediction**. For the null model Brier score, the overall event rate (say, 0.05 for a 5% mortality rate) is assigned to each patient. This indexes predictive value when using this information but no patient-specific factors.
SSI, surgical site infection; UTI, urinary tract infection; VTE, deep venous thrombosis.

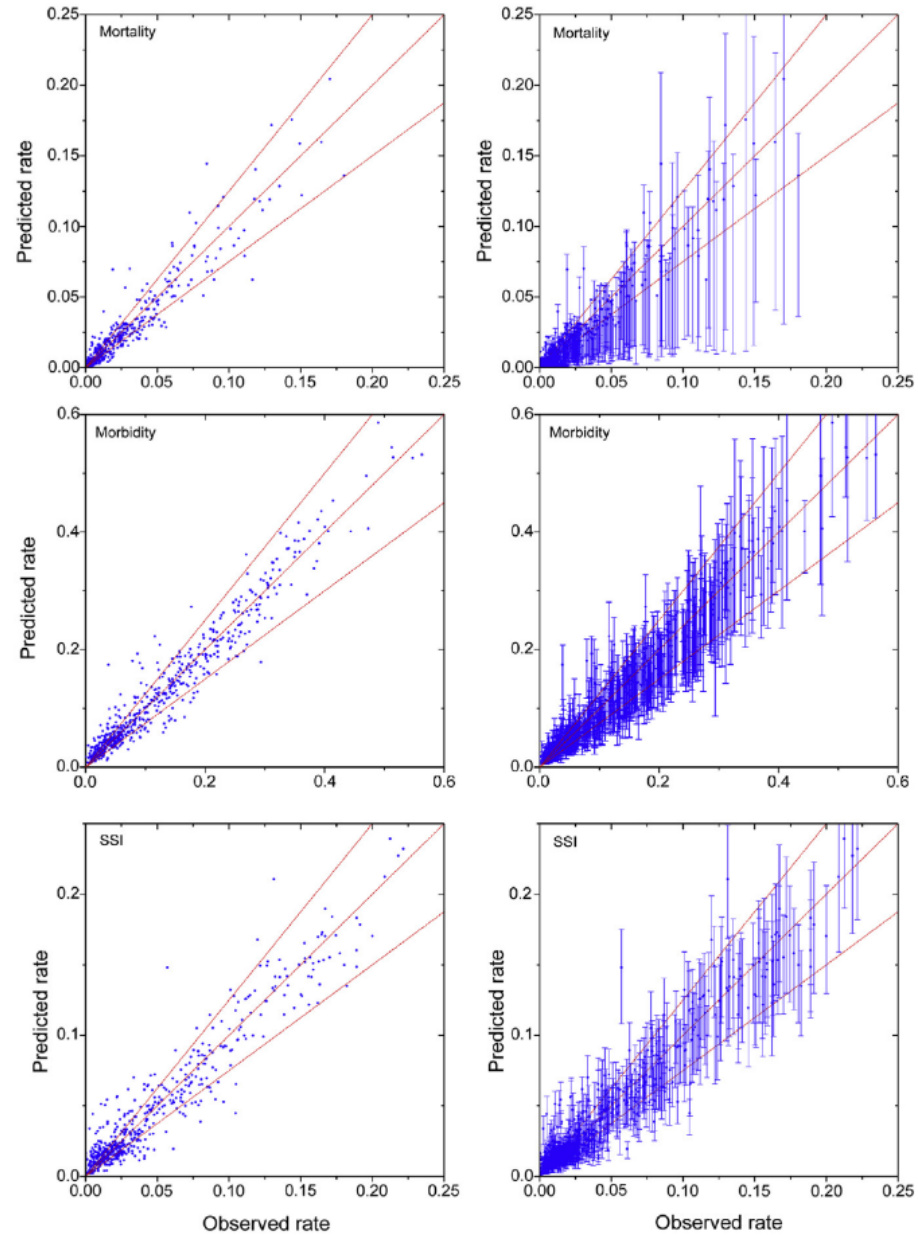


Figure 1. Plots of mean observed rates and universal-model-predicted rates for Current Procedural Terminology (CPT) codes. *Only CPTs with at least 200 cases are included. The limit lines on either side of the diagonal representing perfect agreement (observed = predicted) are set at $\pm 25\%$ (from the diagonal). Scatter plots are in the left column; the right column includes the interquartile range (IQR) around the predicted values for each CPT group. The IQR spread represents differences in patient-predicted risk within each CPT code.

ACS – NSQIP

- ▶ Benefits of universal risk calculator
 - ▶ Uses 21 preoperative risk factors which are usually available in most patients preoperatively



Enter Patient and Surgical Information

Procedure

44140 - Colectomy, partial; with anastomosis

Clear

Begin by entering the procedure name or CPT code. One or more procedures will appear below the procedure box. You will need to click on the desired procedure to properly select it. You may also search using two words (or two partial words) by placing a '+' in between, for example: "cholecystectomy+cholangiography"

Reset All Selections

Are there other potential appropriate treatment options? Other Surgical Options Other Non-operative options None

Please enter as much of the following information as you can to receive the best risk estimates.
A rough estimate will still be generated if you cannot provide all of the information below.

Age Group

Diabetes

Sex

Hypertension requiring medication

Functional status

Previous cardiac event

Emergency case

Congestive heart failure in 30 days prior to surgery

ASA class

Wound class

Dyspnea

Steroid use for chronic condition

Current smoker within 1 year

Ascites within 30 days prior to surgery

History of severe COPD

Systemic sepsis within 48 hours prior to surgery

Dialysis

Acute Renal Failure

Ventilator dependent

BMI Calculation: Height (in)

Disseminated cancer

Weight (lbs)



Step 2 of 4



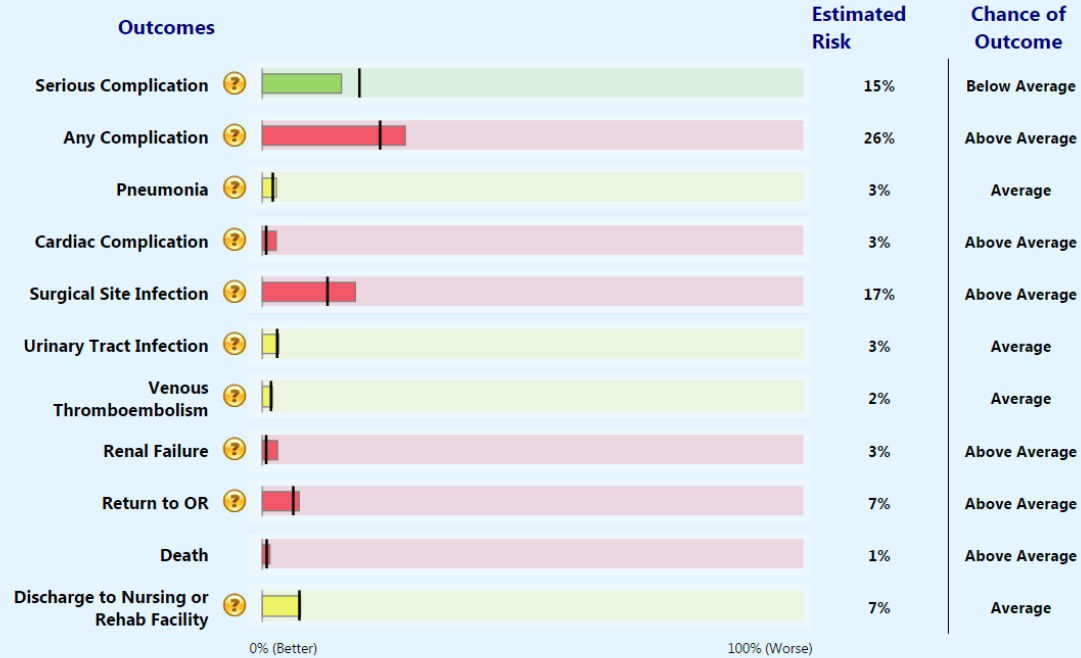
Surgical Risk Calculator



[Risk Calculator Homepage](#) [About](#) [FAQ](#) [ACS Website](#) [ACS NSQIP Website](#)

Procedure 44140 - Colectomy, partial; with anastomosis
Risk Factors Age: 65-74, Male, ASA III, Diabetes (insulin), HTN, Previous cardiac, Obese (Class2)

[Change Patient Risk Factors](#)



Predicted Length of Hospital Stay: 4.0 days

How to Interpret the Graph Above:



Surgeon Adjustment of Risks

This will need to be used infrequently, but surgeons may adjust the estimated risks if they feel the calculated risks are underestimated. This should only be done if the reason for the increased risks was NOT already entered into the risk calculator.

1 - No adjustment necessary

[Back](#)

[Continue](#)

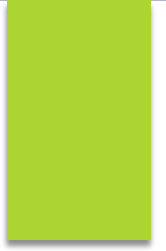
Step 3 of 4



ACS - NSQIP

- ▶ Limitations
 - ▶ Questionable applicability of a US based risk prediction model
 - ▶ Preoperative variables were selected based on what was available in the NSQIP data base
 - ▶ Other preoperative factors such as albumin is not included despite high association with post operative morbidity

Applying this
knowledge in
practice



Practical use of tools

- ▶ Use of peri-operative risk tools
 - ▶ High risk patients having procedures which are not necessary
 - ▶ Stoma reversals
 - ▶ Exceptionally high risk patients
 - ▶ Potentially pre-terminal

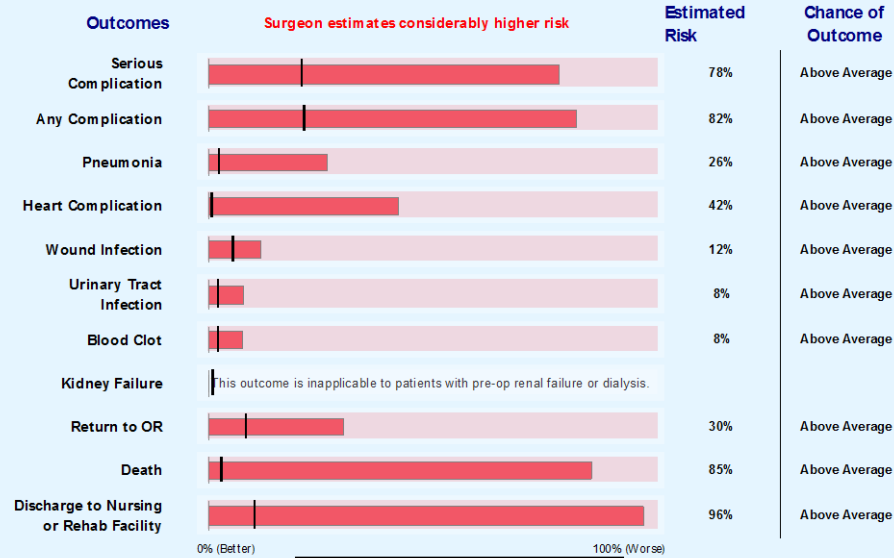
Case

- ▶ Mid 70's renal patient with a potential ischaemic gut
 - ▶ Usual renal co-morbidities
 - ▶ Critical aortic stenosis
 - ▶ Severe pulmonary hypertension
 - ▶ Actively septic
 - ▶ Significant abdominal pain

Patient Surgical Risk Report

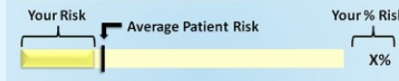


Procedure 49000 Exploratory laparotomy, exploratory celiotomy with or without biopsy(s) (separate procedure)
Risk Factors Age: 75-84, Male, Partially dependent functional status, Emergent, ASA IV/V, Contaminated wound, Chronic steroids, Sepsis, Diabetes (insulin), HTN, Previous cardiac, CHF, Dyspnea at rest, COPD, Dialysis, Acute renal failure, Overweight



Predicted Length of Hospital Stay: 30.0 days

How to Interpret the Graph Above:



Disclaimer: The ACS Surgical Risk Calculator estimates the chance of an unfavorable outcome (such as a complication or death) after surgery. The risk is estimated based upon information the patient gives to the healthcare provider about prior health history. The estimates are calculated using data from a large number of patients who had a surgical procedure similar to the one the patient may have. Please note the risk percentages provided to you by the Surgical Risk Calculator are only estimates. The risk estimate only takes certain information into account. There may be other factors that are not included in the estimate which may increase or decrease the risk of a complication or death. These estimates are not a guarantee of results. A complication after surgery may happen even if the risk is low. This information is not intended to replace the advice of a doctor or healthcare provider about the diagnosis, treatment, or potential outcomes. ACS is not responsible for medical decisions that may be made based on the risk calculator estimates, since these estimates are provided for informational purposes. Patients should always consult their doctor or other health care provider before deciding on a treatment plan.

Definitions

- Complications: Includes any of the problems after surgery listed below
- Pneumonia: Infection in the lungs
- Heart Complication: Includes heart attack or sudden stopping of the heart
- Wound Infection: Infection at the area of the incision or near the organ where surgery was performed
- Urinary Tract Infection: Infection of the bladder or kidneys
- Blood Clot: Clot in the leg veins that can travel to the lung
- Kidney Failure: Kidneys no longer function in making urine and/or clearing the blood of toxins
- Return to OR: The need to go back to the operating room due to a problem after the prior surgery
- Discharge to Nursing or Rehab facility: Discharge to a facility other than home

Useful Questions

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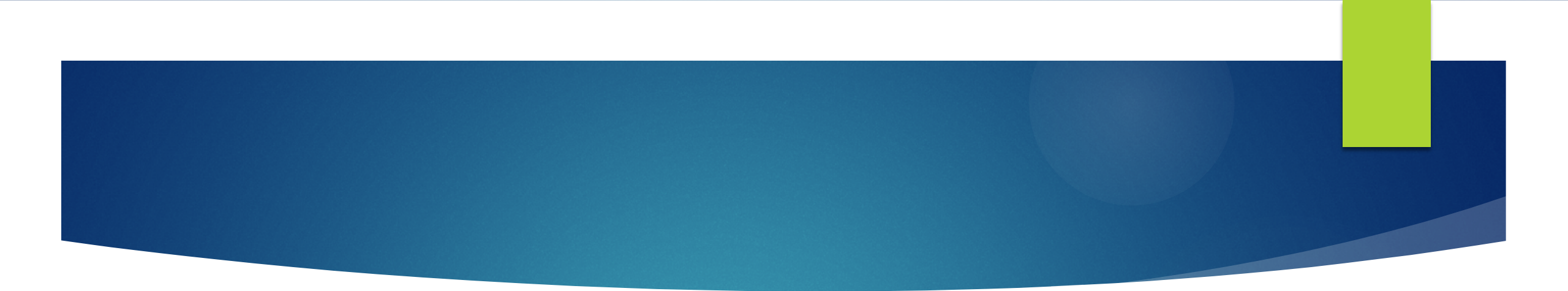
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- 
- ▶ Stress that they will continue to be looked after even if they don't proceed with surgery
 - ▶ Discuss which teams will be responsible for their ongoing care

Importance of communication

- ▶ The anaesthetist is the last hurdle to overcome prior to surgery
 - ▶ Communication is vital between surgeons and anaesthetist
 - ▶ Also vital between anaesthetist and patients

Conclusions

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- ▶ Perioperative mortality is higher than people realise
- ▶ There are tools which are available to help quantify risks
- ▶ There are alternatives to surgery
- ▶ Need to ask important and difficult questions