

Case Study – Morbidity and Mortality Reviews

Reducing time spent while improving insights using our systems



C2-Ai

Case Studies: Improving Morbidity and Mortality Reviews

Providing more insights while reducing clinician time spent on review

ABOUT THIS CASE STUDY

Typically Morbidity and Mortality Reviews can be rather random as clinicians may simply pick a few sets of notes of patients that have died.

This activity may find something useful or simply waste everyone's time.

We help by indicating the cases to look at - namely deaths relating to cases where risk of mortality was low (why did they die?) and those where it was very high (why did the hospital operate?).

This saves clinicians time and is a more focused and useful approach.

"CRAB just makes sense. It presents data in a way that is easy to understand and interpret. It has been immensely useful for me both personally in my appraisal and in my role as a Clinical Director. It helps me to pick up early warning of problems with intelligence that can be believed and acted upon"

Jeremy Cundall,

Consultant Colorectal and General Surgeon,
Executive Medical Director CDDFT

ABOUT C2-Ai

Our systems deliver the safety and savings hospitals need! C2-Ai helps hospitals worldwide to demonstrably reduce avoidable harm and mortality, generate significant savings on operating expenditure (potentially millions per hospital) and reduce complaints/clinical negligence claims by up to 10%.

We uniquely and accurately risk adjust for each patient and can tell which hospitals, specialties, consultants etc. are doing well (given their specific case-mix), where the hospital has issues for mortality and complications, what the causes are, their economic impact, and how to resolve them. We can then support hospitals with forward-looking applications to triage and manage patients more effectively, thereby optimising outcomes and cost-effectiveness.

Our suite of tools is not limited to hospitals, but has wider application for regulators and purchasers/insurers.

"Accurate benchmarking of outcomes was a real challenge to us ... however our work with CRAB analytics has provided invaluable quality assurance. The risk adjusted reporting has provided confidence that our outcomes are better than comparable organisations and the level of detail enables us to focus on improvements in specific areas. It was particularly useful during our regulatory inspection and follow up meetings with the CQC to show how this strengthens our clinical governance..."

Dr Jenny Davidson, Director of Governance, King Edward VII's Hospital.

"The problem with [HSMR systems] is that they tell you there might be a problem, but not where or why. CRAB® tells you exactly what and where the problem is, and even which patients are involved. Then you can do something about it."

Dr. Aresh Anwar, Medical Director Royal Perth Hospital, Australia



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Streamlining Morbidity and Mortality Reviews

Mortality in the “average hospital” - How do we focus our efforts?

Consider ‘typical’ statistics for a hospital to set the scene:

- ~120 deaths per month
- ~105 of these are medical and ~15 are surgical
- Of the 105 medical deaths:
 - Average age of death is 83 years
 - Most younger deaths relate to chronic disease states
- Of the 15 surgical deaths:
 - 8 patients with terminal cancer or extreme pathology
 - 7 patients had a severe acute illness
- In surgery, complications are much more common

Streamlining Morbidity and Mortality Reviews

This approach also useful routinely for more targeted M&M review

Using our unique risk-adjusted approach (considering physiology, co-morbidities, severity of operation/procedure etc.):

- What went wrong in case A (risk-adjusted risk of mortality was very low - 2.8%)?

but also...

- Why was patient B operated upon (risk-adjusted risk of mortality was very high – 99.90%)?

Date of Op	Case	Surgeon	DOB	DOD	Risk
13/01/2019	17070 Ms P		17/01/1949	17/01/2019	A 2.80%
14/01/2019	17119 Mr C		07/02/1931	30/01/2019	48.50%
01/02/2019	17598 Ms P		15/03/1943	10/02/2019	20.80%
07/02/2019	17122 Mr C		06/01/1941	08/02/2019	19.30%
20/02/2019	17095 Mr T		19/06/1938		B 99.90%
02/03/2019	17134 Mr T		05/05/1935		88.30%
02/03/2019	17184 Mr T		14/01/1937	05/03/2019	74.30%
04/03/2019	17139 Ms P		17/12/1962	05/03/2019	14.60%
04/03/2019	17592 Ms P		17/12/1972	14/03/2019	90.30%

Organisational results: M&M review

M&M review drill down: by patient

- Summary patient record for each patient shows overview of demographics, chronology, responsible surgeon, procedure, predicted risks, complications ensuing...
- Enables clinicians to easily consider the patient deaths we have highlighted...

Complications Report	
OPERATION REPORT	CASE 53756, 09/08/2009
PATIENT:	
Admitted:	09/08/2009
Discharged:	15/08/2009
Period of Stay:	6 days
Estimated LOS:	37 days
Hospital Op. Number:	1
	Emergency Admission
SURGEON:	Copeland, Mr G P
SPECIALTY:	General Surgery
DATE OF OPERATION:	09/08/2009 00:13
Date of Death:	15/08/2009
OPCS PROCEDURES:	2
Description:	H05.3 Total colectomy and ileostomy NEC T25.3 Primary repair of incisional hernia using sutures
BUPA PROCEDURE:	
Description:	H0410 Panproctocolectomy and ileostomy
MORTALITY RISK:	41.3%
MORTALITY:	YES
COMPLICATION RISK:	95.7%
COMPLICATIONS:	2
Description:	Death / Death in hospital Infection / Chest
DIAGNOSES:	12
Description:	K55.9 Vascular Disorder Of Intestine, Unspecified I10.X Essential (Primary) Hypertension I25.2 Old Myocardial Infarction I89.8 Oth Spec Noninfectiv Disord I vascnatic Vessel And I vascn Nerve

Organisational results: M&M review

M&M review drill down: by patient

- ... and the corresponding diagnostic and risk profile of the patient allows the clinicians to draw conclusions about the root cause.

MORTALITY RISK: MORTALITY:	41.3% YES	
COMPLICATION RISK: COMPLICATIONS:	95.7% 2	
Description:	Death / Death in hospital Infection / Chest	
DIAGNOSES:	12	
Description:	K55.9 Vascular Disorder Of Intestine, Unspecified I10.X Essential (Primary) Hypertension I25.2 Old Myocardial Infarction I89.8 Oth Spec Noninfectiv Disord Lymphatic Vessel And Lymph Node J18.9 Pneumonia, Unspecified K43.9 Ventral Hernia Without Obstruction Or Gangrene M47.9 Spondylosis, Unspecified R03.1 Nonspecific Low Blood-Pressure Reading Y95.X Nosocomial Condition Z87.1 Personal History Of Diseases Of The Digestive System Z95.1 Presence Of Aortocoronary Bypass Graft Z98.0 Intestinal Bypass And Anastomosis Status	
PHYSIOLOGICAL SCORE:		35
Age	71 or more years	4
Cardiac; CXR	Diuretic, digoxin, antianginal, hypertensive therapy	2
Resp.; CXR	Short of breath on exertion; mild COPD	2
Blood pressure	100 - 109 or 131 - 170 mmHg	2
Pulse	40 - 49 or 81 - 100 bpm	2
Glasgow coma score	GCS of 15	1
Urea	10.1 - 15.0 mmol/litre	4
Sodium	131 - 135 mmol/litre	2
Potassium	3.2 - 3.4 or 5.1 - 5.3 mmol/l	2
Haemoglobin	11.5 - 12.9 or 16.1 - 17.0 g/100ml	2
White cell count	3.0 or less, or 20.1 or more x10 ⁹ /l	4
ECG	91 or more bpm, arrhythmia, >4/min ectopics, ST/T wave changes	8
OPERATIVE SCORE:		18
Severity	Complex major operation	8
No. of ops	Single operation only	1
Blood loss	101 - 500 ml	2
Peritoneal soiling	Serous fluid only, or blood less than 250 ml	2
Malignancy	No malignancy present	1
Time of op.	7 - 24 hrs after admission; immediate, no resus.	4
Show Patient Details		

Organisational results: M&M review

CRAB also allows focus on positive outcomes

- Search for the high-risk cases which were successful...
- ...we can often learn more from what we did right!

HOME > REPORTING > OVERVIEW > CHOOSE FOCUS (1; 2; 3; 4) > CHOOSE DATES > OUTLIER > REPORT

Mortality Surgical Outlier

WHAT OUTLIERS WOULD YOU LIKE TO IDENTIFY?
Denver, 01/01/2006 to 31/12/2008.

1. Choose Outlier Type

<input checked="" type="radio"/>	Unexpected Favourable Outcomes (Above Outlier Threshold)
<input type="radio"/>	Unexpected Adverse Outcomes (Below Outlier Threshold)

2. Set Outlier Threshold
80 **CREATE REPORT >**

About CRAB | Help 

Need Help?

Click the on-screen button to choose the report you would like. (Clicking on one button automatically deselects the other.) Then, set the value of the Outlier Threshold.

Click **CREATE REPORT** to display the report.

The threshold is the risk of an unfavourable outcome calculated using POSSUM and expressed as a percentage. The higher the number, the greater the risk of an unfavourable outcome.

The report shows all cases that meet the selected criteria.



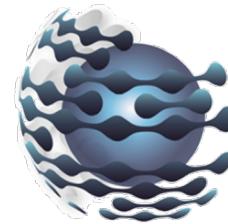
THANK YOU

To discuss how we can help reduce avoidable harm and mortality,
while saving direct and clinical negligence costs, get in touch:

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