

# **'Failure to rescue' from complications following colorectal surgery in Aotearoa New Zealand**

***Dr Cameron Wells***

*Chris Varghese, Luke Boyle, Dr Matthew McGuinness, Dr Celia Keane, Prof Greg O'Grady, A/Prof Jason Gurney, A/Prof Jonathan Koea, A/Prof Chris Harmston, Prof Ian Bissett*



**MEDICAL AND  
HEALTH SCIENCES**  
SURGICAL AND TRANSLATIONAL  
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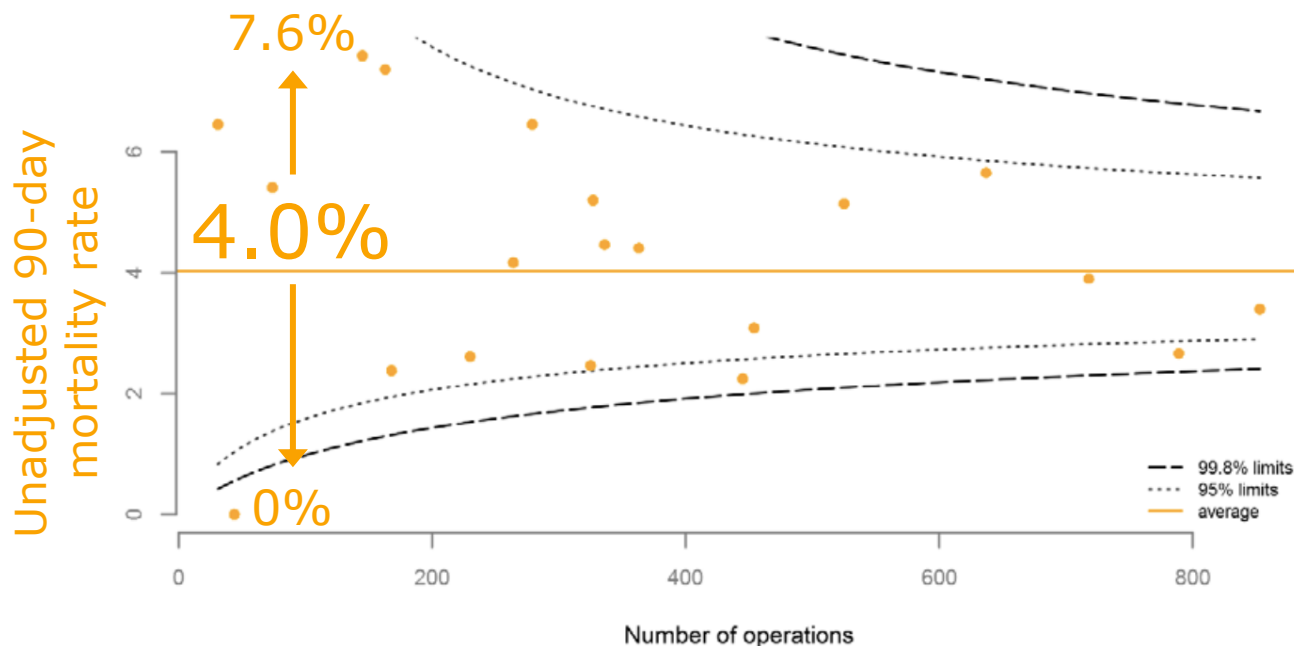


# Variation in Postoperative Mortality

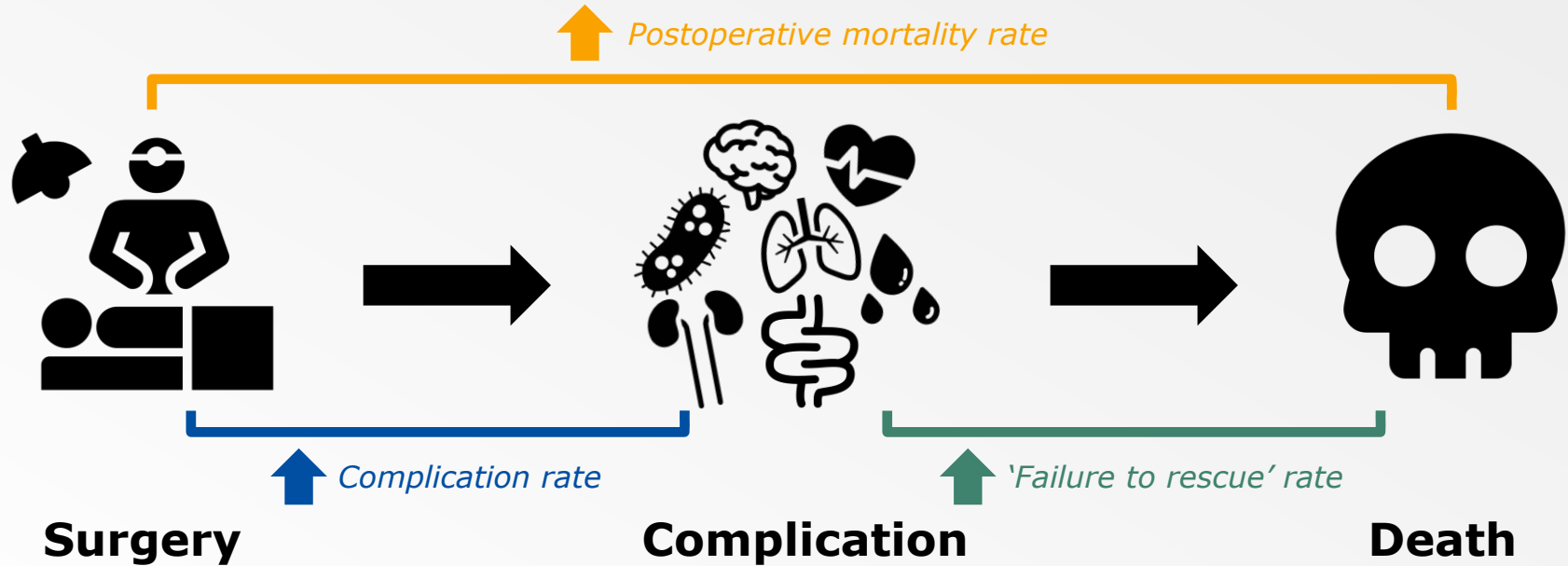


## Bowel Cancer Quality Improvement Report

2013-16



# Postoperative Mortality



# Aims



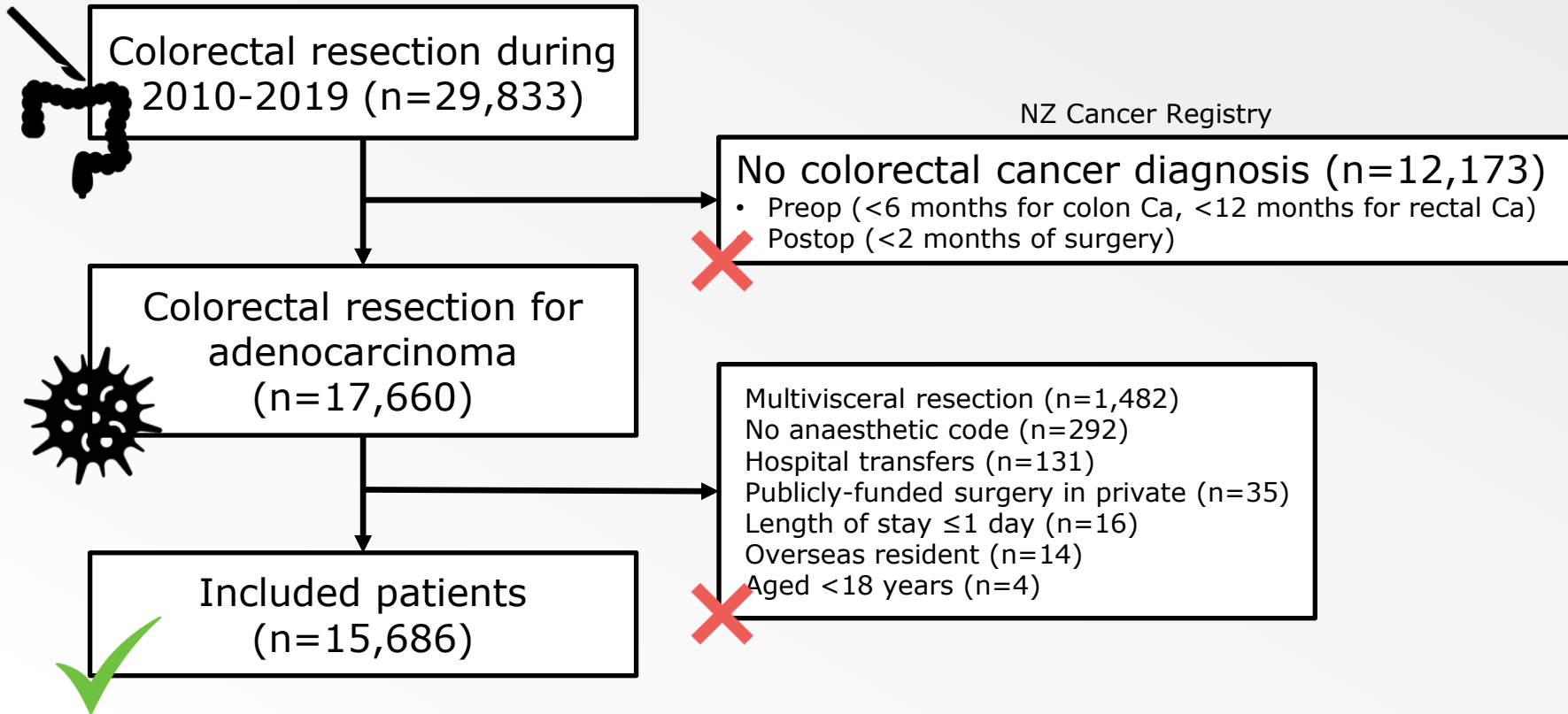
**1** Define the rate of '*failure to rescue*' following colorectal cancer resection in Aotearoa New Zealand

**2** Examine variation in '*failure to rescue*' between District Health Boards

**3** Examine the contribution of improvements in '*rescue*' to reductions in postoperative mortality from 2010 to 2019

# Methods

NZ National Minimum Dataset



# Definitions

All deaths within 90d

**Failure to rescue** =  $\frac{\text{All deaths within 90d}}{\text{Complications, reoperations, or deaths within 90d}}$

## ICD-10 Codes:



Pneumonia



Arrhythmia



Acute kidney injury



Respiratory failure



Myocardial infarction



Stroke



DVT/PE



Shock



Delirium



Sepsis



Cardiac arrest



Reoperation

# Analysis



- Observed vs. risk- and reliability-adjusted mortality rates calculated for each DHB
  - **Risk-adjustment:** NZRISK (age, gender, ethnicity, acuity, ASA), C3 comorbidity index, colon vs. rectal cancer, disease stage, and NZDep2013
  - **Reliability-adjustment:** Reduces random error associated with small sample sizes from some DHBs
- DHBs grouped into four quartiles based on observed vs. expected mortality rates
- Time periods grouped into 2-year blocks

# Results



**15686** patients

**2010-  
2019**

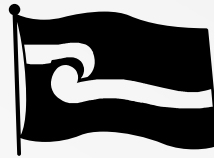
**20** DHBs



46% Female



Mean age 71y  
(SD 12y)



6% Māori  
2% Pacifica



77% Colon Ca  
23% Rectal Ca

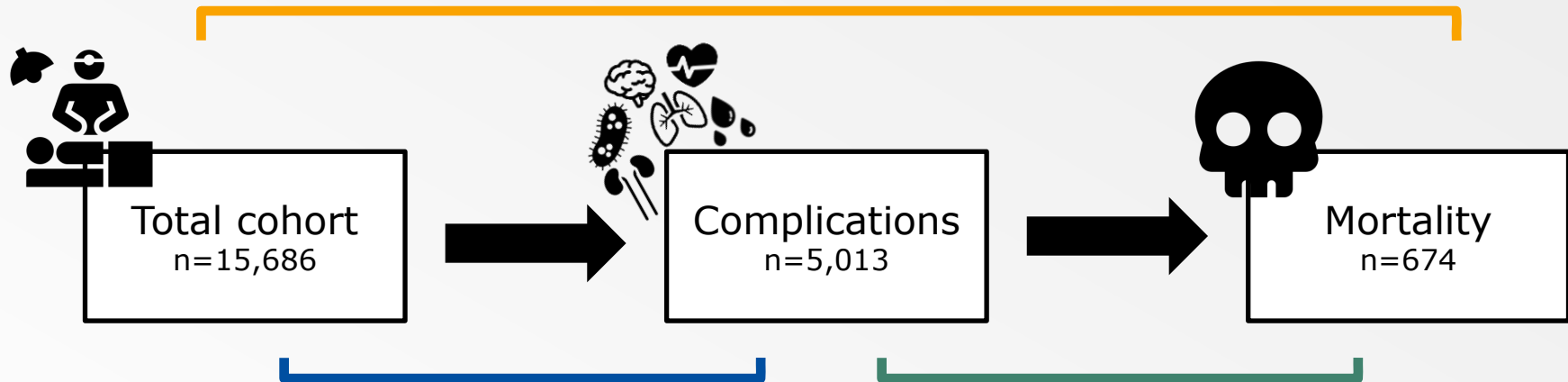


80% Elective  
20% Acute



# Failure to Rescue

90d Mortality Rate: 4.7%



Complication Rate: 32.0%

'Failure to Rescue' Rate: 13.4%



AKI  
(9.2%)

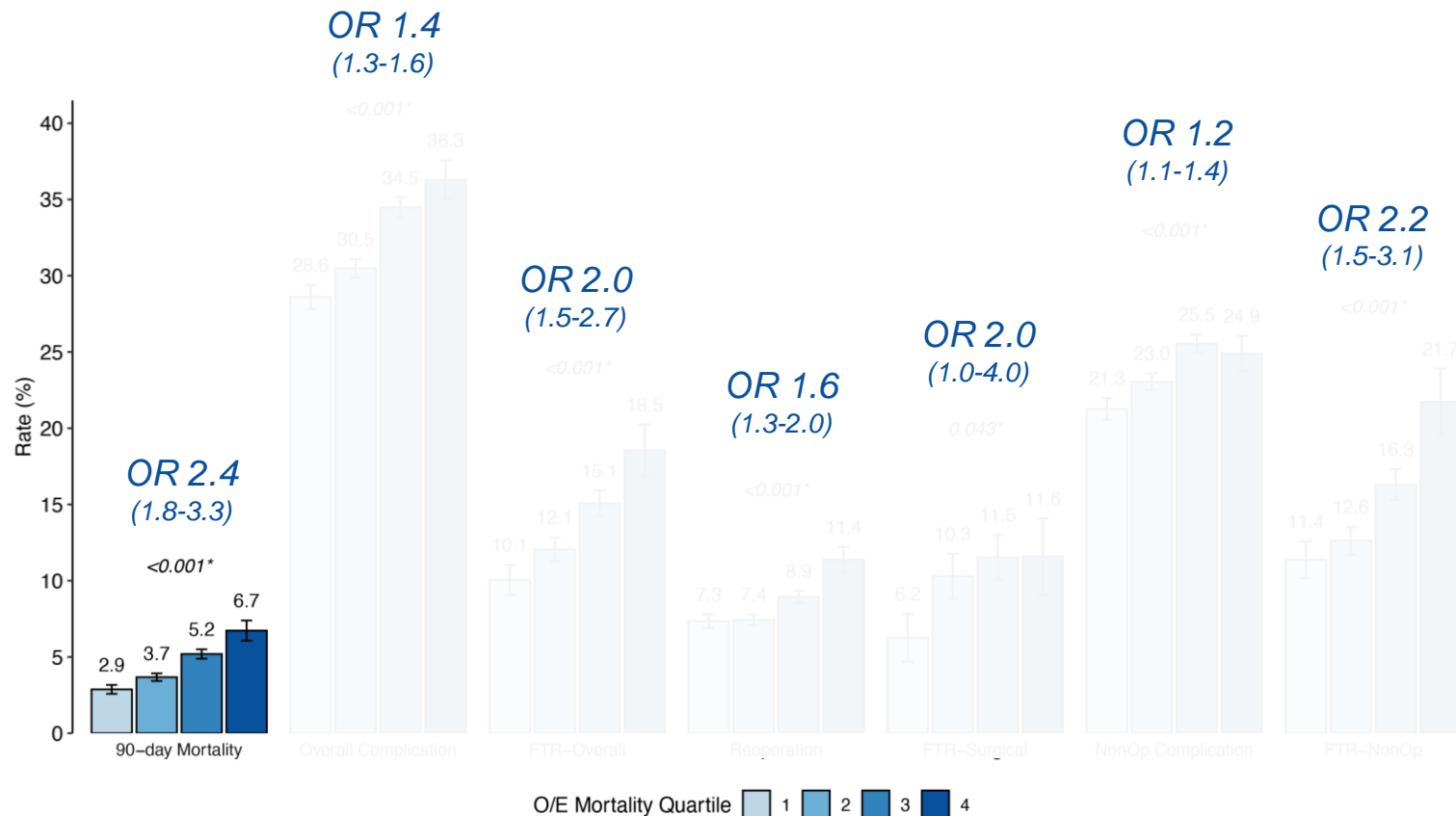


Reoperation  
(8.3%)

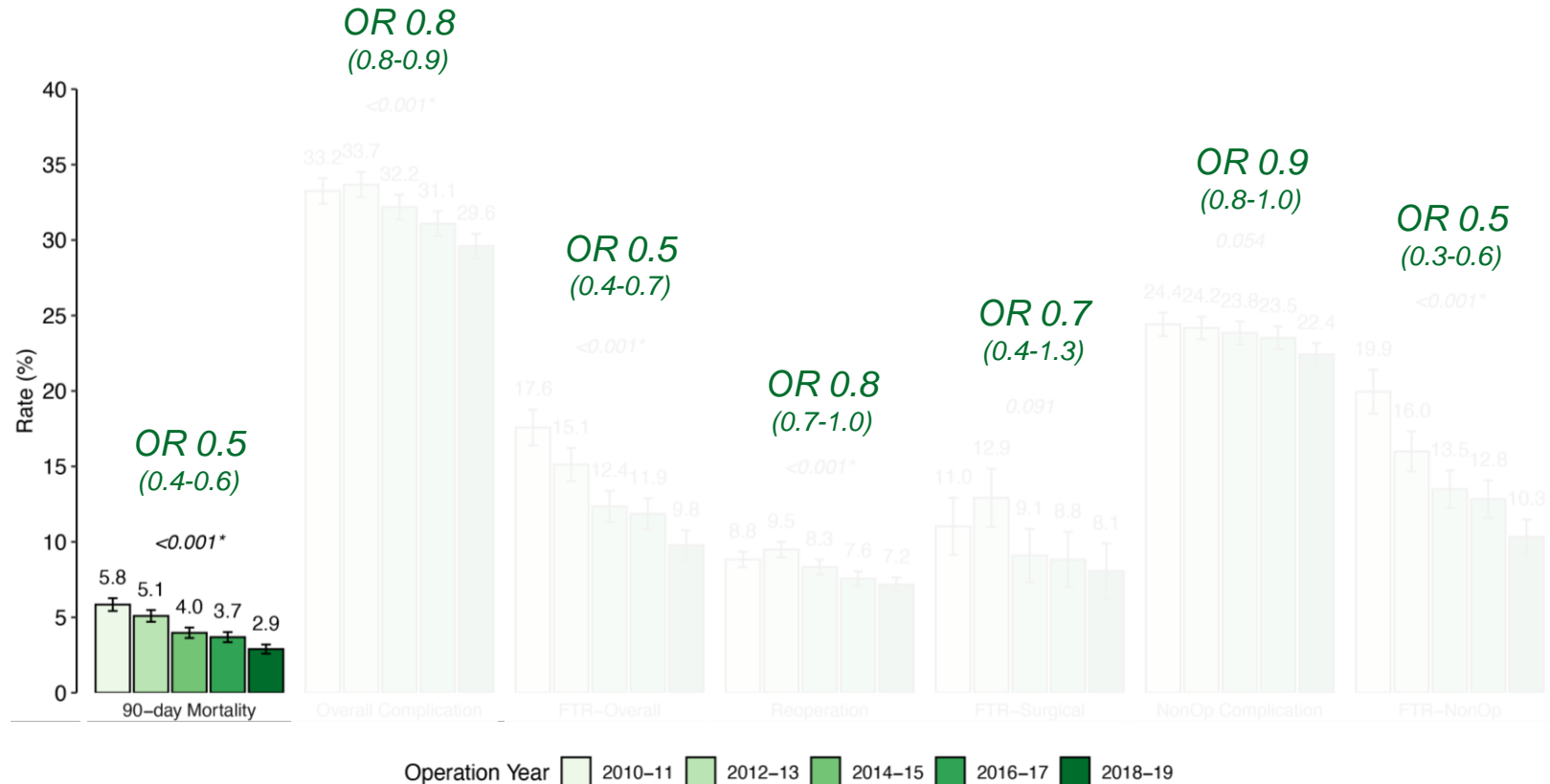


Pneumonia  
(8.0%)

# Variation by DHB



# Improvements over time



# Conclusions



Improvements in 'rescue' have driven reductions in mortality over the last decade



Variation between DHBs is primarily driven by differences in 'failure to rescue'



'Rescue' and early identification of deterioration should be a target for quality improvement



Further research needed to investigate inequities for Māori, and contributors to regional variation across Aotearoa

# Acknowledgements



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*Dr Celia Keane*



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*Prof Greg O'Grady*



*A/Prof Chris Harmston*



*A/Prof Jonathan Koea*



*A/Prof Jason Gurney*

ORIGINAL STUDY

## **“Failure to Rescue” following Colorectal Cancer Resection: Variation and Improvements in a National Study of Postoperative Mortality**

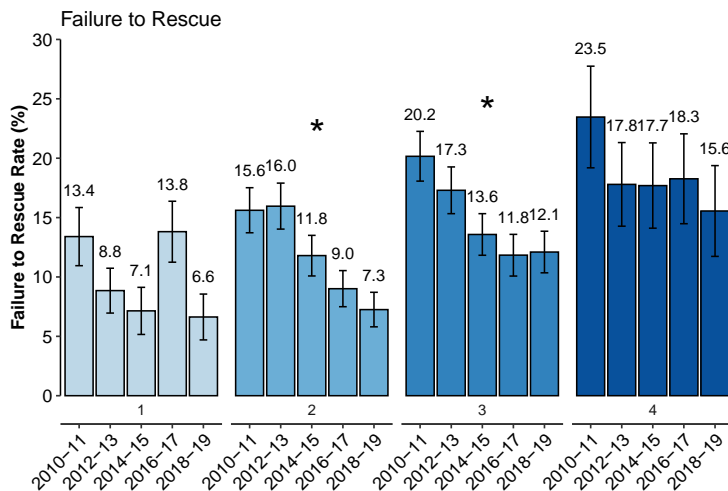
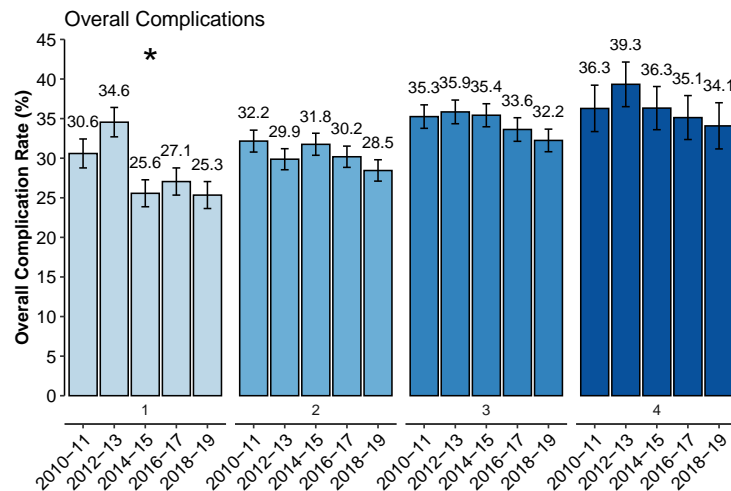
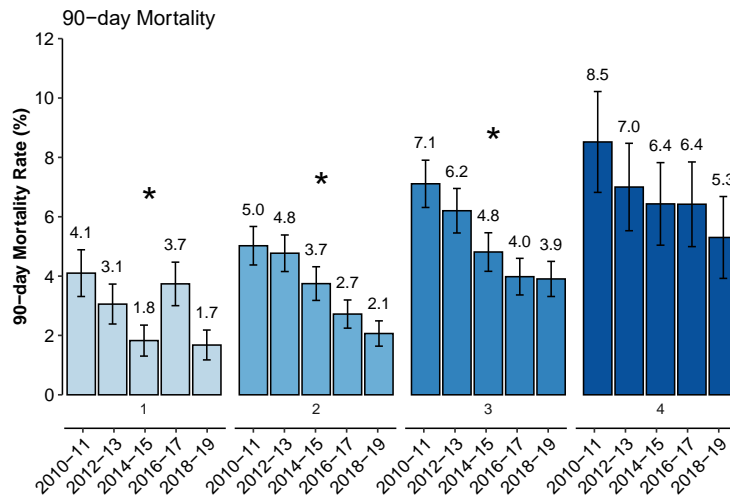
### **Reducing Mortality after Colorectal Surgery**

Wells, Cameron I. MBChB BMedSc(Hons)\*; Varghese, Chris BMedSc(Hons)\*; Boyle, Luke J. MSc†; McGuinness, Matthew J. MBChB‡; Keane, Celia MBChB PhD\*; O’Grady, Greg MBChB PhD FRACS\*,§,¶; Gurney, Jason PhD¶; Koea, Jonathan MD, FACS, FRACS#; Harmston, Chris FRCS (Eng) FRACS\*,‡; Bissett, Ian P. MD, FRACS\*,§

[Author Information](#) 😊

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# Volume Effect

