# pomVLAD

## Risk-adjusted morbidity monitoring within PQIP

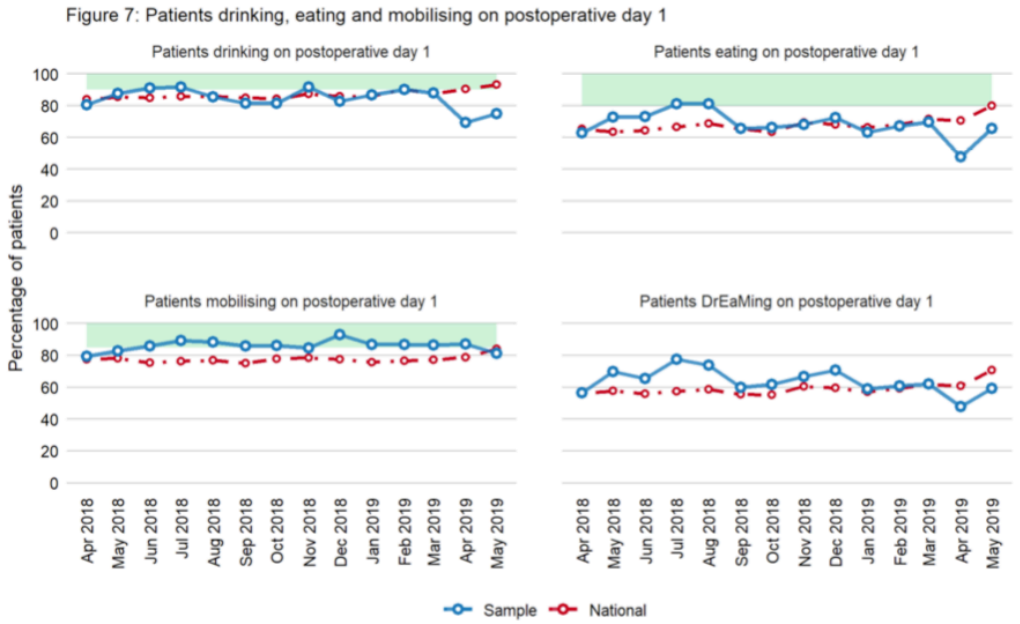
James Bedford

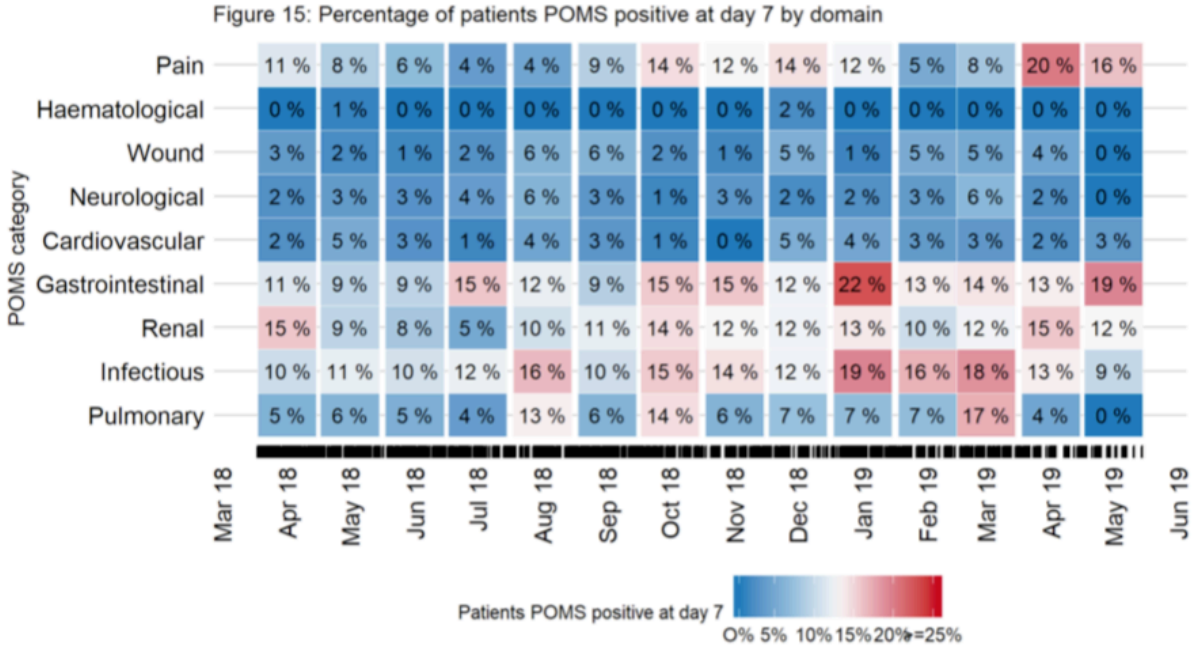
PQIP collaborative event - September 2019

Supported by: The Health Foundation

PQIP Perioperative Quality Improvement Programme
RCoA Royal College of Anaesthetists
NIAA National Institute of Academic Anaesthesia HSRC Health Services Research Centre
The Health Foundation
UCL source surgical outcomes research centre

# PQIP – focus on continuous reporting




PQIP Perioperative Quality Improvement Programme
RCoA Royal College of Anaesthetists
NIAA National Institute of Academic Anaesthesia
HSRC Health Services Research Centre
The Health Foundation
UCL
source surgical outcomes research centre

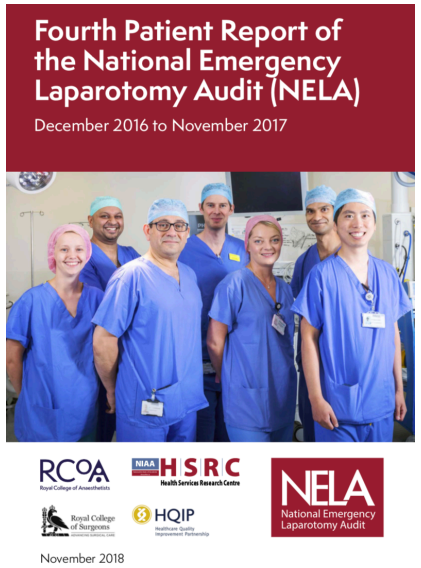
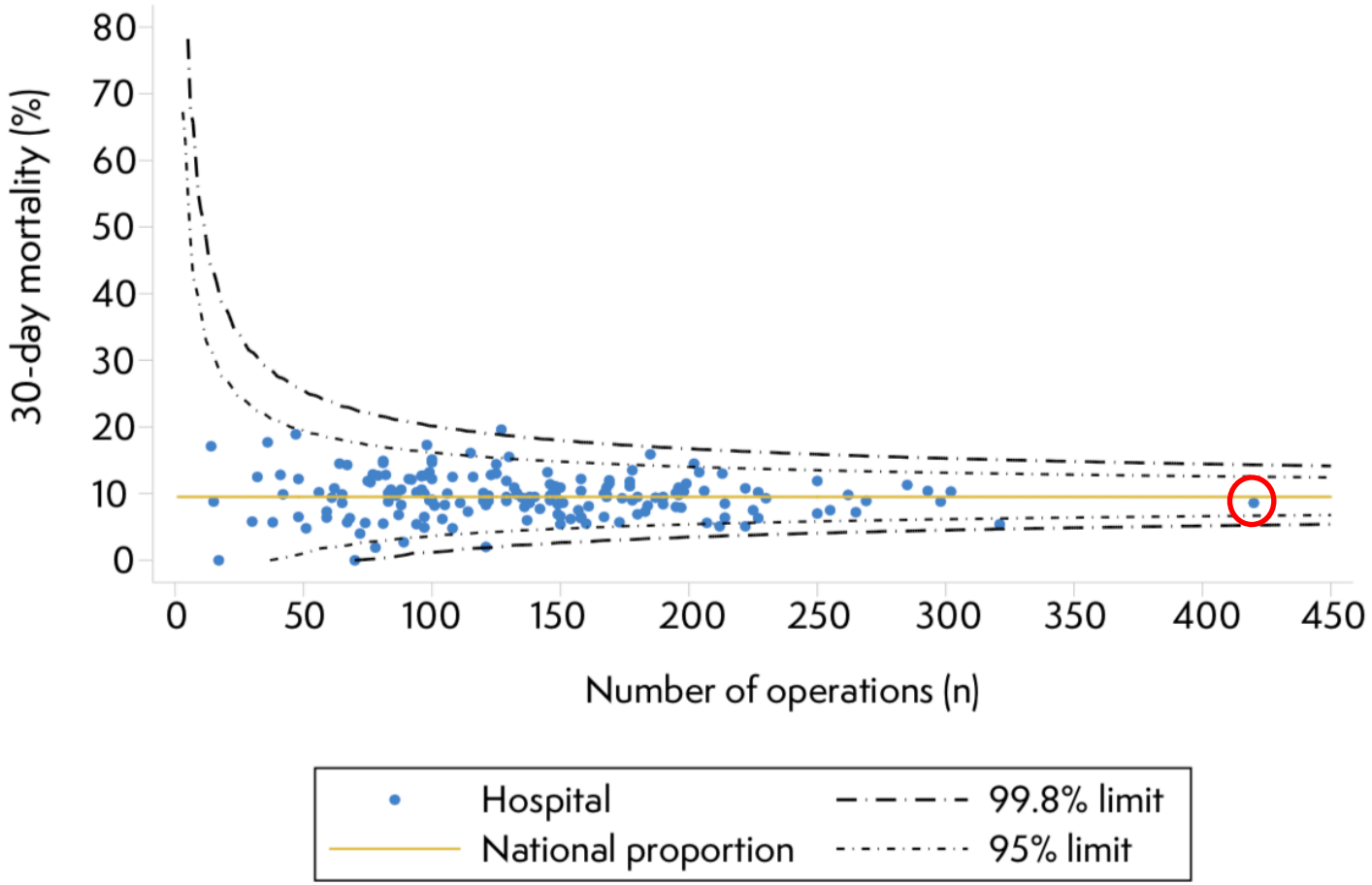



Figure 6.1.4 Funnel plot of risk-adjusted ONS 30-day mortality rates



# Continuous risk-adjusted outcome monitoring

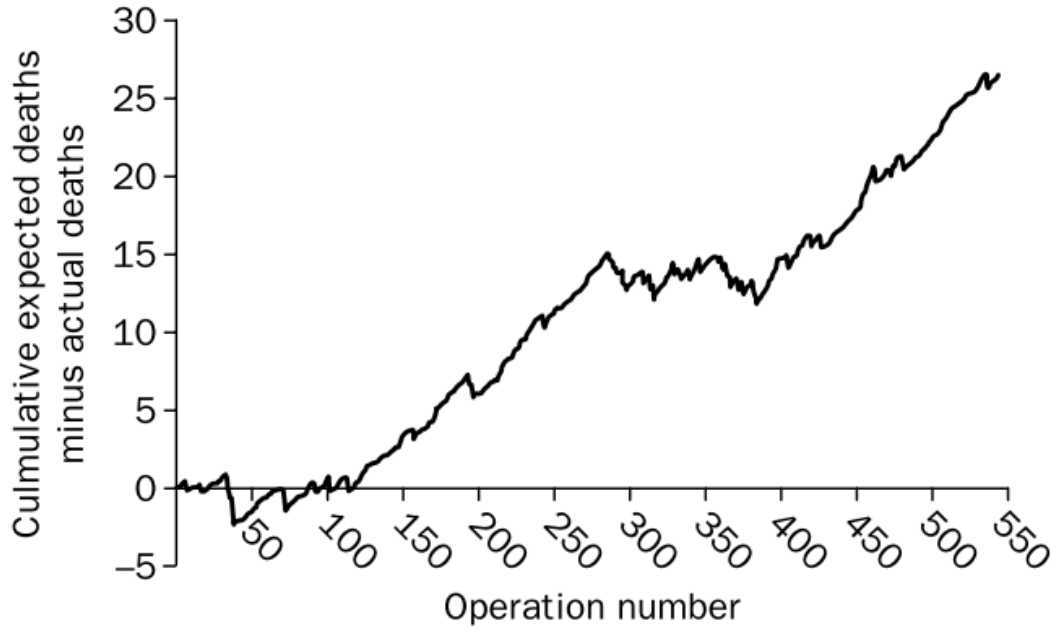
1997

## Variable life-adjusted display (VLAD)

Used to monitor mortality after adult cardiac surgery

**Monitoring the results of cardiac surgery by variable life-adjusted display**

*Jocelyn Lovegrove, Oswaldo Valencia, Tom Treasure, Chris Sherlaw-Johnson, Stephen Gallivan*




PQIP Perioperative Quality Improvement Programme

RCoA Royal College of Anaesthetists

NIAA National Institute of Academic Anaesthesia HSRC Health Services Research Centre

The Health Foundation

UCL source surgical outcomes research centre

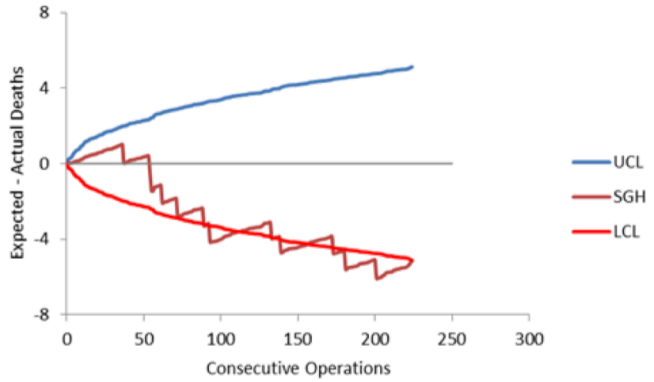
# VLADs - Cardiac surgery

Independent Review of Cardiac Surgery Service
St Georges Hospital NHS Trust.

**Authors:**

Professor Mike Bewick, Independent Health Consultant and founder iQ4U Consultants Ltd

**Fig 3: VLAD for SGH: isolated AVR + CABG using EuroScore I x 0.35, April 2014 – March 2017**




*The reviewers are fully cognisant of the fact that examination of a relatively small series can be misleading because adverse outcomes inevitably occur at random. We cannot say that any one surgeon's mortality figures, or adverse VLAD plot over a short period of time constitutes poor performance. What can be said is that a well governed department would have used such a trend to further review outcomes and to assess performance in greater detail. The operation of combined CABG and AVR is chosen as a benchmark of a greater complexity procedure, but one which consultant cardiac surgeons should be comfortable at carrying out with good outcomes.*

# VLADs – Queenslasnd, Australia

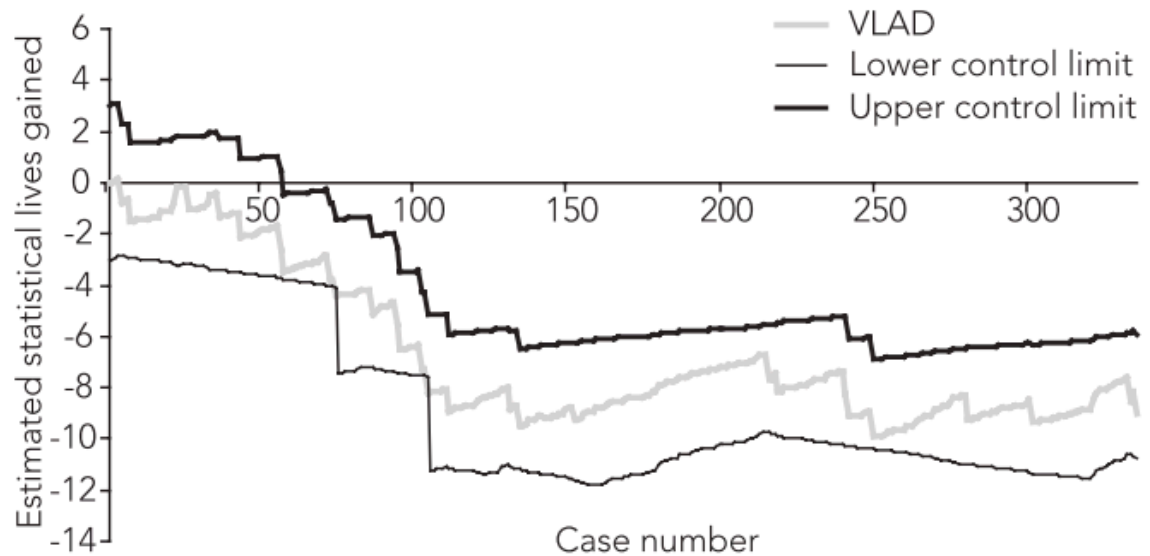
MJA • Volume 187 Number 10 • 19 November 2007

HEALTH CARE

## Identifying variations in quality of care in Queensland hospitals

Stephen J Duckett, Michael Coory and Kirstine Sketcher-Baker

**2 Example of a variable life-adjusted display (VLAD)**




**3 Flagging criteria and related action**

| Notification level | Fatal outcome indicator* | Non-fatal outcome indicator* | Action required |
|---|---|---|---|
| 1 | 30% | 50% | Hospital should investigate internally and report outcome to Area Clinical Governance Unit or Private Health Unit (for private facilities) |
| 2 | 50% | 75% | Area Clinical Governance Unit or Private Health Unit should be involved in investigation |
| 3 | 75% | 100% | Report to Patient Safety and Quality Board through the Area General Manager or Chief Health Officer required |

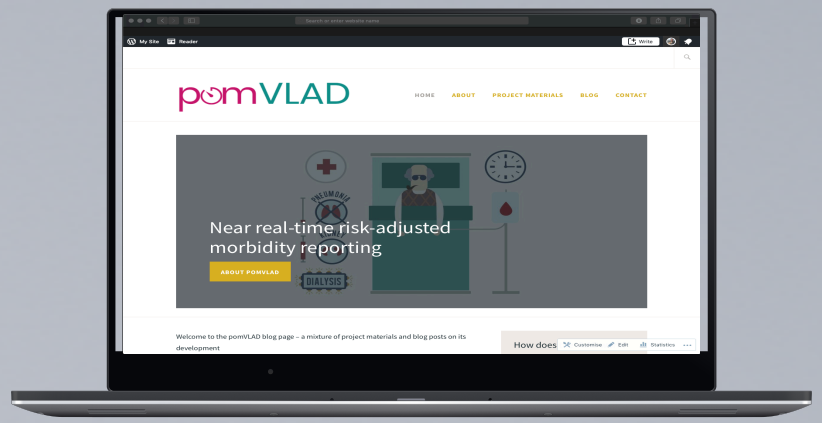
* Per cent relative risk increase or reduction in outcome compared with the average for all hospitals combined. ◆

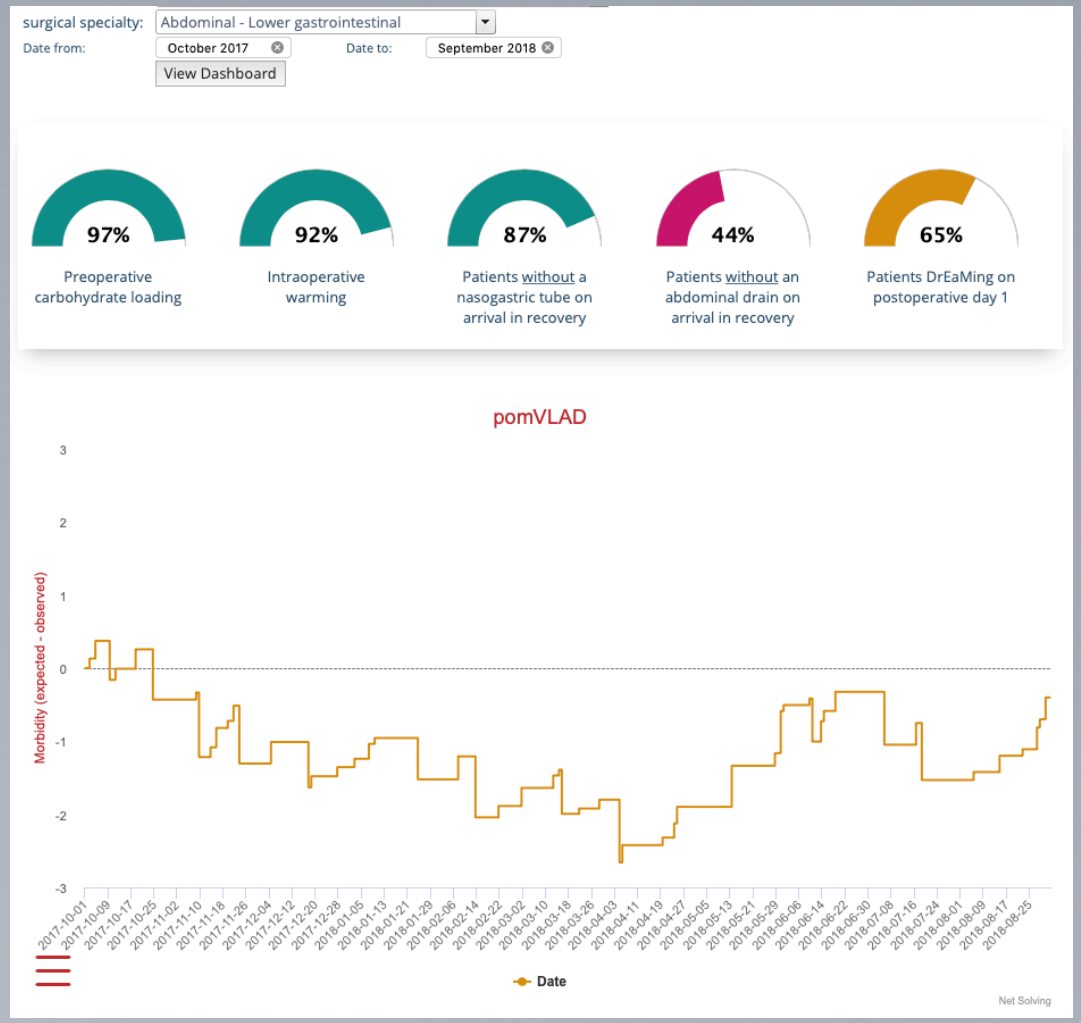
PQIP Perioperative Quality Improvement Programme
RCoA Royal College of Anaesthetists
NIAA National Institute of Academic Anaesthesia
HSRC Health Services Research Centre
The Health Foundation
UCL source surgical outcomes research centre

# Development and implementation of online dashboard

**Implemented into 10 pilot sites in May 2018**

**Further 10 comparison sites identified for mixed-methods evaluation**




PQIP Perioperative Quality Improvement Programme

RCoA Royal College of Anaesthetists

NIAA National Institute of Academic Anaesthesia

HSRC Health Services Research Centre

The Health Foundation

UCL

source surgical outcomes research centre

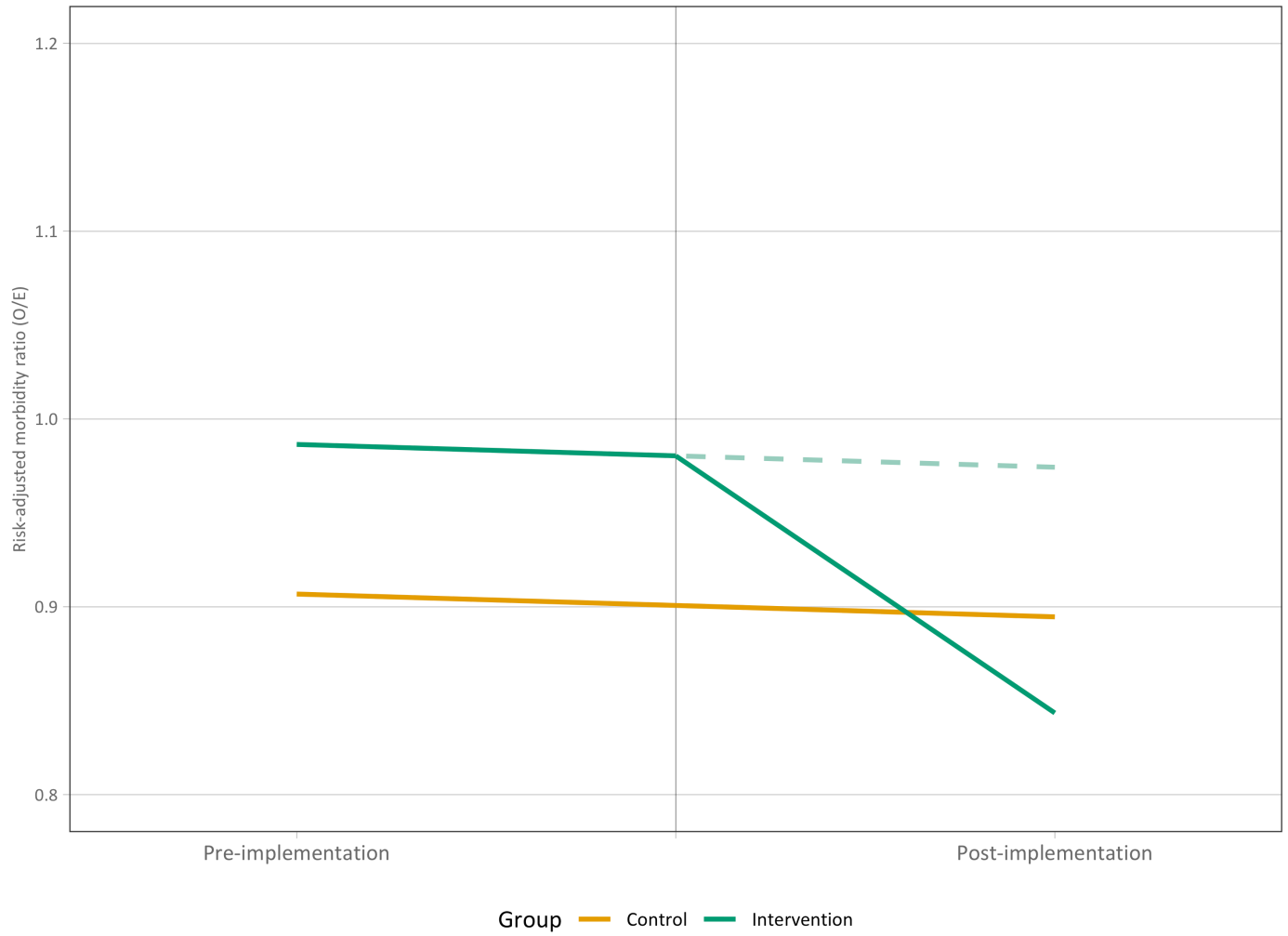
# Mixed-methods evaluation

- Telephone interviews with five intervention sites and five comparison sites
- Two rounds of interview (baseline and follow-up)
- Quantitative analysis of compliance with process measures and risk-adjusted morbidity outcomes

# Preliminary results

- Difference in difference analysis of intervention vs. control groups in two periods (1 year pre- and 1 year post-implementation)
- 10 intervention site, 10 control sites
- Colorectal surgery (n=3588)

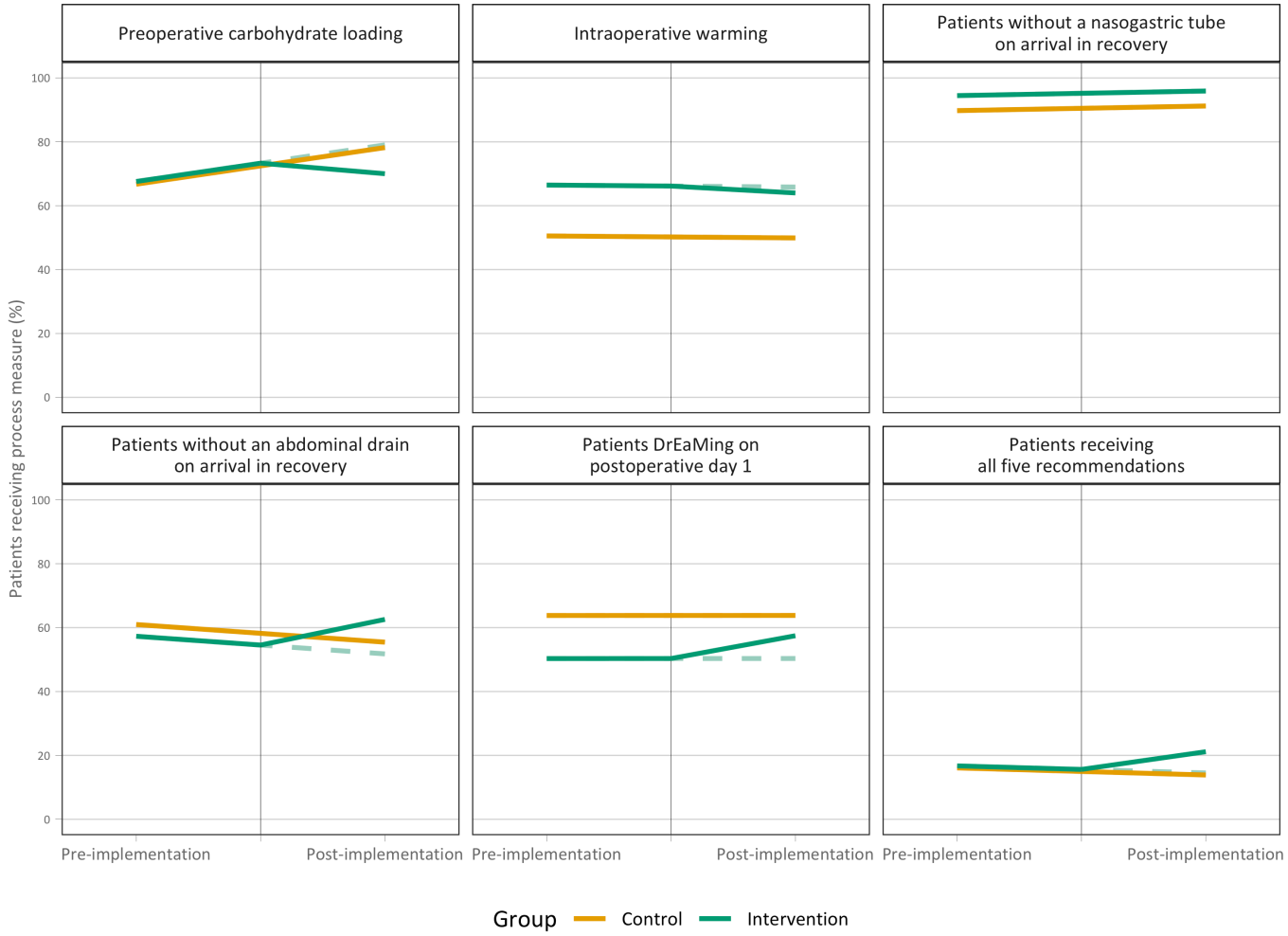
# Quantitative analysis: Risk-adjusted major morbidity




- DID estimator: -0.13
- [95% CI] -0.50 to 0.23

PQIP Perioperative Quality Improvement Programme
RCoA Royal College of Anaesthetists
NIAA National Institute of Academic Anaesthesia HSRC Health Services Research Centre
The Health Foundation
UCL source surgical outcomes research centre

# Quantitative analysis: Process measures




Patients without an abdominal drain

- DID estimator: 10.80
- [95% CI] 3.77 to 17.83

# Qualitative analysis: Barriers to using data for QI

## Lack of QI team structure and culture

Surgeon

"I think we've been very good at collecting data but…in terms of what we do with the data that requires a much wider discussion…there's still some way to go in getting the culture change towards a better team."

Research nurse

"Yeah, I mean there is a disconnect. We have almost informal relationships with Ward staff…so we would be able on a sort of informal basis say 'this stuff that we're doing, it's showing us that we don't get patients out of bed quickly enough after the operation'. We could give anecdotal feedback but there is no formal recognised mechanism for us to feed back the data that we're acquiring."

Anaesthetist

"QI [is] mainly down to the initiative of consultants and colleagues really…I mean it's down to the initiative of the individuals. Organisationally is there a push to improve quality improvement, yes in general. But it's more generic on the lines of the trust agenda, with nothing specific to PQIP really."

# Qualitative analysis: Barriers to using data for QI

## Lack of dedicated time for QI

Research nurse

"The Trust is not hugely supportive of research, we're underfunded and understaffed and a bit stretched, I don't think we'd be able to incorporate in our remit any clinical intervention."

Research nurse

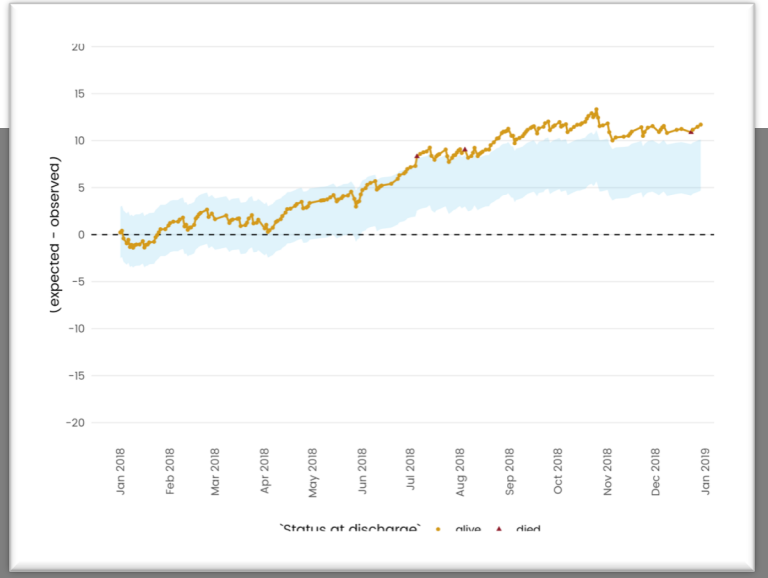
"I'm managing my team to collect the information, the patients are kind enough to take part, we've got a duty of care to do something with the result, and I feel that we're not doing that….it needs a lot of time dedicated to it to make small changes…it needs somebody with a high motivation and a high time ability to drive it forward."

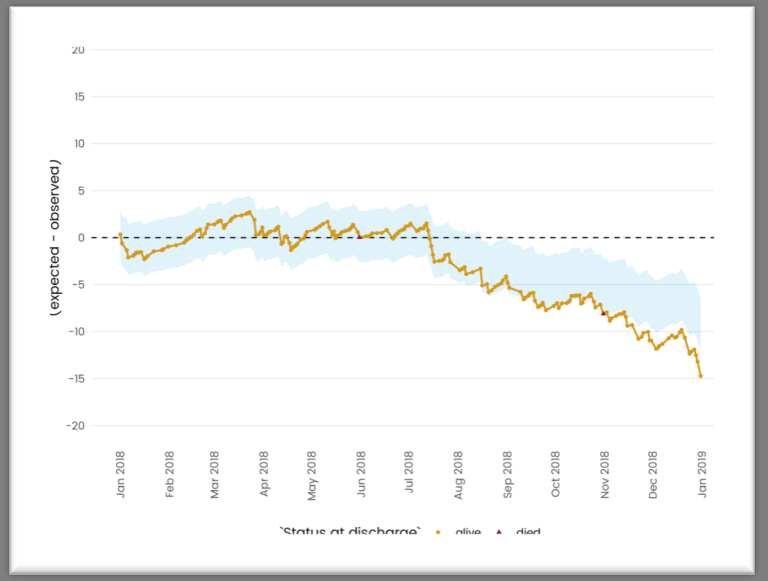
Anaesthetist

"…basically I've taken on other things and I've found I haven't time at the moment to be kind of pushing everyone on this so I'm trying to keep it ticking over."

# Future work with VLADs

- Addition of control limits to support interpretation
- Use pilot work to inform role out of dashboard to additional PQIP sites
- Development of tools to support investigation of positive or concerning trends
- Improving mechanisms for sharing good practice across trusts and regions




PQIP Perioperative Quality Improvement Programme
RCoA Royal College of Anaesthetists
NIAA National Institute of Academic Anaesthesia
HSRC Health Services Research Centre
The Health Foundation
UCL
source surgical outcomes research centre

The Health Foundation

Thank you to sites recruiting patients and those who kindly gave up their time for interviews

@jbedford84

PQIP Perioperative Quality Improvement Programme

RCoA Royal College of Anaesthetists

NIAA National Institute of Academic Anaesthesia HSRC Health Services Research Centre

The Health Foundation

UCL source surgical outcomes research centre

# Outcomes after Cardiac surgery

**Independent Review of Cardiac Surgery Service**
**St Georges Hospital NHS Trust.**

**Authors:**

Professor Mike Bewick, Independent Health Consultant and founder iQ4U Consultants Ltd

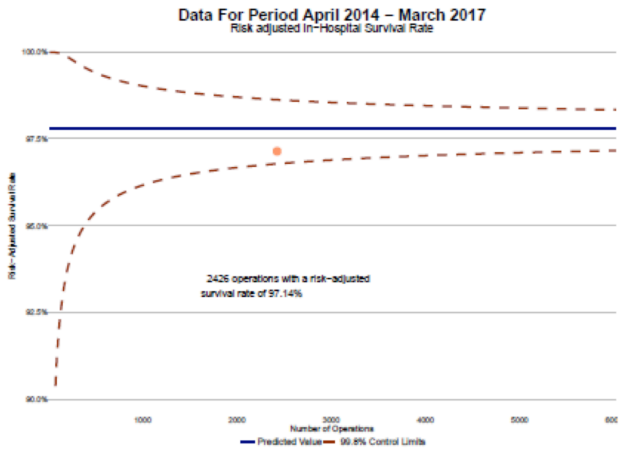
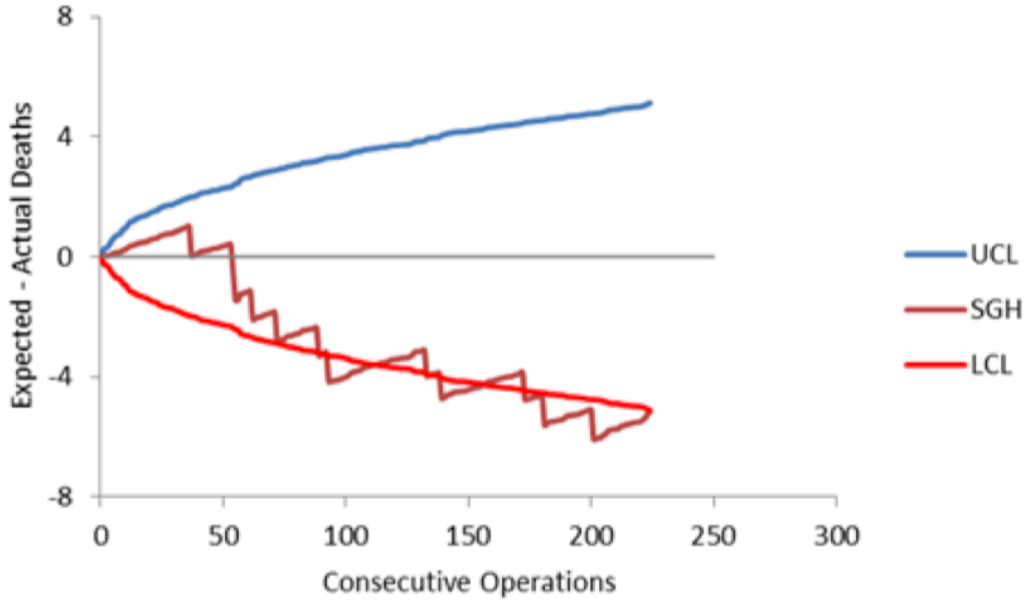
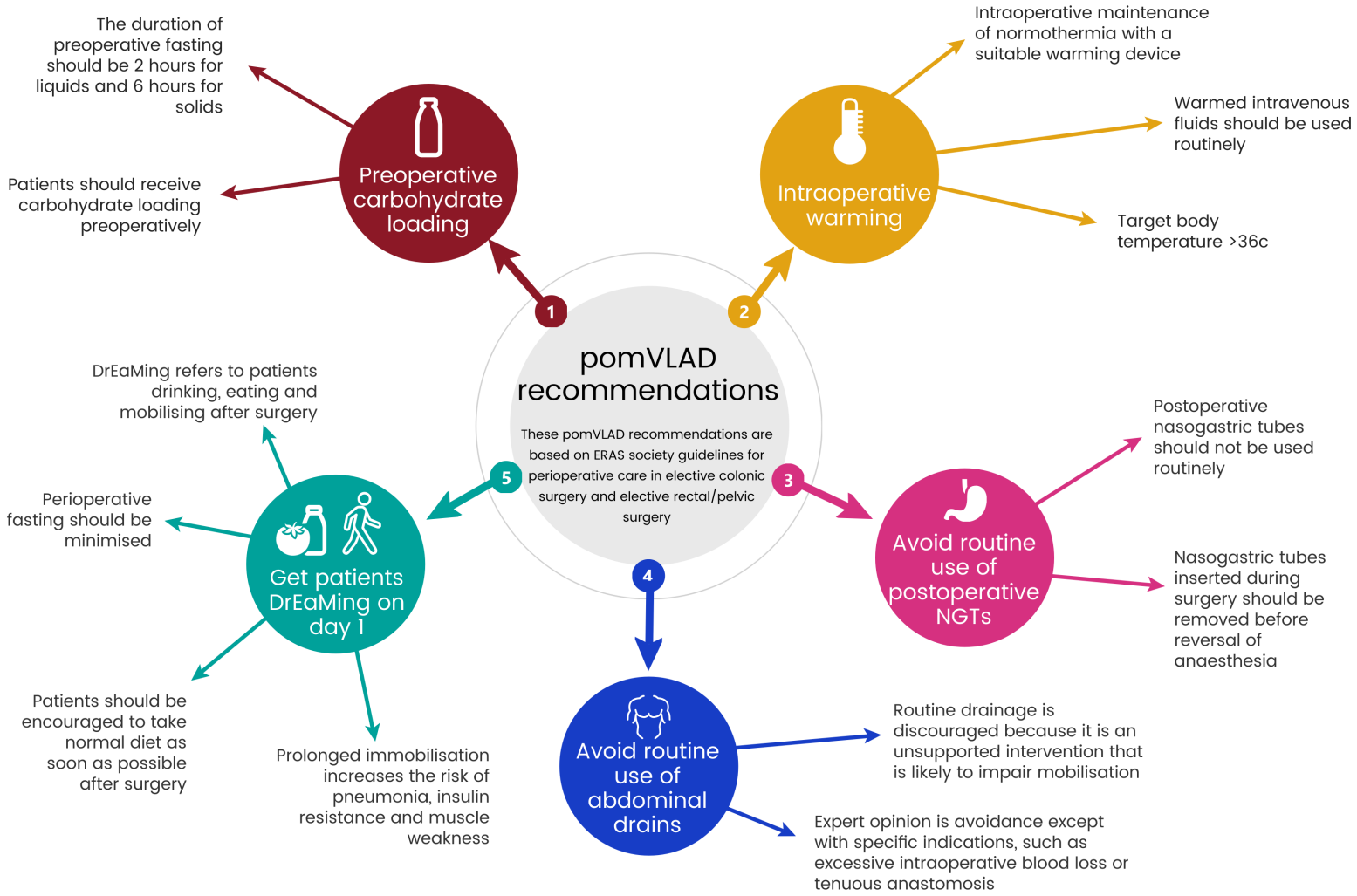



**Fig 6. Risk Adjusted in-hospital survival rate**

**Fig 3: VLAD for SGH: isolated AVR + CABG using EuroScore I x 0.35, April 2014 – March 2017**

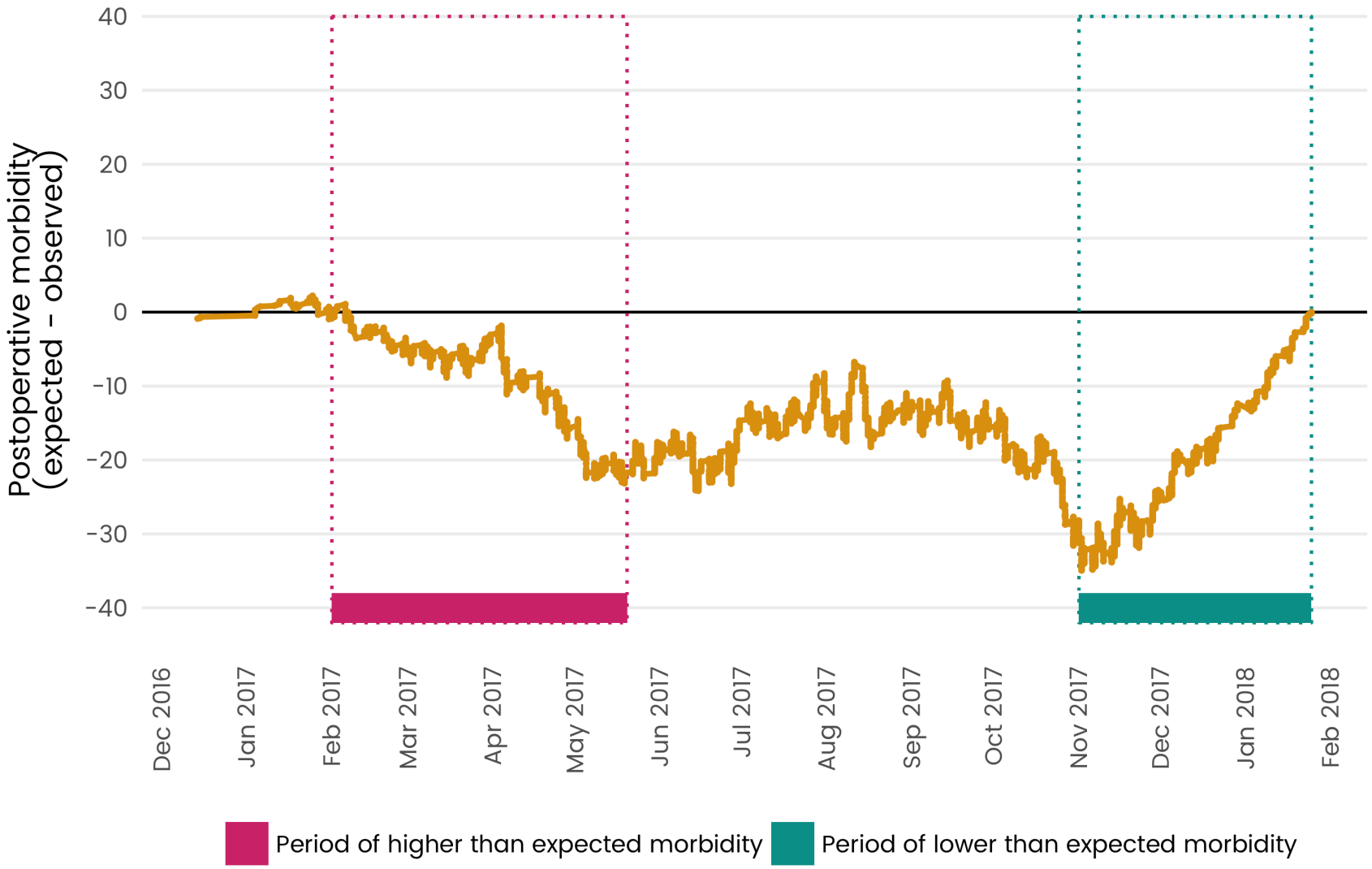





Gustafsson UO, Scott MJ, Schwenk W, Demartines N, Roulin D, Francis N, et al. Guidelines for perioperative care in elective colonic surgery: Enhanced Recovery After Surgery (ERAS®) Society recommendations. Clin. Nutr. 2012;31:783–800
Nygren J, Thacker J, Carli F, Fearon KCH, Norderval S, Lobo DN, et al. Guidelines for perioperative care in elective rectal/pelvic surgery: Enhanced recovery after surgery (ERAS®) society recommendations. World J. Surg. 2013;37:285–305

# pomVLAD

near real-time reporting of risk-adjusted postoperative morbidity outcomes




PQIP Perioperative Quality Improvement Programme
RCoA Royal College of Anaesthetists
NIAA National Institute of Academic Anaesthesia
HSRC Health Services Research Centre
The Health Foundation
UCL
source surgical outcomes research centre

# Initial views on VLADs

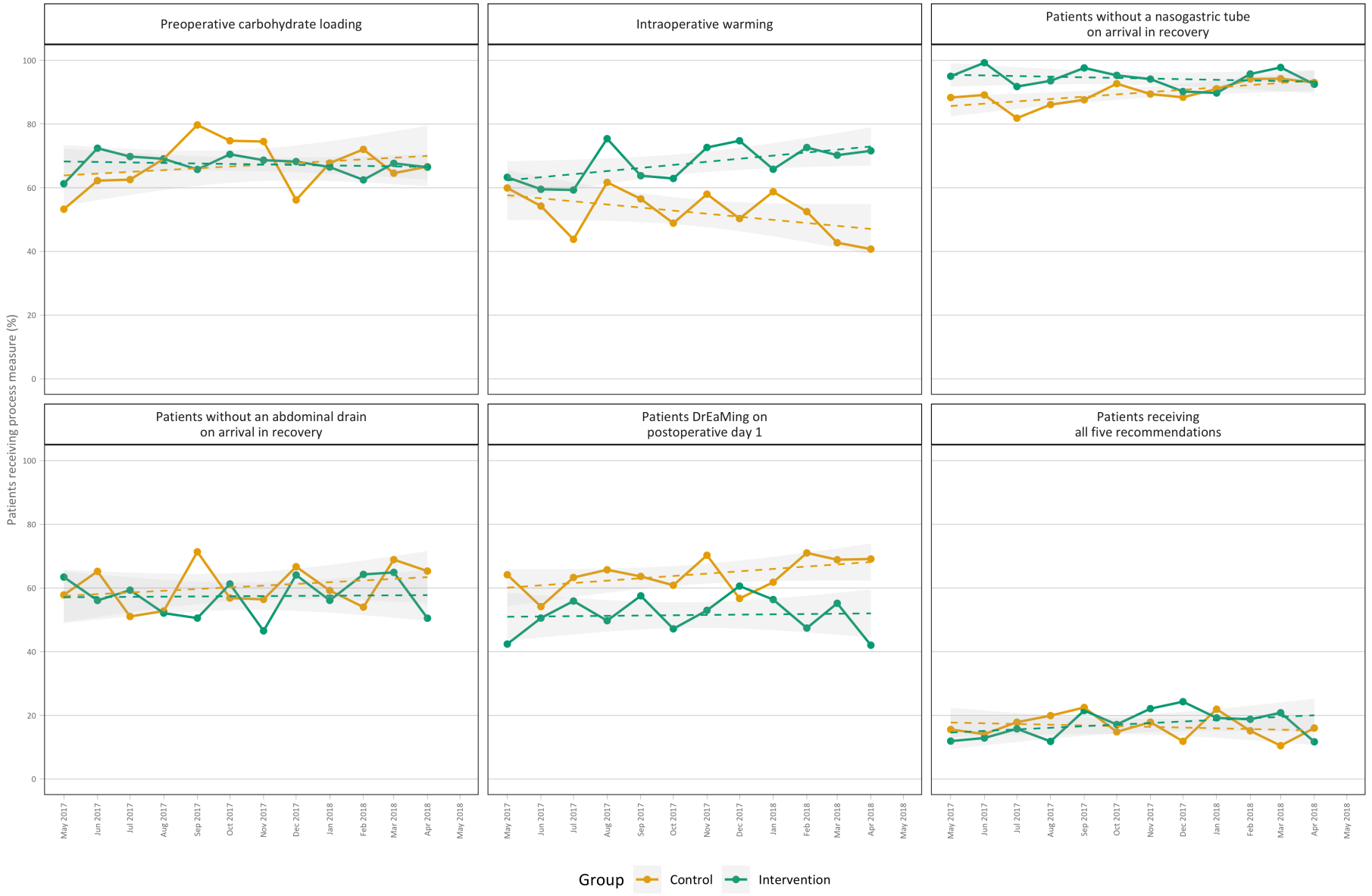
Consultant anaesthetist

"…the closer you can get them down to real time…I think you've got more opportunity to intervene early if you see something that isn't performing as you'd expect, rather than waiting for a three month, six month, yearly report. So it gives you a greater [responsiveness] I suppose."

Consultant surgeon

"We've always felt that we provide a high quality service, it just [the data] highlights the fact that we couldn't ... And the [VLAD] dashboard is probably going to be a way of doing that. It could be a part of mortality, morbidity discussion we have on a monthly basis."

# Process measures: time-trends




PQIP Perioperative Quality Improvement Programme

RCoA Royal College of Anaesthetists

NIAA National Institute of Academic Anaesthesia

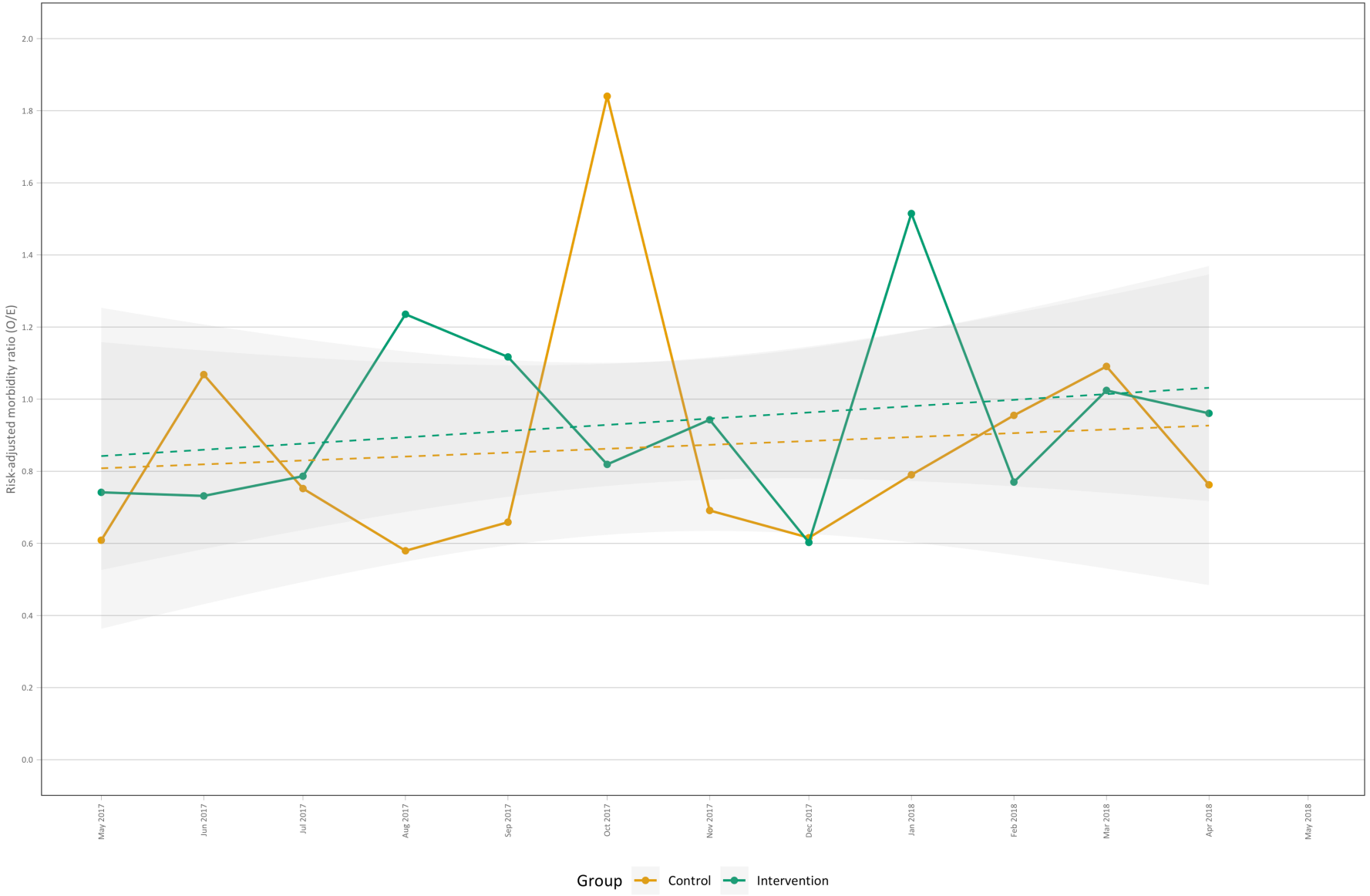
HSRC Health Services Research Centre

The Health Foundation

UCL

source surgical outcomes research centre

# Morbidity: time-trends




PQIP Perioperative Quality Improvement Programme

RCoA Royal College of Anaesthetists

NIAA National Institute of Academic Anaesthesia

HSRC Health Services Research Centre

The Health Foundation

UCL

source surgical outcomes research centre

# Qualitative analysis: Barriers to using data for QI

## Lack of QI team structure and culture

Anaesthetist
"It's logistical things like I want to take it to the surgeons and present it to them but the last three of their audit afternoons that I've asked for a slot they've said we haven't got time. I send emails I don't get any response and don't get any interest. It's very hard…because they're so busy with their clinical jobs that I haven't had too much interest."

Surgeon
"We're concerned by DrEaMing after surgery…A lot of changes have not been formalised yet…due to absences, people who are supposed to be dealing with it have just not been around…we have a different nurse every other day… Juniors often changing, we don't necessarily have the same registrar on the wards on a daily basis"

Anaesthetist
"PQIP is 100% anaesthetic driven at the moment. The trainees have been very helpful and I wouldn't say I've had help from any consultant colleagues either."