



Royal College  
of Surgeons

ADVANCING SURGICAL CARE

# Using outcomes effectively

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- **Greater emphasis on using outcomes information for improving quality of surgical care**
  - Patient centred-care
  - Revalidation and quality improvement
  - Commissioning
  - NHS transparency and accountability
- **Increasing range of information on outcomes available**
  - Better reporting of outcomes in clinical trials: benefit + harms
  - Increasing use of both clinical and patient-reported outcomes
  - More national clinical audits publishing results regularly

# Purpose governs information required



## Patients might want to know:

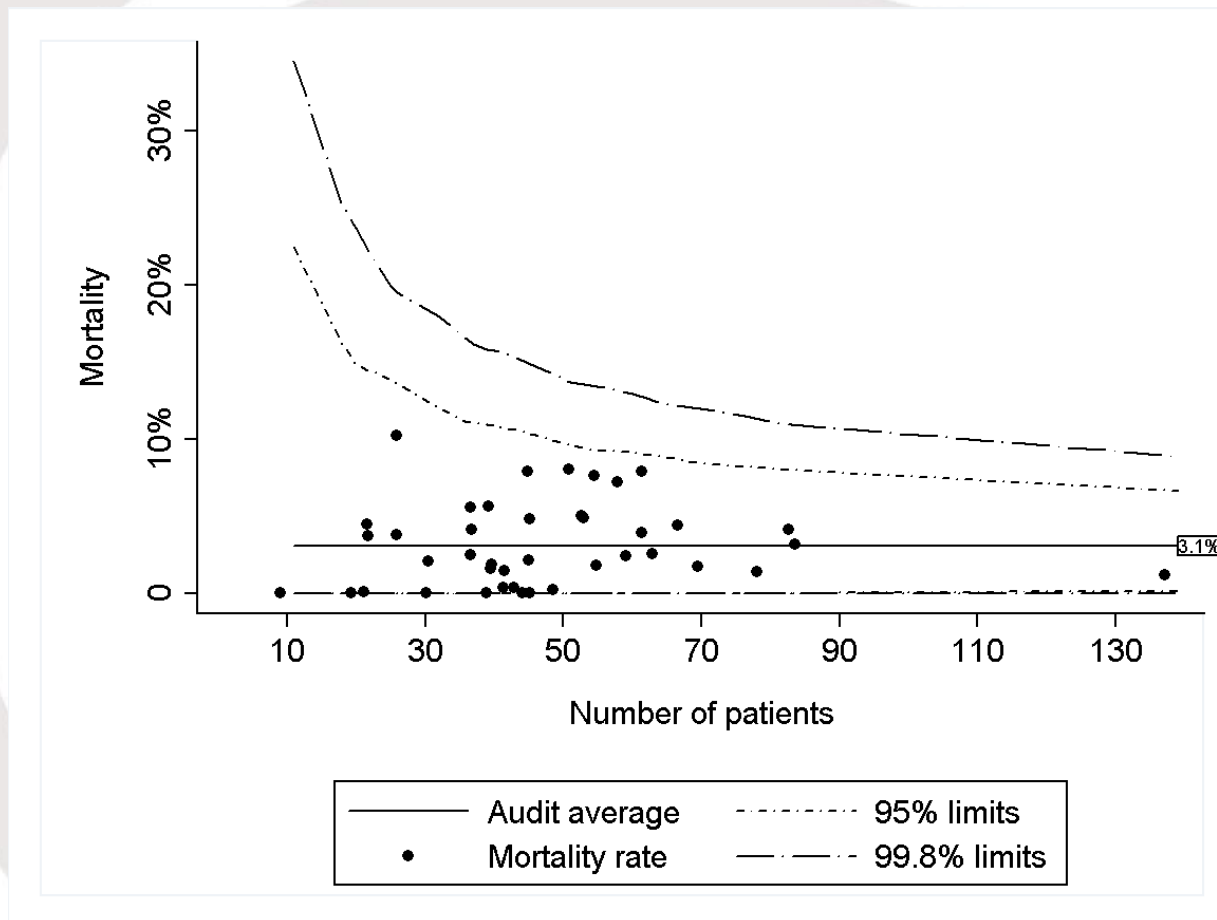
- What outcome might be achieved after surgery?
- Are outcomes achieved by a surgical unit or consultant consistent with expected standards of care?
- Are the outcomes achieved by this surgical unit better than the ones in the nearby hospital?
- Best information about expected benefit comes from clinical evidence
- Information can be provided using statistics derived from local or national clinical audit data
- Information can be provided using ?

# Outcomes: Audit “State of nation” results



**Risk-adjusted 90-day postoperative mortality for patients undergoing oesophagectomy or gastrectomy in England and Wales**

**Source: National Oesophago-Gastric Cancer Audit**



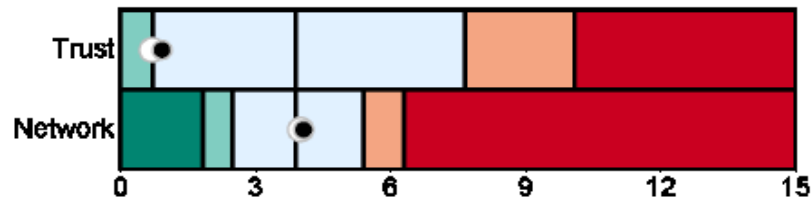
# Clinical Audits: Organisational summary

## Section of NHS trust summaries from the National Bowel Cancer Audit

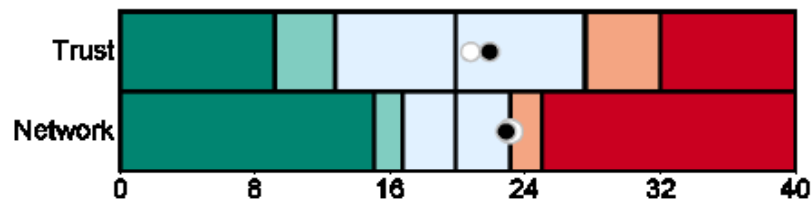
- Bullet plots showing surgical outcomes

### 4. Outcomes of patients having major resection

90-day mortality %

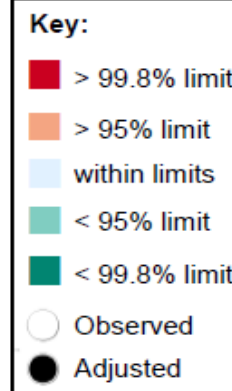
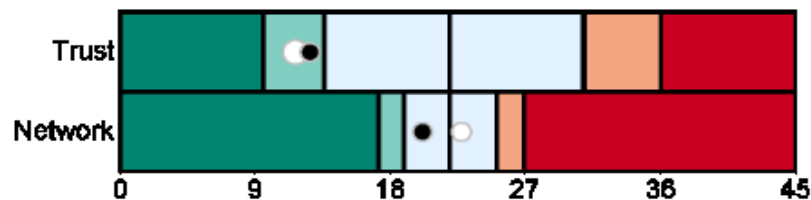


90-day unplanned readmission %



2-year mortality %:

Patients diagnosed 1 Apr 2011 - 31 Mar 2012

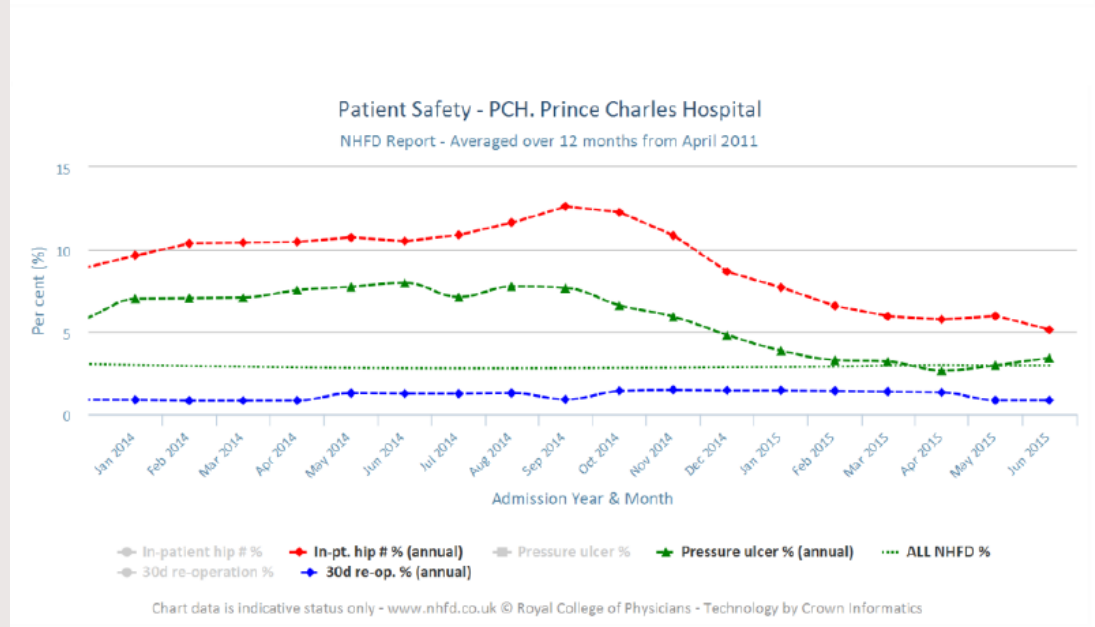
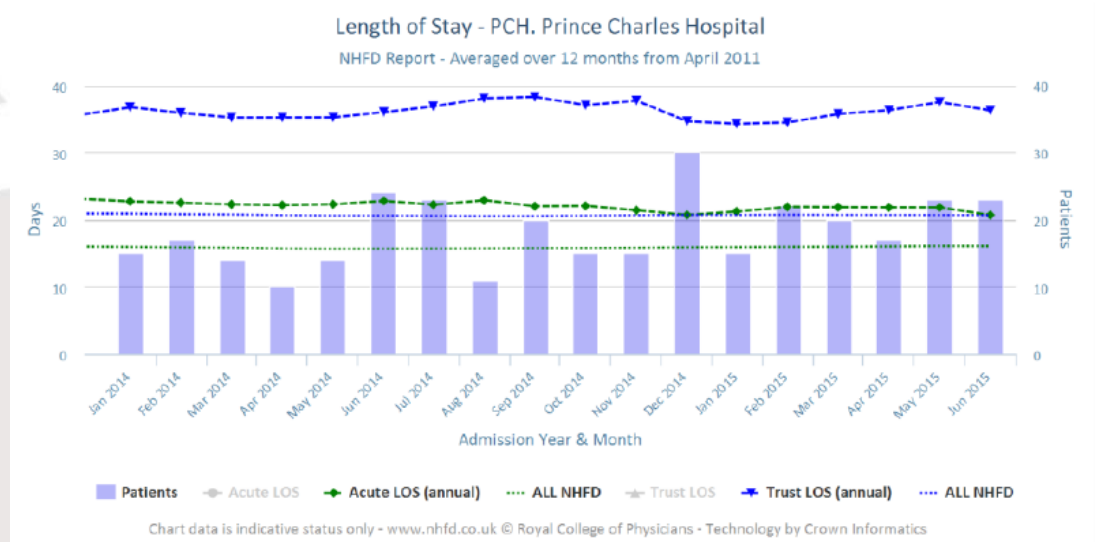


# Clinical Audits: Organisational summary



## Section of NHS trust summaries from the National Hip Fracture Database

- Selected time series graphs



# Clinical Audits: Revalidation



Sample revalidation report available for surgeons to download from the National Vascular Registry

This is to certify that [Consultant Name], [consultant vascular specialist / consultant anaesthetist], has contributed the following procedures to the National Vascular Registry in the last five years.

Procedure	All procedures	Procedures with consultant as first specialist	Date of first procedure in period	Date of last procedure in period
Carotid endarterectomy	49	45	10/01/2010	30/11/2014
Abdominal aortic aneurysm repair	62	56	01/02/2010	02/12/2014
Lower-limb angioplasty / stent	10	10	10/01/2014	11/12/2014
Lower-limb bypass	40	38	02/03/2010	28/11/2014
Lower-limb amputation	37	35	17/01/2010	03/12/2014

The outcomes of these procedures were

Procedure		As first specialist		All procedures	
		Number	Crude mortality rate (%)	Number	Crude mortality rate (%)
Carotid endarterectomy		45	2.2	49	2.0
Abdominal aortic aneurysm repair	Elective Open	11	9.1	12	8.3
	Elective EVAR	35	2.9	40	2.5
	Non-elective	10	30.0	10	30.0
Lower-limb angioplasty / stent	Elective	9	0	9	0
	Non-elective	1	0	1	0
Lower-limb bypass	Elective	24	0	25	0
	Non-elective	14	7.1	15	6.7
Lower-limb amputation	Elective	7	0	7	0
	Non-elective	28	7.1	30	10.0

# Clinical Audits: Active monitoring (1)



**Online reports available for surgeons to design own result tables, from the National Vascular Registry**

## Filter

Row	Variable	Filter
<input checked="" type="radio"/>	Procedure Type	All
<input type="radio"/>	Admission Source	All
<input type="radio"/>	Site Aneurysm	All
<input type="radio"/>	AAA Status	All
<input type="radio"/>	Time By Years	
<input type="radio"/>	Organisation	

Run

## Outcomes

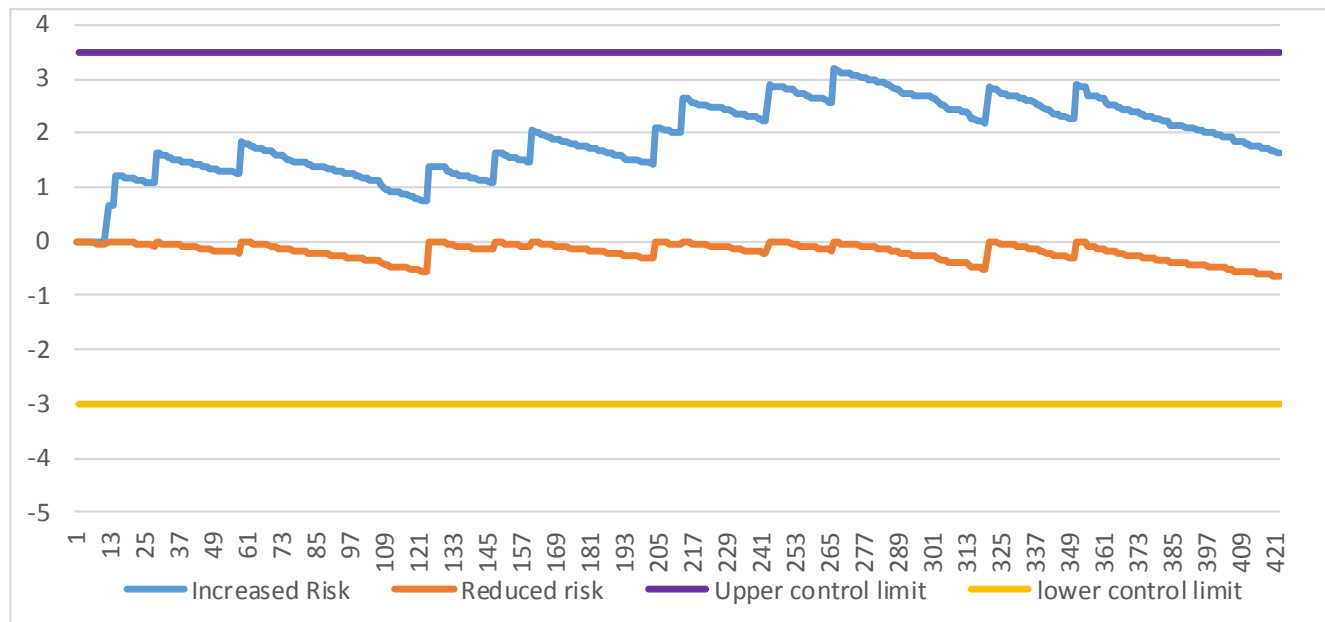
Variable	All Cases	Cases with Outcome Data	Median LOS	In Hospital Deaths	Crude Mortality Rate
Complex EVAR	765	765	6	26	0.03
EVAR	8820	8820	4	186	0.02
Open	7130	7130	9	1088	0.15
Revision EVAR	17	17	3	0	0
Revision Open Repair	1	1	9	0	0
All	16733	16733	6	1300	0.08



# Clinical Audits: Active monitoring (2)

- Example of continuous monitoring chart available for surgeons to track their surgical outcomes over time (National Vascular Registry)

Risk -adjusted tabular CUSUM chart



- For more details, see: Steiner et al. Monitoring surgical performance using risk-adjusted cumulative sum charts. *Biostatistics* 2000; 1: 441-52

- **Various reasons for variation in surgical outcomes**
  - Surgeon + team
  - Preoperative and postoperative care
  - Patient characteristics
  - Completeness of data
  - Unpredictable (random) events
- **Finding unusual pattern of outcomes only first step in process of improving care**

- **Greater range of information on outcomes available**
- **Clinical audits improving the reporting of outcomes**
  - Support quality assurance and improvement
  - Available as organisational summaries for hospital staff
  - Available as active, user-defined online reports
- **These are new developments – welcome feedback!**