National Cancer Audit Collaborating Centre (NATCAN)

Quality Improvement Event

27th March 2024

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Quality Improvement Event

Dr Julie Nossiter, Director of Operations, NATCAN

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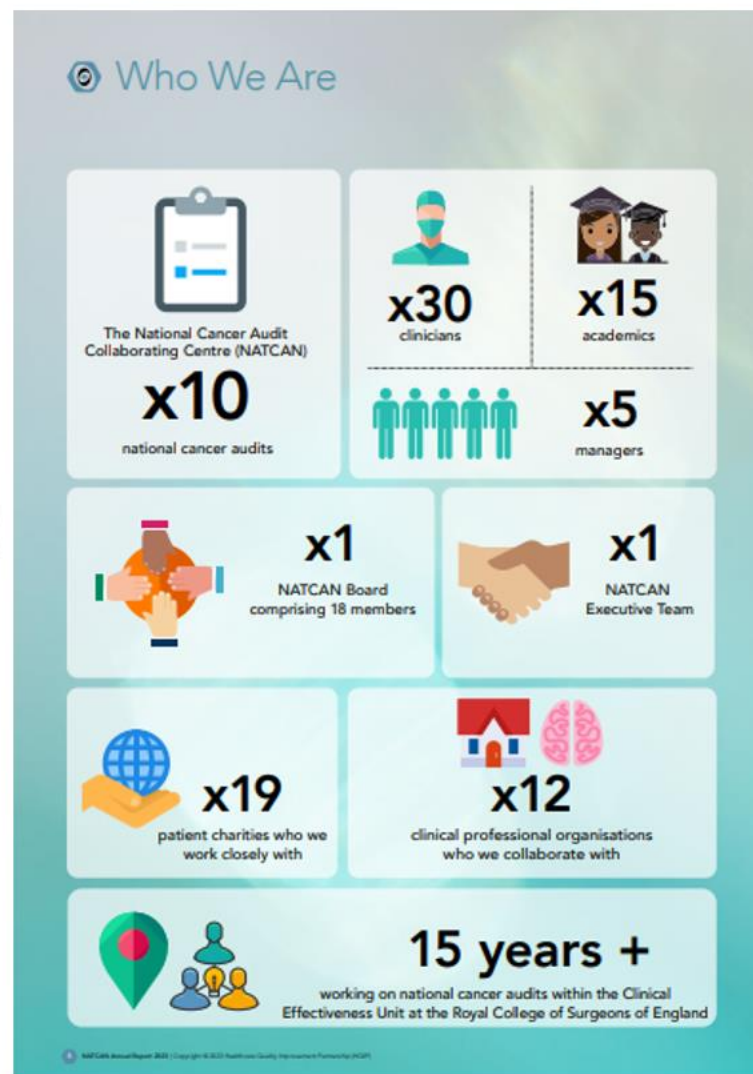
Welcome to NATCAN & our first QI event

- Home of the ten national cancer audits in England & Wales

- Closer collaboration & consistency

- Shared learning & best practice

- Working together with the same aim:

To reduce variation in the care, treatment and outcomes of patients diagnosed with cancer in England Wales

NAoPri — National Audit of Primary Breast Cancer

NBOCA — National Bowel Cancer Audit

NOCA — National Ovarian Cancer Audit

NNHLA — National Non-Hodgkin Lymphoma Audit

NAoMe — National Audit of Metastatic Breast Cancer

NOGCA — National Oesophago-Gastric Cancer Audit

NKCA — National Kidney Cancer Audit

NPaCA — National Pancreatic Cancer Audit

NPCA — National Prostate Cancer Audit

NLCA — National Lung Cancer Audit

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NATCAN: progress so far & next steps

First year (from Oct 2022)

- Establish **organisational & governance structures**
- Develop NATCAN **communication strategy**
- Creation of **common data access channels**
- Establish **6 'new' audits**
- Move **4 'existing' audits** into NATCAN
- Recruitment for **PPI Forums**
- Audit **scoping & development**

From second year onwards (from Oct 2023)

- Develop NATCAN **QI strategy & planning**
- **Reporting & feedback** of audit results (quarterly & annual)
- Design **QI initiatives**
- Roll out of **'full audit cycle' projects**

Thank you!

NATCAN Quality Improvement Event 27.03.24

13.05 - 13.10	**Opening Address -** Peter Johnson (National Clinical Director for Cancer, NHSE)
13.10 - 13.25	**Introduction re: NATCAN and QI principles –** Ajay Aggarwal (Clinical Director, NATCAN)

Act 1

13.25 - 13.45	**Target Quality Improvement – Big data approaches to establishing the drivers of variation in access to care –** Kate Walker (Senior Statistician, NATCAN & Senior Methodologist, Bowel & NHL audits)
13.45 - 14.05	**Landscape Analysis of QI interventions in Oncology –** Adil Rashid (Clinical Fellow, Bowel audit) & Georgia Zachou (Clinical Fellow, Ovarian audit)
14.05 - 14.25	**Panel Discussion** Chair: Neil Mortensen, Chair of the NATCAN Board Panel members: Nigel Trudgill (Clinical Lead, OG & Pancreatic audits), Mike Braun (Clinical Lead, Bowel audit), Alison Tree (Clinical Lead, Prostate audit), Min Hae Park (Methodologist, OG & Pancreatic audits)
14.25 - 14.50	**Break (25 minutes)**

NATCAN Quality Improvement Event 27.03.24

Act 2

14.25 - 14.50	**Designing hospital level/alliance level QI interventions** – Sudha Sundar (Clinical Lead, Ovarian audit) & Doug West (Clinical Lead, Lung audit)
15.10 - 15.30	**The role of positive outliers in driving performance** – Tom Cowling (Senior Methodologist, Kidney & Prostate audits) & Jo Dodkins (Clinical Fellow, Prostate audit)
15.30 - 15.50	**Panel Discussion** Chair: Noel Clarke (Clinical Lead, Prostate audit) Panel members: Sudha Sundar, Doug West, Richard Simcock (Chief Medical Officer, Macmillan Cancer Support), David Cromwell (Director of the CEU)
15.50 - 15.55	**Patient perspective & reflections on the event –** Frank Burroughs, (PPI Forum Chair, NHL audit)
15.55 - 16.00	**Closing address** - Peter Johnson
16.00 - 17.00	**Drinks & Networking**

Housekeeping

- Toilets – Ground Floor
- Fire alarms and exits – not scheduled
- Mobile phones
- Publicise the event – @NATCAN_news
- Questions and microphones
- Panel sessions
- Photographer – group photo @ 4pm
- Feedback and certificates
- Leave no trace

Opening Address

Prof. Peter Johnson,
National Clinical Director for Cancer, NHSE

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NATCAN: QI Principles

**Prof. Ajay Aggarwal,
Clinical Director, NATCAN**

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NATCAN: Current Organisation

NATCAN — National Cancer Audit Collaborating Centre

HEALTHCARE QUALITY IMPROVEMENT PARTNERSHIP

Clinical Effectiveness Unit-RCSEng

NATIONAL CANCER AUDIT COLLABORATING CENTRE (NATCAN)

LSHTM: NIHR, MRC funded health services research

CEU: NVR & Crane / health services projects

NHSE/ National Disease Registration Service Digital Health and Care Wales/Wales

NATCAN Board
Chair, HQIP, NHS England, Welsh Government, RCR, Macmillan Cancer Support, NDRS, WCN, RCSEng Patient & Public Group, NATCAN Executive

NATCAN Executive Team
Director of Operations (Julie Nossiter), Clinical Director (Ajay Aggarwal), Director CEU (David Cromwell), Senior Statistician (Kate Walker), Senior Clinical Epidemiologist (Jan van der Meulen)

Centre Project Manager (Verity Walker)

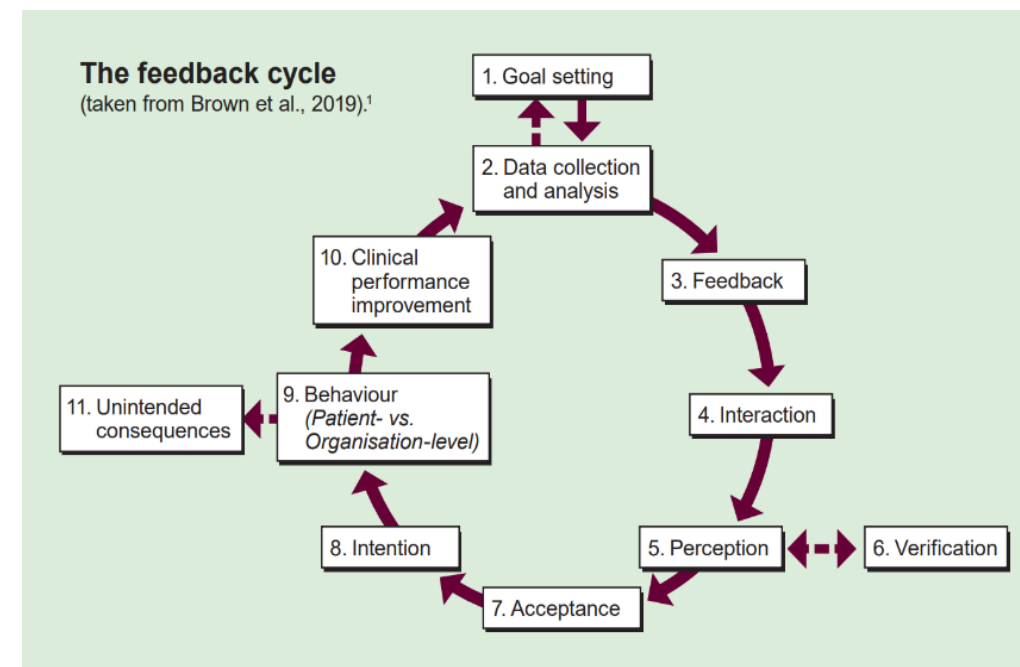### QUALITY IMPROVEMENT TEAM
(working with all cancer audits)

PATIENT AND CARER PANELS
(one for each cancer audit)

TECHNICAL ADVISORY GROUP

CLINICAL REFERENCE / ADVISORY GROUPS
(one for each cancer audit)

Lung cancer

Clinical leads: Neal Navani (Respiratory medicine), Doug West (Surgery, SCTS), John Conibear (Oncology, RCR)
Senior Methodologists: David Cromwell
Statistician/Data Scientist: Adrian Cook, Ella Barber
Clinical Fellow: Lauren Dixon
Audit Manager: Joanne Boudour

Prostate cancer

Clinical leads: Ajay Aggarwal (Oncology, BUG), Noel Clarke (Surgery, BAUS)
Senior Methodologists: Jan van der Meulen, Tom Cowling
Statistician/Data Scientist: Adrian Cook, Emily Mayne
Clinical Fellow: Joanna Dodkins
Audit Manager: Cressida Miller, Marina Parry

Bowel cancer

Clinical leads: Mike Braun (Oncology) Nicola Fearnhead (Surgery, ACPGBI)
Senior Methodologists: Jan van der meulen, Kate Walker
Clinical Fellow: Adil Rashid
Data Scientists: Angela Kuryba; Helen Blake
Audit Manager: Karen Darley

OG cancer

Clinical leads: Nigel Trudgill (Gastroenterology, BSG), James Gossage (Surgery, AUGIS), Tom Crosby/Betsan Thomas
Senior Methodologist: David Cromwell/**Methodologist:** Min Hae Park
Data Scientist: Amanda McDonell
Audit Manager: Karen Darley

Breast cancer: Primary

Clinical leads: David Dodwell (Oncology, UKBCG), Keiran Horgan (Surgery, ABS)
Senior Methodologist: David Cromwell/**Methodologist:** Mel Gannon
Clinical Fellows: Jemma Boyle, Sarah Blacker
Data Scientist: Christine Delon
Audit Manager: Jibby Medina

Breast cancer: Metastatic

Clinical leads: David Dodwell (Oncology, UKBCG), Keiran Horgan (Surgery, ABS), Mark Verill (Medical Oncology, UKBCG)
Senior Methodologist: David Cromwell/ **Methodologist:** Mel Gannon
Data Scientist: Christine Delon
Audit Manager: Jibby Medina

Pancreatic cancer

Clinical leads: Nigel Trudgill (Gastroenterology, BSG), Andrew Smith (Surgery, AUGIS), Ganesh Radhakrishna (RCR)
Senior Methodologist: David Cromwell/ **Methodologist:** Min Hae Park
Clinical Fellow: joins 2024
Data Scientist: Amanda McDonell
Audit Manager: Vikki Hart

Kidney cancer

Clinical leads: Amit Bahl (Oncology, BUG) Grant Stewart (Surgery, BAUS)
Senior Methodologists: Jan van der Meulen, Tom Cowling
Clinical Fellow: Suzi Nallamilli
Audit Manager: Cressida Miller, Marina Parry

Ovarian cancer

Clinical leads: Sudha Sundar (Surgery, BGCS), Agnieszka Michael (Medical Oncology, BGCS)
Senior Methodologists: Jan van der Meulen, Ipek Gurol Urganci
Clinical Fellow: Georgia Zachou
Methodologist: Andrew Hutchings
Audit Manager: Joanne Boudour

Non-Hodgkin Lymphoma

Clinical leads:
Cathy Burton (Haematology, BSH) David Cutter (Oncology, BSH)
Senior Methodologists: Kate Walker,
Methodolcgist: Lu Han
Clinical Fellow: joins 2024
Data Scientist: Ella Barber
Audit Manager: Vikki Hart

ABS, Association of Breast Surgery; ACPGBI, Association of Coloproctology of Great Britain and Ireland; AUGIS, Association of Upper Gastrointestinal Surgeons; BAUS, British Association of Urological Surgeons; BSG, British Society of Gastroenterology; BSH, British Society of Haematology; BUG, British Uro-oncology Group; CEU, Clinical Effectiveness Unit; HQIP, Healthcare Quality Improvement Partnership; LSHTM, London School of Hygiene & Tropical Medicine; MRC, Medical Research Council; NHSE, National Health Service England; NIHR, National Institute for Health and Care Research; NVR, National Vascular Registry; UKBCG, UK Breast Cancer Group; RCR, Royal College of Radiologists; RCSEng, Royal College of Surgeons of England; SCTS, Society for Cardiothoracic Surgery.

NATCAN: 2024

- Develop **Healthcare Improvement Plans**
  - Development & validation of performance indicators (PIs)

- **Quarterly indicator reporting**
  - RCRD 'data quality metrics' published April & July 2024

- **Annual 'State of the Nation' reports***
  - Publication September 2024

- **Greater focus on Quality Improvement (QI)**
  - Each audit will design & implement a QI initiative

The feedback cycle
(taken from Brown et al., 2019).[1]

1. Goal setting
2. Data collection and analysis
3. Feedback
4. Interaction
5. Perception
6. Verification
7. Acceptance
8. Intention
9. Behaviour (Patient- vs. Organisation-level)
10. Clinical performance improvement
11. Unintended consequences

*NPCA, NBOCA & NOGCA maintain reporting cycle in 2024, move to the same cycle as the 'new' audits in 2025. NLCA maintain reporting cycle.
Image taken from Brown B, et al. *Implementation Science*. 2019;14(1):1–25.
HQIP, Healthcare Quality Improvement Partnership; NATCAN, National Cancer Audit Collaborating Centre; NBOCA, National Bowel Cancer Audit; NLCA, National Lung Cancer Audit; NOGCA, National Oesophago-Gastric Cancer Audit; NPCA, National Prostate Cancer Audit; RCRD, Rapid Cancer Registration Dataset.
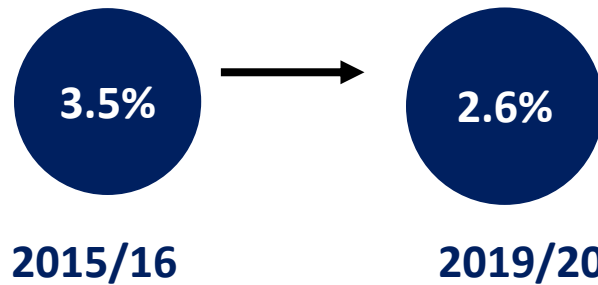
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NATCAN: Principles

- Clinically **Relevant**

- Methodologically **Robust**

- Technically **Rigorous**

Examples of success

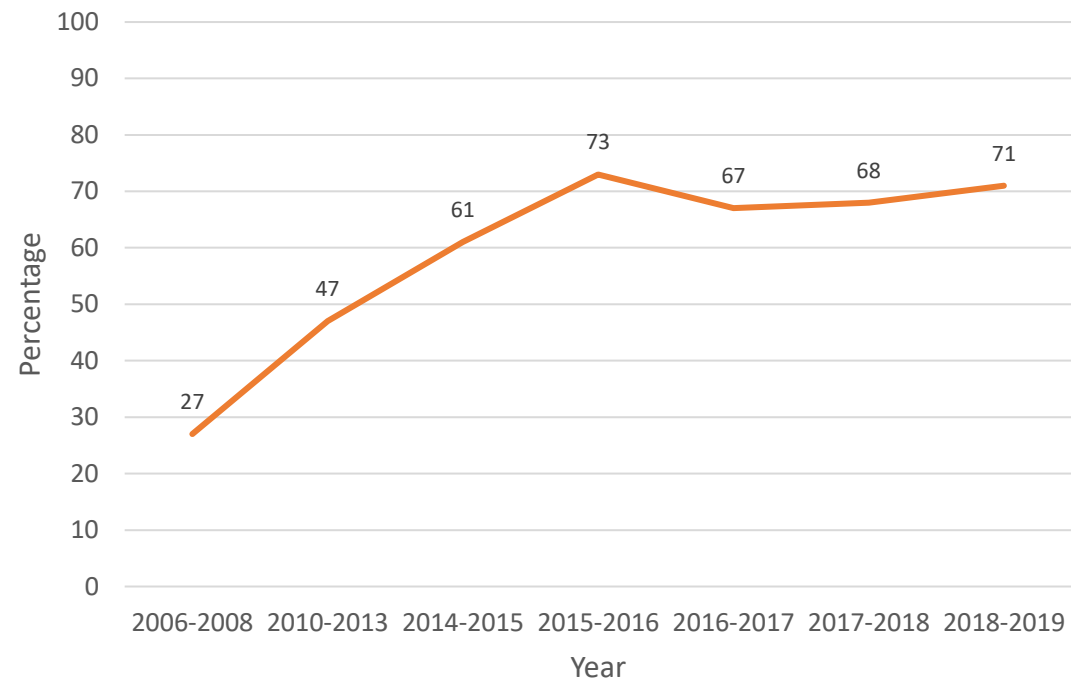## National Bowel Cancer Audit

90-day post-operative mortality

3.5% → **2.6%**

2015/16   2019/20

Between-provider variation in adjuvant chemotherapy use *reduced*

27 Trusts → **21 Trusts**

Outside expected range   Outside expected range

2015/16   2019/20

National Prostate Cancer Audit

Treatment locally advanced/high-risk prostate cancer

Line chart — x-axis "Year", y-axis "Percentage":
- 2006-2008: 27
- 2010-2013: 47
- 2014-2015: 61
- 2015-2016: 73
- 2016-2017: 67
- 2017-2018: 68
- 2018-2019: 71
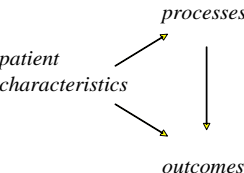
Necessary components for successful quality improvement

NATCAN
National Cancer Audit
Collaborating Centre

Data science and statistics

Development of key performance indicators
Continuous reporting
Methods for "fair" comparisons of hospitals

Clinical epidemiology -> QI

	service evaluation	*clinical audit*
processes	what are we doing?	are we doing what we should be doing?
outcomes	what is the outcome of what we are doing?	are we doing it well (compared with others)?

patient characteristics

Ongoing expansion of linked data resources

National Hospital Data

National Cancer Data

National Chemotherapy Data

NATCAN Data (RCRD and gold standard)

Office of National Statistics

National Radiotherapy Data

Patient-reported Outcomes / Experience

Organisational mapping

Formal advice and support network

Clinical Reference Groups
Technical advisory group
Academic links

Patient-Public Involvement Forums

One for each audit
Linked with patient charities

Research and development platform

Externally funded
National perspective
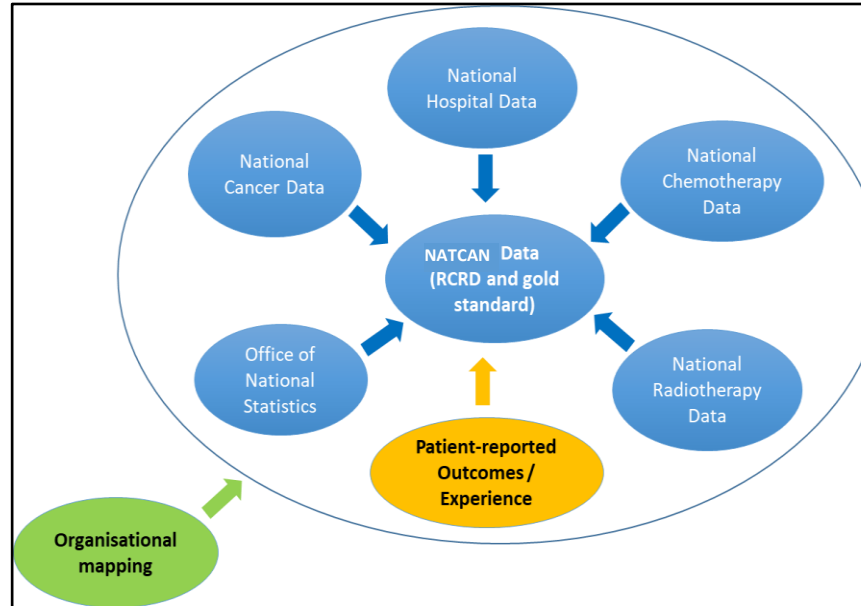International collaborations

Feedback and Public reporting

Transparent reporting of outcomes
Outlier reporting and right to reply

Web-site development

Audit "dashboards"
Data visualisation

Targeted communication strategy

Providers / clinicians
Professional organisations
Patients and charities
Commissioners
Regulators

Innovative quality improvement

Continuous monitoring – control charts
Modified "plan-do-study-act" cycles

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Operationalising QI within NATCAN

- NATCAN QI Team: coordinated by Clinical Director working with all audit teams

- QI activities: based on experience in cancer audits/RCS/expertise in LSHTM

- Healthcare improvement plans –Informed by evidence to select and prioritise indicators and what methods to use to stimulate and monitor QI

- Understanding the literature - What has been done before and works

- Academic partnership with University Leeds – Feedback and reporting

All begins with selecting the right measures!

- **Measurable** - This property means that the indicators can be defined with available data in a valid, reliable, and fair and risk adjusted as appropriate

- **Actionable** – Indicators must be actionable, reflect potential deficits in the quality of care and attributable to a specific pre-defined pathway of care

- **Improvable** – There should be clear scope for improvement (low baseline levels or large unwarranted variation) or interventions have been studied to address the deficit

Understanding the drivers to variation in quality

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.ejcancer.com

Original Research

Measuring variation in the quality of systemic anti-cancer therapy delivery across hospitals: A national population-based evaluation
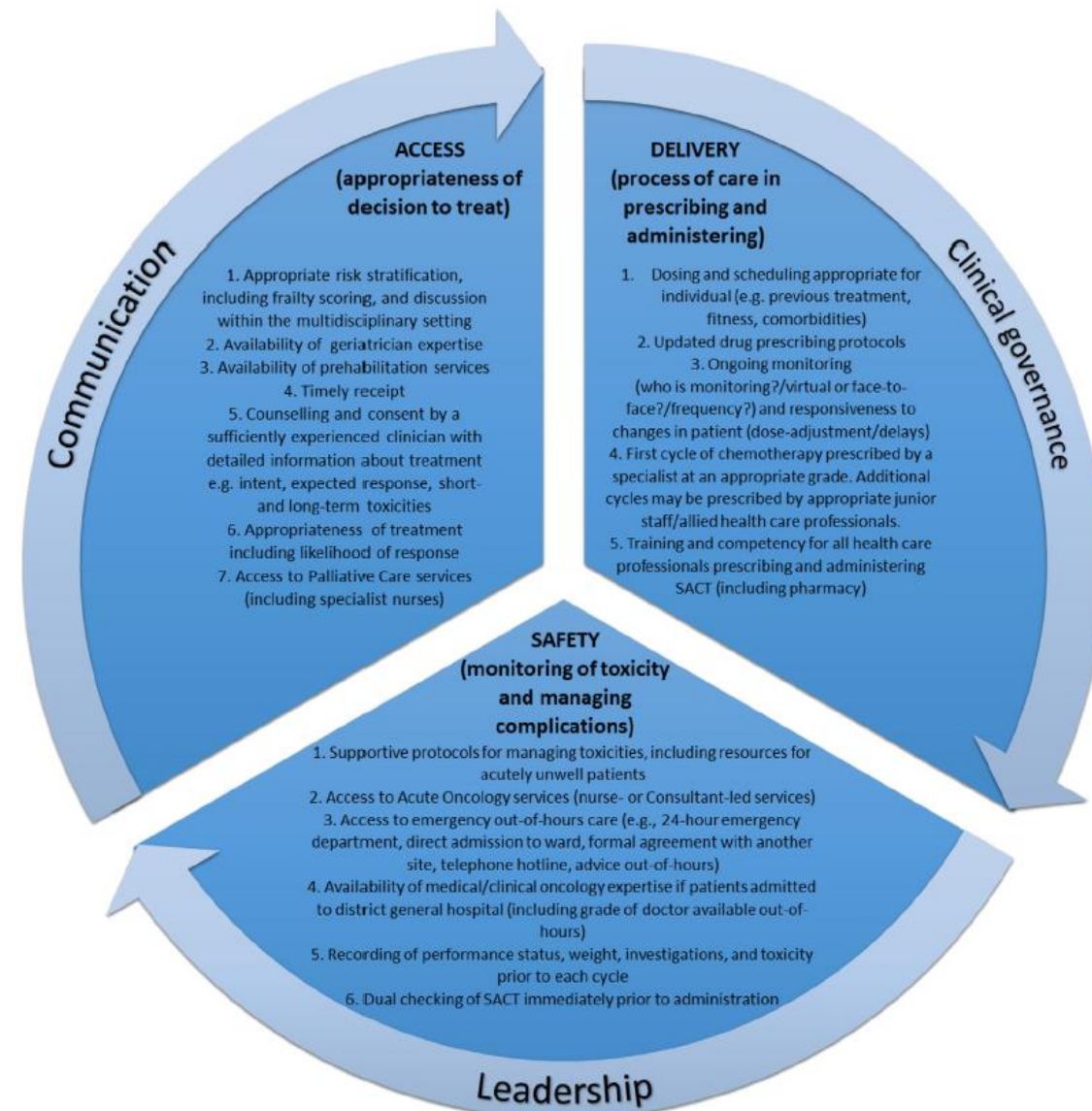
Jemma M. Boyle [a,b,*], Jan van der Meulen [a,b], Angela Kuryba [b], Thomas E. Cowling [a,b], Christopher Booth [c], Nicola S. Fearnhead [d], Michael S. Braun [e,f], Kate Walker [a,b,1], Ajay Aggarwal [a,g,1]
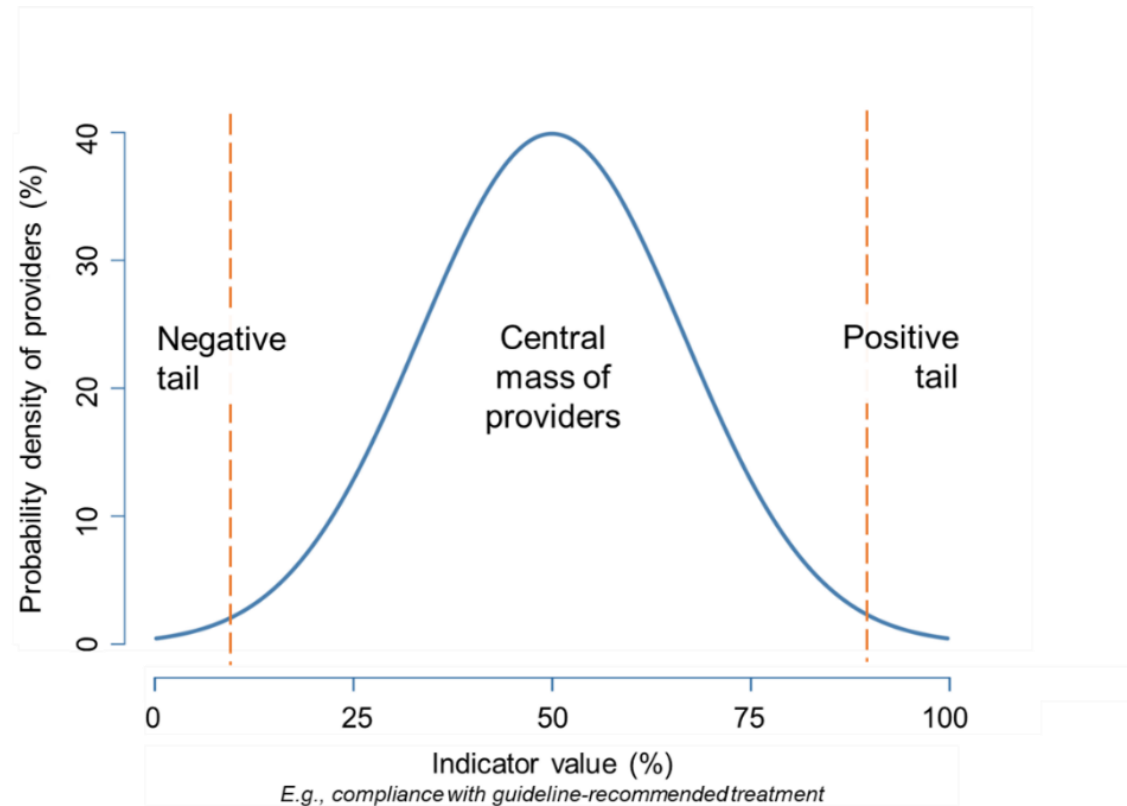
Adjusted severe acute toxicity range – 25% to 67%

Compared to national average:

6 x hospitals 2 standard deviations above
7 x hospitals 2 standard deviations below

QI Methods - Harnessing reporting

Probability density of providers (%) vs Indicator value (%)
E.g., compliance with guideline-recommended treatment

Negative tail | Central mass of providers | Positive tail

1. Negative tail – outlying performance

2. Positive Tail – Knowledge translation

3. Central mass – iterative testing

4. Recommend setting new benchmarks

Influencing Change

- Recommendations formulated by audit teams in collaboration with CRGs (professional bodies, societies, civil society)

- Working directly with NHS England, professional bodies, to ensure recommendations can be translated into action

- Outlier reporting and transparent public reporting interface – incentives CQC/CQUIN

- QI tools for local teams to review processes including particular populations to focus on

- National programme of QI workshops and development of national audit QI initiative

Examples of Improvement Activities

Audit feedback activity	Description
Annual "State of the Nation" Reports	State of the Nation reports that allow NHS organisations to review performance across a range of indicators
Web-based dashboard	Presents results for individual NHS organisations
Local Action Plan template	Allows NHS organisations to document how they will respond to the State of the Nation Report recommendations.
Improvement Case Studies	Examples of different approaches used by NHS trusts to improve care quality or identify areas to improve
Interventions	This will include possible interventions that have been identified in the literature or developed by Trusts/Alliances in the NHS.
Setting Targets	Recommendations may include targets or thresholds for indicators e.g. XX % expected to receive treatment.
Targeting local evaluation	Shortfalls identified in particular populations/ regions – e,g, Alliances or elderly populations

For Discussion Today

- Clinical Epidemiology approach to supporting QI

- Back to the literature- Identifying interventions for quality improvement – what works and doesn't

- Outcome Reporting and the role of positive deviance in driving QI

- How to design and implement QI initiatives – the clinical reality

**Target Quality Improvement –
Big data approaches to establishing the drivers of variation in access to care**

Prof. Kate Walker – Senior Methodologist, NATCAN

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Clinical-methodological partnership

Clinical Effectiveness Unit (CEU) supports 8 LSHTM academic posts currently

Career progression
Research Fellows to Professors

Plus wider clinical-methodological collaborations
E.g. Royal Marsden, UCLH, Christie, Leeds, Patient co-investigators

Methodological rigour

Royal College of Surgeons of England — ADVANCING SURGICAL CARE

NATCAN — National Cancer Audit Collaborating Centre

LONDON SCHOOL of HYGIENE & TROPICAL MEDICINE

National Clinical Audits
CEU
NATCAN

Roots into NHS
Clinicians
Patients
Professional bodies

Rich timely data
Feedback to hospitals

Grant-funded research projects and fellowships

In-depth methodological research

7 ongoing NIHR/MRC projects based at LSHTM
(current funding £8.5M**)**
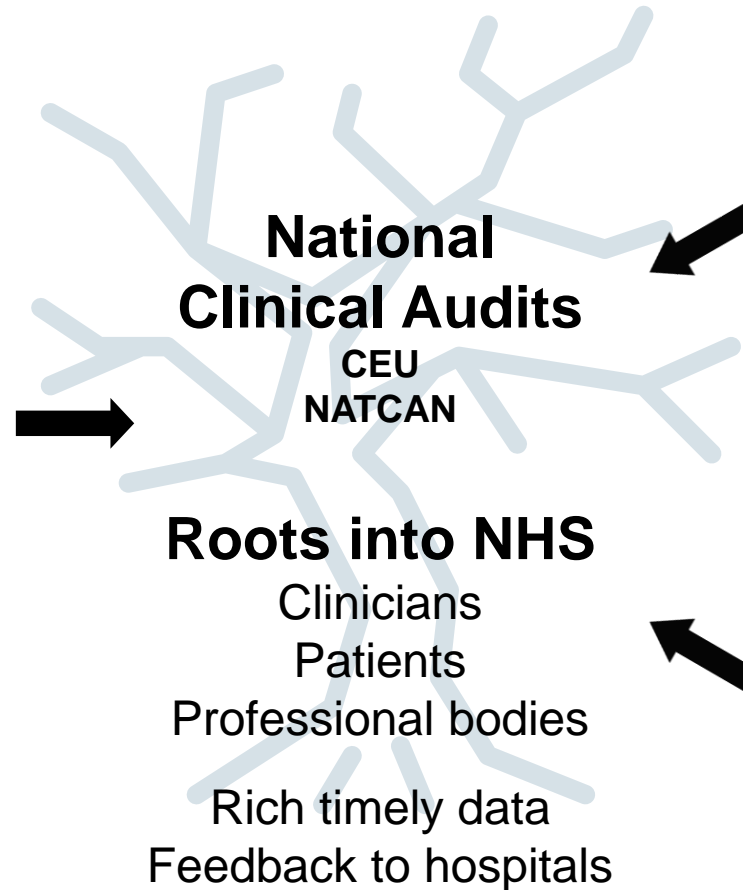
Journal articles

Focussed methodological topics

161 peer-reviewed CEU publications since 2018

LSHTM PhDs

Methodological development → **clinical epidemiology**
Audit clinical fellows
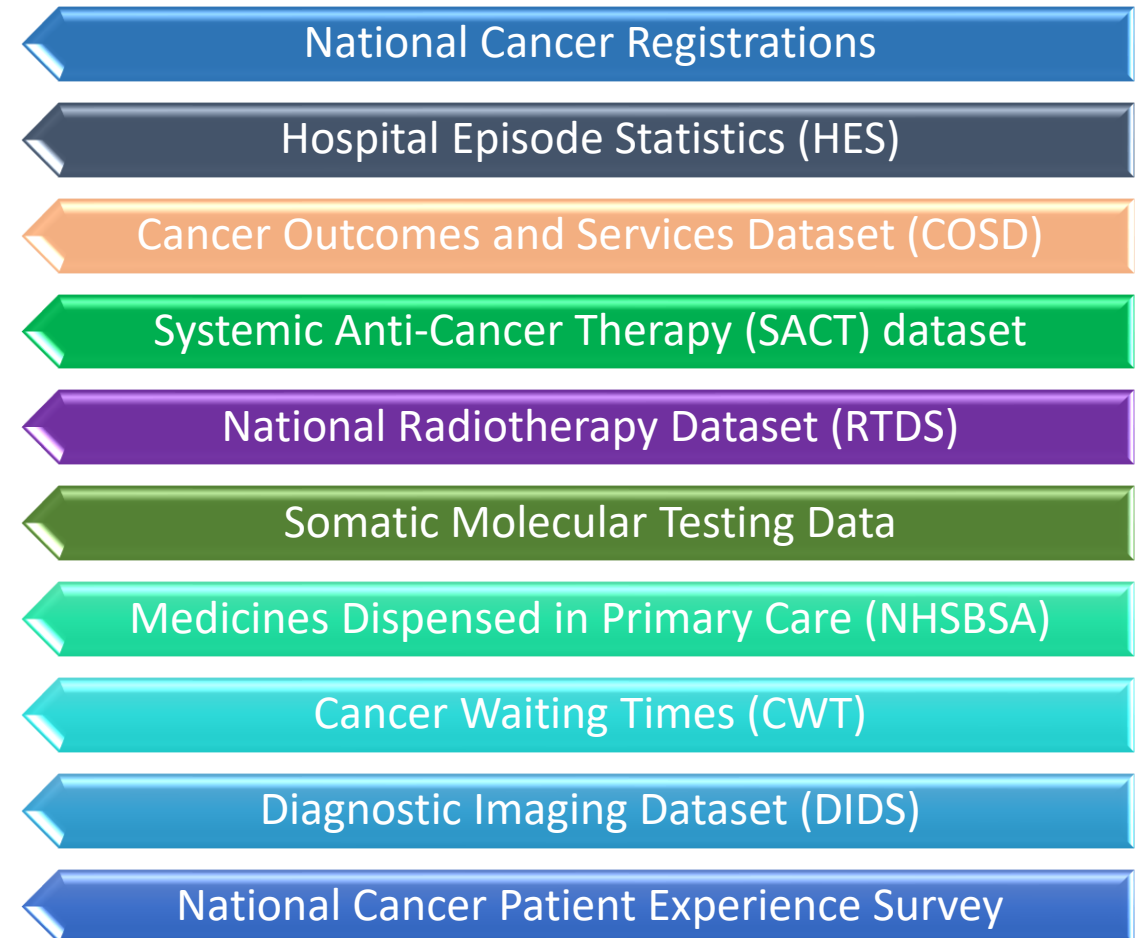9 ongoing PhDs
8 completed PhDs

Rich timely data

Linked national cancer data is **richer** than ever.

And **more timely** than ever:
Rapid cancer registration data
4-6 month lag

Requires methodological development to exploit it

- National Cancer Registrations
- Hospital Episode Statistics (HES)
- Cancer Outcomes and Services Dataset (COSD)
- Systemic Anti-Cancer Therapy (SACT) dataset
- National Radiotherapy Dataset (RTDS)
- Somatic Molecular Testing Data
- Medicines Dispensed in Primary Care (NHSBSA)
- Cancer Waiting Times (CWT)
- Diagnostic Imaging Dataset (DIDS)
- National Cancer Patient Experience Survey

Big data to establish drivers of variation in care

Indicator development	Accurately measure care by provider
Risk adjustment	Fair comparisons
Methods for reporting	Timely reliable feedback, statistical power

| Understanding variation | Establishing drivers of variation in care |

Drive local quality improvement

Indicator development

- Building on expertise in CEU

  Measurable

  - Valid, reliable, fair, specific indicators

- Clinical data science to accurately phenotype care

  - Clinician-driven **forward-search** using research publications, guidelines, clinical expertise

  - Data driven **backward-search** captures additional common coding patterns to pick up idiosyncrasies in coding

BJUI — BJU International

Quantifying severe urinary complications after radical prostatectomy: the development and validation of a surgical performance indicator using hospital administrative data

Arunan Sujenthiran[*], Susan C. Charman[*,†], Matthew Parry[*], Julie Nossiter[*], Ajay Aggarwal[†], Prokar Dasgupta[‡], Heather Payne[§], Noel W. Clarke[¶], Paul Cathcart[**] and Jan van der Meulen[†]

[*]Clinical Effectiveness Unit, Royal College of Surgeons of England, [†]London School of Hygiene and Tropical Medicine, [‡]MRC Centre for Transplantation, King's College London, [§]Department of Oncology, University College London Hospitals, London, [¶]Department of Urology, Christie and Salford Royal NHS Foundation Trusts, Manchester, and [**]Department of Urology, Guy's and St Thomas' NHS Foundation Trust, London, UK

Contents lists available at ScienceDirect

Cancer Epidemiology

journal homepage: www.elsevier.com/locate/canep

ELSEVIER

Development and validation of a coding framework to identify severe acute toxicity from systemic anti-cancer therapy using hospital administrative data

Jemma M. Boyle[a,b,*], Thomas E. Cowling[a,b], Angela Kuryba[b], Nicola S. Fearnhead[c], Jan van der Meulen[a,b], Michael S. Braun[d], Kate Walker[a,b,1], Ajay Aggarwal[e,1]

Indicator development

NIHR-funded LSHTM grant

Data science and machine learning to identify cancer recurrence in routine data
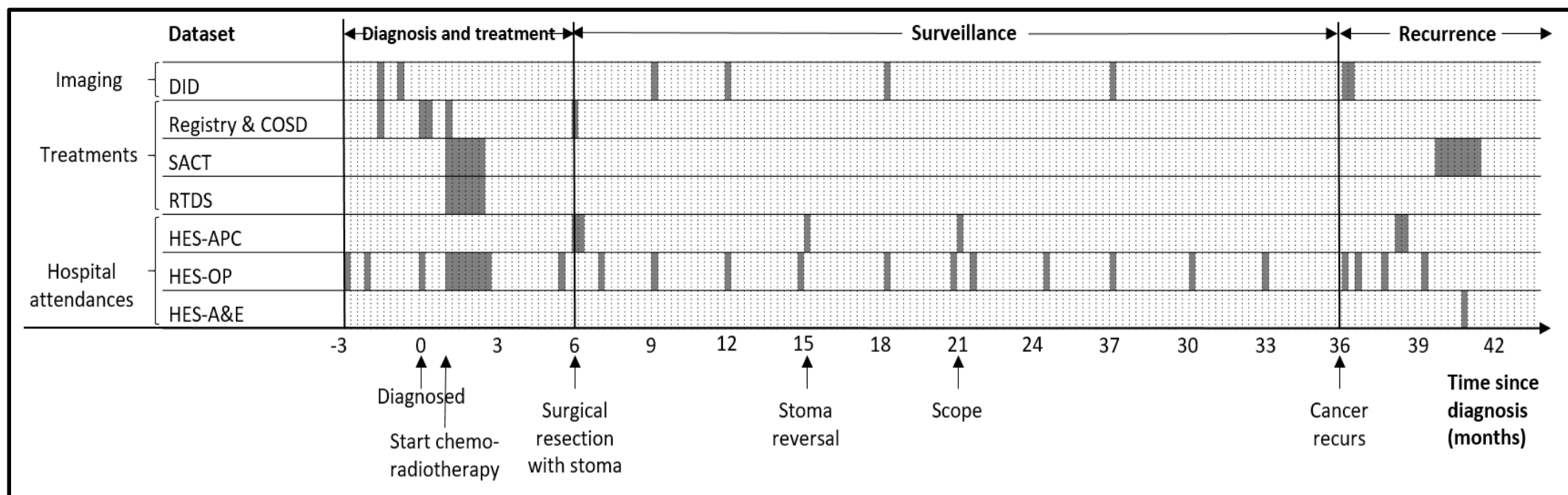
- After curative treatment → predictable pattern of care

- Recurrence → change in frequency and type of events

Risk-adjustment

Accurate model development, modelling non-linear relationships and interactions between risk-factors

BJA

British Journal of Anaesthesia, 121 (4): 739–748 (2018)

doi: 10.1016/j.bja.2018.06.026
Advance Access Publication Date: 23 August 2018
Clinical Practice

Development and internal validation of a novel risk adjustment model for adult patients undergoing emergency laparotomy surgery: the National Emergency Laparotomy Audit risk model

N. Eugene[1,2], C. M. Oliver[1,3,5], M. G. Bassett[1,4], T. E. Poulton[1,4,6], A. Kuryba[1,2], C. Johnston[1,7], I. D. Anderson[1,8], S. R. Moonesinghe[1,5], M. P. Grocott[1,9,10], D. M. Murray[1,11], D. A. Cromwell[1,2,12,*], K. Walker[1,2,12] on behalf of the NELA collaboration[§]

Original article

BJS

Model for risk adjustment of postoperative mortality in patients with colorectal cancer

K. Walker[1,2], P. J. Finan[3] and J. H. van der Meulen[1,2]

[1]Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, and [2]Clinical Effectiveness Unit, Royal College of Surgeons of England, London and [3]John Goligher Colorectal Unit, St James's University Hospital, Leeds, UK
Correspondence to: Dr K. Walker, Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, 15–17 Tavistock Place, London WC1H 9SH, UK (e-mail: kate.walker@lshtm.ac.uk)

Background: A model was developed for risk adjustment of postoperative mortality in patients with colorectal cancer in order to make fair comparisons between healthcare providers. Previous models were derived in relatively small studies with the use of suboptimal modelling techniques.
Methods: Data from adults included in a national study of major surgery for colorectal cancer were used to develop and validate a logistic regression model for 90-day mortality. The main risk factors were identified from a review of the literature. The association with age was modelled as a curved continuous relationship. Bootstrap resampling was used to select interactions between risk factors.
Results: A model based on data from 62 314 adults was developed that was well calibrated (absolute differences between observed and predicted mortality always smaller than 0·75 per cent in deciles of predicted risk). It discriminated well between low- and high-risk patients (C-index 0·800, 95 per cent c.i. 0·793 to 0·807). An interaction between age and metastatic disease was included as metastatic disease was
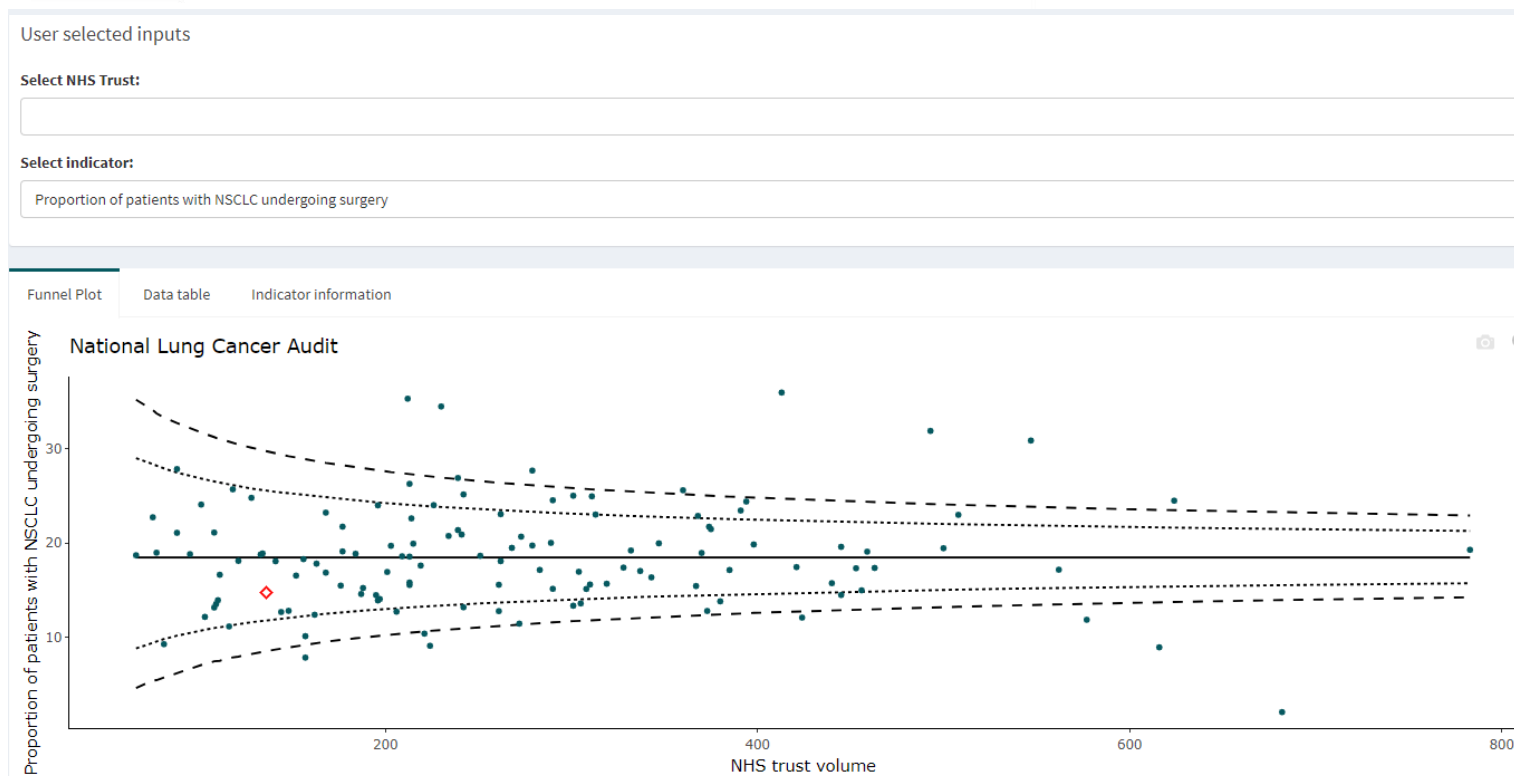
Methods for reporting

- Statistical power to identify poor performance and avoid false complacency

- Current CEU work on improved methods for reliable risk-adjusted estimates (Empirical bayes)
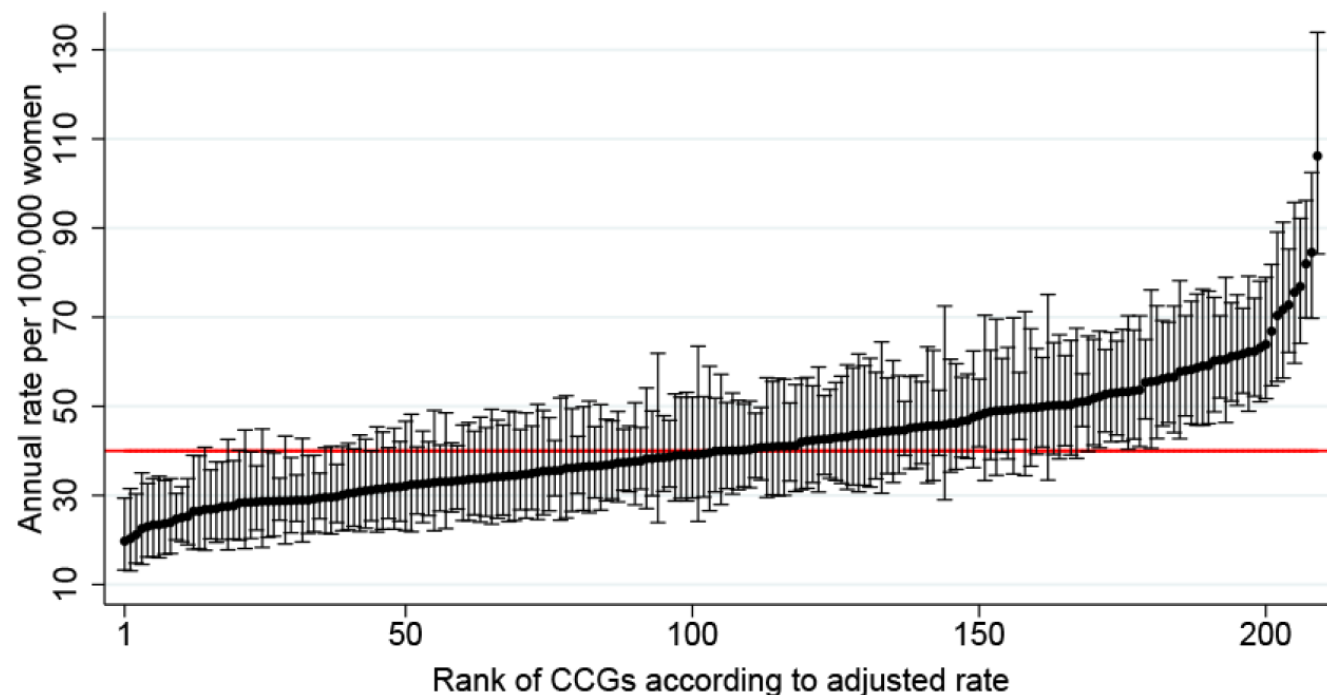
Timely reliable feedback

- Methods to monitor performance over time
- NATCAN interactive web-based dashboards rolling out
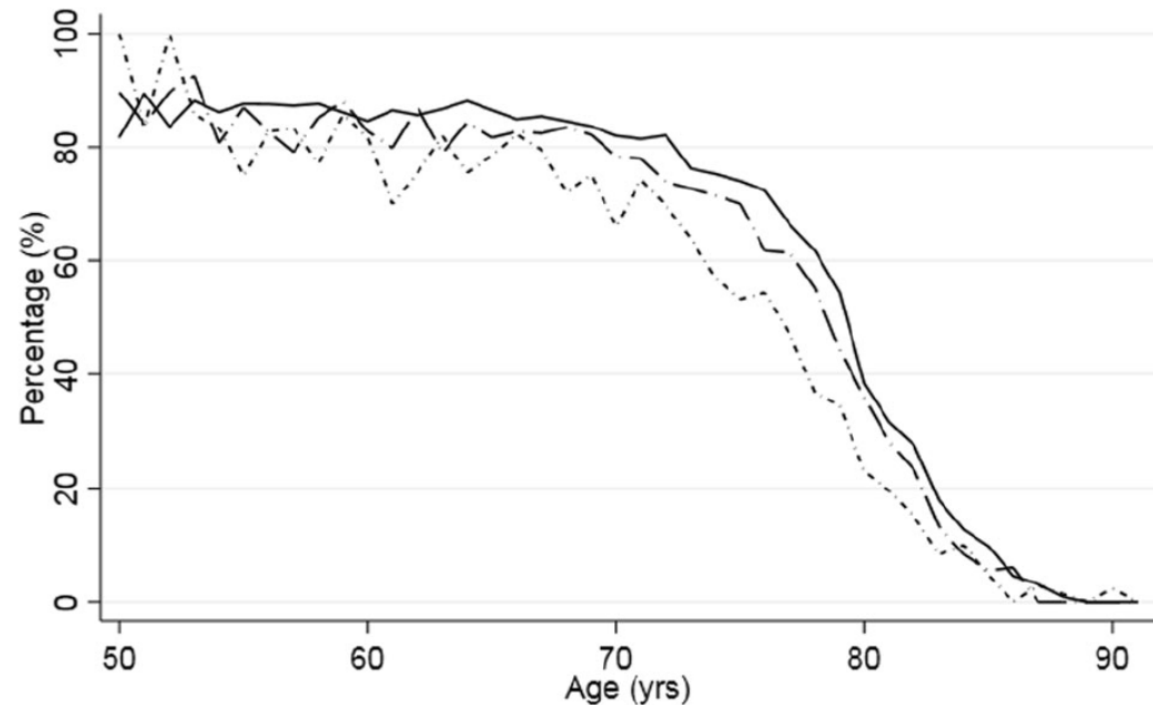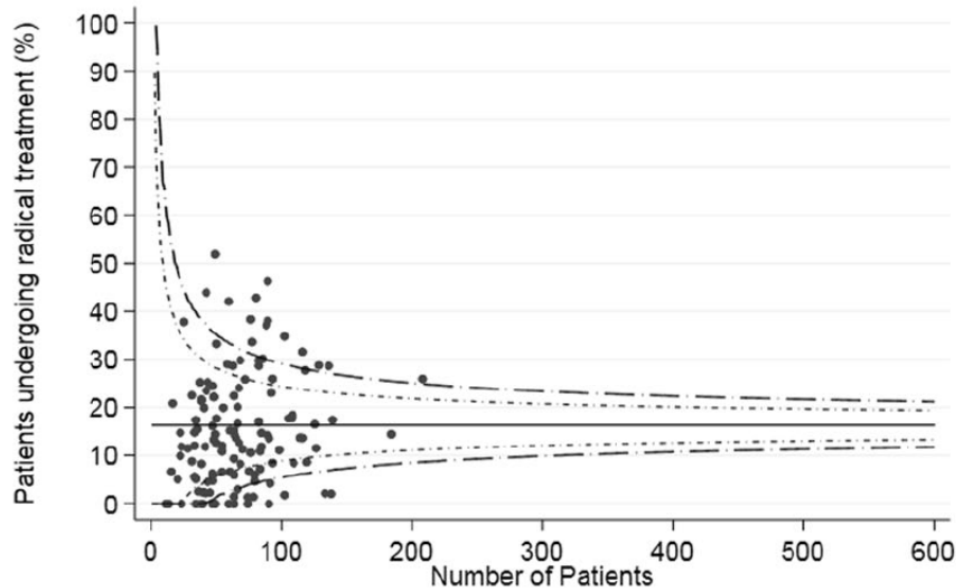
Establishing drivers of variation

Example 1: National Prostate Cancer Audit

Potential "under-treatment" of locally advanced disease

Prostate Cancer
and Prostatic Diseases

B. Receipt of radical treatment by English NHS hospital Trust for patients ≥80 years (adjusted)

Matthew G. Parry [1,2✉], Jemma M. Boyle[1,2], Julie Nossiter[2], Melanie Morris[1,2], Arunan Sujenthiran[2], Brendan Berry [1,2], Paul Cathcart[2], Ajay Aggarwal[4,5], Jan van der Meulen[1,8], Heather Payne[6,8] and Noel W. Clarke[7,8]

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Establishing drivers of variation

Example 2: Bowel Cancer Audit

Variation in access to liver resection for metastatic disease

Socioeconomic differences in selection for liver resection in metastatic colorectal cancer and the impact on survival

A.E. Vallance • J. van der Meulen • A. Kuryba • M. Braun • D.G. Jayne • J. Hill • I.C. Cameron • K. Walker • Show less

Least deprived quintile of patients 1.4x more likely to get a liver resection

Adjusted OR: 1.42 (1.18 to 1.70)

Establishing drivers of variation

Example 2: Bowel Cancer Audit

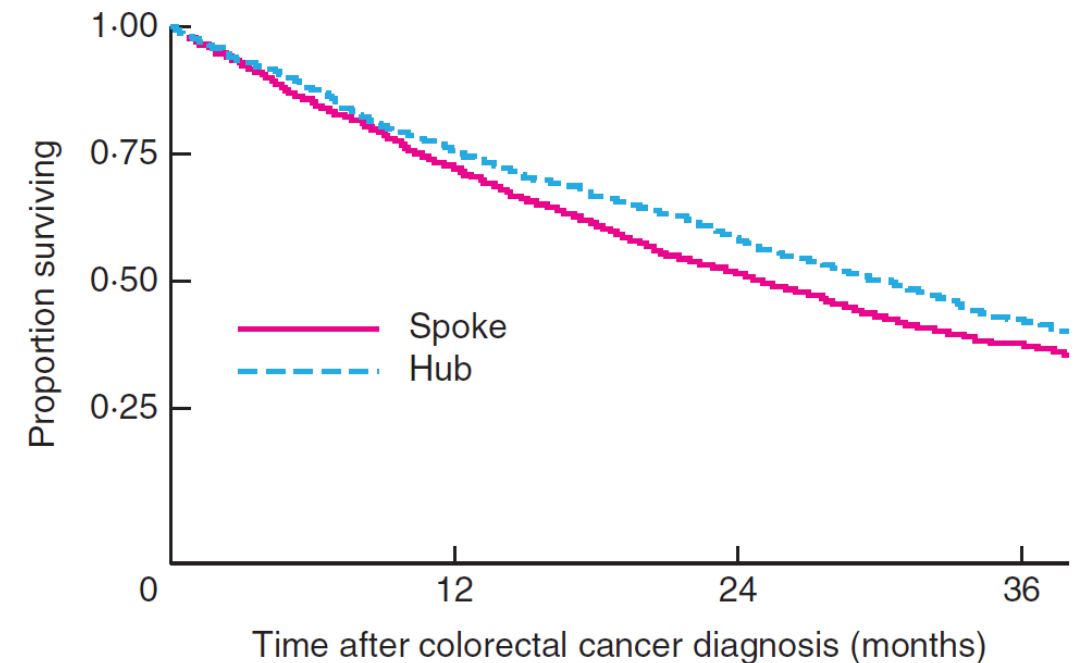Variation in access to liver resection for metastatic disease

BJS

Impact of hepatobiliary service centralization on treatment and outcomes in patients with colorectal cancer and liver metastases

A. E. Vallance[1], J. vanderMeulen[1,2], A. Kuryba[1], I. D. Botterill[3], J. Hill[5], D. G. Jayne[3,4] and K. Walker[1,2]

Patients diagnosed in a hub 1.5x more likely to get a liver resection

Adjusted OR: 1.52 (1.20 to 1.91)

Big data to establish drivers of variation in care

Indicator development	Accurately measure care by provider
Risk adjustment	Fair comparisons
Methods for reporting	Timely reliable feedback, statistical power

Understanding variation	Establishing drivers of variation in care

Drive local quality improvement

Thank you!

NATCAN Quality Improvement
Landscape Analysis of QI interventions in Oncology

27th March 2024

Adil Rashid, Georgia Zachou, Joanna Dodkins

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Moving from Quality Indicators to Quality Improvement

Aggarwal et al. Quality Indicators in Surgical Oncology: systematic review of measures used to compare quality across hospitals

Process	
Adequate follow-up (2+ follow-up office visits within 1 year of treatment completion)	

Outcome	
30-day complication rate	

Structure	
Involvement in research	

- QI practice is mandated for healthcare professionals.
- Bring together the practice and the study of improvement.

Surgical Oncology

Medical Oncology

Radiation Oncology

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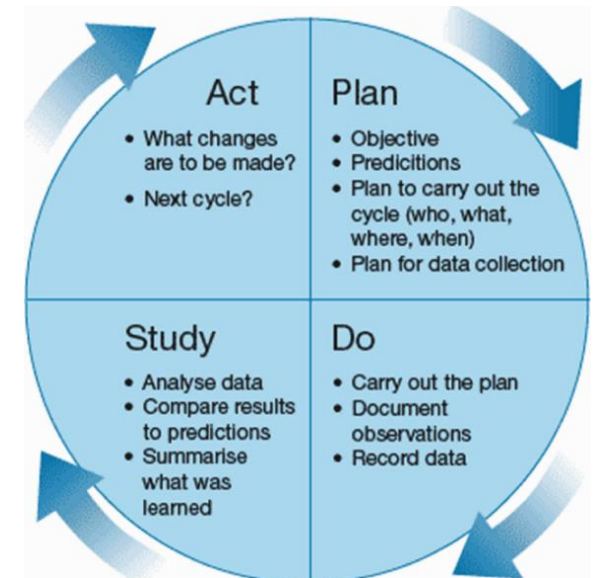
Quality Improvement

Move from:

Describing → Fixing

"Set of **techniques** (adapted from industrial settings) for continuous study and improvement of delivering health care services to meet the needs and expectations of patients"

Purpose of systematic reviews

Major research gap: Limited understanding of what interventions to support quality improvement have been developed across these 3 domains

- What quality deficits did the intervention address? – Can inform selection of performance indicators

- At what level (hospital, regional, national) are the interventions initiated? – Can identify what interventions have been led through national initiatives such as audits

- What types of interventions are being used? - Can inform the recommendations that each audit mandated to provide for addressing quality deficits

- What diseases, modalities do we have limited information on QI interventions

Inclusion Criteria

- Adult patients (18+) with cancer undergoing surgical/ medical/ radiation oncological care.

- Identification of deficit in care.

- Implementation of a secondary care quality improvement intervention to address deficit.

- Peer reviewed publications: 1 January 2000 – 31 December 2023

- Hospital, regional, national, or international level

- Study design: RCTs, non-randomised controlled trials, cohort studies

Search Strategy

1	**quality improvement.ti. or quality improvement.ab.**
2	performance improvement.ti. or performance improvement.ab.
3	quality assurance.ti. or quality assurance.ab.
4	process management.ti. or process management.ab.
5	quality management.ti. or quality management.ab.
6	performance management.ti. or performance management.ab.
7	quality initiative.ti or quality initiative.ab.
8	improvement initiative.ti or improvement initiative.ab.
9	health care benchmarking.ti. or health care benchmarking.ab.
10	program evaluation.ti or program evaluation.ab.
11	best practice implementation.ti. or best practice implementation.ab.
12	health plan implementation.ti. or health plan implementation.ab.
13	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12

14	**cancer.ti. or cancer.ab.**
15	neoplasm.ti. or neoplasm.ab.
16	tum?r.ti. or tum?r.ab.
17	oncology.ti. or oncology.ab.
18	14 or 15 or 16 or 17

Surgical

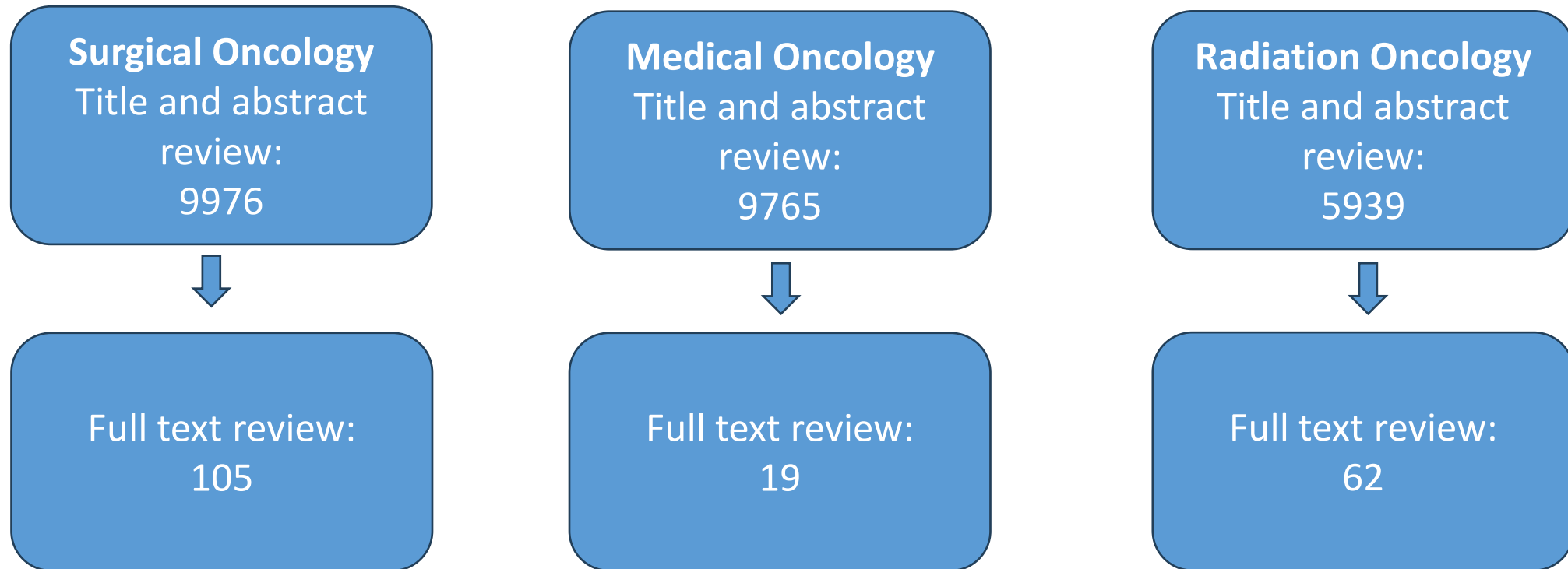|	
19	surger*.ti. or surger*.ab.
20	surgic*.ti. or surgic*.ab.
21	exp surgery/

Medical

19	drug therap*.ti. or drug therap*.ab.
20	chemotherap*.ti. or chemotherap*.ab.
21	systemic therap*.ti. or systemic therap*.ab.
22	exp Antineoplastic Combined Chemotherapy Protocols/
23	exp Antineoplastic Protocols/

Radiation

19	radiotherap*.ti. or radiotherap*.ab.
20	radiation therap*.ti. or radiation therap*.ab.
21	EBRT.ti. or EBRT.ab.
22	IMRT.ti. or IMRT.ab.
23	brachytherapy.ti. or brachytherapy.ab.
24	chemorad*.ti. or chemorad*.ab.
25	exp radiotherapy/

Results

Search performed MEDLINE and EMBASE on 8th January 2024

Surgical Oncology
Title and abstract review:
9976

↓

Full text review:
105

Medical Oncology
Title and abstract review:
9765

↓

Full text review:
19

Radiation Oncology
Title and abstract review:
5939

↓

Full text review:
62

Data extraction

1. What types of interventions are being used?

2. At what level are the interventions initiated?
   - Local
   - Regional
   - National

3. Was the intervention successful?

4. What quality deficits did the intervention address?

5. How can the interventions be linked to NATCAN recommendations?

Medical Oncology

Van Lent et al. Improving the efficiency of a chemotherapy day unit: applying a business approach to oncology

1. Single centre in the Netherlands

2. Applied lean methodology thinking

3. Developed indicators to measure efficiency of chemotherapy day unit.

4. Used in-depth analysis (e.g. direct observation of the entire process) and benchmarking (e.g. interviews and site visits) to identify suitable interventions.

5. 24% increase in treatment and bed utilisation, 12–14% increase of staff productivity and 81% overtime reduction.

Table 4. Pre- and post-measurement CDU.

Indicator	2005	2007	Difference in (%)
Number of beds	30	30	0
Total number of patient visits	12,634	15,662	+24
Average number of visits per bed	421	522	+24
Average number of employees	19.65	21.75	+11
Average number of nurses	11.2	12.21	+9
Average number of visits per employee[a]	643	720	+12
Average number of visits per nurse[a]	1128	1283	+14
Average treatment time per visit in hours	2.2	2.2	No change
Workplace absenteeism excluding maternity leave (%)	9.2	5.9	−36
Overtime in hours	581	113	−81
Patient satisfaction (1–10)	8.1	8.2	+1

Montero et al. Reducing Unplanned Medical Oncology Readmissions by Improving Outpatient Care Transitions: A Process Improvement Project at the Cleveland Clinic

1. US single centre study

2. 30-day readmission rate:
   722 unplanned 30-day readmissions for an overall readmission rate of 27.4%

3. A quality improvement project designed to improve outpatient care transitions:
   o provider education
   o post-discharge nursing phone calls within 48 hours
   o post-discharge provider follow-up appointments within 5 business days

4. Readmission rates declined by 4.5% to 22.9% (P < .01; relative risk reduction, 18%)

5. Economic implications: The mean direct cost of one readmission was $10,884, suggesting an annual cost savings of $1.04 million.

Surgical Oncology

Badia et al. Leveraging a nationwide infection surveillance program to implement a colorectal SSI reduction bundle: a pragmatic, prospective, and multicenter cohort study.

1. Spanish prospective, multicentre cohort study of 55 hospitals participating in a nationwide infection surveillance system.

2. Participants: Adults undergoing elective colorectal surgery.

3. Compared:
   o Control Group: January 2011 to June 2016
   o Intervention Group: July 2016 to December 2020.
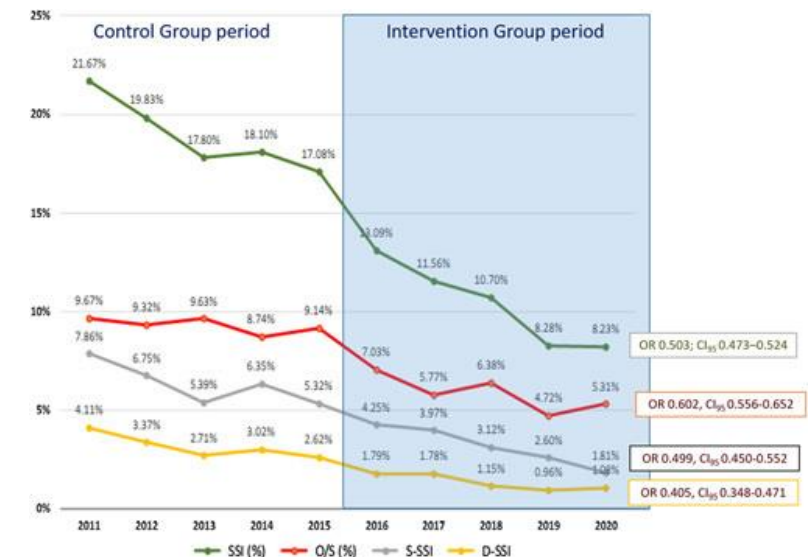
'Adequate' systemic iv antibiotic prophylaxis

Mechanical bowel preparation
Oral antibiotic prophylaxis

Laparoscopic surgery
Maintenance of normothermia
Double-ring plastic wound edge retractor

Kukreja et al. Quality Improvement in Cystectomy Care with Enhanced Recovery (QUICCER) study.

1. US single centre cohort study.

2. Participants: adults undergoing radical cystectomy for bladder cancer.

3. Compared:
   - Control Group 79 patients (retrospective): June 2011 to June 2013
   - Intervention Group 121 patients (prospective): July 2013 to April 2015

4. Reduction in median LOS from 8 to 5 days

5. No association with number of complications or readmissions.
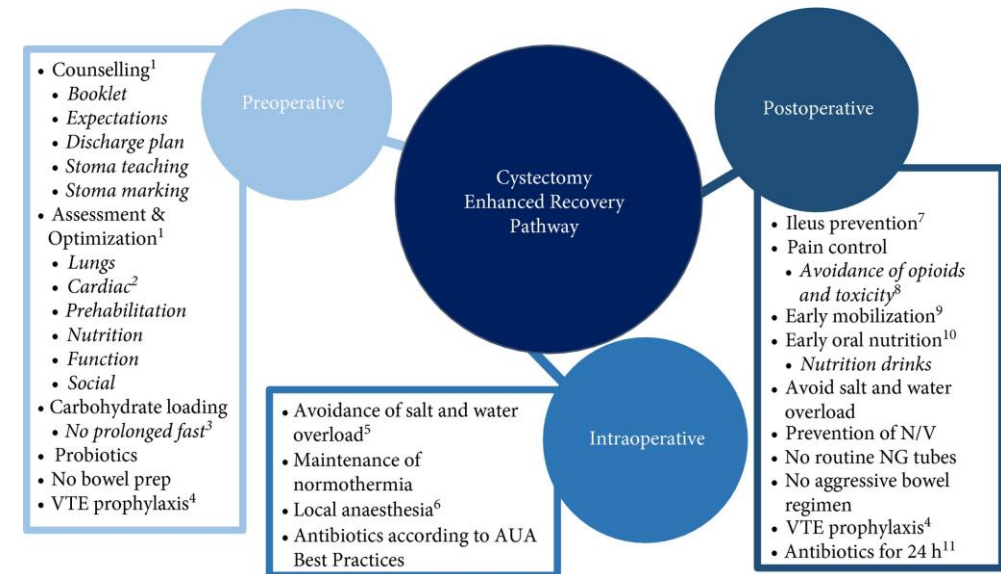
Radiation Oncology

Brown et al. A MDT-oriented intervention to increase guideline recommended care for high-risk prostate cancer: A stepped-wedge cluster randomised implementation trial

1. Multi-centre Australian study in prostate cancer

2. Quality deficit – discussion of patients at MDT/referral to radiation oncology following prostatectomy

3. Intervention:
    o flagging of high-risk patients by pathologists
    o clinical leader allocated
    o peer to peer education with dissemination of printed materials
    o quarterly audit and feedback of individuals' and study Sites' practices

4. Results:
    o The proportion of patients discussed at a MDT meeting increased from 17% to 59%
    o There was no significant difference in referral to radiation oncology (intervention 32% vs control 30%)

Joye et al. Does a central review platform improve the quality of radiotherapy for rectal cancer? Results of a national quality assurance project

1.   National Belgian study in rectal cancer

2.   Quality deficit – uniformity of CTV delineation

3.   Intervention:
    o central review facility was established
    o centres were asked to delineate the CTV of each rectal cancer patient
    o delineation tools were distributed to all centres
    o radiation technologist was trained in CTV delineation and reviewed all cases
    o delineations were reviewed within 24h and, if necessary, the modified CTV was sent back to the original centre
    o Feedback on which CTV was finally used for treatment planning was reported

4.   Results:
    o CTV contours were modified in 74.3% cases

Next steps

- Identify improvement interventions used in medical, surgical and radiation oncology to inform national and local level QI for NATCAN and wider clinical community

- Interventions can be mapped to specific performance indicators within the individual audits to inform future quality improvement plans

- Consider using the interventions or methodologies identified for planned national PDSA cycle

Any questions