10 Years of the NPCA Cancer Audit

Evaluating performance in prostate cancer care – The NPCA's surgical and radiotherapy outcome reporting programme

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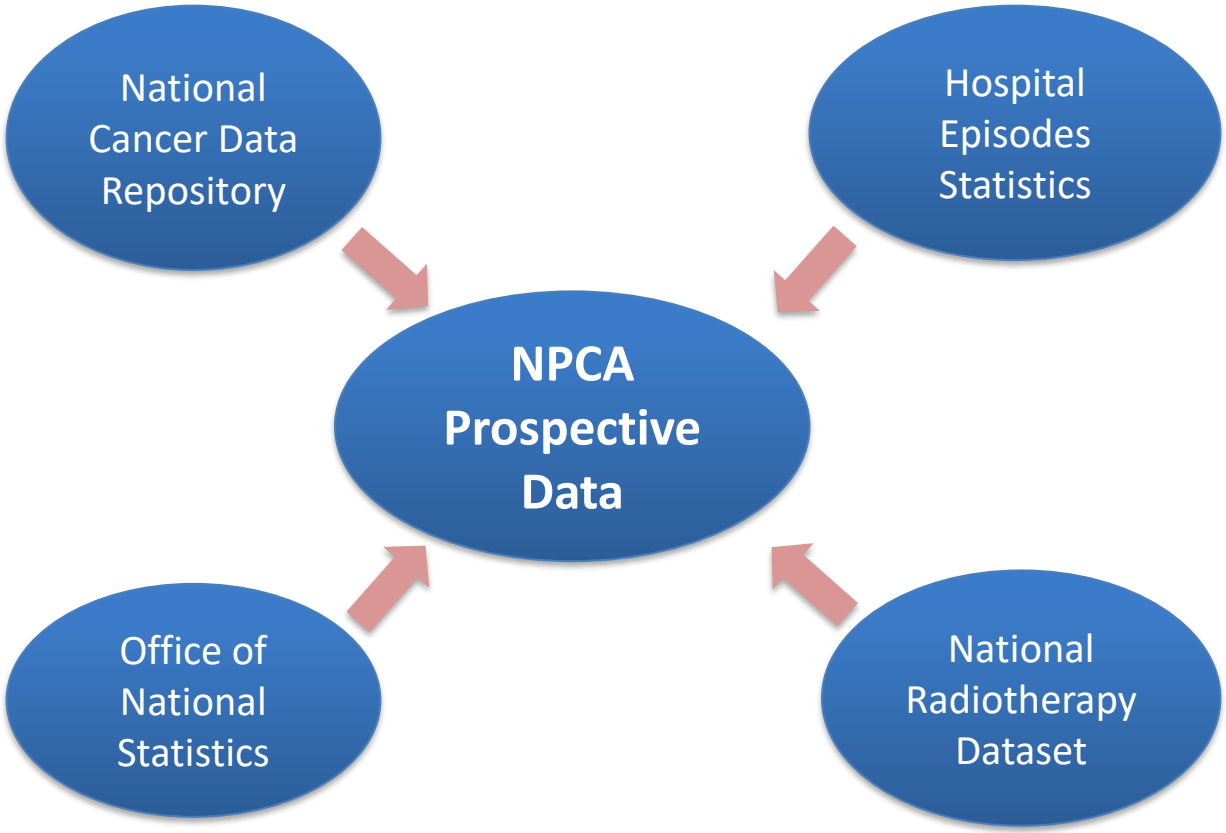
3rd January 2023

NPCA Quality Improvement Workshop

@mparry7

Overview

- Development of “Outcome Indicators”
- Use of indicators within the NPCA to assess variation
- Use of indicators in research



Data linkage performed across data sources @ patient level

Indicator Development

BJUI
BJU International

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

Arunan Sujenthiran*, Susan C. Charman*,†, Matth
Aggarwal†, Prokar Dasgupta‡, Heather Payne§, No
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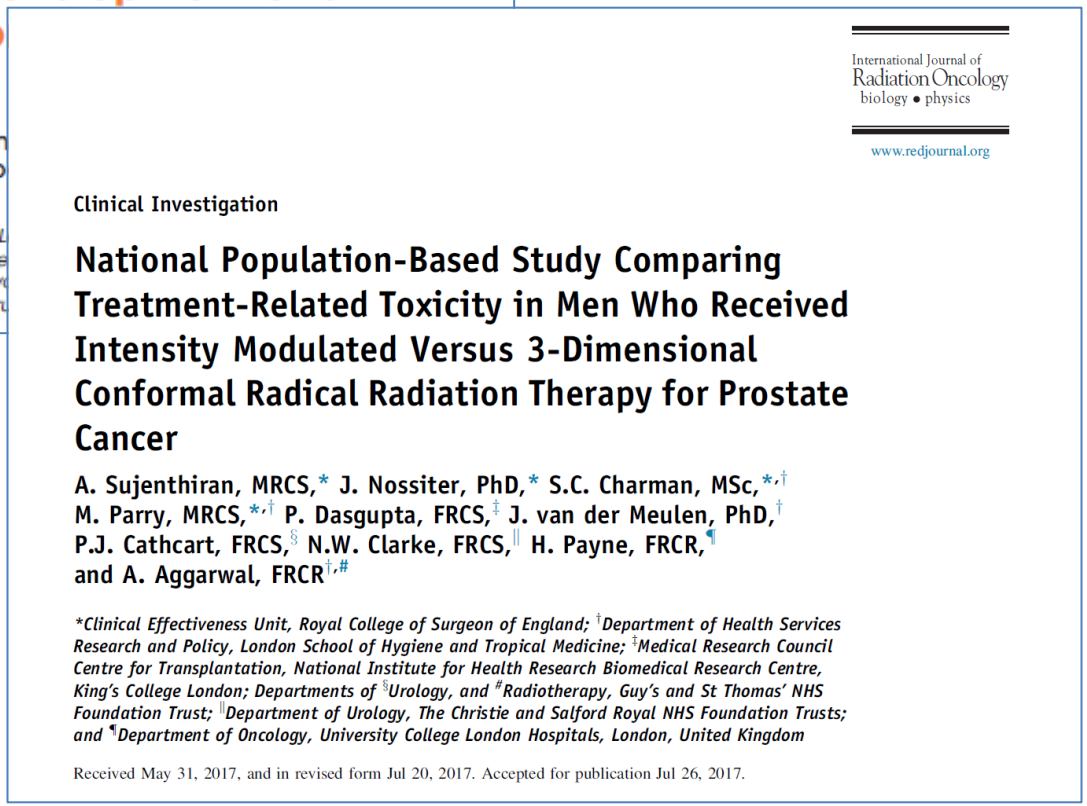
**Department of Urology, Guy's and St Thomas' NHS Foundation Tru



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Clinical Investigation

National Population-Based Study Comparing Treatment-Related Toxicity in Men Who Received Intensity Modulated Versus 3-Dimensional Conformal Radical Radiation Therapy for Prostate Cancer

A. Sujenthiran, MRCS,* J. Nossiter, PhD,* S.C. Charman, MSc,*,† M. Parry, MRCS,*,† P. Dasgupta, FRCS,‡ J. van der Meulen, PhD,† P.J. Cathcart, FRCS,§ N.W. Clarke, FRCS,‖ H. Payne, FRCR,¶ and A. Aggarwal, FRCR†,#

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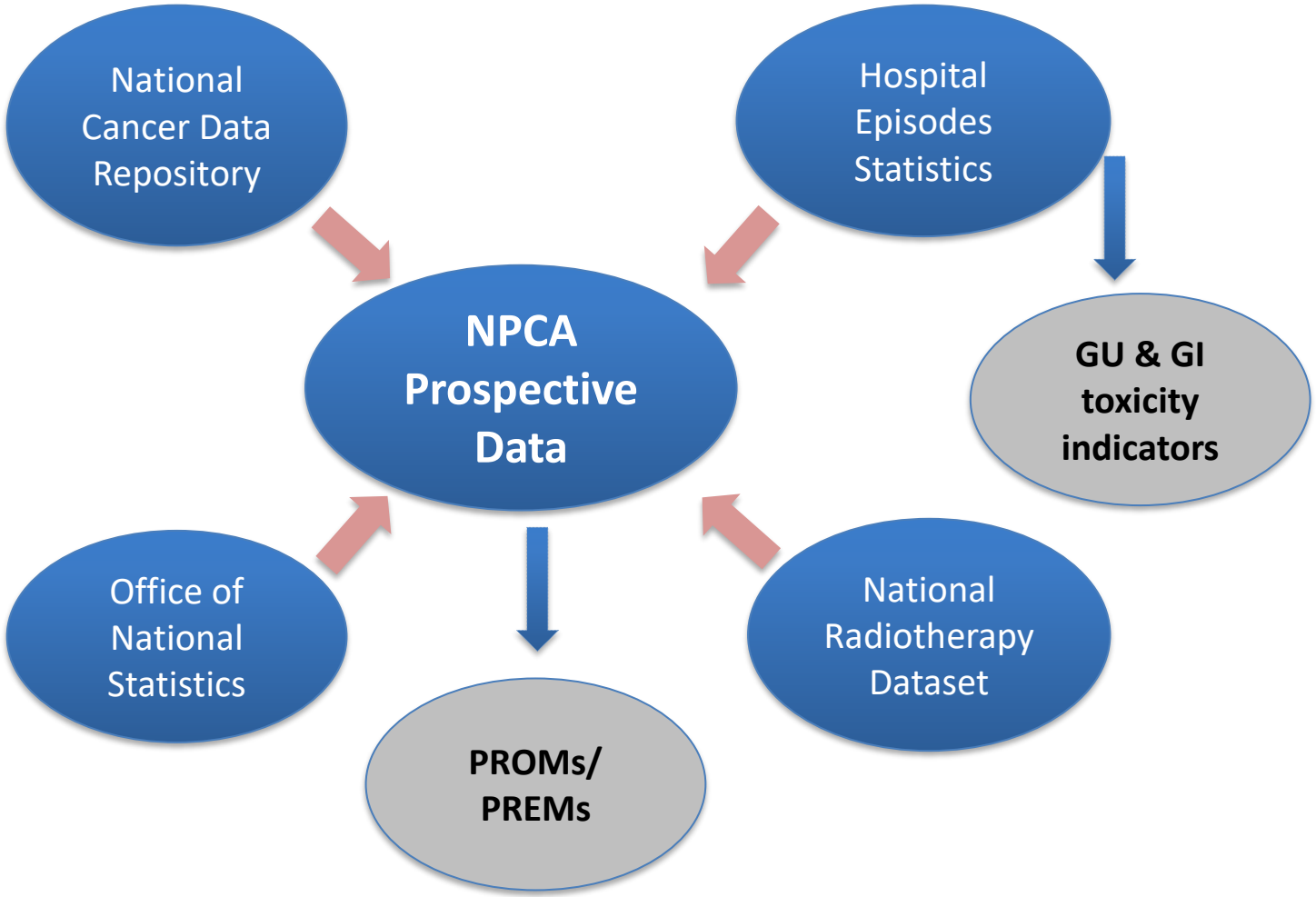
Indicator Development

- Routinely collected data from between 2008 -2012
- Transparent coding framework based on procedure codes in Hospital Episode Statistics (HES)
  - "forward-coding" & "backward-coding" allows us to capture the idiosyncrasies of coding practice
  - Surgery: Stricture, Incontinence, Other (e.g. diagnostic cystoscopy)
  - Radiotherapy: As above but also GI outcomes (lower GI endoscopy)
- Validation:
  - Concordance with diagnosis codes
  - Surgery: Urethral stricture, incontinence
  - Radiotherapy: Irradiation cystitis, radiation proctitis
  - Appropriate association w/patient & surgical characteristics

What makes a good performance indicator?

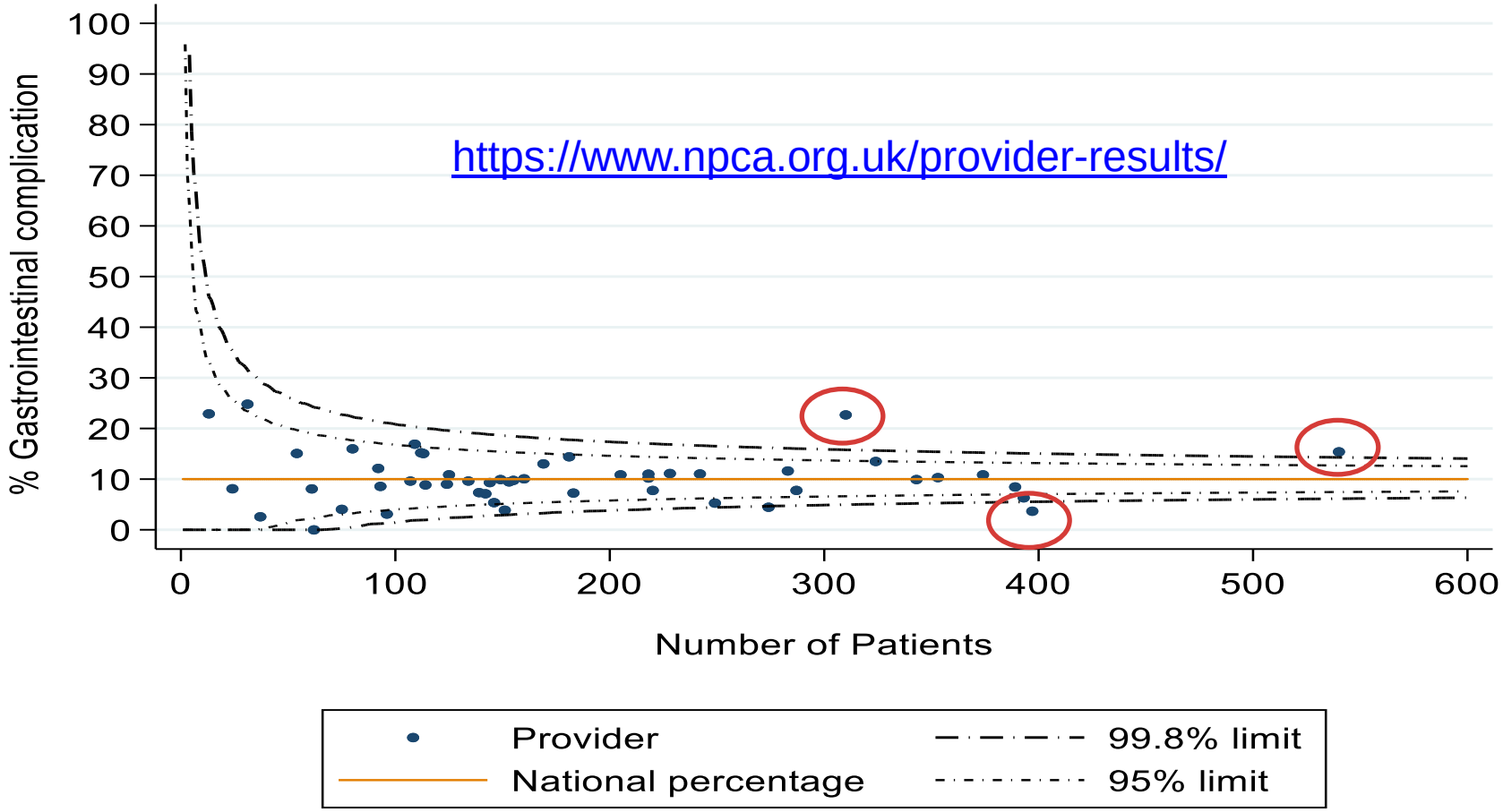
- Validity
  - Explicit coding framework
- Fairness
  - Risk adjustment to allow for differences in case-mix (age, stage, socioeconomic status, comorbidity)
- Technical feasibility
  - Define population, comparison, case mix, outcomes
- Statistical power
  - To detect outliers
  - Sufficient population size/No. of events


National Cancer Data Repository
Hospital Episodes Statistics
NPCA Prospective Data
GU & GI toxicity indicators
Office of National Statistics
National Radiotherapy Dataset
PROMs/ PREMs

Hospital-level Performance Indicators

- Urinary toxicity after surgery
  - Performance Indicator, 2 years after surgery
  - PROMs (EPIC – Urinary Domain)
- Gastrointestinal toxicity after radiotherapy
  - Performance Indicator, 2 years after radiotherapy
  - PROMs (EPIC – Bowel Domain)
- Sexual function after surgery/radiotherapy
  - PROMs (EPIC – Sexual Domain)
- 90-day readmissions after surgery

Hospital-level Performance Indicators



Considerations

- Aim is not to rank hospitals but assesses if performance is further from the national average than would occur by chance alone.
- Don’t adjust for differences in surgical/radiotherapy practice as can inappropriately mask variation in outcomes (e.g. robotic or IMRT)
- Reduces the likelihood of misclassification bias
  - Standardized coding approach for grading toxicity
  - Not dependent on individual clinician reporting
- Agreement between PROMS and our performance indicators

Impact

- Challenge to existing cultures and beliefs
- Highlights need for QA across the whole surgical and radiotherapy care pathway
- Quality improvement workshop identified several areas for improvement:
  - Peer review processes
  - Radiotherapy (Contouring, Dosimetry, Target localisation)
  - Surgery (Training)
  - Communication and Team working

NPCA: Audit meets Research

- Indicators used for outcome reporting and Audit purposes.
- Advancements in techniques and technologies.
- Compare outcomes between different treatment strategies in a “real-world” setting.

BJUI
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National cohort study comparing severe medium-term urinary complications after robot-assisted vs laparoscopic vs retropubic open radical prostatectomy

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

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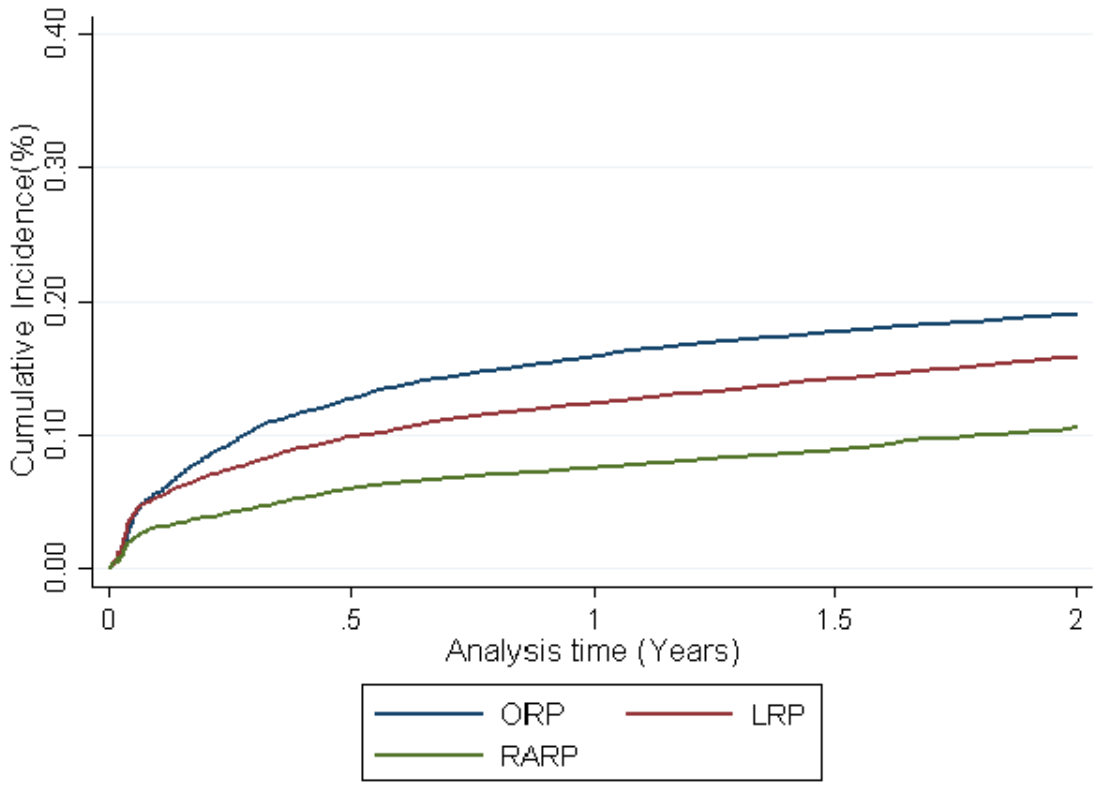

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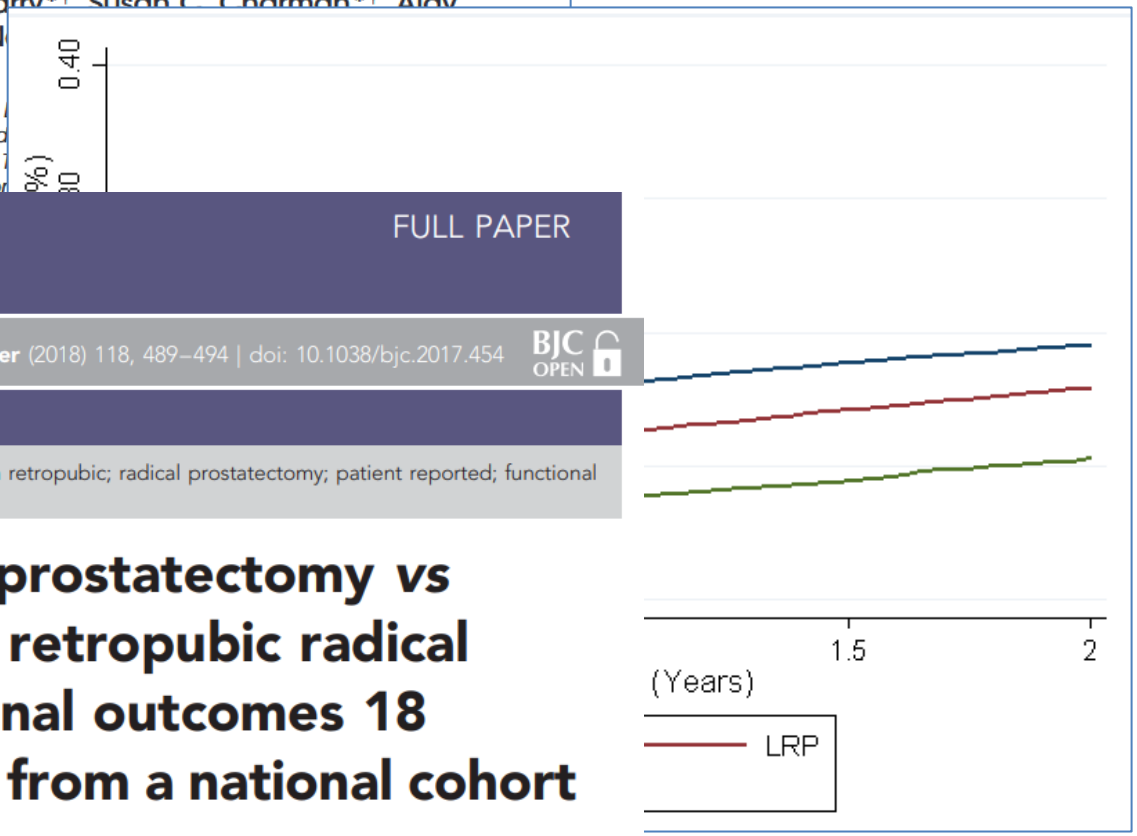


FULL PAPER

BJC

British Journal of Cancer (2018) 118, 489–494 | doi: 10.1038/bjc.2017.454

BJC OPEN

Keywords: prostate cancer; robot-assisted; laparoscopic; open retropubic; radical prostatectomy; patient reported; functional outcomes

Robot-assisted radical prostatectomy *vs* laparoscopic and open retropubic radical prostatectomy: functional outcomes 18 months after diagnosis from a national cohort study in England

Julie Nossiter*[,1,2], Arunan Sujenthiran[2], Susan C Charman[1,2], Paul J Cathcart[3], Ajay Aggarwal[1,2], Heather Payne[4], Noel W Clarke[5,6] and Jan van der Meulen[1,2]

NPCA
National Prostate Cancer Audit

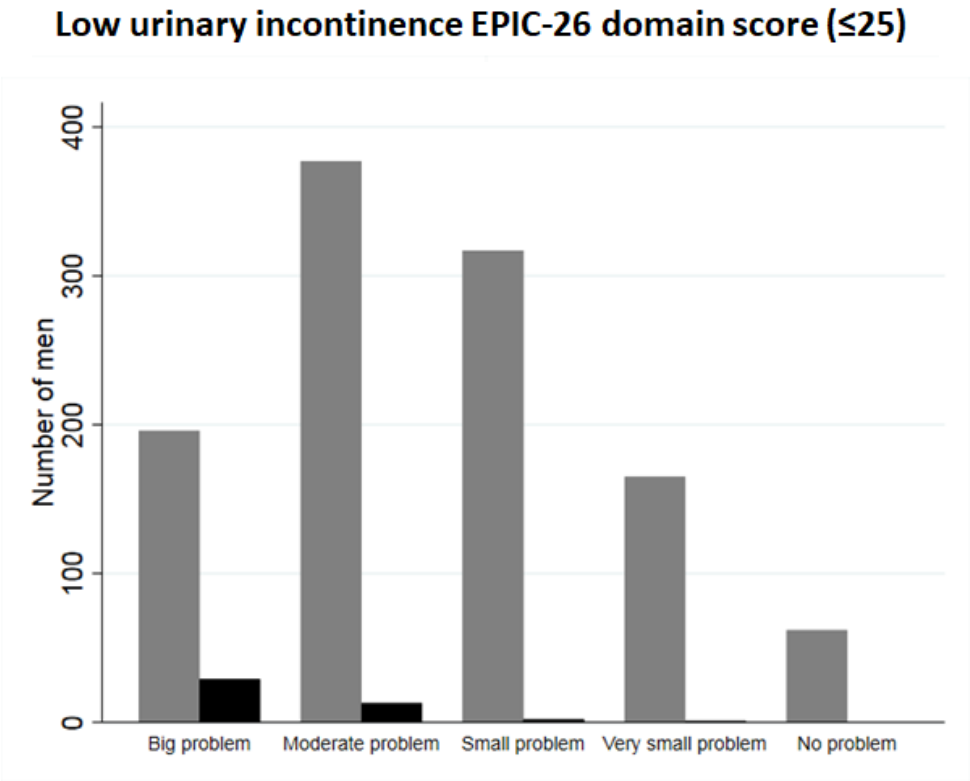
BJU Int 2022; **130**: 84–91 doi:10.1111/bju.15663

BJUI
BJU International

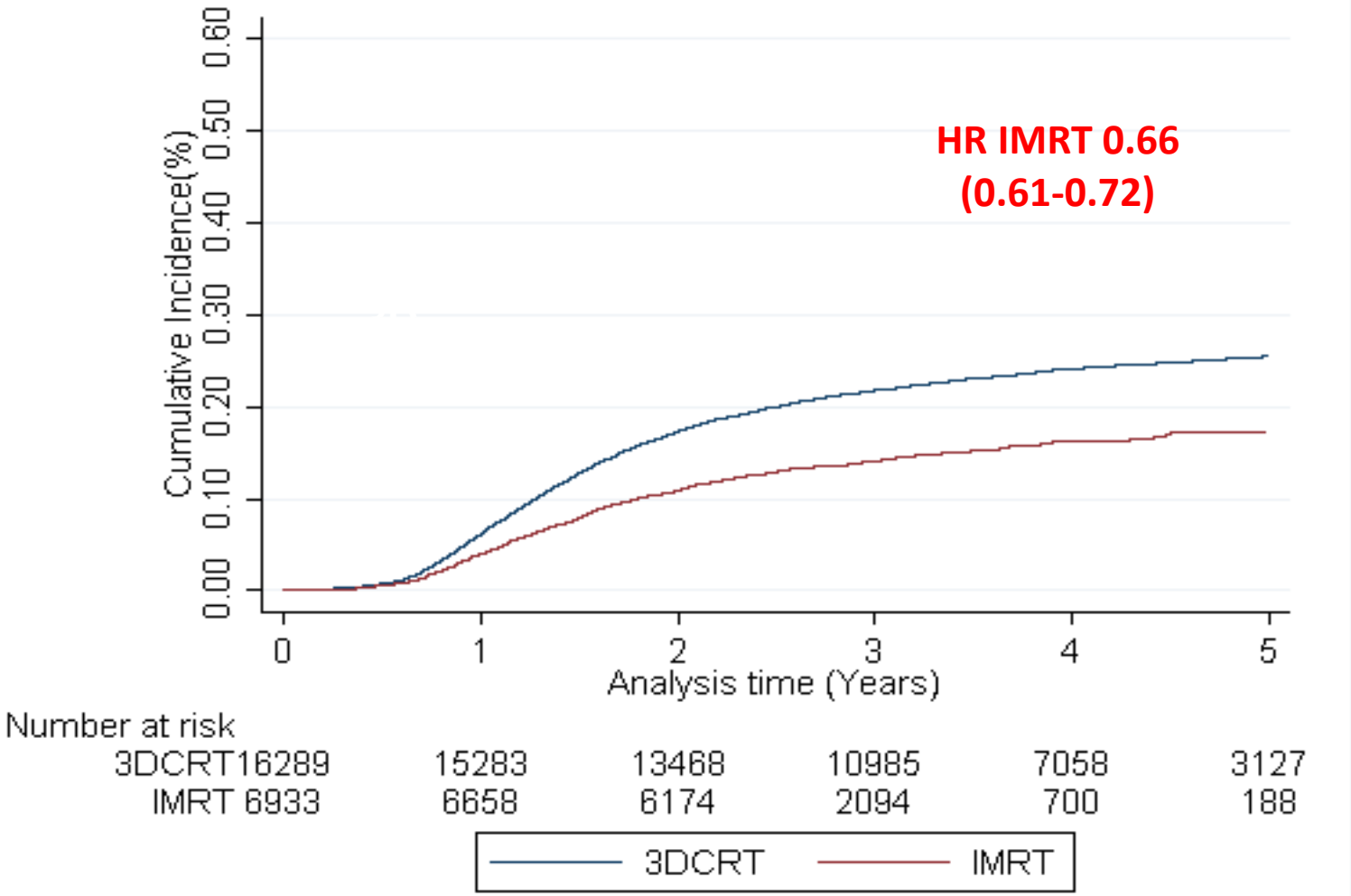
Original Article

Urinary incontinence and use of incontinence surgery after radical prostatectomy: a national study using patient-reported outcomes

Matthew G. Parry[1,2], Ted A. Skolarus[3,4], Julie Nossiter[1,2], Arunan Sujenthiran[2,5], Melanie Morris[1,2], Thomas E. Cowling[1], Brendan Berry[1,2], Ajay Aggarwal[6,7], Heather Payne[8], Paul Cathcart[9], Noel W. Clarke[10] and Jan van der Meulen[1]

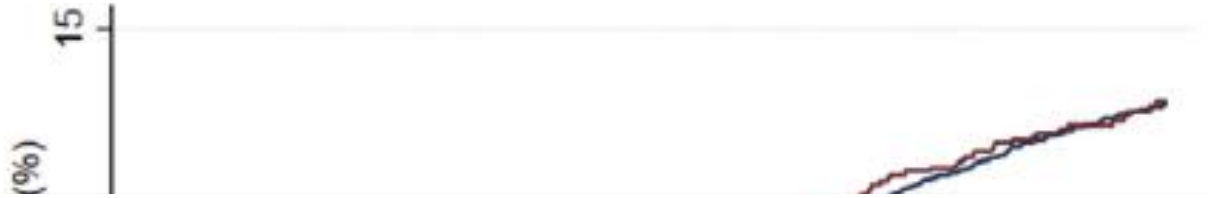


IMRT vs 3D Conformal Radiotherapy



Comparison of Treatment-Related Toxicity With Hypofractionated or Conventionally Fractionated Radiation Therapy for Prostate Cancer: A National Population-Based Study

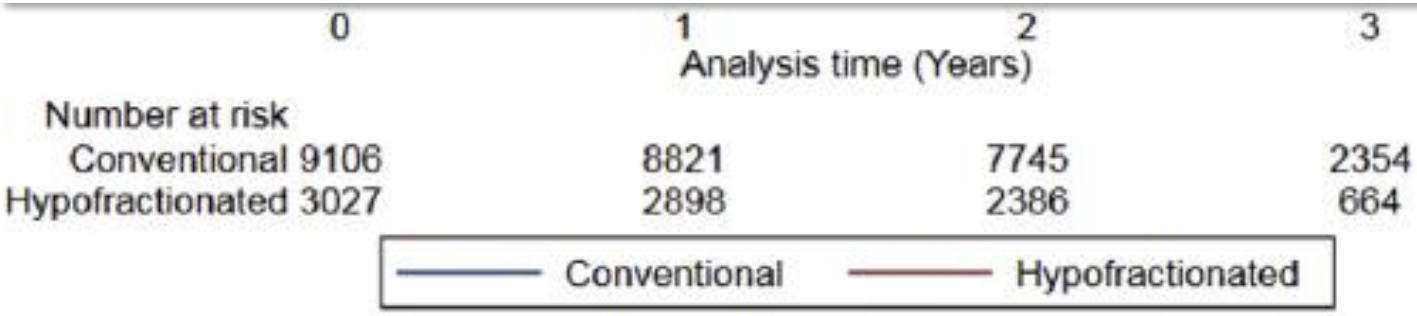
A. Sujenthiran †‡*, M. Parry †§*, J. Nossiter †, B. Berry †, P.J. Cathcart ‡, N.W. Clarke ||, H. Payne ¶, J. van der Meulen §, A. Aggarwal §**



original reports

Patient-Reported Functional Outcomes After Hypofractionated or Conventionally Fractionated Radiation for Prostate Cancer: A National Cohort Study in England

Julie Nossiter, PhD[1,2]; Arunan Sujenthiran, MD[2]; Thomas E. Cowling, PhD[1]; Matthew G. Parry, MBChB, MSc[2]; Susan C. Charman, MSc[1]; Paul Cathcart, MD[3]; Noel W. Clarke, MBBS, ChM[4,5]; Heather Payne, MBBS, MD[6]; Jan van der Meulen, PhD[1]; and Ajay Aggarwal, MD, PhD[7,8]



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Clinical Investigation

Toxicity of Pelvic Lymph Node Irradiation With Intensity Modulated Radiation Therapy for High-Risk and Locally Advanced Prostate Cancer: A National Population-Based Study Using Patient-Reported Outcomes

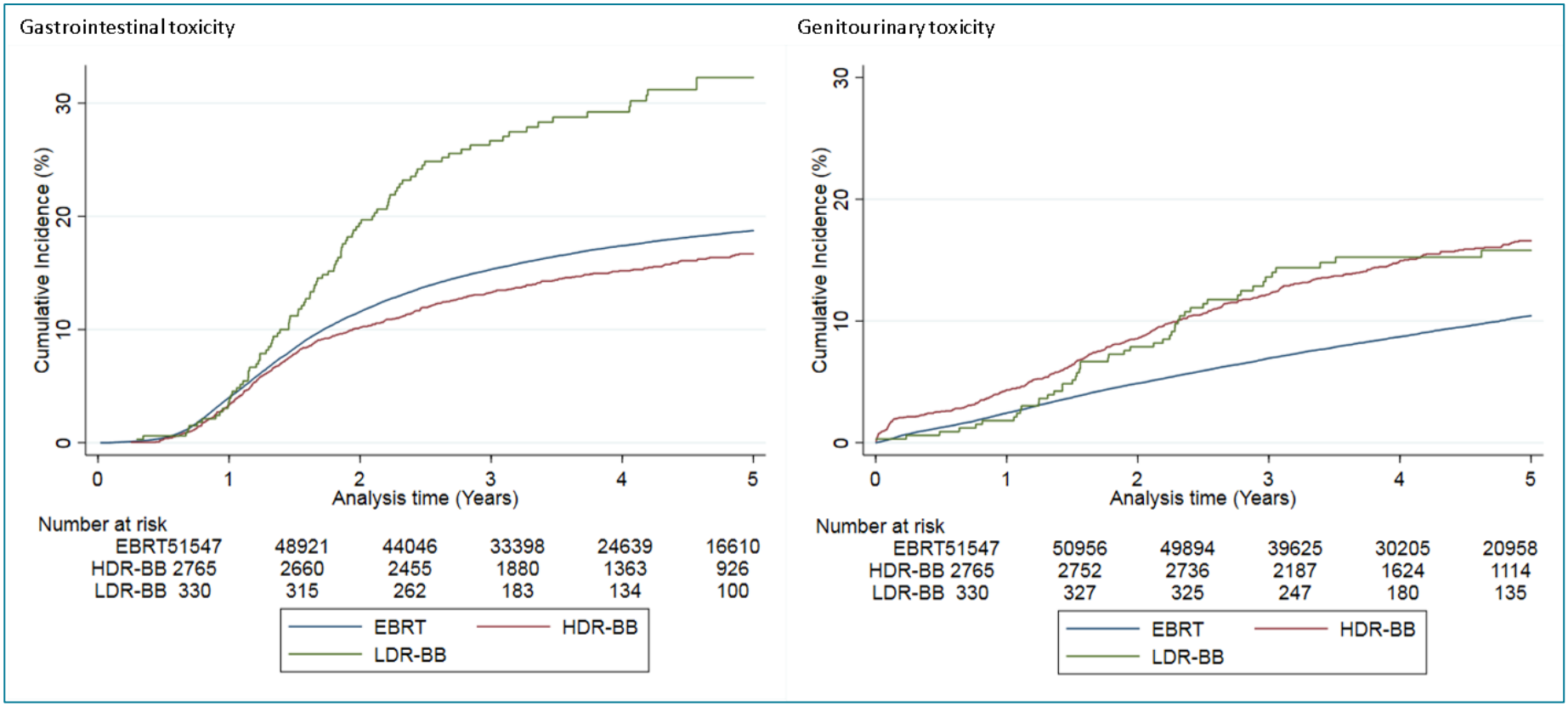
Matthew G. Parry, MSc,*,† Julie Nossiter, PhD,† Thomas E. Cowling, PhD,* Arunan Sujenthiran, MD,† Brendan Berry, MBBS,*,† Paul Cathcart, MD,‡ Noel W. Clarke, ChM,§ Heather Payne, FRCP, FRCR,‖ Jan van der Meulen, PhD,* and Ajay Aggarwal, PhD¶,#

original report

Treatment-Related Toxicity Using Prostate-Only Versus Prostate and Pelvic Lymph Node Intensity-Modulated Radiation Therapy: A National Population-Based Study

Matthew G. Parry, MSc[1,2]; Arunan Sujenthiran, MD[2]; Thomas E. Cowling, PhD[1]; Julie Nossiter, PhD[2]; Paul Cathcart, MD[3]; Noel W. Clarke, ChM[4]; Heather Payne, FRCP, FRCR[5]; Jan van der Meulen, PhD[1]; Ajay Aggarwal, PhD[3,6]

Brachytherapy Boost



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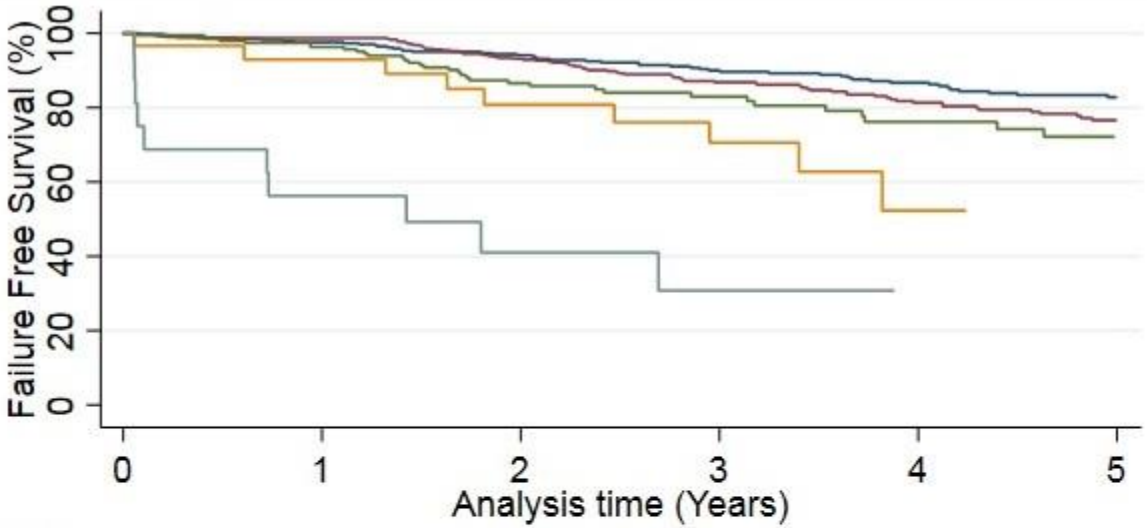

Number at risk

ISUP GG 1	392	351	298	243	190	141
ISUP GG 2	625	536	390	269	176	126
ISUP GG 3	196	168	110	74	45	30
ISUP GG 4	30	24	17	13	5	4
ISUP GG 5	16	8	5	3	2	2

Abbreviation: ISUP CGG – International Society of Urological Pathology grade group

Summary

- Outcome reporting can support quality improvement
- Standardised coding template maintains objectivity…

  …PROMs adds depth
- Low cost for what it can deliver but must be done robustly (3 yrs to develop) and continues to be iterated
- High impact comparative effectiveness research

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