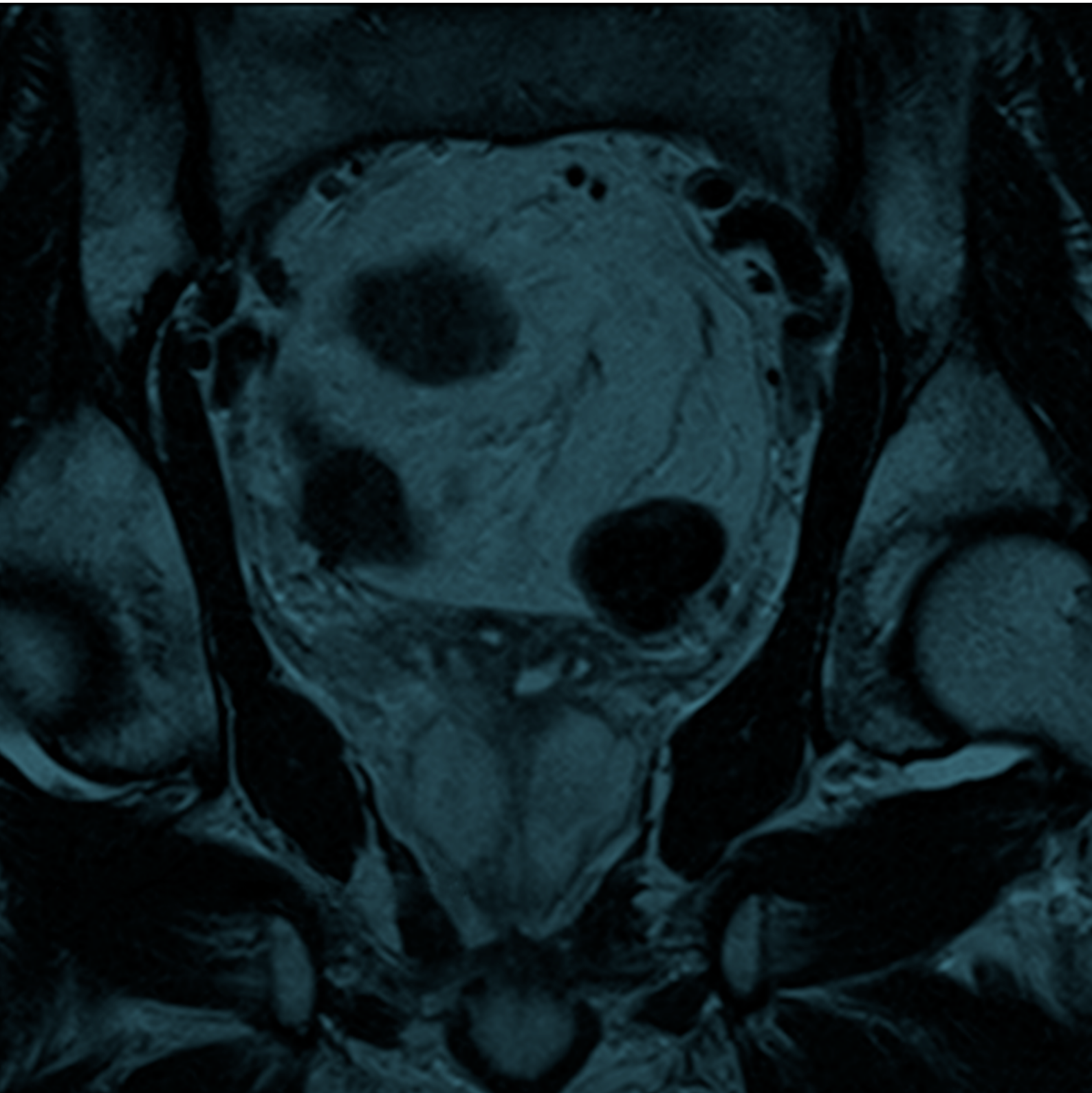
NPCA
National Prostate Cancer Audit

Annual Report 2017

Results of the NPCA Prospective Audit in England and Wales for men diagnosed from 1 April 2015 - 31 March 2016



National Prostate Cancer Audit

Fourth Year Annual Report – Results of the NPCA Prospective Audit in England and Wales for men diagnosed 1 April 2015 – March 2016

London: The Royal College of Surgeons of England, 2017.

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The Royal College of Surgeons of England (RCS) is an independent professional body committed to enabling surgeons to achieve and maintain the highest standards of surgical practice and patient care. As part of this it supports Audit and the evaluation of clinical effectiveness for surgery.

The NPCA is based at the The Clinical Effectiveness Unit (CEU). The CEU is an academic collaboration between The Royal College of Surgeons of England and the London School of Hygiene and Tropical Medicine, and undertakes national clinical audits and research. Since its inception in 1998, the CEU has become a national centre of expertise in methods, organisation, and logistics of large-scale studies of the quality of surgical care. The CEU managed the publication of the NPCA Annual Report, 2015.

In partnership with:

The British Association of Urological Surgeons (BAUS) was founded in 1945 and exists to promote the highest standards of practice in urology, for the benefit of patients, by fostering education, research and clinical excellence. BAUS is a registered charity and qualified medical practitioners practising in the field of urological surgery are eligible to apply for membership. It is intended that this website will be a resource for urologists, their patients, other members of the healthcare team and the wider public.

The British Uro-oncology Group (BUG) was formed in 2004 to meet the needs of clinical and medical oncologists specialising in the field of urology. As the only dedicated professional association for uro-oncologists, its overriding aim is to provide a networking and support forum for discussion and exchange of research and policy ideas.

National Cancer Registration and Analysis Service (NCRAS), Public Health England collects patient-level data from all NHS acute providers and from a range of national data feeds. Data sources are collated using a single data processing system ('Encore') and the management structure is delivered through eight regional offices across England.

The NCRAS is the data collection partner for the NPCA.

Commissioned by:

The Healthcare Quality Improvement Partnership (HQIP) is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. Its aim is to promote quality improvement, and in particular to increase the impact that clinical audit has on healthcare quality in England and Wales. HQIP holds the contract to manage and develop the National Clinical Audit Programme, comprising more than 30 clinical audits that cover care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual audits, also funded by the Health Department of the Scottish Government, DHSSPS Northern Ireland and the Channel Islands.

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Acronym list

American Society of Anaesthesiologists (ASA) score

Clinical nurse specialist (CNS)

Clinical Effectiveness Unit (CEU)

Cancer Outcomes and Services Dataset (COSD)

Cancer Information System for Wales (Canisc)

Classification of Operations and Procedures version 4 (OPCS-4)

English national Cancer Data Repository (NCDR)

External beam radiation therapy (EBRT)

Healthcare Quality Improvement Partnership (HQIP)

Hospital Episode Statistics (HES)

Intensity modulated radiotherapy (IMRT)

Minimum dataset (MDS)

Multi-parametric magnetic resonance imaging (mpMRI)

Multi-disciplinary teams (MDT)

National Institute for Health and Care excellence (NICE)

National Prostate Cancer Audit (NPCA)

National Cancer Registration and Analysis Service (NCRAS)

Public Health England (PHE)

Patient reported experience measures (PREMs)

Patient reported outcomes measures (PROMs)

Prostate specific antigen (PSA)

Quality of Life (QoL)

Radiotherapy dataset (RTDS)

Radical prostatectomy (RP)

Specialist multi-disciplinary team (sMDT)

Transrectal ultrasound biopsy (TRUS)

Tumour, nodes, metastases (TNM) staging system

University Health Board (UHB)

Welsh Cancer Intelligence and Surveillance Unit (WCISU)

Acknowledgements

The National Prostate Cancer Audit (NPCA) is commissioned by the Healthcare Quality Improvement Partnership (HQIP) and funded by NHS England and the Welsh Government as part of the National Clinical Audit and Patient Outcomes Programme. The audit is a collaboration between the Clinical Effectiveness Unit (CEU) at the Royal College of Surgeons of England (RCS), the British Association of Urological Surgeons (BAUS) and the British Uro-oncology Group (BUG).

The NPCA Project Team would like to thank all men in England and Wales who are currently completing the NPCA Patient Survey and for sharing their views on the quality of care and the impact of radical treatment on their daily lives.

The Project Team would like to thank all urological and uro-oncological colleagues, and their clinical and non-clinical teams at NHS Trusts in England and Health Boards in Wales who collected and submitted data for the audit. Your support is key to enabling the NPCA to evaluate the care that men receive following a diagnosis of prostate cancer in England and Wales and whether this care reflects recommended guidelines and quality standards. For the first time, the NPCA compares NHS Providers in England identifying any potential outlying performance related to both short-term and medium-term treatment outcomes following radical treatment.

A report summarising the key results in a patient friendly format will be published in Spring 2018.

We are grateful to the NPCA data collection partners including the National Cancer Registration and Analysis Service (NCRAS), Public Health England (PHE) [*] and the Wales Cancer Network, Public Health Wales for supporting NPCA data submissions from Trusts and Health Board and for supplying data for this report.

We would like to thank BAUS and BUG for their continued professional guidance and for raising awareness amongst urological and uro-oncological colleagues.

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[*] Data for the NPCA in England is based on patient-level information collected by the NHS, as part of the care and support of cancer patients. The data is collated, maintained and quality assured by the National Cancer Registration and Analysis Service, which is part of Public Health England.

Foreword

This fourth Annual Report from the National Prostate Cancer Audit (NPCA) presents current data regarding prostate cancer care in England and Wales for men diagnosed between 1st April 2015 and 31st March 2016. For the first time, we report on the performance of NHS Providers across the patient pathway, from diagnosis through to the outcomes of treatment.

Using previously developed performance indicators, we describe the variation in disease presentation. In England and Wales, the proportion of men diagnosed with metastatic disease at presentation has stabilised compared with previous years. However, there is some variation between providers and further work is required to understand the potential causes of late presentation.

The trends we have recorded are very encouraging. These show that the focusing of complex prostate cancer surgery on larger units has continued, as has the use of mpMRI scanning and transperineal biopsy. There are also encouraging trends in treatment allocation. The number of men with locally advanced prostate cancer who receive curative primary treatment is still going up, although there is some regional variation. This is very positive news for healthy older men, who we know have the potential for long-term cancer cure with multimodal therapies. The NPCA will provide more detailed information on the types of multimodality therapy received by these men, including information about treatment delivery and potential side-effects, and will show whether the opportunities for such treatments are in line with current recommendations.

The data from the NPCA also demonstrates that the number of men with low-risk, localised disease receiving radical therapies continues to reduce over time and that more men are now being managed safely with active surveillance. Further work needs to be done to evaluate the treatment pathway for these men to be sure how they fare on surveillance, what their surveillance pathway is like and how effective it is, and we will study whether or not they are being offered balanced information regarding active surveillance as part of their initial counselling and in relation to their intervention treatment options.

In this report, for the first time, the NPCA presents validated performance indictors capturing treatment-related toxicity, which allow the quality of radical treatments delivered nationally to be measured and compared between providers and enabling areas where quality improvement is required to be identified. Within two years of undergoing radical treatment, one in ten men experience at least one severe genitourinary complication after undergoing radical prostatectomy, or a severe gastrointestinal complication following external beam radiotherapy. These findings from the NPCA further demonstrate the importance of appropriate counselling of patients regarding potential treatment-related toxicity and the provision of support services beyond the immediate post-treatment period. Encouragingly, no outlying performance was detected for these medium-term indicators.

Key to the success of the NPCA is the collection of a broad range of data and we are grateful to everyone involved including Trust and Health Board teams, in addition to the NPCA data collection partners in England and Wales, the National Cancer Registration and Analysis Service (NCRAS) and the Wales Cancer Network. We are also grateful to the Clinical Effectiveness Unit at the Royal College of Surgeons of England and the NPCA team for their analysis and interpretation of the collected data and for their management of the Audit.

Most importantly, we are particularly grateful to the men with prostate cancer who have, or who are currently completing the patient survey. We are delighted that the patient survey has recently re-started in England and been launched in Wales. In addition to providing a unique insight into the effects of radical treatments on men's lives, men currently on active surveillance are also providing their insights regarding treatment options and their quality of life. We look forward to presenting these findings in a future report.

The value of the annual report is dependent on the quality of the data submitted by each NHS team. Data collection in Wales continues to achieve a high level of data completeness indicating that clinical sign-off is facilitating this achievement. Although we are encouraged by improvements in data collection in England enabling more men to be risk-stratified, improvements are still required in other key data items including ASA score, performance status and key bespoke NPCA specialist surgery and radiotherapy data items that are unavailable from other national data collections. We encourage colleagues to review their local data completeness and to develop strategies to improve data quality across the patient pathway.

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Urological Clinical Lead representing the British Association of Urological Surgeons

Heather Payne
Oncological Clinical Lead representing the British Uro-oncology Group

Executive Summary

Background

Prostate cancer is the most frequently diagnosed solid cancer (over 40,000 new cases each year) and the second most common cause of cancer-related death in men in the UK.[1] The National Prostate Cancer Audit (NPCA) was commissioned by the Healthcare Quality Improvement Partnership (HQIP)[2] and funded by NHS England and the Welsh Government with the aim of assessing the process of care and its outcomes in all men diagnosed with prostate cancer in England and Wales. This is the fourth Annual Report (2017) of the NPCA.

The NPCA is a collaboration between the Clinical Effectiveness Unit (CEU) at the Royal College of Surgeons of England, the British Association of Urological Surgeons (BAUS) and the British Uro-Oncology Group (BUG). In partnership with the National Cancer Registration and Analysis Service (NCRAS), Public Health England, and the Wales Cancer Network, Public Health Wales, the Audit has collected a large body of data from multiple sources including Trust/Health Board data submissions and national datasets. The NPCA presents analyses of these data, in this and previous reports, to provide information regarding the type and extent of prostate cancer and the quality of prostate cancer services and treatment in England and Wales. In this 2017 report, for the first time, the NPCA presents a provider-level comparison of treatment outcomes in England.

NPCA prospective audit data collection

This fourth Annual Report presents results of the prospective audit for men diagnosed with prostate cancer between 1st April 2015 and 31st March 2016 in England and Wales.

Firstly, we report on the participation of NHS providers, and the completeness and quality of the key NPCA data items. Secondly, we present national-level demographic information on patients diagnosed with prostate cancer over the same date range, key aspects of the diagnostic and staging process they underwent and the treatments they received.

Thirdly, using previously developed performance indicators we describe the variation in disease presentation across NHS providers in England and Wales (NPCA Annual Report 2015) and treatment allocation for England only.

Finally, for England only, we present performance indicators related to short-term treatment outcomes for men undergoing radical prostatectomy (NPCA Annual Report 2015), and two new validated performance indicators related to medium-term genitourinary toxicity following radical prostatectomy and medium-term gastrointestinal toxicity following radical external beam radiotherapy (EBRT)[3,4].

This will be the first NPCA report to compare NHS providers in England identifying any potential outlying performance related to both "short-term" and "medium-term" treatment outcomes following adjustment for case-mix factors. These performance indicators will enable future comparison of provider performance overtime. Currently, we are not able to present a similar comparison of NHS providers in Wales due to delays in the availability of Patient Episode Database for Wales (PEDW) data during this reporting period. As a result, performance indicators relate to England only unless otherwise stated.

The report is primarily written for clinicians, providers of prostate cancer services, commissioners and health care regulators. A version presenting the results to patients and the wider public is being produced separately and will be available on the NPCA's website (www.npca.org.uk) in Spring 2018.

Prospective Audit: Key Findings

NHS Provider participation and data quality

- All NHS Trusts and Health Boards in England and Wales participated and submitted data to the NPCA in this audit period.
- Data-completeness of staging items has continued to improve and as a result we were able to determine disease status and allocate a provider in 90% of men in England and 98% of men in Wales. However, whilst important pre-treatment data-items such as performance status and American Society of Anaesthesiologists (ASA) score were 100% in Wales, they remain poorly completed (34% and 45%, respectively) in England.
- Although we have successfully determined key treatment-related information from alternative linked data-sources such as Hospital Episode Statistics and the National Radiotherapy Dataset, poor completeness of treatment-specific data items only available in the NPCA dataset (e.g. planned type of image-guidance for EBRT, nerve-sparing status of surgery and androgen deprivation therapy information) remains a concern in England. In Wales, data-completeness of these data-items is also much higher.

[1] Cancer Research UK, Prostate Cancer Statistics 2014

[2] The Healthcare Quality Improvement Partnership (HQIP) is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies. www.hqip.org.uk/national-programmes

[3] Sujenthiran A, Charman S et al. Quantifying severe urinary complications after radical prostatectomy: the development and validation of a surgical performance indicator using hospital administrative data. BJU international. 2017;doi:10.1111/bju.13770 (Epub ahead of print)

[4] Sujenthiran A, Nossiter J et al. National population-based study comparing treatment-related toxicity in men who received Intensity-modulated versus 3D-Conformal Radical Radiotherapy for prostate cancer. Int J Radiat Oncol Biol Phys. 2017;doiI: 10.1016/j.ijrobp.2017.07.040 (Epub ahead of print)

Prostate Cancer Diagnostics

- Although transrectal ultrasound (TRUS) biopsy remains the most commonly used method for diagnosis, there is an increase in the use of the transperineal biopsy technique.
- More men are receiving multiparametric MRI (mpMRI) in England and Wales, and the use of pre-biopsy MRI continues to increase.

Performance Indicators

- The proportion of patients diagnosed with metastatic disease at presentation is 16% in England and 13% in Wales. In England and Wales, these proportions remain stable compared to 2014-15 data with some variation between providers that will need further work to understand potential causes of late-presentation.
- The level of potential "over-treatment"[5] (proportion of men with low-risk localised disease undergoing radical therapy) was 8% in England. This is an improvement compared to 2014-15 data when 12% were potentially over-treated.
- The level of potential "under-treatment"[6] of locally advanced disease is measured based on the proportion of men with locally advanced disease undergoing radical therapy. In England, 73% of men in this cohort received radical treatment which is also an improvement compared to 61% in 2014-15 data.
- The proportion of men in England with an emergency re-admission within 90 days of radical prostatectomy was published for the first time using a risk-adjustment model. The national average was 4% which is an improvement from 5% in 2014-15 data.
- We also evaluated medium-term complications after radical treatment using a risk-adjustment approach. In England, we found about 1 in 10 men experienced a severe genitourinary complication (related to the urinary tract rather than sexual dysfunction) within 2 years of radical prostatectomy. Following radical EBRT, about 1 in 10 men experienced a severe gastrointestinal complication within the same time-frame. Although variation existed in the occurrence of complications between centres, there were no centres with outlying performance after adjustment for differences in age or comorbidities.

Key Messages

1. All NHS providers of prostate cancer care in England and Wales are now participating in the NPCA. At present, data completeness in England does not reach the high level achieved in Wales.

2. The proportion of men presenting with metastatic disease at diagnosis between 1st April 2015 and 31st March 2016 remains stable in England and Wales. However, there is some variation and work is required to understand potential causes of late presentation.

3. Changes in diagnostic and staging practice over time are apparent. The use of multiparametric MRI prior to biopsy in England is increasing and there is evidence of increasing uptake of 'newer' biopsy techniques such as the transperineal approach in England and Wales.

4. The "potential over-treatment" of men with low-risk disease in England has further declined after reaching a plateau in 2015 and 2016 indicating that more men may have the option of active surveillance in keeping with recent guidance.

5. The trend towards a reduction in the "potential under-treatment" of men with locally advanced disease continues suggesting that fewer men are being denied the opportunity of potentially curative treatment.

6. Within two years of undergoing radical treatments, one in ten men experience at least one severe genitourinary complication after undergoing radical prostatectomy, or a severe gastrointestinal complication following external beam radiotherapy.

7. For the first time, the NPCA uses a risk-adjusted approach to compare the performance of NHS treatment centres in England and identify outlying performance.

[5] NICE, 2015. Prostate Cancer. NICE Quality Standard 91. Quality Statement 1: 'men with low-risk prostate cancer for whom radical treatment is suitable are also offered the option of active surveillance'

[6] NICE, 2015. Prostate Cancer. NICE Quality Standard 91. Quality Statement 3: 'men with intermediate- or high-risk localised prostate cancer who are offered non-surgical radical treatment are offered radical radiotherapy and androgen deprivation therapy in combination.'

Implications for the care of men with prostate cancer

- **Continued improvement in the data-completeness of key data items is still required.** This includes both important risk-adjustment factors (performance status and ASA) in addition to bespoke NPCA treatment-related data items ("planned type of image-guidance for EBRT", "planned duration of neoadjuvant/adjuvant androgen deprivation therapy" and "radical prostatectomy margin status") that are currently unavailable from other nationally collected data sources.

- **The high level of data completeness for Welsh NPCA data** was very encouraging and is likely to be due to the mandated input of a health care professional in the clinical-sign off. Similar strategies engaging health care professionals may help to improve data completeness in England.

- **The increase in men receiving multiparametric MRI prior to biopsy is an important finding.** The use of pre-biopsy MRI has also been shown to be gaining momentum in England however a challenge could be the limited capacity issues within healthcare settings in the NHS.

- **TRUS remains the most commonly used biopsy technique** though the slight increased use of the transperineal approach reflects the improved and more precise methods of diagnosis and facilitation for surveillance.

- **The trend seen towards a reduction in men with low-risk disease being "potentially over-treated" is encouraging** and suggests findings from studies such as PIVOT[7] and Protect[8] are being disseminated into national practice. There will always be patients who will opt for treatment however safe-guards should be in place to ensure all men are appropriately counselled on active surveillance.

- **The trend seen towards a reduction in the potential "under-treatment" of locally advanced prostate cancer is encouraging and is in line with current guidelines.** There is strong evidence that EBRT to the prostate, combined with hormone therapy before and after, improves survival. The evidence for the use of surgery in this setting is less strong but some men are likely to benefit. A concern of the NPCA has been that some healthy older men may be at risk of under-treatment. Further work is required to understand what factors contribute to some men in this cohort receiving treatment and others not.

- **Validated performance indicators capturing treatment-related toxicity** allow the quality of radical prostatectomy and EBRT delivered nationally to be measured and compared between providers, enabling areas where quality improvement is required to be identified.

- **Patients must be appropriately counselled regarding potential treatment-related toxicity** and have access to support services beyond the immediate post-treatment period.

[7] Wilt TJ, Brawer MK et al. Radical prostatectomy versus observation for localized prostate cancer. N Engl J Med 2012:367:203-213

[8] Hamdy FC, Donovan JL et al. 10-Year outcomes after monitoring, surgery, or radiotherapy for localized prostate cancer. N Engl J Med 2016;375:1415-1424

Recommendations

For prostate cancer teams (local and specialist MDTs) within NHS Trust/Health Boards

- Review local data completeness and ensure that data quality issues are identified and urgently addressed across the patient pathway.
- Review performance indicators for your Trust/ Health Board and implement changes to local practices where required in keeping with the NPCA 'Implications for clinical practice' and clinical guidelines/quality standards.[9,10]

For commissioners and health care regulators

- Review the performance indicators for your region to identify areas where improvements can be made.
- Work with your local NHS providers to develop strategies to reduce variation in the care provided to patients.

Future Plans for the NPCA

- The NPCA will continue engagement with Trusts to achieve improved overall and key data-item completeness.
- The Audit will continue to perform risk-adjusted short-term and medium-term outcome metrics in England to compare provider performance overtime. In Wales, the Audit will use linked PEDW data to perform similar measures in the next Annual Report.
- The Audit will publish provider-level treatment outcome performance indicators as part of the Clinical Outcomes Programme (COP) in Q1 2018.
- The NPCA will work with the Care Quality Commission (CQC) and Healthcare Inspectorate Wales (HIW), the independent regulators of health and adult social care in England and Wales respectively, to explore the utilisation of NPCA data and key measures to inform their inspection processes.
- Further to the recent re-start of the NPCA patient survey, the Audit will continue to gather information directly from patients about the benefits and side-effects of treatment.
- The findings from the NPCA will continue to be presented at key professional conferences and stakeholder meetings.

[9] NICE, 2014: https://www.nice.org.uk/guidance/cg175

[10] NICE, 2015: https://www.nice.org.uk/guidance/qs91

NPCA Annual Report 2017 Summary

PARTICIPATION & DATA COLLECTION

All NHS Providers of prostate cancer care in England and Wales are participating in the audit

At present, data completeness in England does not reach the high level achieved in Wales

The report covers men diagnosed between 1st April 2015 – 31st March 2016

41,739 men were diagnosed with prostate cancer in England and Wales

55% of men were 70 years or older

PROSTATE CANCER DIAGNOSTICS

- **Multiparametric MRI is increasingly being used prior to prostate biopsy**
- **Transrectal ultrasound remains the most common biopsy technique, although newer transperineal techniques are being recorded**

DISEASE PRESENTATION

England **16%** **13%** Wales

The proportion of men presenting with metastatic disease at diagnosis is stable

TREATMENT ALLOCATION IN ENGLAND

8% of men with low-risk, localised disease underwent radical treatment and are potentially 'over-treated'

This compares favourably with **12%** of men in 2014/15

Fewer men with high-risk localised/locally advanced disease were potentially 'under-treated' in 2015/16

73% of these men received radical treatment, which is an improvement compared with

61% of men in 2014/15

However, regional variation in potential 'over-treatment' and/or 'under-treatment' is apparent

TREATMENT OUTCOMES IN ENGLAND

4% proportion of men readmitted to hospital as an emergency within 90 days following radical prostatectomy

Within 2 years of treatment **1 in 10** men experience

a severe genitourinary complication following radical prostatectomy

or

a severe gastrointestinal complication after radical external beam radiation

For the first time, the NPCA publishes a risk-adjusted comparison of these validated short-term and medium-term performance indicators by NHS provider in England

RECOMMENDATIONS

Prostate cancer teams (local and specialist MDTs) within NHS Trusts/Health Boards

- Ensure that data quality issues are identified and urgently addressed across the patient pathway
- Review provider-level performance indicators and implement changes to local practices where required in keeping with clinical guidelines and NPCA 'Implications for the care of men with prostate cancer'

Commissioners and Health care regulators

- Review regional results to identify areas where improvements can be made
- Work with local NHS providers to develop strategies to reduce variation in the care provided to patients

NPCA
National Prostate Cancer Audit

References NICE, 2014. Prostate Cancer. Clinical Guideline 175. https://www.nice.org.uk/guidance/cg175 ; NICE, 2015. Prostate Cancer. NICE Quality Standard 91. https://www.nice.org.uk/guidance/qs91

1. The National Prostate Cancer Audit (NPCA): Introduction

1.1 Background

Prostate cancer is the most frequently diagnosed solid cancer (over 40,000 new cases each year) and the second most common cause of cancer-related death in men in the UK.[11] Prostate cancer is highly heterogeneous and follows a variable course in different patients, ranging from clinically insignificant, slow-growing, localised tumours to clinically significant, aggressive, fast-growing tumours. As a result of its variable nature in different patients, the management of prostate cancer is complex and requires a multidisciplinary approach.

An increasing number of men are living with a diagnosis of low-risk, localised disease without evidence of spread beyond the prostate, which may not become clinically evident in their lifetime. A key concern is that the majority could be suitably managed with active surveillance, a programme of careful monitoring to detect early disease progression.

In contrast, men with high-risk localised/locally advanced disease, in particular healthy older men, may be under-treated and placed on hormonal treatments alone denying them more radical local treatments and the potential of a long-term cancer cure.

The National Prostate Cancer Audit (NPCA) was commissioned by the Healthcare Quality Improvement Partnership (HQIP) and funded by NHS England and the Welsh Government in response to the need for better information about the quality of prostate cancer services and care provided in England and Wales.

The NPCA is a collaboration between the Clinical Effectiveness Unit (CEU) at the Royal College of Surgeons of England, the British Association of Urological Surgeons (BAUS) and the British Uro-Oncology Group (BUG). The National Cancer Registration and Analysis Service (NCRAS), Public Health England, and the Wales Cancer Network, Public Health Wales, act as the Audit's data collection partners.

1.2 Aim and objectives

The aim of the NPCA is to assess the process of care and its outcomes in men diagnosed with prostate cancer in England and Wales.

The key objectives of the Audit are to investigate:

- Service delivery and organisation of care in England and Wales.
- The characteristics of patients newly diagnosed with prostate cancer.
- The diagnostic and staging process and planning of initial treatment.
- The initial treatments that men received.
- The experiences of men receiving care and their health outcomes 18 months after diagnosis
- Overall and disease-free survival

The NPCA determines whether the care received by men diagnosed with prostate cancer in England and Wales is consistent with current recommended practice, such as those outlined in the National Institute for Health and Care Excellence (NICE) Guidelines and Quality Standards[12,13] (see box) as well as to provide information to support healthcare providers, commissioners and regulators in helping improve care for patients.

NICE Quality Standards, 2015

1. QS1: men with prostate cancer have a discussion about treatment options and adverse effects with a named nurse specialist.
2. QS2: men with low-risk prostate cancer for whom radical treatment is suitable are also offered the option of active surveillance.
3. QS3: men with intermediate- or high-risk localised prostate cancer who are offered non-surgical radical treatment are offered radical radiotherapy and androgen deprivation therapy in combination.
4. QS4: men with adverse effects of prostate cancer treatment are referred to specialist services.
5. QS5: men with hormone-relapsed metastatic prostate cancer have their treatment options discussed by the urological cancer MDT.

Although the NPCA started prior to the publication of the NICE Quality Standards, the Audit provides results that can be used to evaluate to what extent prostate cancer care providers meet most of these standards.

The NPCA patient survey asks about how men were informed about their treatment options, how treatment decisions were made and to what extent they had access to a named clinical nurse specialist (CNS) (QS1). Data collection has recently restarted further to a year-long pause in response to the implementation of type-II objections by NHS Digital.[14] These results will be published in a future report.

[11] Cancer Research UK, Prostate Cancer Statistics 2014
[12] NICE, 2014: https://www.nice.org.uk/guidance/cg175
[13] NICE, 2015: https://www.nice.org.uk/guidance/qs91
[14] http://content.digital.nhs.uk/article/7092/Information-on-type-2-opt-outs

In this report, we present results for indicators of possible over-treatment in men with low-risk disease and under-treatment in men with locally advanced disease (QS2 and QS3).

In our organisational survey, originally performed in 2014 and recently updated in 2017 (see NPCA website), we describe whether providers of cancer services have specialist services on-site (QS4).

Prostate cancer has a protracted natural course and with further follow-up of patients in later years, the NPCA will assess to what extent the treatment options of men with hormone-relapsed metastatic cancer have been discussed at an MDT (QS5).

In addition to the results directly linked to the NICE Quality Standards, the NPCA reports on aspects of care that capture ongoing developments in the way men with prostate cancer are being assessed and treated. The Audit also provides evidence on the adoption of newer technologies (use of multiparametric MRI scanning before the prostate biopsy and the type of biopsy used) and treatments (robotic-assisted prostatectomy and intensity-modulated radiotherapy) as well as the impact on patient outcomes.

1.3 Previous Annual Reports

Since its start in 2013, the NPCA has published three Annual Reports (see box). In these reports, we have published information for all individual NHS providers in England and Wales about their participation, case ascertainment, and data quality.

Previous NPCA Annual Reports

The first Annual Report, published in 2014,[15] presented the results from:

- An organisational audit of service delivery and prostate cancer care in England and Wales.
- An analysis of existing data on patients diagnosed between 1 April 2006 and 31 March 2008 in England to provide comparative baseline data for the prospective audit

The 2015 NPCA Annual Report,[16] presented the following results:

- An analysis of existing data for men diagnosed with prostate cancer between 1 April 2010 and 31 March 2013 in England, demonstrated a decrease in the percentage of men with low-risk prostate cancer who received radical treatment from 28% between 2006 and 2008 to 13% between 2010 and 2013
- An increase in the percentage of men with locally advanced disease who had radical treatment from 27% to 53% in corresponding time periods.

The 2016 Annual Report,[17] reported on prostate cancer services provided by individual NHS providers to men diagnosed between 1 April 2014 to 31 March 2015 in England and 1 April to 30 September in Wales, and related outcomes, including:

- Increases in the use of multiparametric MR imaging and new biopsy methods.
- Considerable variation among NHS providers in the level of potential over-treatment of patients with low-risk disease and under-treatment of those with high-risk / locally advanced disease.
- Variation among providers in short-term outcomes after radical prostatectomy in terms of length of stay and emergency readmission within 90 days
- Variation among providers in occurrence of a urinary complication one year after radical prostatectomy.

In addition, this report presented patient-reported outcomes and experiences reported by men diagnosed in English NHS between April and October 2014 who had radical treatment.

- A high response rate was achieved indicating successful engagement of patients with the patient survey (77%).
- Most men reported a very positive experience of care after radical prostate cancer treatment in England with 90% rating their care as 8 or above on a scale ranging from 0 ('very poor') to 10 ('very good') with limited variation among providers.
- 85% of patients were supported by a named clinical nurse specialist.
- Men undergoing radical treatment (surgery or radiotherapy) experience significant sexual dysfunction.

[15] First Year Annual Report – Organisation of Services and Analysis of Existing Clinical Data. NPCA, 2014.
[16] Second Year Annual Report – Further analysis of existing clinical data and preliminary results from the NPCA Prospective Audit. NPCA, 2015.
[17] Third Year Annual Report – Results of the NPCA Prospective Audit and Patient Survey. NPCA, 2016.
These reports can be downloaded from the NPCA website: http://www.npca.org.uk/reports/

1.4 Annual Report 2017 overview and current status of the NPCA prospective audit

In this fourth Annual Report, we present the results for patients diagnosed between 1st April 2015 to 31st March 2016 in England and Wales including:

- Trust and Health Board participation in the NPCA, including data completeness and data quality
- The characteristics of all men newly diagnosed with prostate cancer, information regarding diagnosis and staging, and initial treatments in England and Wales
- The variation in disease presentation in England and Wales
- Finally, we report on the performance of NHS Providers in England across the patient pathway from diagnosis and treatment allocation to the outcomes following treatment.

For the first time, the NPCA presents validated performance indictors capturing treatment-related toxicity, which allow the quality of radical treatments delivered in England to be measured and compared between providers and enabling areas where quality improvement is required to be identified.

2. Results from the NPCA Prospective Audit in England and Wales

2.1 Introduction

The NPCA's prospective audit aims to assess the process of care and its outcomes in all men diagnosed with prostate cancer. Two specific areas of concern have been highlighted that relate to the management of patients with prostate cancer. Firstly, for patients with low-risk localised disease there are concerns that men may be receiving immediate radical therapy that may not improve outcomes ('are we over-treating patients that could be appropriately managed by active surveillance?'). Secondly, there are concerns about the availability and provision of multimodal radical therapy for patients with more advanced disease ('are we under-treating patients with locally advanced or high-risk localised disease?').

In this report, we present the results from the NPCA Prospective Audit for men diagnosed between 1st April 2015 to the 31st March 2016 for England and Wales including:

- We report on the participation of NHS providers, and the completeness and quality of the key NPCA data items submitted to the National Cancer Registration and Analysis Service (NCRAS), Public Health England and the Wales Cancer Network, Public Health Wales.
- We present demographic information on patients diagnosed with prostate cancer over the same date range, key aspects of the diagnostic and staging process they underwent and the treatments they received.
- Using previously developed performance indicators we describe the variation in disease presentation across NHS providers in England and Wales (NPCA Annual Report 2015) and treatment allocation for England only.
- For England only, we present performance indicators related to short-term treatment outcomes for men undergoing radical prostatectomy (NPCA Annual Report 2015)[18], in addition to two new validated performance indicators related to medium-term genitourinary toxicity following radical prostatectomy and medium-term gastrointestinal toxicity following radical external beam radiotherapy (EBRT).[19,20]

This will be the first NPCA report to compare NHS providers in England identifying any potential outlying performance related to both short-term and medium-term treatment outcomes following adjustment for case-mix factors. We are not currently able to present a similar comparison of NHS providers in Wales due to delays in the availability of Patient Episode Database for Wales (PEDW) data during this reporting period but the same performance indicators will be applied to this patient cohort in the future.

2.2 Methods

2.2.1 Inclusion criteria & Prospective Audit period

Patients are eligible for inclusion in the prospective audit if they are newly diagnosed with an ICD-10 diagnostic code of "C61" (malignant neoplasm of the prostate). The data collection period reported here includes men diagnosed between 1st April 2015 and the 31st March 2016 in England and Wales, which allows assessment of all short-term indicators. Medium-term indicators require longer follow-up (up to two years post-treatment) so the diagnostic period is earlier (between 1st April 2014 – 31st March 2015).

2.2.2 Data collection

The NPCA works with the National Cancer Registration and Analysis Service (NCRAS), Public Health England as a data collection partner in England, which collects patient-level data from all NHS acute providers and from a range of national data-feeds. This includes the Cancer Outcomes and Services Dataset (COSD), which specifies the data items to be submitted routinely by service providers via MDT electronic data collection systems to the National Cancer Data Repository (NCDR) on a monthly basis. Clinical sign-off of data submitted to NCRAS is not mandated in England.

The Wales Cancer Network (WCN), Public Health Wales is the NPCA's data collection partner in Wales however the data collection process in Wales differs from England. The NPCA dataset (section 2.2.3) is captured through a national system, Cancer Information System for Wales (Canisc), after identification by hospital cancer services and uploaded via electronic MDT data collection systems. Prior to submission of NPCA data to the WCN each patient record is validated, frequently by an MDT coordinator, and signed off by a designated clinician. Patient records are signed off when all key data items have been completed.

2.2.3 NPCA dataset

The audit collected data on the diagnosis, management and treatment of every patient newly diagnosed with prostate cancer and discussed at a MDT meeting in England from the 1st April 2015 and 31st March 2016. The NPCA dataset comprises three broad categories:

1. NPCA Minimum data set 1 (MDS-1): The first category of data items are collected for **all men newly diagnosed with prostate cancer** during the initial phase of management.
2. NPCA Minimum data set 2 (MDS-2): The second category of data items are collected for all patients who have **undergone radical prostatectomy**.

[18] Second Year Annual Report – Further analysis of existing clinical data and preliminary results from the NPCA Prospective Audit. NPCA, 2015: http://www.npca.org.uk/reports/

[19] Sujenthiran A, Charman S et al. Quantifying severe urinary complications after radical prostatectomy: the development and validation of a surgical performance indicator using hospital administrative data. BJU international. 2017;doi:10.1111/bju.13770 (Epub ahead of print)

[20] Sujenthiran A, Nossiter J et al. National population-based study comparing treatment-related toxicity in men who received Intensity-modulated versus 3D-Conformal Radical Radiotherapy for prostate cancer. Int J Radiat Oncol Biol Phys 2017;doiI: 10.1016/j.ijrobp.2017.07.040 (Epub ahead of print)

3. NPCA Minimum data set 3 (MDS-3): The third category of data items are collected for **all men for whom external beam radiation therapy or brachytherapy is planned with or without hormone deprivation therapy**.

A summary of the NPCA dataset collected for patients diagnosed between 1st April 2015 and 31st March 2016 can be found on the website.[21] These data are linked to other national datasets by NCRAS including Cancer Registration data, Hospital Episode Statistics (HES) data, the Office for National Statistics dataset (ONS) and the National Radiotherapy Dataset (RTDS) to produce the English dataset for analysis in the NPCA Annual Report.

The Welsh dataset currently comprises the NPCA dataset only as PEDW, ONS and RTDS data are currently unavailable from the Wales Cancer Network. The NPCA does not receive data from the cancer registry in Wales.

2.2.4 Level of reporting

It is recommended that the care of patients eligible for radical prostate cancer treatments should be coordinated by specialist MDTs.[22] These hubs are made up of one or more specialist cancer centres coordinating services for referring local Trust MDTs.

The arrangement of NHS Providers, both local and specialist MDTs, and the range of services they provide for the staging and management of prostate cancer was determined by the NPCA Organisational Audit. Data for England is presented in this chapter on a national level and at a specialist MDT level (Appendix 1a) with the exception of data specific to surgery (Appendix 2a) and radiotherapy (Appendix 3a) which are presented according to the individual specialist treatment centre.[23,24]

Further to the issues raised since the publication of the NPCA Annual Report 2016,[25] the NPCA team have worked with the NCRAS to determine the best way to allocate patients to the Trust where their prostate cancer was diagnosed. As a result of these investigations, it was agreed to use 'diagnosis date' and 'trust of diagnosis' according to the Cancer Registry to allocate a patient to a Trust at diagnosis.[26] Data for local diagnosing Trust MDTs can be found in Appendix 1a.

All data presented in this chapter for Wales are reported at diagnosing Health board level (Appendices 1b – 3b). Patients undergoing radical treatment may have treatment in a different Health Board to the one that they were diagnosed in. There is a standard pathway detailing which centre a patient will be treated at depending on their diagnosing Health Board.[23] However, it cannot be assumed that all patients followed this pathway.

2.2.5 Patient inclusion and data quality

In this year's report, a patient is considered to be included in the prospective audit in England if they have a record of newly diagnosed prostate cancer in the English cancer registry (Appendix 4a). In previous reports, we defined case-ascertainment in England as the number of NPCA records received divided by the number of expected prostate cancer cases according to the cancer registry. As we now include all men newly diagnosed with prostate cancer within the cancer registry in the NPCA, we no longer report case-ascertainment (as this is per definition 100%). The completeness of eight key data items in England and seven in Wales provides a marker of data quality.

Expected numbers of radical prostatectomy operations performed by surgical centres (MDS-2) were based on the presence of a "M61" OPCS-4[27] procedure code in the HES database linked to cancer registry (Appendix 4b). The expected numbers of external beam radiotherapy and brachytherapy treatments performed by radiotherapy/brachytherapy centres (MDS-3) were obtained from the National Radiotherapy Dataset (RTDS) linked to cancer registry for the same date range (Appendix 4c).

A patient is included in the prospective audit in Wales if a completed NPCA record was submitted and the Wales Cancer Network (WCN) can assign a patient to a diagnosing Health Board. The total expected number of cases was determined from the number of men newly diagnosed with prostate cancer in the Welsh Cancer Intelligence and Surveillance Unit (WCISU) between 1st January 2015 and 31st December 2015. WCISU were unable to provide exact numbers for the time frame of NPCA data collection. As only data for men with an NPCA record is available for analysis, case ascertainment for the Health Boards in Wales is presented, defined as the proportion of the expected number of patients for whom an NPCA record was submitted containing at least one NPCA tumour staging data item.

2.2.6 Definition of disease status and disease risk stratification

In England, men were assigned to a disease status category according to their TNM stage, "Gleason score of biopsy" and PSA using a previously developed algorithm (Appendix 5). TNM and "Gleason score of biopsy" are received from the cancer registry whilst PSA was from the COSD data-set as it is not routinely collected within the cancer registry.

In Wales, cancer stage was defined using "T category (pre-treatment)", "N category (pre-treatment)" and "M category (pre- treatment)". Where pre-treatment information was missing for T or N, the corresponding pathological staging items were used if available. All men were assigned to a

[21] http://www.npca.org.uk/prospective-audit-tools/

[22] NICE 2002. Improving outcomes in urological cancer.

[23] http://www.npca.org.uk/annual-report-2014/

[24] Organisation of Prostate Cancer Services in the English National Health Service. Aggarwal A, Nossiter J et al. Organisation of Prostate Cancer Services in the English National Health Service. Clin Oncol (R Coll Radiol) 2016;28(8):482-9

[25] https://www.npca.org.uk/content/uploads/2016/12/lessons-learnt-NPCA-AR2016.pdf

[26] https://www.npca.org.uk/annual-report-2016-2017/

[27] Classification of surgical operations and procedures (4th revised edn). OPCS: London, 1987.

disease status category according to their TNM stage, Gleason score and PSA using the algorithm (Appendix 5). All data items were collected as part of the NPCA dataset in Wales.

2.2.7 Definition of radical prostate cancer treatment

A patient was considered to have undergone radical prostate cancer therapy if he was identified as having received radical prostatectomy, radical external beam radiotherapy or brachytherapy.

In England, HES records were used to identify patients who had undergone **radical prostatectomy** using the OPCS-4 procedure code "M61". The RTDS data-item "treatment modality" was used to identify men who received **external beam radiotherapy** and/or **brachytherapy**. HES records were also used to identify brachytherapy patients, not identified in RTDS, using OPCS-4 procedure codes ("M706" + "X653" + "Y363 / M706 + "X653/ M712" +"X653"). HES and RTDS records provided the procedure date of the radical treatments. Patients were only considered to have undergone radical treatment as **primary prostate cancer treatment** if this procedure date was within 12 months of the diagnosis date.

2.2.8 Definition of NPCA performance indicators

We previously defined performance indicators relating to disease presentation, treatment allocation, and 'short-term' treatment outcomes. Four indicators were applied to prospective data from 1st April 2015 to 31st March 2016 and presented according to the current framework for delivery of prostate cancer care.

We have also developed and validated two further treatment outcome indicators, the first captures severe genitourinary toxicity following radical prostatectomy (RP)[28] and the second captures severe gastrointestinal (GI) toxicity following radical external beam radiotherapy (EBRT)[29]. These 'medium-term' indicators were applied to prospective data for men diagnosed 1st April 2014 to 31st March 2015 as longer follow-up is required (data available until 31st December 2016).

The indicators are summarised below:

Disease presentation

- ***Performance indicator 1: Proportion of men diagnosed with metastatic disease***. This process indicator provides information on the potential late diagnosis of prostate cancer. Men assigned to the mixed grouping of locally advanced or metastatic disease were excluded (see Appendix 5).

Data are presented at specialist MDT level in England and diagnosing Health Board level in Wales.

Treatment allocation to evaluate potential over- and under-treatment

- ***Performance indicator 2: Proportion of men with low-risk localised prostate cancer undergoing radical prostate cancer therapy***. This process indicator provides information about the "potential over-treatment" of men with low-risk prostate cancer.

- ***Performance indicator 3: Proportion of men with locally advanced disease receiving radical prostate cancer therapy.*** This process indicator provides information about "potential under-treatment" of men with locally advanced disease.

Data are presented at specialist MDT level in England. Only those men who could be allocated to a Trust at diagnosis were included in the analysis of disease presentation and treatment allocation performance indicators.

Outcomes of treatment: short-term

- ***Performance indicator 4: Proportion of patients who had an emergency readmission within 90 days of radical prostate cancer surgery***. This outcome indicator was derived from linkage with HES admissions. Emergency readmission may reflect that patients experienced a complication related to radical prostate cancer surgery after discharge from hospital.

Data are presented at RP centre level in England. Data are currently unavailable for these indicators in Wales.

Outcomes of treatment: medium-term

- ***Performance indicator 5: Proportion of patients experiencing at least one severe genitourinary (GU) complication within 2 years of radical prostatectomy***

  We used a coding-framework based on OPCS-4 procedure codes to capture genitourinary complications severe enough to require an intervention. These included complications of the urinary tract as opposed to those related to sexual dysfunction. Men with an associated diagnosis of bladder cancer (ICD-10 "C67" code) were excluded as their surveillance often requires interval cystoscopies which could be incorrectly captured as treatment of a complication of RP. Men who received adjuvant/salvage radiotherapy within the follow-up period were also excluded.

[28] Sujenthiran A, Charman S et al. Quantifying severe urinary complications after radical prostatectomy: the development and validation of a surgical performance indicator using hospital administrative data. BJU international. 2017;doi:10.1111/bju.13770 (Epub ahead of print)

[29] Sujenthiran A, Nossiter J et al. National population-based study comparing treatment-related toxicity in men who received Intensity-modulated versus 3D-Conformal Radical Radiotherapy for prostate cancer. Int J Radiat Oncol Biol Phys 2017;doiI: 10.1016/j.ijrobp.2017.07.040 (Epub ahead of print)

The overall proportion of men experiencing at least one genitourinary complication within two years was reported according to RP centres who perform at least 10 operations per year.

- ***Performance indicator 6: Proportion of patients experiencing at least one severe gastrointestinal (GI) complication within 2 years of radical external beam radiotherapy***

  We developed a coding-framework that used OPCS-4 procedure codes to capture interventions required to treat GI toxicity but also required the presence of specific ICD-10 diagnosis codes relating to GI toxicity. This approach was taken to exclude men who had GI interventions such as colonoscopy for reasons unrelated to radiotherapy, such as part of a screening programme. Men with an associated diagnosis of bladder cancer, those who received additional brachytherapy and those who had received radical prostatectomy prior to EBRT were excluded.

The overall proportion of men experiencing at least one GI complication was reported according to radiotherapy centres which treat at least 10 patients per year.

2.2.9 Funnel plots

Funnel plots were generated for all performance indicators using control limits defining differences corresponding to two standard deviations (inner limits) and three standard deviations (outer limits) from the national average population. Low volume (<10 patients) specialist MDTs and treatment centres were excluded from the funnel plots. Unadjusted funnel plots were used for the three process indicators (1, 2 and 3) which were presented according to specialist MDTs in England.

Adjusted funnel plots were performed for the three outcome indicators (4, 5 and 6) in England. Multivariable logistic regression was carried out with adjustment for patient age and comorbidity to determine adjusted outcomes for these three performance indicators. Comorbidity was captured using the Royal College of Surgeons (RCS) Charlson comorbidity score[30]. The adjusted funnel plots are reported at treatment centre level. Treatment centres outside the outer funnel for these three outcome indicators were considered as potential 'alarm' outliers and contacted according to the recommended HQIP procedure.[31]

2.3 Results in England

2.3.1 Audit Participation

Prostate cancer services are provided at 139 NHS Trusts in England across 48 specialist MDTs. All NHS Trusts participated in the NPCA from 1st April 2015 to 31st March 2016. In this time period we received the cancer registry records of 39,613 men who were newly diagnosed with prostate cancer.

2.3.2 Data completeness of submitted data

Completeness of pre-treatment (MDS-1) data items

38,950 men were diagnosed with prostate cancer and linked to a valid NHS provider. Performance status (COSD data item) and ASA grade (NPCA data item) are important determinants of treatment decision-making and variables that we would like to include in a risk-adjustment model (Table 1). However, data completeness still remains low: Performance status and ASA were 45% and 34%, respectively. In terms of diagnostic information, overall 56% of patients had the NPCA data-item completed related to whether multiparametric MRI was performed. Completeness of these data items by diagnosing Trust and specialist MDT are shown in Appendix 1a.

[30] Armitage JN, van der Meulen JH et al. Identifying co-morbidity in surgical patients using administrative data with the Royal College of Surgeons Charlson Score. Br J Surg. 2010;97(5):772-81.
[31] http://www.hqip.org.uk/resources/detection-and-management-outliers-national-clinical-audits/

Table 1: Overview of overall data completeness for selected data items for men newly diagnosed with prostate cancer in England and Wales over the period of 1 April 2015 and 31 March 2016. Of the 39,613 cancer registry records received in England, 38,950 had a valid provider code. All 2121 NPCA records received in Wales had a valid provider code.

Data variable	England N(%) [data source -VARIOUS]	Wales N(%) [data source - ALL NPCA]
MDS1: diagnostic, staging and initial planned treatments for men newly diagnosed with prostate cancer		
No. of men with C61 prostate cancer diagnosis & valid provider code (denominator)	38,950 [CR]	2,121 [NPCA]
ASA completed	13,079 (34%) [NPCA]	2,121 (100%)
PSA completed	28,208 (72%) [COSD]	1,860 (88%)
Performance status completed	17,400 (45%) [COSD]	2,121 (100%)
Gleason Score completed	32,144 (83%) [CR]	1,856 (88%)
TNM completed	28,818 (74%) [CR]	2,118 (100%)
Multiparametric MRI performed completed	21,730 (56%) [NPCA]	2,121 (100%)
At least 1 planned treatment recorded	22,996 (59%) [NPCA]	2,121 (100%)
At least 1 treatment modality recorded	32,765 (84%) [COSD]	Data unavailable
MDS2: data items collected for men who have undergone radical prostatectomy		
No. of men who underwent radical prostatectomy (denominator)	5,864 [HES-CR]	284
Type of radical prostatectomy performed	5,864 (100%) [HES]	249 (88%)
Nerve sparing completed	2,505 (43%) [NPCA]	167 (59%)
Margin status completed	3,225 (55%) [NPCA]	235 (83%)
MDS3: data items collected for men for whom external beam radiation therapy or brachytherapy is planned		
No. of men for whom radiotherapy is recorded (denominator)	13,252 [RTDS-CR]	631
Planned duration of adjuvant ADT completed	2,131 (16%) [NPCA]	569 (93%)
Planned duration of neoadjuvant ADT completed	2,811 (21%) [NPCA]	591 (96%)
Planned type of image guidance	2,814 (21%) [NPCA]	613 (97%)
No. of men for whom brachytherapy is recorded (denominator)	1,183 [RTDS-CR]	<10
Planned brachytherapy type completed	271 (23%) [NPCA]	<10

Data sources: CR = cancer registry, NPCA = NPCA dataset, COSD = cancer outcomes services dataset, HES = hospital episode statistics, RTDS = radiotherapy dataset).

Completeness of radical prostatectomy (MDS-2) data items

5,864 men who underwent radical prostatectomy (RP) and could be allocated to 52 surgical centres (Table 1; Appendix 2a). "Nerve-sparing status" and "RP margin status" data items were completed in 43% and 55% of men, respectively. Type of radical prostatectomy (robotic, laparoscopic or open) was determined using linked data from HES due to poor completion of the appropriate NPCA data item.

Completeness of external beam radiotherapy / brachytherapy (MDS-3) data items

13,252 patients who received external beam radiotherapy (EBRT) and could be linked to one of the 52 RT centres were identified (Table 1; Appendix 3a). "Planned type of image guidance for EBRT", "planned duration of neoadjuvant androgen deprivation therapy" and "planned duration of adjuvant androgen deprivation therapy" were recorded for 21%, 21% and 16% of patients, respectively. 1,183 patients who received brachytherapy could be linked to a brachytherapy centre (Table 1). "Planned brachytherapy type" was recorded in 23% of these patients.

2.3.3 NPCA prospective audit cohort in England: Findings

Patient characteristics

Data on patient characteristics were available for 39,613 patients (Table 2). More than half of the men diagnosed with prostate cancer were 70 years or older (54%) including 36% of men between 70 and 80 years of age and 18% of men who were older than 80 years. Approximately one-quarter of the men (26%) were in the least deprived socioeconomic national quintile group as measured by the Index of Multiple of Deprivation (IMD). Those men in the most deprived quintile group constituted 13% of the cohort. The majority of men were of white ethnic origin (93%).

Diagnostic investigations

Transrectal ultrasound guided biopsy (TRUS) was the most common prostate biopsy technique performed before treatment (88% of patients who had a biopsy) although there was a slight increase in the use of the transperineal biopsy techniques compared with the previous reporting period (12% in 2015/16 versus 11% in 2014/15; Table 2). 51% of men had a record indicating that multiparametric MRI was performed in their diagnostic pathway with 73% performed prior to, and 27% performed after, prostate biopsy

PSA, tumour grade, tumour stage and disease status at presentation

For patients with completed information about PSA at diagnosis, 46% had a PSA level of <10, 23% had a level between 10 and 20 and 31% had a PSA higher than 20 (Table 2). Of the men with a recorded Gleason score, 24% had a score ≤6, 48% a score of 7 and 28% a Gleason score of 8 or higher. For TNM stage 18% were staged as having T1 disease, 44% T2, 33% T3 and 5% T4. 11% of men were recorded as having N1 disease and 17% as having M1 disease.
In applying the NPCA risk stratification algorithm, disease status could be defined for 35,930 men. Of these patients, 9% were in the low-risk group, 38% in the intermediate group, 2% in the mixed group (either having locally advanced or metastatic disease), 35% in the locally advanced group and 16% in the metastatic group.

Table 2: Distribution of patient and tumour characteristics for men newly diagnosed with prostate cancer in England and Wales over the period of 1 April 2015 and 31 March 2016.		
	England N(%) [data source -VARIOUS]	**Wales N(%) [data source - ALL NPCA]**
Patient information		
No. of men with C61 prostate cancer diagnosis (denominator)	39,613	2,121
Age	CR	NPCA
<60	4,645 (12%)	224 (11%)
60-70	13,524 (34%)	733 (35%)
70-80	14,410 (36%)	801 (38%)
>80	7,034 (18%)	363 (17%)
IMD	CR	Data unavailable
1	10,178 (26%)	
2	9,668 (24%)	
3	8,178 (21%)	
4	6,553 (16%)	
5	5,036 (13%)	
Ethnicity	CR	Data unavailable
White	33,513 (93%)	
Asian/ Asian British	675 (2%)	
Black/ Black British	1,249 (3%)	
Other	621 (2%)	
Missing	3,555	
ASA	NPCA	NPCA
1	6,360 (48%)	839 (40%)
2	5,480 (42%)	958 (45%)
≥3	1,295 (10%)	324 (15%)
Missing	26,478	
Performance status	NPCA	NPCA
0	11,595 (66%)	1,204 (57%)
1-2	5,507 (32%)	851 (40%)
≥3	367 (2%)	66 (3%)
Missing	22,144	
Charlson score		Data unavailable
0	24,574 (72%)	
≥1	9,729 (28%)	
Missing	5,310	

/Table 2 continued

	England N(%) [data source -VARIOUS]	Wales N(%) [data source - ALL NPCA]
Diagnostic & staging information		
Biopsy technique	NPCA	NPCA
Transrectal sampling	15,600 (86%)	1,705 (96%)
Transrectal saturation	305 (2%)	13 (<1%)
Perineal sampling	1,014 (6%)	2 (<1%)
Perineal template	1,098 (6%)	58 (3%)
Other	829	84
None	2,844	259
Missing/unknown	16,881	-
mpMRI performed	NPCA	NPCA
Before	7,511 (37%)	304 (15%)
After	2,722 (14%)	810 (39%)
Not done	9,823 (49%)	954 (46%)
Not known whether mpMRI performed	1,761	53
Missing	17,796	
PSA	COSD	NPCA
<10	12,924 (46%)	928 (50%)
10-20	6,580 (23%)	452 (24%)
>20	8,810 (31%)	480 (26%)
Missing	11,299	261
Gleason	CR	NPCA
≤6	7,882 (24%)	705 (38%)
7	15,575 (48%)	726 (39%)
≥8	9,135 (28%)	425 (23%)
Missing	7,021	265
T score	CR	NPCA
T1	6,129 (18%)	404 (19%)
T2	15,187 (44%)	941 (46%)
T3	11,447 (33%)	562 (27%)
T4	1,616 (5%)	160 (8%)
Missing/X	5,234	54
N score	CR	NPCA
N0	27,131 (89%)	1,693 (91%)
N1	3,329 (11%)	159 (9%)
Missing/X	9,153	269
M score	CR	NPCA
M0	27,538 (83%)	1,416 (84%)
M1	5,706 (17%)	278 (16%)
Missing/X	6,369	427

/Table 2 continued

	England N(%) [data source -VARIOUS]	Wales N(%) [data source - ALL NPCA]
Prostate cancer disease status		
Metastatic	5,706 (16%)	278 (13%)
Locally advanced	12,526 (35%)	699 (34%)
Mixed (advanced/locally advanced)	821 (2%)	66 (3%)
Intermediate	13,514 (38%)	854 (41%)
Low risk	3,363 (9%)	179 (7%)
Insufficient	3,683	45

Radical Prostatectomy (RP) Information

5,864 men underwent RP, most commonly by the robotic approach (74%; Table 3). A similar proportion of men had a laparoscopic (13%) or open (12%) RP. For patients with complete information present on margin status (n=2,888) 69% were negative and 31% were positive. Of note, the positive margin status was higher in men with locally advanced (39%) compared to intermediate-risk localised (33%) and low-risk localised (29%).For patients with complete information about nerve-sparing status (n=1,329), just under half (47%) did not undergo nerve-sparing; 30% received bilateral and 23% unilateral nerve-sparing. We did not stratify nerve-sparing status according to disease status due to the high level of missing data (>50%) We used codes from the linked HES dataset to determine if men underwent a pelvic lymphadenectomy at time of RP[32]. We found that 31% of men underwent a lymphadenectomy at time of RP. When stratified according to disease status, 43% of men with locally advanced, 22% with intermediate-risk localised and 13% of men with low-risk localised disease underwent lymphadenectomy.

External Beam Radiotherapy (EBRT) and Brachytherapy Information

Of the men who had information completed related to "planned radiotherapy intent" (n=13,978), the majority had primary radical radiotherapy (87%; Table 3). We determined modality of RT in England using data from the linked RTDS[33] and found 82% of men had Intensity-modulated radiotherapy. For those with complete information on type of IGRT, Cone beam CT (67%) was the commonest type followed by fiducial markers (17%). 7% were using KV x-ray imaging and 5% a combination of IGRT with fiducial and cone-beam.

[32] Sujenthiran A, Charman S et al. Quantifying severe urinary complications after radical prostatectomy: the development and validation of a surgical performance indicator using hospital administrative data. BJU international. 2017;doi:10.1111/bju.13770 (Epub ahead of print)

[33] Sujenthiran A, Nossiter J et al. National population-based study comparing treatment-related toxicity in men who received Intensity-modulated versus 3D-Conformal Radical Radiotherapy for prostate cancer. Int J Radiat Oncol Biol Phys 2017;doiI: 10.1016/j.ijrobp.2017.07.040 (Epub ahead of print)

Table 3: Radical surgery and radiotherapy information for men newly diagnosed with prostate cancer in England and Wales over the period of 1 April 2015 and 31 March 2016.		
	England N(%) [data source -VARIOUS]	**Wales N(%) [data source - ALL NPCA]**
Radical prostatectomy information		
No. of men with M61 radical prostatectomy (denominator)	5,864 [HES]	284 [NPCA]
Type of radical prostatectomy	HES	NPCA
Open	724 (12%)	59 (24%)
Robotic	4,354 (74%)	160 (66%)
Laparoscopic	786 (13%)	24 (10%)
Missing	-	41
Radical prostatectomy margin status	NPCA	NPCA
Negative	1,979 (69%)	155 (69%)
Positive <3mm	350 (12%)	29 (13%)
Positive ≥3mm	171 (6%)	5 (2%)
Positive, unknown length	388 (13%)	36 (16%)
Not known/missing	2,639	59
Nerve sparing status	NPCA	NPCA
Bilateral	754 (30%)	70 (42%)
Unilateral	575 (23%)	14 (95%)
None	1,176 (47%)	80 (49%)
Missing	3,359	120
Lymphadenectomy performed	HES	NPCA
No	4,034 (69%)	102 (45%)
Yes	1,830 (31%)	124 (55%)
Missing	–	58
Radical radiotherapy information		
No. of men for whom radiotherapy is recorded (denominator)	13,978 [RTDS]	631 [NPCA]
Radiotherapy intent	RTDS	NPCA (planned)
Primary	12,156 (87%)	580 (92%)
Palliative	1,613 (12%)	23 (4%)
Other	19 (<1%)	27 (4%)
Missing	190	1
Radiotherapy modality	RTDS	NPCA (planned)
3D conformal	3,048 (17%)	209 (34%)
IMRT	10,930 (82%)	404 (66%)

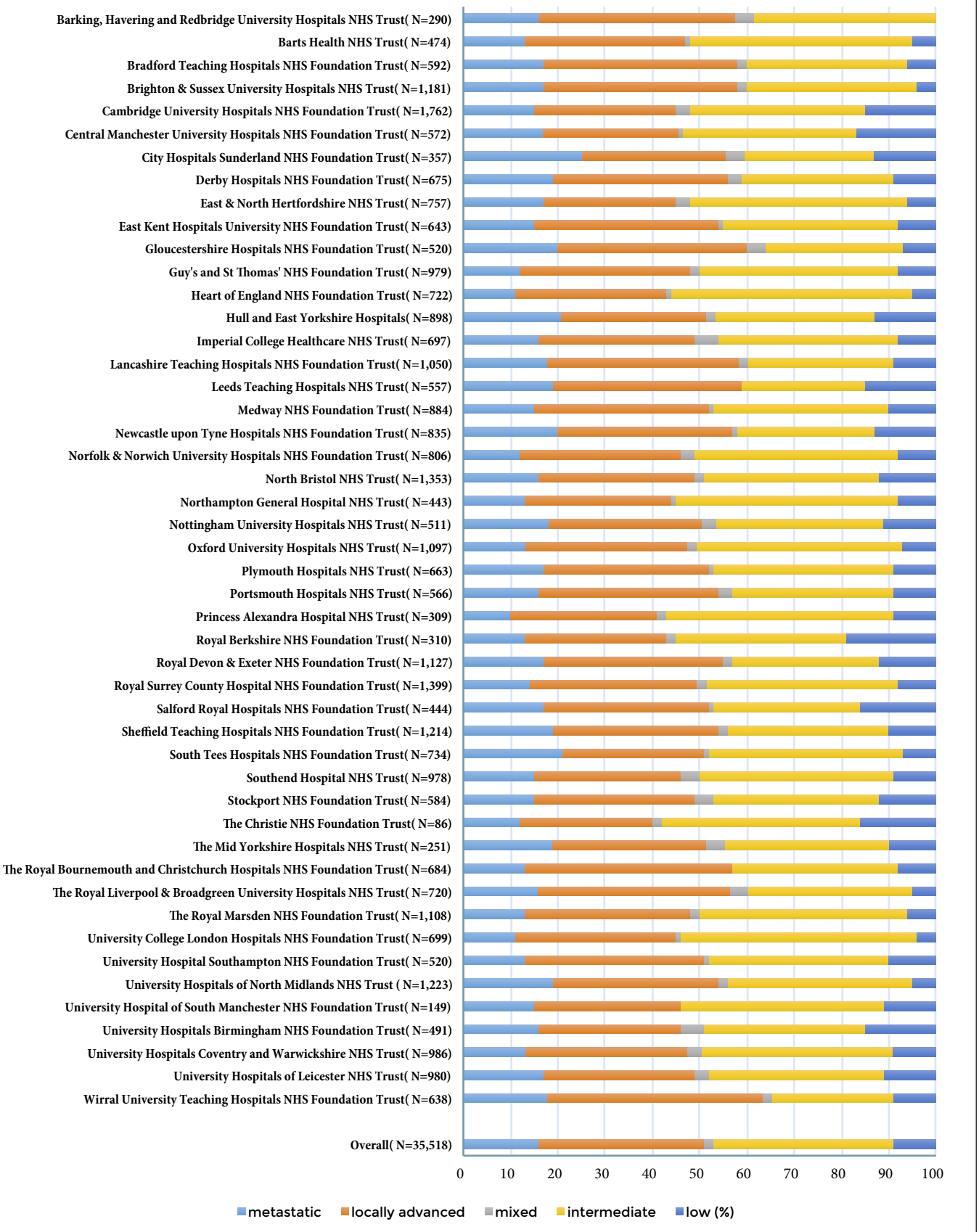
/Table 3 continued

	England N(%) [data source -VARIOUS]	Wales N(%) [data source - ALL NPCA]
Planned image guidance	NPCA	NPCA
Cone beam CT	2,930 (67%)	471 (75%)
Fudicial markers	745 (17%)	5 (<1%)
Combined	230 (5%)	125 (20%)
KV imaging	291 (7%)	12 (2%)
Other	187 (4%)	12 (2%)
Missing/not known	9,383	6
Planned radiotherapy region	RTDS	NPCA
Prostate and/or seminal vesicles	10,392 (79%)	474 (77%)
Whole pelvis incl. lymph nodes	1,397 (11%)	114 (19%)
Other	1,340 (10%)	29 (5%)
Missing/ not known	849	14
Planned duration of neoadjuvant androgen deprivation therapy	NPCA	NPCA
None	391 (13%)	46 (8%)
2-6 months	2,246 (78%)	465 (78%)
>6 months	247 (9%)	84 (14%)
Missing/Not known	10,441	36
Planned duration of adjuvant androgen deprivation therapy	NPCA	NPCA
None	595 (27%)	212 (38%)
6 months	360 (16%)	27 (5%)
18 months	77 (4%)	17 (3%)
2 years	442 (20%)	43 (8%)
3 years	519 (24%)	214 (39%)
Indefinite	188 (9%)	34 (6%)
Other	18 (<1%)	4 (<1%)
Missing/ Not known	11,779	80
Brachytherapy information		
No. of men for whom brachytherapy is recorded (denominator)	1,183 [RTDS]	<10 [NPCA]
Planned Brachytherapy Type	NPCA	NPCA
LDR monotherapy	227 (50%)	<10
LDR boost	13 (3%)	
HDR monotherapy	73 (16%)	<10
HDR boost	141 (31%)	<10
Missing	729	-

2.3.4 NPCA "short-term" performance indicators

Performance indicators 1-3 were applied to men with a record containing information about the diagnosing specialist MDT and for whom there was sufficient information to determine disease status. We were able to determine disease status and allocate a provider to 35,518 (90%) of patients (Appendix 4a). The overall distribution of disease status was 16% metastatic, 35% locally advanced, 2% mixed, 38% intermediate-risk localised and 9% low-risk localised disease (Figure 1). Performance indicators 4 and 5 were applied to men who could be linked to a surgical centre where their radical prostatectomy was performed. Performance indicator 6 was applied to men who could be linked to a RT centre.

Figure 1: Prostate cancer disease status distribution by specialist MDT (35,518 patients diagnosed between 1st April 2015 – 31st March 2016 with sufficient staging information to determine disease status) in England

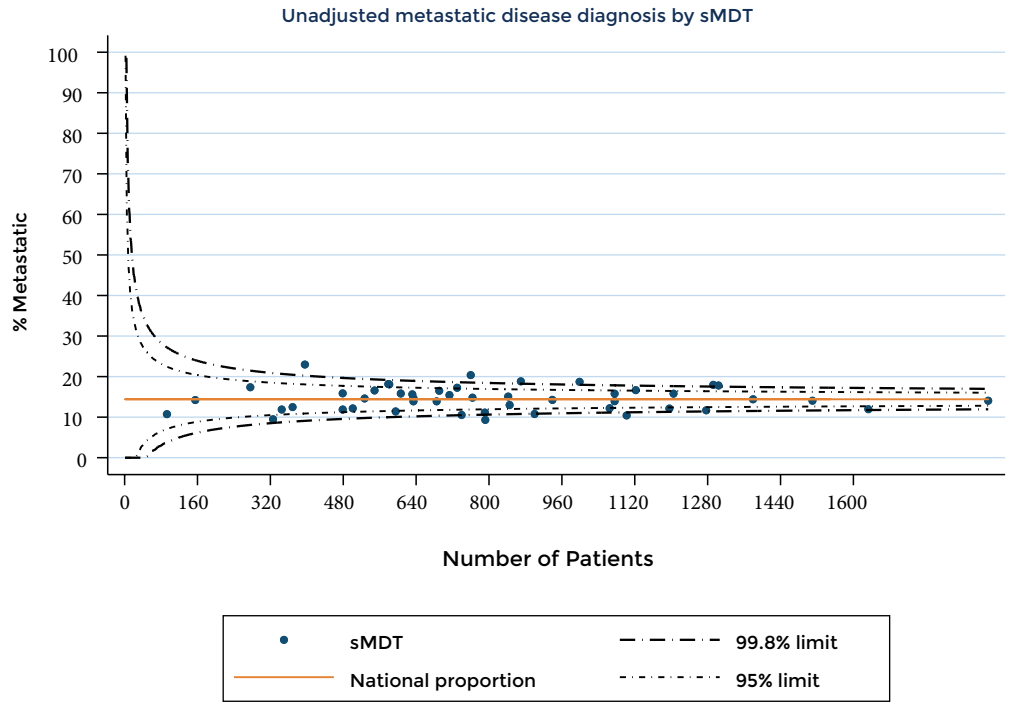


Performance indicator 1: Proportion of men diagnosed with metastatic disease

Overall 16% of men were diagnosed with metastatic disease at presentation.

An unadjusted funnel plot (Figure 2) demonstrates the variation in the proportion of men diagnosed with metastatic disease across 48 specialist MDTs (ranging from 10% - 25%).

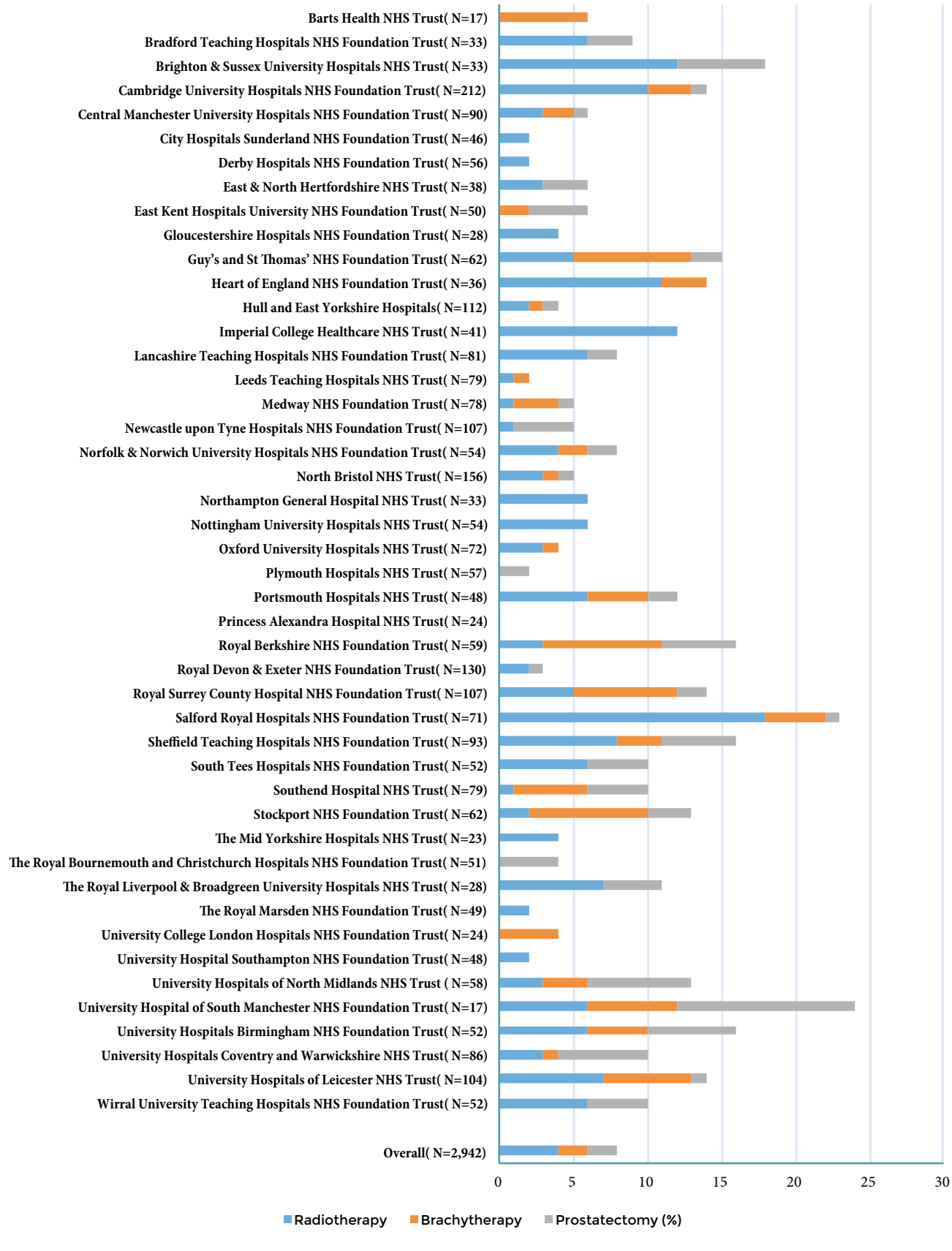
Figure 2: Unadjusted funnel plot for proportion of patients with metastatic disease at diagnosis across specialist MDTs in England.



Performance indicator 2: Proportion of men with low-risk localised cancer undergoing radical prostate cancer treatment

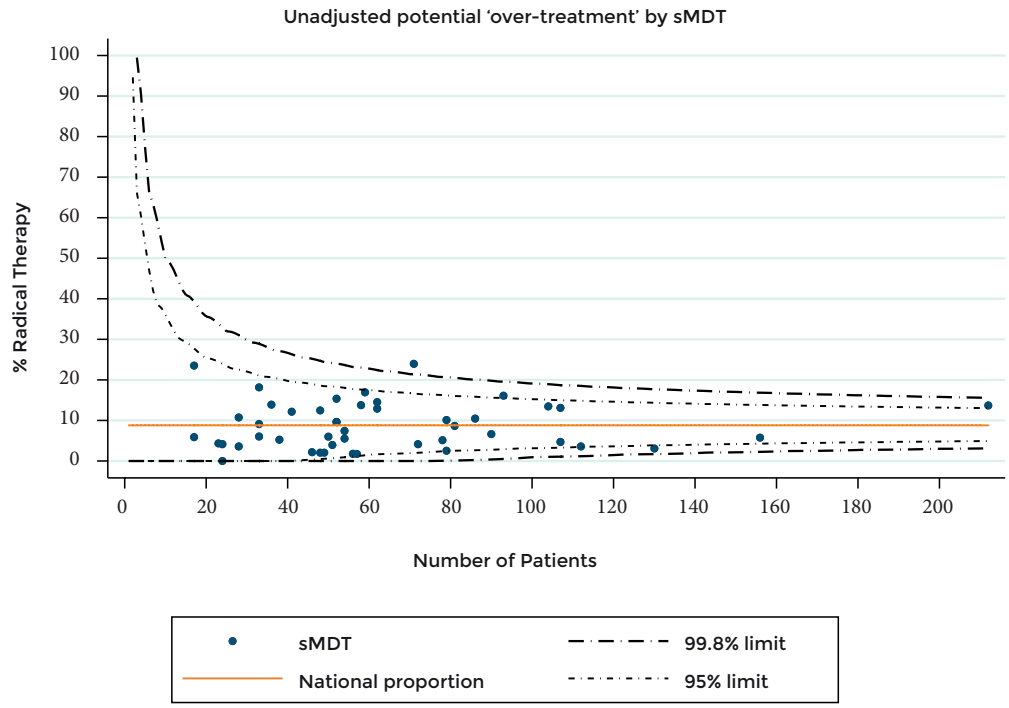
Overall, 8% of men diagnosed with low-risk localised cancer underwent radical prostate cancer therapy within 12 months of diagnosis. Most men undergoing radical treatment had external beam radiotherapy (4%), 2% of men received brachytherapy and 2% underwent radical prostatectomy (Figure 3a).

Figure 3a: Proportion of patients with low-risk localised prostate cancer undergoing radical prostate cancer therapy by specialist MDTs in England.



Of the 48 specialist MDTs, only one was above the outer limits of the unadjusted funnel plot (Figure 3b).

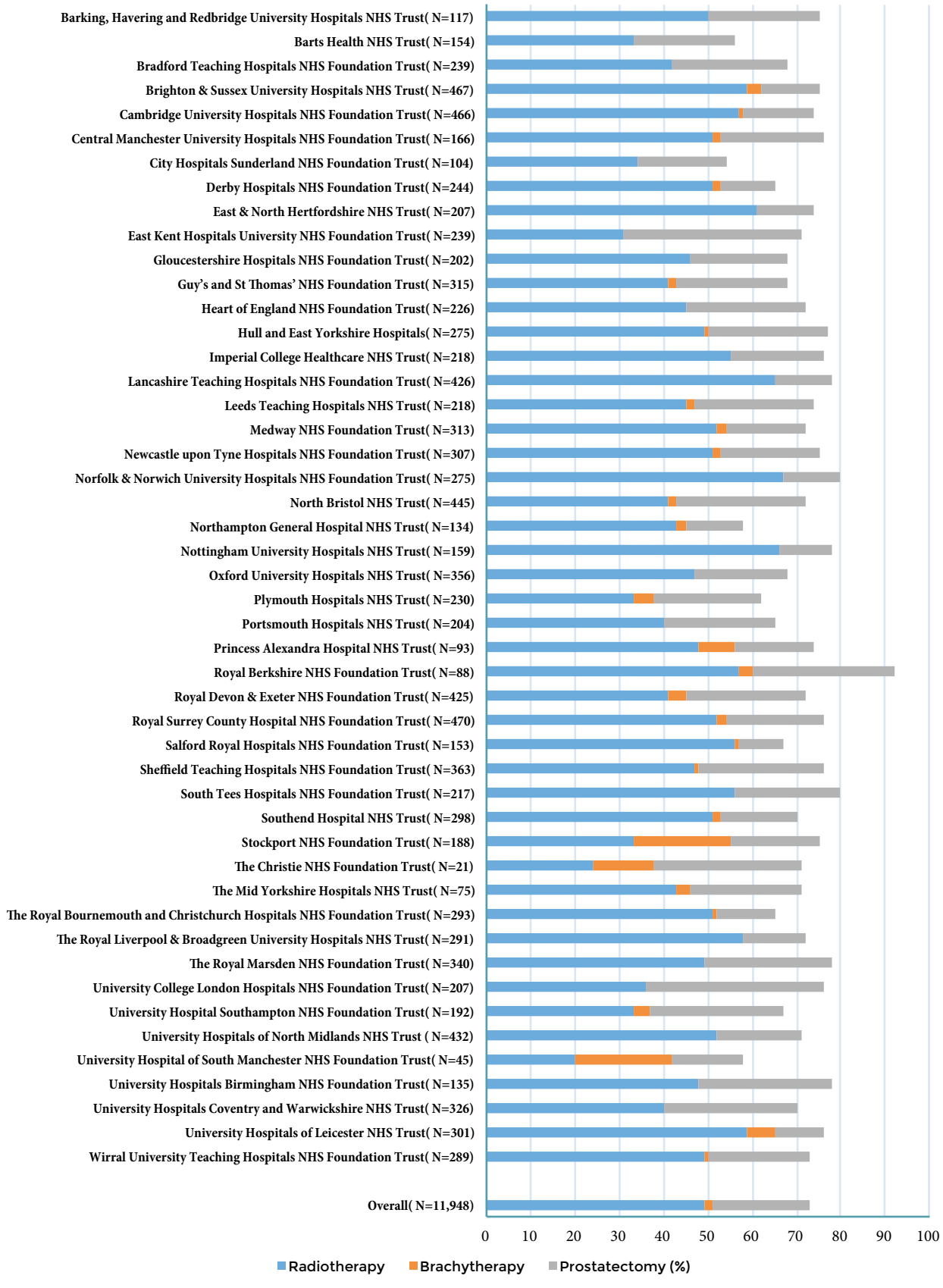
Figure 3b: Unadjusted funnel plot for proportion of patients with low-risk localised prostate cancer undergoing radical prostate cancer therapy by specialist MDTs in England.



Performance indicator 3: Proportion of men with locally advanced disease undergoing radical prostate cancer treatment

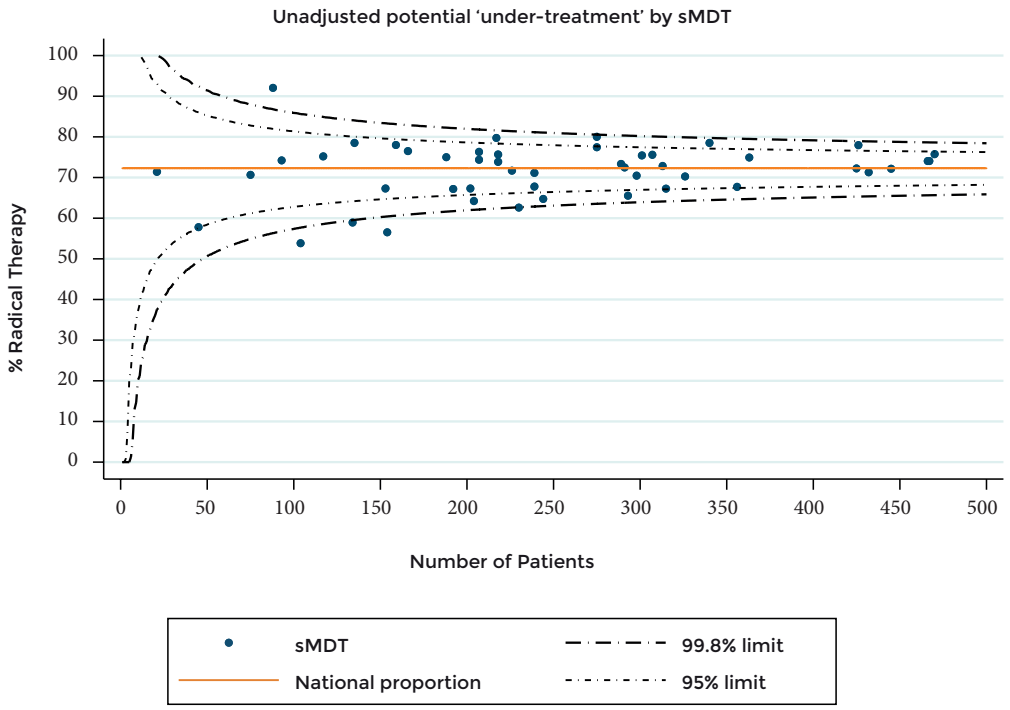
73% of men diagnosed with locally advanced prostate cancer were found to have undergone some form of radical therapy within 12 months of diagnosis: 49% received external beam radiation, 22% underwent radical prostatectomy and 2% underwent brachytherapy (Figure 4a).

Figure 4a: Proportion of patients with locally advanced prostate cancer undergoing radical prostate cancer therapy by specialist MDTs in England.



One specialist MDT was above the outer limit of the unadjusted funnel and three were below (Figure 4b).

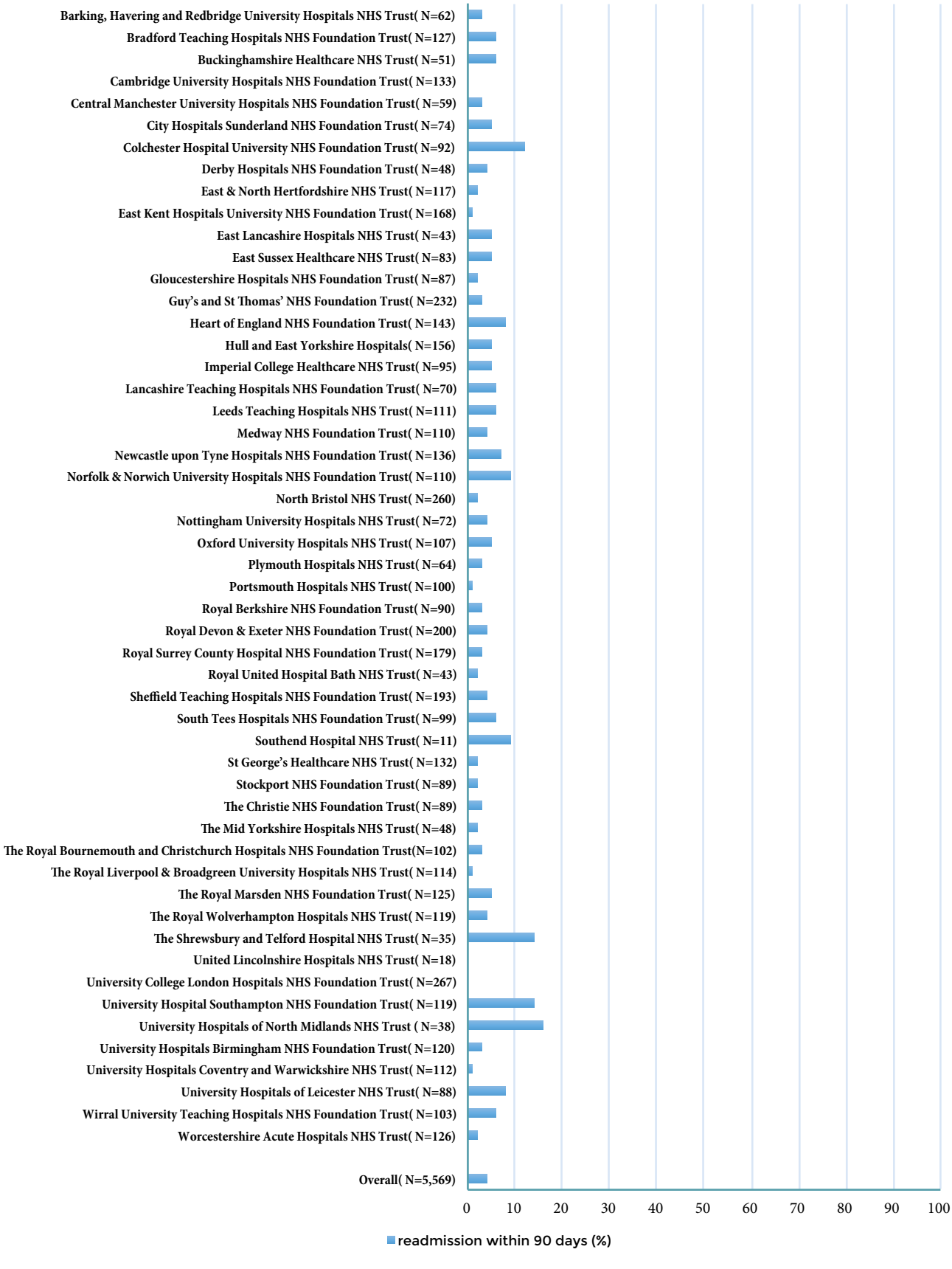
Figure 4b: Unadjusted funnel plot for proportion of patients with locally advanced prostate cancer undergoing radical prostate cancer therapy by specialist MDTs in England.



Performance indicator 4: Proportion of patients readmitted as an emergency within 90 days of radical prostate cancer surgery

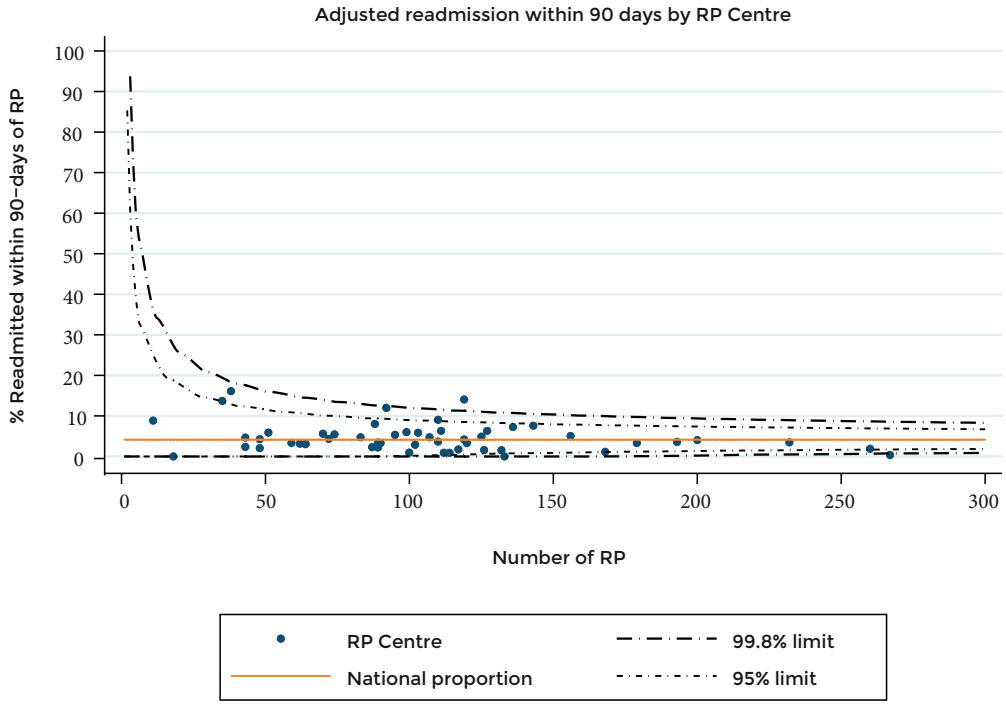
The overall emergency readmission rate within 90 days after radical prostatectomy was 4% (ranging from 0 to 16%) (Figure 5a)

Figure 5a: Proportion of patients readmitted as an emergency within 90 days of radical prostatectomy by surgical centres in England.



The adjusted 90-day emergency re-admission rate following radical prostatectomy across all included surgical centres was 4% (Figure 5b). One surgical centre fell above the outer limit and informed regarding potential 'alarm' outlier status. Please see Appendix 6b for details of their response.

Figure 5b: Adjusted funnel plot for the proportion of patients readmitted as an emergency within 90 days of radical prostatectomy by surgical centres in England.

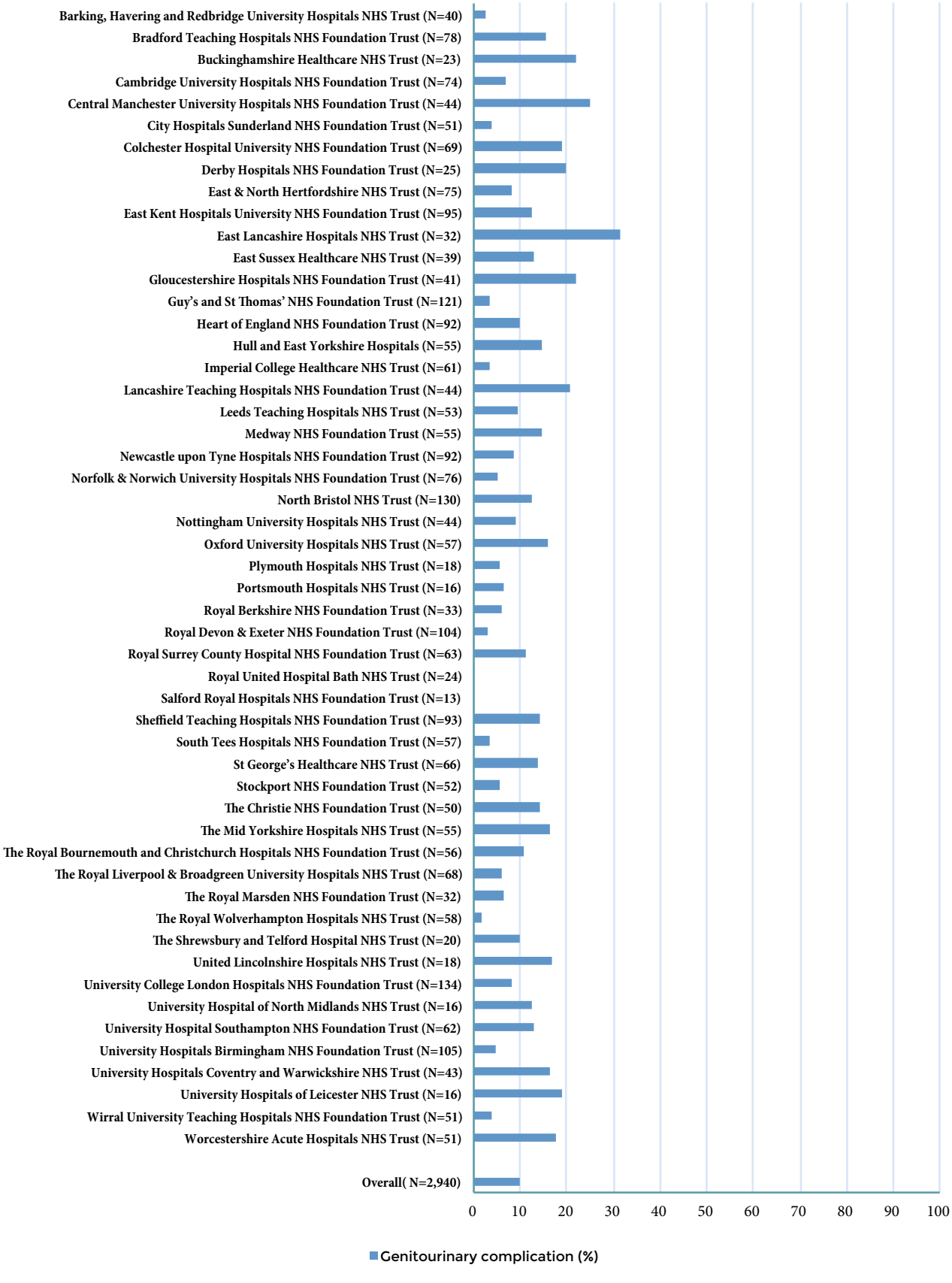


2.3.5 NPCA: 'medium-term' performance indicators

Performance indicator 5: Severe genitourinary toxicity following radical prostatectomy

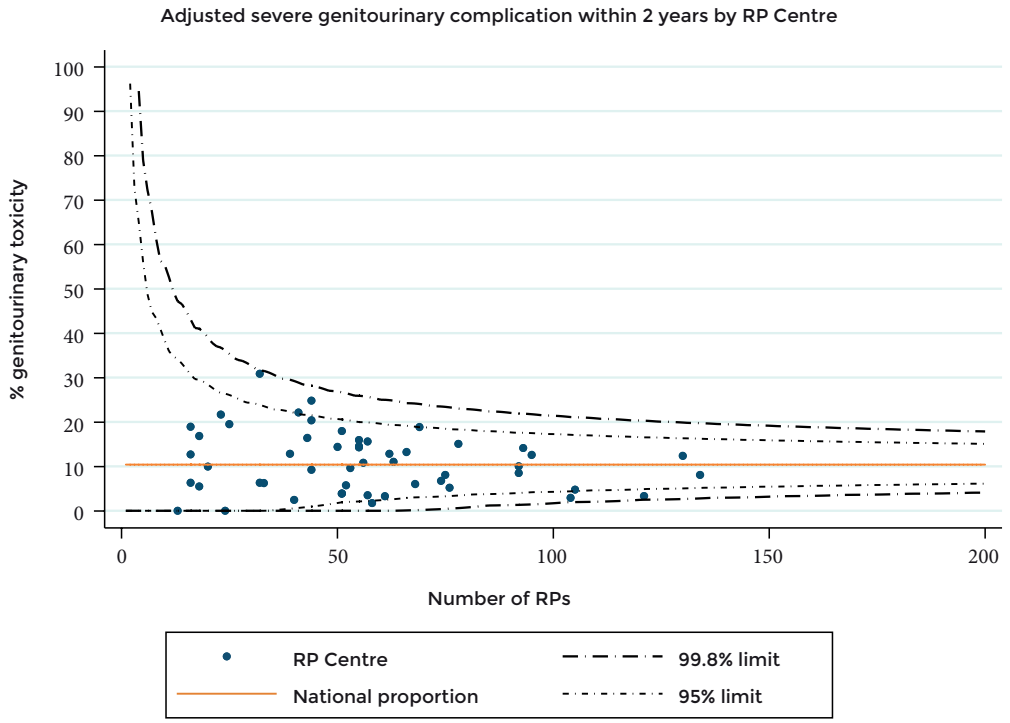
The final cohort included 2,940 men who underwent radical prostatectomy between 1st April 2014 and 31st December 2015. Of these men, overall 308 (10%) experienced a genitourinary (GU) complication within two years. (Figure 6a)

Figure 6a: Proportion of patients who experienced a severe genitourinary complication within 2 years of radical prostatectomy by surgical centres in England.



Following adjustment, overall 11% of men experienced at least one severe treatment-related GU complication following radical prostatectomy (Figure 6b). There were no surgical centres with potential outlying performance.

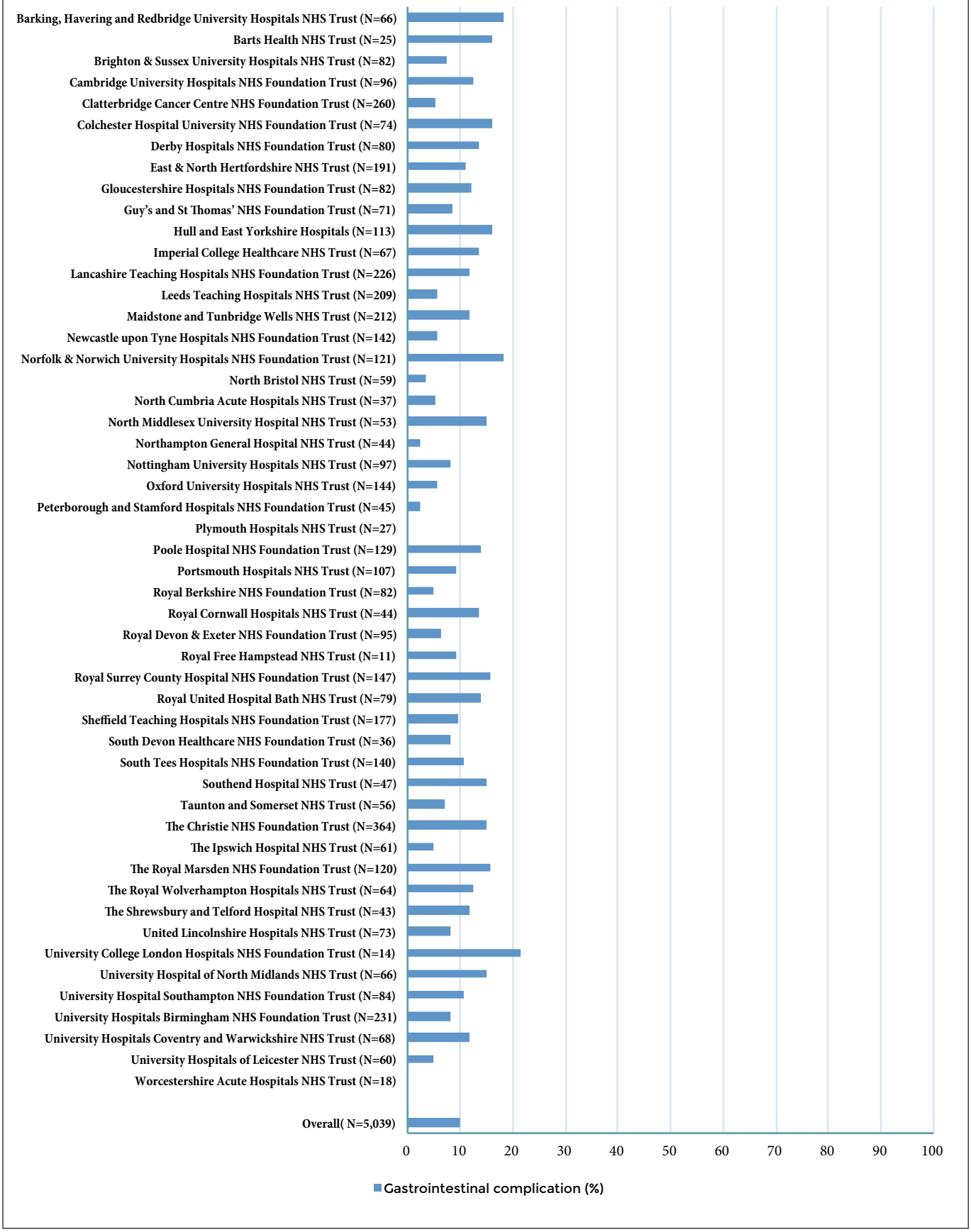
Figure 6b: Adjusted funnel plot for the proportion of patients who experienced a severe genitourinary complication within 2 years of radical prostatectomy by surgical centres in England.



Performance indicator 6: Severe gastrointestinal toxicity following radical external beam radiotherapy (EBRT)

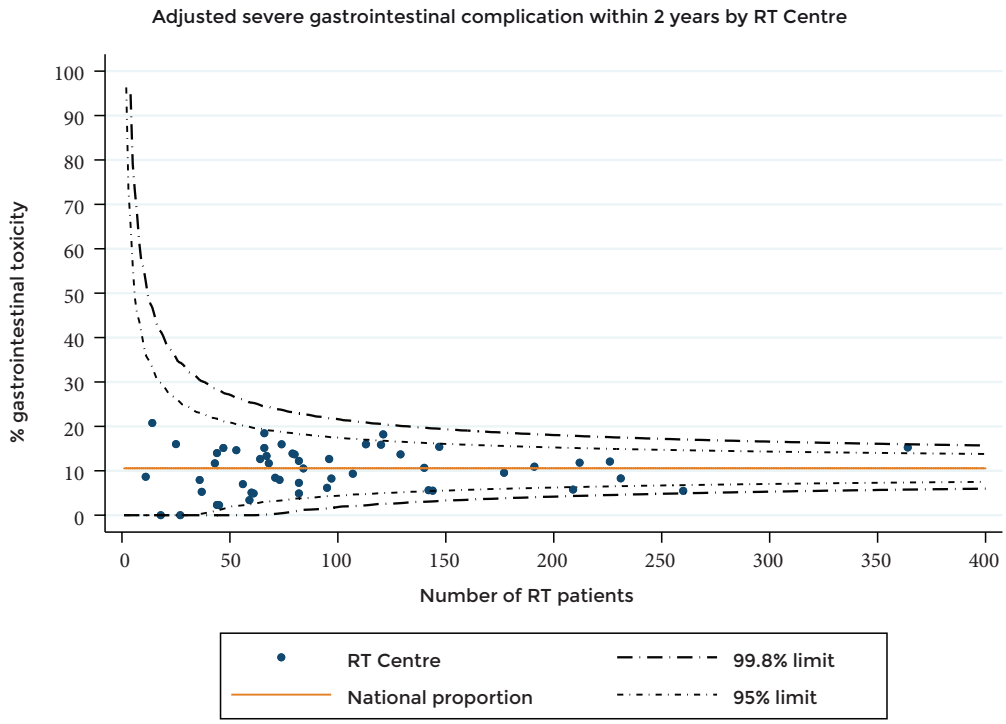
We identified 5,039 men who received EBRT between 1st April 2014 and 31st March 2015. Of these patients, overall 523 (11%) experienced at least one bowel complication within 2 years on a national level (Figure 7a).

Figure 7a: Proportion of patients who experienced a severe gastrointestinal complication within 2 years of radical radiotherapy by radiotherapy centres in England.



Following adjustment, overall 11% of men experienced at least one severe treatment-related GI complication following EBRT (Figure 7b). There were no RT centres with potential outlying performance.

Figure 7b: Adjusted funnel plots of the proportion of patients who experienced a severe gastrointestinal complication within 2 years of radiotherapy by radiotherapy centres in England.



2.4 Results in Wales

2.4.1 Audit participation & case-ascertainment

All six Health Boards in Wales providing prostate cancer services submitted verified NPCA records for patients diagnosed between 1st April 2015 and 31st March 2016. The number of prostate cancer cases diagnosed between 1st January 2015 and 31st December 2015 in WCISU (n=2,434) was used as an estimate to calculate case-ascertainment. Based on this denominator overall case ascertainment rate was 87%. The range between health boards was 81% to 100% (Appendix 2b).

2.4.2 Data completeness of submitted data

This section provides an indication of data completeness for key pre-treatment (MDS-1), radical prostatectomy (MDS-2) and EBRT (MDS-3) key NPCA data items.

Completeness of pre-treatment (MDS-1) data items

The level of data completeness across all six Health Boards was excellent. 100% completion rates were achieved across all Health Boards for 4 out of the 6 data items. Only PSA level and Gleason score completion rates failed to achieve 100%, the overall rate for these were identical at 88% with a range of between 84% to 97% (Table 1).

Completeness of radical prostatectomy data items (MDS-2)

284 NPCA records of patients that underwent radical prostatectomy were identified and were reported by diagnosing health board "Type of radical prostatectomy" was completed in 88% of cases, only one Health Board failed to achieve rates of greater than 90%. "Nerve-sparing status" was less well completed with 59% of cases recorded. "Margin status" was completed in 83% of cases (Table 1).

Completeness of external beam radiotherapy data-items (MDS-3)

631 NPCA records of patients that underwent external beam radiotherapy were identified and reported by diagnosing Health Board. Fewer than ten patients received brachytherapy alone or radiotherapy plus brachytherapy therefore these have not been reported.

"Planned type of image guidance" was completed in 97% of cases with a range of 91% to 100% between health boards. "Planned duration of neoadjuvant ADT" was completed in 96% of cases and "Planned duration of adjuvant ADT" was completed in 93% of cases (Table 1).

2.4.3 NPCA Prospective audit cohort in Wales: Findings

Patient characteristics

Data on patient characteristics was available for all 2,121 cases. Similar to England, approximately half of men were 70 years or older (55%) at diagnosis with 38% of men between 70 and 80 years of age (38%; Table 2) and just under a fifth of men were older than 80 years old (17%). 57% of men were in very good health with a performance score of 0 (Table 2) and only 3% had a score of 3 or more. 40% had no co-existing health problems (ASA 1) and a slightly higher proportion (45%) had mild systemic disease (ASA 2).

Diagnostic investigations

Transrectal ultrasound (TRUS) guided biopsy was the most commonly used prostate biopsy technique performed (96%; Table 2).

Information on the use of mpMRI was available for 2,068 cases (98%). 54% of men had a record indicating the mpMRI was performed in their diagnostic pathway with 27% being performed prior to prostate biopsy and 73% after (Table 2).

NPCA PSA, tumour grade, tumour stage and disease status at presentation

Among the 1,860 cases with a documented PSA level at diagnosis, 50% had a level less than 10, 24% had a level between 10 and 20 and 26% had a level above 20 ng/ml. Gleason score at diagnosis was available for 1,856 patients. A similar proportion of men had Gleason scores of ≤6 and 7 (38% and 39% respectively). 23% of patients had a Gleason score of 8 or above.

TNM staging was recorded for 97% of cases with 2067 cases having a documented T stage. 19% were staged as T1, 46% were T2, 27% were T3 and 8% were T4. N stage was recorded in 87% of cases submitted with 9% staged as N1. M stage was recorded in 80% of cases submitted and 16% were staged as M1. (Table 2)

In applying the NPCA risk stratification algorithm disease status could be defined in 98% of men with a NPCA record. 7% of men were classified as low risk, 41% were intermediate risk, 34% were locally advanced and 13% had metastatic disease. 3% were classified as mixed (either having locally advanced or metastatic disease) and 2% of cases did not have enough information to classify (Table 2).

Radical prostatectomy (RP) information

For men who had complete data regarding type of prostatectomy, the most common approach was robotic (66%), followed by open (24%) and laparoscopic (10%). 228 men had information recorded for "margin status", just over two-thirds (69%) were negative and 31% were positive. When stratified according to disease status the positive margin rate was 31%, 27% and 41% in men with low-risk localised, intermediate-risk localised and locally advanced disease, respectively.

"Nerve sparing status" was completed in 164 cases, just under half (49%) of the cases did not involve nerve sparing. 42% had bilateral nerve sparing and 9% had unilateral sparing. When stratified according to disease status 46% of men with low-risk localised disease underwent some form of nerve-sparing compared to 53% of men with intermediate-risk and 90% of those with locally advanced disease.

The lymphadenectomy status was recorded for 226 cases, 55% had a lymphadenectomy and 45% did not (Table 3). When stratified according to disease status 8% of men with low-risk localised disease underwent lymphadenectomy compared to 48% of men with intermediate-risk and 84% of those with locally advanced disease.

External beam radiotherapy (EBRT) and brachytherapy information

Of the men who had information completed regarding radiotherapy intent 92% had primary radical radiotherapy, 4% had adjuvant radiotherapy and 4% had palliative radiotherapy (Table 3). For the "planned RT type" two-thirds of cases (66%) had arcing IMRT and a third received 3D conformal radiotherapy. For those with complete information on type of IGRT, Cone beam CT (75%) was the most commonly used followed by combined cone CT and fiducial markers (20%). KV imaging was used in 2% of cases.

We describe planned neoadjuvant ADT according to disease status. 99% of men with locally advanced disease received neoadjuvant ADT (83% 2-6 months, 16% >6 months), and 83% of men with intermediate-risk localised disease (76% 2-6 months, 7% > 6 months).

In terms of planned adjuvant ADT, 83% of men with locally advanced disease received adjuvant ADT and the commonest treatment duration was for 3 years (61%). 22% of men with intermediate-risk localised disease received adjuvant ADT and the commonest treatment duration was 6 months (6%). Very few men (<10) received brachytherapy therefore we did not report data-completeness of these items.

2.4.4 Prostate cancer disease status distribution across Health Boards

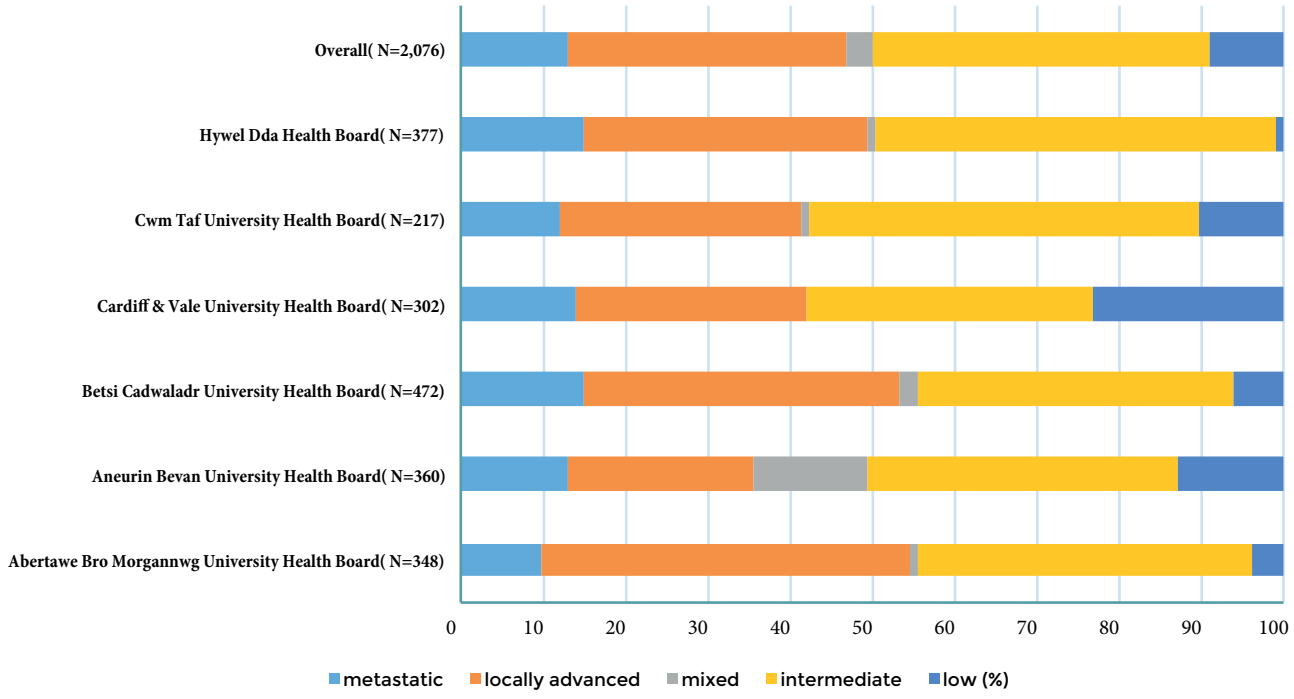
All men for whom disease status could be determined were also linked to a Health Board. Of these men, 13% were metastatic, 34% locally advanced, 3% mixed, 41% intermediate-risk localised and 9% low-risk localized (Figure 8).
The distribution of disease status did vary between Health Boards with most variation seen in the number of cases with low risk disease with a range of 1% to 23%.

2.4.5 NPCA short-term performance indicator

***Performance indicator 1* - Proportion of men diagnosed with metastatic disease**

Overall, 13% of men had metastatic disease at presentation and this ranged from between 10 to 15% across health boards. (Figure 8).

Figure 8: Prostate cancer disease status distribution by Health Board (2,076 patients diagnosed between 1st April 2015 – 31st March 2016 with sufficient staging information to determine disease status) in Wales.



2.5 Discussion

2.5.1 Participation and data completeness

The analysis of the NPCA's second year of prospective data collection in England and first full year in Wales produced some encouraging results with all Trusts and Health Boards now participating. A collaborative process involving the NPCA, NCRAS and the Wales Cancer Network liaising with providers has helped to ensure 100% participation.

Data-completeness of staging items has continued to improve in England and Wales. As a result we were able to determine disease status and allocate a provider in 90% of men in England and 98% of men in Wales. Furthermore, the proportion of patients in the "mixed" group which represents men who cannot be categorised as either locally advanced or metastatic due to missing staging data, has decreased to 2% and 3% in England and Wales, respectively. However, whilst important pre-treatment (MDS-1) data-items such as ASA and performance status were 100% complete in Wales, they remain poorly completed (34% and 45%, respectively) in England.

Although we have successfully determined key treatment-related information from alternative data-sources such as HES (e.g. radical prostatectomy type and use of lymphadenectomy) and RTDS (e.g. EBRT modality) the poor completeness of bespoke NPCA treatment-specific data items in England remains a concern. These NPCA data-items were developed to capture important information that is unavailable from other data sources including planned type of image-guidance for EBRT, nerve-sparing status of surgery and androgen deprivation therapy information. Further work should be focussed on improving completion of such key data-items.

Data completeness in Wales was much better for treatment-specific data-items as well. It is likely that this is due to the clinical sign-off process that exists in Wales. This valuable information provides an accurate representation of current practice as limited data is missing and also will allow robust risk-adjustment when performance indicators are used for Welsh data in next year's Annual Report.

2.5.2 Patient and Treatment Characteristics

In England the majority of men were of white ethnic origin (93%) which is higher than the 87% of men who classified themselves as white in the 2011 UK Census. Similarly, men from the lowest socioeconomic status quintile were under-represented in the NPCA dataset (13% whereas per definition 20% is expected). These data were unavailable for Wales at the time of this report but future linkage with PEDW data will allow this information to be reported.

5,864 men underwent radical prostatectomy and about 3 in 4 men received robot-assisted surgery. In Wales out of 284 men who received radical prostatectomy, 2 in 3 received robot-assisted surgery. The use of pelvic lymphadenectomy at time of surgery remains widely debated and of interest; national data suggests 3 in 10 men have a lymphadenectomy performed in England. In Wales 55% of men underwent lymphadenectomy. Newer radiation technologies such as IMRT appear to be widely utilised with more than 80% of patients in England and approximately 65% of men in Wales receiving this technology. It is important to note that the use of different data sources to extract this information in England and Wales precludes comparison between the countries.

2.5.3 Prostate cancer diagnostics and staging

TRUS guided biopsy was used in 88% of men in England and 96% of men in Wales and remains the commonest biopsy technique used. In England, there has been a slight increase in the use of biopsy techniques using the transperineal approach (12%) though this has not been seen in Wales. For 2014-15 data we reported that 44% of men had a record indicating multiparametric MRI (mpMRI) was performed with 56% being performed pre-biopsy in England. 2015-16 data has demonstrated an increase in those receiving mpMRI (51%) and 73% being performed pre-biopsy. This represents a transition towards pre-biopsy mpMRI on a national level based on studies such as the PROMIS trial which recommended multiparametric MRI be used more often and as a triage tool prior to TRUS biopsy.[34] In Wales more men received mpMRI (54%) but fewer were performed pre-biopsy (27%).

2.5.4 Performance indicators

Men diagnosed with metastatic disease at presentation

This measure provides a snapshot of the proportion of men being diagnosed with metastatic disease at presentation. Overall we found 16% of men were diagnosed with metastatic disease compared to 15% in 2014-15 data. In Wales 13% of patients presented with metastatic disease compared to 11% in 2014-15 data. Differences between audit periods are likely due to improved completeness of staging items which has led to a reduction in patients classified as "mixed". There also appears to be minimal variation in men diagnosed with metastatic disease at a specialist MDT and Health Board level.

[34] Ahmed HU, El-Shater Bosaily A et al. Diagnostic accuracy of multi-parametric MRI and TRUS biopsy in prostate cancer (PROMIS): a paired validating confirmatory study. Lancet 2017;389(10071):815-822

"Potential over-treatment" of low-risk localised disease

On a national level 8% of men with low-risk localised disease received radical treatment within one year of diagnosis in England. This is an improvement compared to 2014-15 data when 12% were potentially over-treated. This is encouraging and suggests further use of active surveillance in this cohort of men.

"Potential under-treatment" of locally advanced disease

73% of men diagnosed with locally advanced disease received some form of radical treatment within a year of diagnosis in England. This is in comparison to 61% of men in 2014-15 data. The majority of men received radiotherapy although the proportion receiving radical prostatectomy has increased compared to the 2014-15 data. This is positive and suggests that more men are being offered potentially curative treatment as opposed to being placed on hormonal therapy alone.

Emergency re-admission within 90 days of radical prostatectomy

This performance indicator was published for the first time using a risk-adjustment model. The national average was 4% which is a slight improvement from 5% in last year's Annual Report. This improvement could be secondary to improved surgical technique, better patient selection or more efficient discharge pathways and requires further evaluation. Following adjustment only one surgical centre was outside the outer limit of the funnel plot.

Medium-term treatment-related toxicity after radical prostatectomy and external beam radiotherapy

On a national level, 11% of men experienced at least one severe GU complication following radical prostatectomy. 11% of men also experienced severe GI toxicity following radical EBRT. Although variation existed in the occurrence of complications between centres, there were no centres with outlying performance after adjustment for differences in age or comorbidities. These new metrics will be a valuable new tool for the future, enabling direct comparison of outcome and morbidity year on year following surgery by provider.

Key Messages

1. All NHS providers of prostate cancer care in England and Wales are now participating in the NPCA. At present, data completeness in England does not reach the high level achieved in Wales.

2. The proportion of men presenting with metastatic disease at diagnosis between 1st April 2015 and 31st March 2016 remains stable in England and Wales. However, there is some variation and some work is required to understand potential causes of late presentation.

3. Changes in diagnostic and staging practice over time are apparent. The use of multiparametric MRI prior to biopsy in England is increasing and there is evidence of increasing uptake of 'newer' biopsy techniques such as the transperineal approach in England and Wales.

4. The "potential over-treatment" of men with low-risk disease in England has further declined after reaching a plateau in 2015 and 2016 indicating that more men may have the option of active surveillance in keeping with recent guidance.

5. The trend towards a reduction in the "potential under-treatment" of men with locally advanced disease continues suggesting that fewer men are being denied the opportunity of potentially curative treatment.

6. Within two years of undergoing radical treatments, one in ten men experience at least one severe genitourinary complication after undergoing radical prostatectomy, or a severe gastrointestinal complication following external beam radiotherapy.

7. For the first time, the NPCA uses a risk-adjusted approach to compare the performance of NHS treatment centres in England and identify outlying performance.

Implications for the care of men with prostate cancer

- Continued improvement in the data-completeness of key data items is still required. This includes both important risk-adjustment factors (performance status and ASA) in addition to bespoke NPCA treatment-related data items ("planned type of image-guidance for EBRT", "planned duration of neoadjuvant/adjuvant androgen deprivation therapy" and "radical prostatectomy margin status") that are currently unavailable from other nationally collected data sources.

- The increase in men receiving multiparametric MRI prior to biopsy is an important finding. Studies supporting pre-biopsy mpMRI have been performed at highly specialised centres and have highlighted the importance of high-quality mpMRI and radiology reporting required to replicate the results on a national level. This is a challenge given the capacity issues within healthcare settings in the NHS and the NPCA will investigate the type of MRI delivered across the country in the future.

- Reduction in men with low-risk disease being "potentially over-treated". Overall this is encouraging and suggests findings from studies such as PIVOT[35] and Protect[36] are being disseminated into national practice. There will always be patients who will opt for treatment however safe-guards should be in place to ensure all men are appropriately counselled on active surveillance.

- Reduction in men with locally advanced disease being "potentially under-treated". There is strong evidence that EBRT to the prostate combined with hormone therapy before and for a period after improves survival. The evidence for the use of surgery in this setting is less strong but some men are likely to benefit. A concern of the NPCA has been that some healthy older men may be at risk of under-treatment. This issue is of growing importance given the ageing population and the impact this will have on the proportion of older men being diagnosed with locally advanced disease. Further work is required to understand what factors contribute to some men in this cohort receiving treatment and others not.

- We have used previously validated outcome measures to capture treatment-related toxicity using NPCA prospective data. These metrics allow the measurement of quality of radical prostatectomy and EBRT delivered nationally and provides information that can guide quality improvement which can help providers to see how they compare with each other. The findings from the NPCA further demonstrate the importance of appropriate counselling of patients regarding potential treatment-related toxicity and the provision of support services beyond the immediate post-treatment period.

Recommendations

For prostate cancer teams (local and specialist MDTs) within NHS Trusts/Health Boards

- Review local data completeness and ensure that data quality issues are identified and urgently addressed across the patient pathway.

- Review performance indicators for your Trust/ Health Board and implement changes to local practices where required in keeping with the NPCA *'Implications for the care of men with prostate cancer'* and *NICE clinical guidelines/quality standards*.[37,38]

For commissioners and health care regulators

- Review the performance indicators for your region to identify areas where improvements can be made.

- Work with your local NHS providers to develop strategies to reduce variation in the care provided to patients.

[35] Wilt TJ, Brawer MK et al. Radical prostatectomy versus observation for localized prostate cancer. N Engl J Med 2012:367:203-213

[36] Hamdy FC, Donovan JL et al. 10-Year outcomes after monitoring, surgery, or radiotherapy for localized cancer. N Engl J Med 2016;375:1415-1424

[37] NICE, 2014: https://www.nice.org.uk/guidance/cg175

[38] NICE, 2015: https://www.nice.org.uk/guidance/qs91

Glossary

Active Surveillance
This treatment is a way of monitoring prostate cancer that has low risk features and is contained within the prostate. Doctors monitor the cancer closely and can initiate active treatment with surgery or radiotherapy if the cancer starts to grow.

Androgen Deprivation Therapy (ADT)
The use of hormones to treat prostate cancer. This can be used alongside radiotherapy for radical treatment, or in isolation for the treatment of advanced disease.

ASA score
The American Society of Anaesthesiologists (ASA) classification is a scoring system based on the perioperative health and co-morbidities of a surgical patient. A high ASA score denotes a higher risk of perioperative complications in the short and long term. For the NPCA, an ASA score is assigned to all patients regardless of treatment.

Brachytherapy
A treatment for prostate cancer using radioactive seeds implanted into the prostate gland. Brachytherapy can deliver a high radiation dose to the prostate gland whilst avoiding radiation to the surrounding healthy tissue.

British Association of Urological Surgeons (BAUS)
A dedicated professional association for urological surgeons. Registered charity no: 1127044.

British Uro-oncology Group (BUG)
Dedicated professional association for clinical and medical oncologists specialising in the field of urology. Registered charity no: 1116828.

Cancer Network Information System Cymru (CaNISC)
An online computer system that provides information for health professionals on cancer patients across Wales.

Case-mix
Refers to different characteristics of patients seen in different hospitals (for example age, sex, disease stage, social deprivation and general health). Knowledge of differing case-mix enables a more accurate method of comparing quality of care (case-mix adjustment).

Case-mix adjustment
A statistical method of comparing quality of care between organisations that takes into account important and measurable characteristics (also see risk-adjustment).

Care Quality Commission (CQC)
Independent regulator of health and adult social care in England. The CQC makes sure that health and social care services provide people with safe, effective, compassionate and high-quality care.

Clinical Effectiveness Unit (CEU)
An academic collaboration between the RCS and the London School of Hygiene and Tropical Medicine (LSHTM).
The CEU carries out national surgical audits, develops audit methodologies and produces evidence on clinical and cost effectiveness.

Clinical Nurse Specialist (CNS)
These are experienced senior nurses who have undergone specialist training and play an essential role in improving communication with cancer patients. They act as the first point of contact for the patient, coordinating and facilitating the patient's treatment.

Clinical Outcomes Publication (COP)
An NHS initiative, managed by HQIP, to publish quality measures at the level of each individual consultant, team and unit using national clinical and administrative data.

Co-morbidity
Medical condition(s) or disease process(es) that are additional to the disease under investigation (in this case, prostate cancer).

Cancer Outcomes and Services Dataset (COSD)
The national standard for reporting on cancer in the NHS in England. Trusts submit a data file to the National Cancer Registration and Analysis Service (NCRAS) every month.

Charlson Co-morbidity Score
A commonly used scoring system for medical co-morbidities. The score is calculated based on the absence and presence of specific medical problems in the Hospital Episode Statistics (HES) database.

External Beam Radiotherapy (EBRT)
The use of high energy X-ray beams directed at the prostate to kill cancer cells. It can be used to treat localised or locally advanced prostate cancer.

Gleason Score
The Gleason score is a measure of how aggressive the prostate cancer is and is graded up to nine. Along with PSA and TNM, the Gleason score can be used to risk stratify patients.

Health Board
A local health organisation that is responsible for delivering all healthcare services within a regional area in Wales. Currently, there are seven Health Boards in Wales and six of these provide prostate cancer services

Healthcare Quality Improvement Partnership (HQIP)
It aims to promote quality improvement in healthcare and increase the impact of clinical audit on the services provided by the NHS and independent healthcare organisations.

Hospital Episode Statistics (HES)
A database that contains data on all inpatients treated within NHS trusts in England. This includes details of admissions, diagnoses and treatments.

Intensity-modulated Radiotherapy (IMRT)
IMRT is a type of conformal radiotherapy. Conformal radiotherapy shapes the radiation beam to closely fit the area of the cancer in order to avoid healthy tissue. The benefit over 3-diemntional conformal radiotherapy is that a higher dose can be given to the prostate while limiting the radiation dose to the surrounding tissues.

International Classification of Diseases, Tenth Revision (ICD-10)
This is the World Health Organisation international standard diagnostic classification, and is used to code diagnoses and complications within the Hospital Episode Statistics database of the English NHS.

Localised Disease
When cancer is confined within the prostatic capsule.

Locally Advanced Disease
When cancer has spread outside the prostatic capsule and potentially into surrounding lymph nodes in the pelvis.

Lymphadenectomy
The surgical removal of one or more groups of lymph nodes.

Magnetic Resonance Imaging (MRI)
A type of scan that uses strong magnetic fields and radio waves to produce detailed images of the inside of the body.

Margin Status
Once the prostate has been removed during surgery, the margin status indicates if the edge of the specimen contains cancer cells or not. A positive margin status would indicate that residual prostate cancer cells are likely to have been left behind.

Metastatic Disease
When cancer has spread away from the prostate to distant sites of the body, mainly to the bones.

Multidisciplinary Team (MDT)
A team of specialist health care professionals from various backgrounds (e.g. doctors, nurses, administrative staff) who collaborate to organise and deliver care for patients with a specific condition (e.g. prostate cancer).

Multimodal Therapies
The use of multiple treatments for use against prostate cancer. This may be a combination of radiotherapy, hormones and/or surgery.

Multiparametric MRI (mpMRI)
A special type of Magnetic Resonance Imaging Scan (MRI) that provides detailed images of the prostate.

National Cancer Data Repository (NCDR)
The NCDR comprises a merged dataset of English cancer registration data, linked to further national datasets including Hospital Episode Statistics (HES), the radiotherapy dataset (RTDS) and Office of National Statistics data (ONS).

National Cancer Registration and Analytical Service (NCRAS)
A national body which collects, analyses and reports on cancer data for the NHS population in England.

Nerve-sparing Surgery
During a prostatectomy the surgeon may avoid the nerves surrounding the prostate in order to preserve erectile function after the operation. This is not always possible if the cancer has spread outside of the prostatic capsule.

NHS Digital
The provider of professional IT services to the NHS. Their goal is to improve health and social care in England by making better use of technology, data and information.

NHS Hospital Trust
An NHS organisation that provides acute care services in England. A trust can include one or more hospitals.

National Institute for Health and Care Excellence (NICE)
An organisation responsible for providing national guidance on the promotion of good health, and the prevention and treatment of ill health.

Office for National Statistics (ONS)
Government department responsible for collecting and publishing official statistics about the UK's society and economy. This includes cancer registration data.

Patient Episode Database for Wales (PEDW)
A database that contains all inpatient and day case activity undertaken in NHS Wales hospitals. This includes details of admissions, diagnoses and the treatments undergone.

Performance Status (WHO/ECOG)
The World Health Organisation (WHO)/Eastern Cooperative Oncology Group (ECOG) performance status indicator is a measure of how disease(s) impacts a patient's ability to manage on a daily basis. It was initially developed in the research setting to standardise the reporting of chemotherapy toxicity and the response of cancer patients in clinical trials. However, it is now in the public domain and is routinely used in other research and clinical settings.

Prostate Specific Antigen (PSA)
A protein produced by the cells of the prostate gland. A high PSA may indicate prostate cancer or prostate cancer recurrence but it also may indicate benign conditions such as an enlarged prostate or infection.

Prostatectomy
The surgical removal of the prostate gland.

Radical treatment
Treatment aimed at curing prostate cancer (removing cancer tissue). These treatments include radical prostatectomy and radiotherapy (including brachytherapy).

Radiotherapy Data Set (RTDS)
A database that contains standardised data from all NHS Trust providers of radiotherapy services in England.

Radiotherapy
The use of radiation to destroy cancer cells. There are different types of radiotherapy, including external beam radiotherapy and brachytherapy.

Risk Stratification
Men with prostate cancer are classified according to their risk profile. This is done by taking into account how aggressive the cancer is and how far it has spread.

Risk-adjustment
A statistical method of that takes into account important and measurable characteristics (also see case-mix adjustment).

Robotic-assisted Prostatectomy
A key-hole operation that uses a robot console to help the operating surgeon. The robot allows for more controlled and precise movements during the operation. Advantages over traditional open surgery include less blood loss, less post-operative pain, a shorter hospital stay, smaller scars and a greater likelihood of sparing the nerves and bloods vessels which are attached to the prostate.

Royal College of Surgeons of England (RCS)
An independent professional body committed to enabling surgeons to achieve and maintain the highest standards of surgical practice and patient care. As part of this it supports audit and the evaluation of clinical effectiveness of surgery.

Specialist Multidisciplinary Team (sMDT)
An sMDT coordinates the specialist treatment of men with prostate cancer. The SMDT enables local cancer units to access specialist prostate cancer services which may not be locally available. Specialist services include prostatectomy and radiotherapy.

Staging/stage
The anatomical extent of a cancer.

TNM stage
This is a classification that describes how advanced the cancer is and stands for Tumour (T), Node (N) and Metastasis (M). T describes the size of the tumour, N describes the involvement of lymph nodes and M describes if the cancer has spread to a different part of the body.

Transrectal Ultrasound (TRUS) Biopsy
This involves using thin needles to takes tissue samples from the prostate after numbing the area with local anaesthetic. The biopsy is done through the rectum (back passage). The placement of these needles is enabled by use of an ultrasound scanner in the rectum to guide the biopsy.

Transperineal biopsy
Taking biopsies of the prostate through the perineum. This is performed under general anaesthetic and needle placement can be more precise than transrectal ultrasound biopsies.

Treatment-related Toxicity
This relates to complications following radical treatment. Genitourinary and gastrointestinal complications can be expected following radiotherapy, but only genitourinary complications are expected following prostatectomy.

Wales Cancer Network (WCN)
A new organisation that has evolved from the merger of the two Cancer Networks in Wales and the Cancer National Specialist Advisory Group (NSAG) and is designed to collateral cancer-specific information in Wales.

Welsh Cancer Intelligence and Surveillance Unit (WCISU)
WCISU is the National Cancer Registry for Wales. Its primary role is to record, store and report on all incidence of cancer for the resident population of Wales.

Appendix 1a: Overview of data completeness for selected data items in (MDS1) by sMDT and Trust in England over the period of 1 April 2015 and 31 March 2016.

Of the 39,613 cancer registry records received in England, 38,951 had a valid provider code. As the NPCA includes all men newly diagnosed with prostate cancer in the English NCDR we no longer report case-ascertainment (as this approaches 100% in most cases).

Diagnosing sMDT	No. of Cancer Registry records	ASA completed N(%) (NPCA)	Performance status (COSD)	PSA completed N(%) (COSD)	Gleason Score completed N(%) (Cancer Registry)	TNM completed N(%) (Cancer Registry)	Multiparametric MRI performed completed N(%) (NPCA)	At least 1 planned treatment recorded N(%) (NPCA)	At least 1 treatment modality recorded (COSD) N(%)
Overall	**38,950**	**13,079 (34%)**	**17,400 (45%)**	**28,208 (72%)**	**32,144 (83%)**	**28,818 (74%)**	**21,730 (56%)**	**22,996 (59%)**	**32,765 (84%)**
Barking, Havering and Redbridge University Hospitals NHS Trust	**369**	**35 (9%)**	**33 (9%)**	**308 (83%)**	**258 (70%)**	**214 (58%)**	**54 (15%)**	**132 (36%)**	**339 (92%)**
Barking, Havering and Redbridge University Hospitals NHS Trust	369	35 (9%)	33 (9%)	308 (83%)	258 (70%)	214 (58%)	54 (15%)	132 (36%)	339 (92%)
Barts Health NHS Trust	**501**	**198 (40%)**	**288 (57%)**	**441 (88%)**	**446 (89%)**	**433 (86%)**	**438 (87%)**	**439 (88%)**	**443 (88%)**
Barts Health NHS Trust	431	133 (31%)	223 (52%)	375 (87%)	386 (90%)	369 (86%)	373 (87%)	372 (86%)	374 (87%)
Homerton University Hospital NHS Foundation Trust	70	65 (93%)	65 (93%)	66 (94%)	60 (86%)	64 (91%)	65 (93%)	67 (96%)	69 (99%)
Bradford Teaching Hospitals NHS Foundation Trust	**632**	**423 (67%)**	**341 (54%)**	**528 (84%)**	**533 (84%)**	**479 (76%)**	**607 (96%)**	**265 (42%)**	**576 (91%)**
Airedale NHS Trust	162	139 (86%)	139 (86%)	151 (93%)	145 (90%)	140 (86%)	157 (97%)	53 (33%)	151 (93%)
Bradford Teaching Hospitals NHS Foundation Trust	187	95 (51%)	16 (9%)	119 (64%)	152 (81%)	123 (66%)	176 (94%)	74 (40%)	165 (88%)
Calderdale And Huddersfield NHS Foundation Trust	283	189 (67%)	186 (66%)	258 (91%)	236 (83%)	216 (76%)	274 (97%)	138 (49%)	260 (92%)
Brighton & Sussex University Hospitals NHS Trust	**1,380**	**10 (1%)**	**566 (41%)**	**857 (62%)**	**1,006 (73%)**	**1,097 (79%)**	**512 (37%)**	**538 (39%)**	**1,131 (82%)**
Brighton & Sussex University Hospitals NHS Trust	378	3 (1%)	17 (4%)	268 (71%)	256 (68%)	303 (80%)	13 (3%)	17 (4%)	290 (77%)
East Sussex Healthcare NHS Trust	425	4 (1%)	11 (3%)	73 (17%)	347 (82%)	307 (72%)	3 (1%)	19 (4%)	332 (78%)
Western Sussex Hospitals NHS Trust	577	3 (1%)	538 (93%)	516 (89%)	403 (70%)	487 (84%)	496 (86%)	502 (87%)	509 (88%)
Cambridge University Hospitals NHS Foundation Trust	**1,896**	**830 (44%)**	**959 (51%)**	**1,426 (75%)**	**1,582 (83%)**	**1,328 (70%)**	**1,352 (71%)**	**1,260 (66%)**	**1,486 (78%)**
Bedford Hospital NHS Trust	211	205 (97%)	206 (98%)	207 (98%)	163 (77%)	166 (79%)	206 (98%)	206 (98%)	203 (96%)
Cambridge University Hospitals NHS Foundation Trust	397	31 (8%)	23 (6%)	131 (33%)	351 (88%)	283 (71%)	148 (37%)	141 (36%)	126 (32%)
Hinchingbrooke Health Care NHS Trust	95	3 (3%)	68 (72%)	48 (51%)	73 (77%)	70 (74%)	66 (69%)	46 (48%)	91 (96%)
Peterborough and Stamford Hospitals NHS Foundation Trust	318	162 (51%)	105 (33%)	266 (84%)	259 (81%)	240 (75%)	218 (69%)	150 (47%)	281 (88%)
Queen Elizabeth Hospital NHS Trust	248	172 (69%)	176 (71%)	231 (93%)	214 (86%)	101 (41%)	217 (88%)	225 (91%)	231 (93%)
The Ipswich Hospital NHS Trust	341	194 (57%)	224 (66%)	318 (93%)	275 (81%)	295 (87%)	321 (94%)	321 (94%)	318 (93%)
West Suffolk Hospitals NHS Trust	286	63 (22%)	157 (55%)	225 (79%)	247 (86%)	173 (60%)	176 (62%)	171 (60%)	236 (83%)
Central Manchester University Hospitals NHS Foundation Trust	**606**	**464 (77%)**	**517 (85%)**	**550 (91%)**	**509 (84%)**	**556 (92%)**	**534 (88%)**	**563 (93%)**	**490 (81%)**
Central Manchester University Hospitals NHS Foundation Trust	146	86 (59%)	106 (73%)	125 (86%)	112 (77%)	123 (84%)	129 (88%)	130 (89%)	115 (79%)
Pennine Acute Hospitals NHS Trust	460	378 (82%)	411 (89%)	425 (92%)	397 (86%)	433 (94%)	405 (88%)	433 (94%)	375 (82%)
City Hospitals Sunderland NHS Foundation Trust	**396**	**281 (71%)**	**338 (85%)**	**296 (75%)**	**253 (64%)**	**208 (53%)**	**299 (76%)**	**307 (78%)**	**386 (97%)**
City Hospitals Sunderland NHS Foundation Trust	380	273 (72%)	324 (85%)	286 (75%)	253 (67%)	198 (52%)	289 (76%)	297 (78%)	371 (98%)
South Tyneside NHS Foundation Trust	16	8 (50%)	14 (88%)	10 (63%)	0	10 (63%)	10 (63%)	10 (63%)	15 (94%)
Derby Hospitals NHS Foundation Trust	**730**	**197 (27%)**	**176 (24%)**	**471 (65%)**	**589 (81%)**	**452 (62%)**	**523 (72%)**	**419 (57%)**	**569 (78%)**
Burton Hospitals NHS Foundation Trust	157	152 (97%)	154 (98%)	150 (96%)	126 (80%)	100 (64%)	154 (98%)	149 (95%)	152 (97%)
Derby Hospitals NHS Foundation Trust	334	34 (10%)	21 (6%)	265 (79%)	269 (81%)	221 (66%)	307 (92%)	249 (75%)	316 (95%)
Sherwood Forest Hospitals NHS Foundation Trust	239	11 (5%)	1 (0%)	56 (23%)	194 (81%)	131 (55%)	62 (26%)	21 (9%)	101 (42%)
East & North Hertfordshire NHS Trust	**842**	**475 (56%)**	**350 (42%)**	**660 (78%)**	**686 (81%)**	**592 (70%)**	**528 (63%)**	**516 (61%)**	**727 (86%)**
East & North Hertfordshire NHS Trust	314	50 (16%)	37 (12%)	230 (73%)	259 (82%)	221 (70%)	115 (37%)	118 (38%)	283 (90%)

Diagnosing sMDT	No. of Cancer Registry records	ASA completed N(%) (NPCA)	Performance status (COSD)	PSA completed N(%) (COSD)	Gleason Score completed N(%) (Cancer Registry)	TNM completed N(%) (Cancer Registry)	Multiparametric MRI performed completed N(%) (NPCA)	At least 1 planned treatment recorded N(%) (NPCA)	At least 1 treatment modality recorded (COSD) N(%)
Luton and Dunstable Hospital NHS Trust	267	222 (83%)	110 (41%)	228 (85%)	225 (84%)	193 (72%)	222 (83%)	213 (80%)	231 (87%)
West Hertfordshire Hospitals NHS Trust	261	203 (78%)	203 (78%)	202 (77%)	202 (77%)	178 (68%)	191 (73%)	185 (71%)	213 (82%)
East Kent Hospitals University NHS Foundation Trust	**685**	**3 (0%)**	**511 (75%)**	**167 (24%)**	**565 (82%)**	**604 (88%)**	**414 (60%)**	**418 (61%)**	**580 (85%)**
East Kent Hospitals University NHS Foundation Trust	685	3 (0%)	511 (75%)	167 (24%)	565 (82%)	604 (88%)	414 (60%)	418 (61%)	580 (85%)
Gloucestershire Hospitals NHS Foundation Trust	**579**	**5 (1%)**	**20 (3%)**	**19 (3%)**	**462 (80%)**	**407 (70%)**	**16 (3%)**	**12 (2%)**	**478 (83%)**
Gloucestershire Hospitals NHS Foundation Trust	444	5 (1%)	6 (1%)	19 (4%)	354 (80%)	322 (73%)	15 (3%)	11 (2%)	388 (87%)
Wye Valley NHS Trust	135	0	14 (10%)	0	108 (80%)	85 (63%)	1 (1%)	1 (1%)	90 (67%)
Guy's and St Thomas' NHS Foundation Trust	**1,102**	**278 (25%)**	**323 (29%)**	**769 (70%)**	**928 (84%)**	**837 (76%)**	**641 (58%)**	**657 (60%)**	**83 (8%)**
Guy's and St Thomas' NHS Foundation Trust	464	67 (14%)	121 (26%)	359 (77%)	397 (86%)	375 (81%)	357 (77%)	357 (77%)	13 (3%)
King's College Hospital NHS Foundation Trust	415	189 (46%)	189 (46%)	225 (54%)	349 (84%)	293 (71%)	209 (50%)	225 (54%)	11 (3%)
Lewisham and Greenwich NHS Trust	223	22 (10%)	13 (6%)	185 (83%)	182 (82%)	169 (76%)	75 (34%)	75 (34%)	59 (26%)
Heart of England NHS Foundation Trust	**740**	**311 (42%)**	**163 (22%)**	**694 (94%)**	**677 (91%)**	**585 (79%)**	**651 (88%)**	**626 (85%)**	**514 (69%)**
Heart of England NHS Foundation Trust	610	290 (48%)	122 (20%)	576 (94%)	580 (95%)	499 (82%)	572 (94%)	549 (90%)	391 (64%)
Walsall Hospitals NHS Trust	130	21 (16%)	41 (32%)	118 (91%)	97 (75%)	86 (66%)	79 (61%)	77 (59%)	123 (95%)
Hull and East Yorkshire Hospitals	**999**	**523 (52%)**	**422 (42%)**	**858 (86%)**	**773 (77%)**	**686 (69%)**	**588 (59%)**	**558 (56%)**	**952 (95%)**
Hull and East Yorkshire Hospitals	396	116 (29%)	123 (31%)	336 (85%)	310 (78%)	238 (60%)	164 (41%)	156 (39%)	374 (94%)
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust	239	76 (32%)	75 (31%)	172 (72%)	168 (70%)	162 (68%)	169 (71%)	127 (53%)	233 (97%)
York Hospitals NHS Trust	364	331 (91%)	224 (62%)	350 (96%)	295 (81%)	286 (79%)	255 (70%)	275 (76%)	345 (95%)
Imperial College Healthcare NHS Trust	**845**	**445 (53%)**	**590 (70%)**	**676 (80%)**	**687 (81%)**	**559 (66%)**	**603 (71%)**	**572 (68%)**	**661 (78%)**
Chelsea and Westminster NHS Foundation Trust	89	40 (45%)	51 (57%)	63 (71%)	61 (69%)	53 (60%)	42 (47%)	39 (44%)	76 (85%)
Imperial College Healthcare NHS Trust	407	266 (65%)	276 (68%)	310 (76%)	344 (85%)	274 (67%)	272 (67%)	247 (61%)	276 (68%)
London North West Healthcare NHS Trust	260	62 (24%)	176 (68%)	223 (86%)	209 (80%)	156 (60%)	213 (82%)	216 (83%)	221 (85%)
The Hillingdon Hospital NHS Trust	89	77 (87%)	87 (98%)	80 (90%)	73 (82%)	76 (85%)	76 (85%)	70 (79%)	88 (99%)
Lancashire Teaching Hospitals NHS Foundation Trust	**1,122**	**447 (40%)**	**986 (88%)**	**942 (84%)**	**954 (85%)**	**876 (78%)**	**735 (66%)**	**922 (82%)**	**1,056 (94%)**
Blackpool, Fylde and Wyre Hospitals NHS Trust	286	15 (5%)	233 (81%)	200 (70%)	257 (90%)	239 (84%)	42 (15%)	195 (68%)	266 (93%)
East Lancashire Hospitals NHS Trust	264	242 (92%)	253 (96%)	245 (93%)	223 (84%)	209 (79%)	206 (78%)	255 (97%)	256 (97%)
Lancashire Teaching Hospitals NHS Foundation Trust	294	25 (9%)	256 (87%)	262 (89%)	241 (82%)	211 (72%)	247 (84%)	260 (88%)	272 (93%)
University Hospitals of Morecambe Bay NHS Trust	278	165 (59%)	244 (88%)	235 (85%)	233 (84%)	217 (78%)	240 (86%)	212 (76%)	262 (94%)
Leeds Teaching Hospitals NHS Trust	**581**	**160 (28%)**	**139 (24%)**	**333 (57%)**	**463 (80%)**	**412 (71%)**	**553 (95%)**	**449 (77%)**	**511 (88%)**
Harrogate and District NHS Foundation Trust	154	133 (86%)	113 (73%)	144 (94%)	131 (85%)	138 (90%)	150 (97%)	143 (93%)	147 (95%)
Leeds Teaching Hospitals NHS Trust	427	27 (6%)	26 (6%)	189 (44%)	332 (78%)	274 (64%)	403 (94%)	306 (72%)	364 (85%)
Medway NHS Foundation Trust	**939**	**266 (28%)**	**853 (91%)**	**827 (88%)**	**775 (83%)**	**831 (88%)**	**738 (79%)**	**713 (76%)**	**817 (87%)**
Dartford and Gravesham NHS Trust	105	4 (4%)	96 (91%)	90 (86%)	68 (65%)	88 (84%)	90 (86%)	81 (77%)	94 (90%)
Maidstone and Tunbridge Wells NHS Trust	670	118 (18%)	599 (89%)	596 (89%)	586 (87%)	597 (89%)	554 (83%)	536 (80%)	577 (86%)

Diagnosing sMDT	No. of Cancer Registry records	ASA completed N(%) (NPCA)	Performance status (COSD)	PSA completed N(%) (COSD)	Gleason Score completed N(%) (Cancer Registry)	TNM completed N(%) (Cancer Registry)	Multiparametric MRI performed completed N(%) (NPCA)	At least 1 planned treatment recorded N(%) (NPCA)	At least 1 treatment modality recorded (COSD) N(%)
Medway NHS Foundation Trust	164	144 (88%)	158 (96%)	141 (86%)	121 (74%)	146 (89%)	94 (57%)	96 (59%)	146 (89%)
Newcastle upon Tyne Hospitals NHS Foundation Trust	**870**	**336 (39%)**	**312 (36%)**	**679 (78%)**	**741 (85%)**	**565 (65%)**	**241 (28%)**	**695 (80%)**	**833 (96%)**
Gateshead Health NHS Foundation Trust	98	89 (91%)	88 (90%)	98 (100%)	80 (82%)	61 (62%)	58 (59%)	98 (100%)	97 (99%)
Newcastle upon Tyne Hospitals NHS Foundation Trust	391	55 (14%)	50 (13%)	292 (75%)	349 (89%)	239 (61%)	34 (9%)	314 (80%)	375 (96%)
North Cumbria Acute Hospitals NHS Trust	212	140 (66%)	132 (62%)	147 (69%)	173 (82%)	148 (70%)	148 (70%)	146 (69%)	199 (94%)
Northumbria Healthcare NHS Foundation Trust	169	52 (31%)	42 (25%)	142 (84%)	139 (82%)	117 (69%)	1 (1%)	137 (81%)	162 (96%)
Norfolk & Norwich University Hospitals NHS Foundation Trust	**900**	**311 (35%)**	**625 (69%)**	**806 (90%)**	**755 (84%)**	**566 (63%)**	**307 (34%)**	**707 (79%)**	**846 (94%)**
James Paget University Hospitals NHS Foundation Trust	233	227 (97%)	231 (99%)	231 (99%)	174 (75%)	173 (74%)	226 (97%)	181 (78%)	231 (99%)
Norfolk & Norwich University Hospitals NHS Foundation Trust	667	84 (13%)	394 (59%)	575 (86%)	581 (87%)	393 (59%)	81 (12%)	526 (79%)	615 (92%)
North Bristol NHS Trust	1,510	513 (34%)	875 (58%)	1,330 (88%)	1,210 (80%)	1,200 (79%)	1,313 (87%)	1,054 (70%)	1,350 (89%)
Great Western Hospitals NHS Foundation Trust	269	14 (5%)	218 (81%)	250 (93%)	221 (82%)	250 (93%)	252 (94%)	243 (90%)	250 (93%)
North Bristol NHS Trust	**623**	**59 (9%)**	**118 (19%)**	**515 (83%)**	**524 (84%)**	**416 (67%)**	**529 (85%)**	**409 (66%)**	**562 (90%)**
Royal United Hospital Bath NHS Trust	371	337 (91%)	333 (90%)	344 (93%)	296 (80%)	339 (91%)	338 (91%)	208 (56%)	308 (83%)
Weston Area Health NHS Trust	127	16 (13%)	97 (76%)	114 (90%)	97 (76%)	89 (70%)	113 (89%)	111 (87%)	115 (91%)
Yeovil District Hospital NHS Foundation Trust	120	87 (73%)	109 (91%)	107 (89%)	72 (60%)	106 (88%)	81 (68%)	83 (69%)	115 (96%)
Northampton General Hospital NHS Trust	**479**	**89 (19%)**	**147 (31%)**	**394 (82%)**	**399 (83%)**	**399 (83%)**	**99 (21%)**	**262 (55%)**	**427 (89%)**
Kettering General Hospital NHS Trust	229	23 (10%)	32 (14%)	219 (96%)	194 (85%)	195 (85%)	21 (9%)	166 (72%)	223 (97%)
Northampton General Hospital NHS Trust	250	66 (26%)	115 (46%)	175 (70%)	205 (82%)	204 (82%)	78 (31%)	96 (38%)	204 (82%)
Nottingham University Hospitals NHS Trust	**549**	**38 (7%)**	**29 (5%)**	**446 (81%)**	**460 (84%)**	**355 (65%)**	**219 (40%)**	**147 (27%)**	**486 (89%)**
Nottingham University Hospitals NHS Trust	549	38 (7%)	29 (5%)	446 (81%)	460 (84%)	355 (65%)	219 (40%)	147 (27%)	486 (89%)
Oxford University Hospitals NHS Trust	**1,196**	**461 (39%)**	**150 (13%)**	**748 (63%)**	**1,063 (89%)**	**740 (62%)**	**528 (44%)**	**497 (42%)**	**1,019 (85%)**
Buckinghamshire Healthcare NHS Trust	319	199 (62%)	40 (13%)	269 (84%)	264 (83%)	184 (58%)	211 (66%)	177 (55%)	266 (83%)
Milton Keynes General Hospital NHS Trust	220	0	25 (11%)	67 (30%)	198 (90%)	131 (60%)	1 (0%)	6 (3%)	186 (85%)
Oxford University Hospitals NHS Trust	657	262 (40%)	85 (13%)	412 (63%)	601 (91%)	425 (65%)	316 (48%)	314 (48%)	567 (86%)
Plymouth Hospitals NHS Trust	**713**	**316 (44%)**	**334 (47%)**	**670 (94%)**	**586 (82%)**	**598 (84%)**	**604 (85%)**	**623 (87%)**	**677 (95%)**
Plymouth Hospitals NHS Trust	368	47 (13%)	50 (14%)	337 (92%)	326 (89%)	329 (89%)	276 (75%)	340 (92%)	353 (96%)
Royal Cornwall Hospitals NHS Trust	345	269 (78%)	284 (82%)	333 (97%)	260 (75%)	269 (78%)	328 (95%)	283 (82%)	324 (94%)
Portsmouth Hospitals NHS Trust	**634**	**347 (55%)**	**241 (38%)**	**545 (86%)**	**503 (79%)**	**524 (83%)**	**525 (83%)**	**532 (84%)**	**519 (82%)**
Isle of Wight NHS Trust	223	179 (80%)	207 (93%)	203 (91%)	169 (76%)	216 (97%)	203 (91%)	203 (91%)	205 (92%)
Portsmouth Hospitals NHS Trust	411	168 (41%)	34 (8%)	342 (83%)	334 (81%)	308 (75%)	322 (78%)	329 (80%)	314 (76%)
Princess Alexandra Hospital NHS Trust	**326**	**6 (2%)**	**49 (15%)**	**221 (68%)**	**303 (93%)**	**293 (90%)**	**103 (32%)**	**176 (54%)**	**272 (83%)**
North Middlesex University Hospital NHS Trust	97	0	21 (22%)	74 (76%)	86 (89%)	91 (94%)	58 (60%)	0	69 (71%)
Princess Alexandra Hospital NHS Trust	229	6 (3%)	28 (12%)	147 (64%)	217 (95%)	202 (88%)	45 (20%)	176 (77%)	203 (89%)
Royal Berkshire NHS Foundation Trust	**345**	**62 (18%)**	**0**	**257 (74%)**	**280 (81%)**	**175 (51%)**	**323 (94%)**	**319 (92%)**	**313 (91%)**

Diagnosing sMDT	No. of Cancer Registry records	ASA completed N(%) (NPCA)	Performance status (COSD)	PSA completed N(%) (COSD)	Gleason Score completed N(%) (Cancer Registry)	TNM completed N(%) (Cancer Registry)	Multiparametric MRI performed completed N(%) (NPCA)	At least 1 planned treatment recorded N(%) (NPCA)	At least 1 treatment modality recorded (COSD) N(%)
Royal Berkshire NHS Foundation Trust	345	62 (18%)	0	257 (74%)	280 (81%)	175 (51%)	323 (94%)	319 (92%)	313 (91%)
Royal Devon & Exeter NHS Foundation Trust	**1,205**	**768 (64%)**	**749 (62%)**	**1,060 (88%)**	**1,002 (83%)**	**1,045 (87%)**	**893 (74%)**	**948 (79%)**	**1,155 (96%)**
Northern Devon Healthcare NHS Trust	155	149 (96%)	149 (96%)	140 (90%)	120 (77%)	123 (79%)	124 (80%)	121 (78%)	153 (99%)
Royal Devon & Exeter NHS Foundation Trust	531	434 (82%)	432 (81%)	475 (89%)	451 (85%)	468 (88%)	501 (94%)	481 (91%)	496 (93%)
South Devon Healthcare /Torbay and South Devon NHS Foundation Trust (from October 2,015)	236	151 (64%)	87 (37%)	227 (96%)	206 (87%)	220 (93%)	227 (96%)	226 (96%)	228 (97%)
Taunton and Somerset NHS Trust	283	34 (12%)	81 (29%)	218 (77%)	225 (80%)	234 (83%)	41 (14%)	120 (42%)	278 (98%)
Royal Surrey County Hospital NHS Foundation Trust	**1,633**	**352 (22%)**	**206 (13%)**	**1,075 (66%)**	**1,277 (78%)**	**1,173 (72%)**	**504 (31%)**	**524 (32%)**	**1,323 (81%)**
Ashford and St Peter's Hospitals NHS Trust	135	1 (1%)	0	69 (51%)	67 (50%)	65 (48%)	1 (1%)	5 (4%)	116 (86%)
Frimley Health NHS Foundation Trust	447	109 (24%)	88 (20%)	364 (81%)	348 (78%)	331 (74%)	216 (48%)	283 (63%)	390 (87%)
Hampshire Hospitals NHS Foundation Trust	334	83 (25%)	69 (21%)	197 (59%)	261 (78%)	293 (88%)	44 (13%)	58 (17%)	260 (78%)
Royal Surrey County Hospital NHS Foundation Trust	368	24 (7%)	47 (13%)	173 (47%)	310 (84%)	202 (55%)	95 (26%)	62 (17%)	255 (69%)
Surrey and Sussex Healthcare NHS Trust	349	135 (39%)	2 (1%)	272 (78%)	291 (83%)	282 (81%)	148 (42%)	116 (33%)	302 (87%)
Salford Royal Hospitals NHS Foundation Trust	**479**	**390 (81%)**	**431 (90%)**	**438 (91%)**	**401 (84%)**	**423 (88%)**	**424 (89%)**	**410 (86%)**	**433 (90%)**
Bolton Hospitals NHS Trust	170	157 (92%)	155 (91%)	159 (94%)	152 (89%)	164 (96%)	149 (88%)	133 (78%)	165 (97%)
Salford Royal Hospitals NHS Foundation Trust	131	93 (71%)	106 (81%)	105 (80%)	99 (76%)	91 (69%)	105 (80%)	108 (82%)	96 (73%)
Wrightington, Wigan and Leigh NHS Trust	178	140 (79%)	170 (96%)	174 (98%)	150 (84%)	168 (94%)	170 (96%)	169 (95%)	172 (97%)
Sheffield Teaching Hospitals NHS Foundation Trust	**1,291**	**516 (40%)**	**540 (42%)**	**920 (71%)**	**1,049 (81%)**	**919 (71%)**	**536 (42%)**	**873 (68%)**	**975 (76%)**
Barnsley Hospital NHS Foundation Trust	102	2 (2%)	9 (9%)	89 (87%)	69 (68%)	54 (53%)	14 (14%)	90 (88%)	88 (86%)
Chesterfield Royal Hospital NHS Foundation Trust	256	207 (81%)	223 (87%)	238 (93%)	210 (82%)	235 (92%)	190 (74%)	186 (73%)	236 (92%)
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	356	6 (2%)	56 (16%)	272 (76%)	297 (83%)	271 (76%)	19 (5%)	288 (81%)	311 (87%)
Sheffield Teaching Hospitals NHS Foundation Trust	439	172 (39%)	121 (28%)	192 (44%)	362 (82%)	262 (60%)	184 (42%)	194 (44%)	209 (48%)
The Rotherham NHS Foundation Trust	138	129 (93%)	131 (95%)	129 (93%)	111 (80%)	97 (70%)	129 (93%)	115 (83%)	131 (95%)
South Tees Hospitals NHS Foundation Trust	**760**	**117 (15%)**	**538 (71%)**	**638 (84%)**	**679 (89%)**	**570 (75%)**	**222 (29%)**	**403 (53%)**	**732 (96%)**
County Durham and Darlington NHS Foundation Trust	236	117 (50%)	217 (92%)	225 (95%)	207 (88%)	179 (76%)	213 (90%)	217 (92%)	230 (97%)
North Tees And Hartlepool NHS Foundation Trust	205	0	200 (98%)	176 (86%)	180 (88%)	136 (66%)	7 (3%)	177 (86%)	196 (96%)
South Tees Hospitals NHS Foundation Trust	319	0	121 (38%)	237 (74%)	292 (92%)	255 (80%)	2 (1%)	9 (3%)	306 (96%)
Southend Hospital NHS Trust	**1,076**	**135 (13%)**	**175 (16%)**	**721 (67%)**	**869 (81%)**	**701 (65%)**	**417 (39%)**	**395 (37%)**	**1,017 (95%)**
Basildon and Thurrock University Hospitals NHS Foundation Trust	192	126 (66%)	163 (85%)	174 (91%)	144 (75%)	144 (75%)	129 (67%)	137 (71%)	178 (93%)
Colchester Hospital University NHS Foundation Trust	316	1 (0%)	1 (0%)	162 (51%)	266 (84%)	175 (55%)	1 (0%)	2 (1%)	296 (94%)
Mid Essex Hospital Services NHS Trust	274	3 (1%)	2 (1%)	123 (45%)	240 (88%)	200 (73%)	34 (12%)	45 (16%)	257 (94%)
Southend Hospital NHS Trust	294	5 (2%)	9 (3%)	262 (89%)	219 (74%)	182 (62%)	253 (86%)	211 (72%)	286 (97%)
Stockport NHS Foundation Trust	**634**	**23 (4%)**	**236 (37%)**	**408 (64%)**	**551 (87%)**	**466 (74%)**	**115 (18%)**	**166 (26%)**	**482 (76%)**
East Cheshire NHS Trust	110	1 (1%)	11 (10%)	95 (86%)	94 (85%)	78 (71%)	1 (1%)	2 (2%)	102 (93%)

Diagnosing sMDT	No. of Cancer Registry records	ASA completed N(%) (NPCA)	Performance status (COSD)	PSA completed N(%) (COSD)	Gleason Score completed N(%) (Cancer Registry)	TNM completed N(%) (Cancer Registry)	Multiparametric MRI performed completed N(%) (NPCA)	At least 1 planned treatment recorded N(%) (NPCA)	At least 1 treatment modality recorded (COSD) N(%)
Mid Cheshire Hospitals NHS Trust	162	4 (2%)	27 (17%)	115 (71%)	149 (92%)	114 (70%)	42 (26%)	50 (31%)	111 (69%)
Stockport NHS Foundation Trust	265	17 (6%)	177 (67%)	131 (49%)	231 (87%)	234 (88%)	70 (26%)	44 (17%)	179 (68%)
Tameside Hospital NHS Foundation Trust	97	1 (1%)	21 (22%)	67 (69%)	77 (79%)	40 (41%)	2 (2%)	70 (72%)	90 (93%)
The Christie NHS Foundation Trust	**93**	**34 (37%)**	**41 (44%)**	**44 (47%)**	**85 (91%)**	**66 (71%)**	**42 (45%)**	**43 (46%)**	**28 (30%)**
The Christie NHS Foundation Trust	93	34 (37%)	41 (44%)	44 (47%)	85 (91%)	66 (71%)	42 (45%)	43 (46%)	28 (30%)
The Mid Yorkshire Hospitals NHS Trust	**276**	**223 (81%)**	**222 (80%)**	**221 (80%)**	**217 (79%)**	**139 (50%)**	**228 (83%)**	**221 (80%)**	**219 (79%)**
The Mid Yorkshire Hospitals NHS Trust	276	223 (81%)	222 (80%)	221 (80%)	217 (79%)	139 (50%)	228 (83%)	221 (80%)	219 (79%)
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	**791**	**21 (3%)**	**487 (62%)**	**535 (68%)**	**617 (78%)**	**711 (90%)**	**211 (27%)**	**244 (31%)**	**743 (94%)**
Dorset County Hospitals NHS Foundation Trust	296	3 (1%)	137 (46%)	101 (34%)	239 (81%)	266 (90%)	12 (4%)	29 (10%)	281 (95%)
Poole Hospital NHS Foundation Trust	26	0	12 (46%)	17 (65%)	12 (46%)	18 (69%)	7 (27%)	8 (31%)	21 (81%)
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	469	18 (4%)	338 (72%)	417 (89%)	366 (78%)	427 (91%)	192 (41%)	207 (44%)	441 (94%)
The Royal Liverpool & Broadgreen University Hospitals NHS Trust	**764**	**386 (51%)**	**517 (68%)**	**704 (92%)**	**634 (83%)**	**638 (84%)**	**555 (73%)**	**620 (81%)**	**708 (93%)**
Aintree University Hospital NHS Foundation Trust	220	185 (84%)	216 (98%)	215 (98%)	167 (76%)	212 (96%)	189 (86%)	213 (97%)	216 (98%)
Southport and Ormskirk Hospital NHS Trust	156	49 (31%)	132 (85%)	149 (96%)	137 (88%)	120 (77%)	106 (68%)	103 (66%)	150 (96%)
St Helens and Knowsley Hospitals NHS Trust	217	112 (52%)	148 (68%)	210 (97%)	184 (85%)	192 (88%)	206 (95%)	208 (96%)	201 (93%)
The Royal Liverpool & Broadgreen University Hospitals NHS Trust	171	40 (23%)	21 (12%)	130 (76%)	146 (85%)	114 (67%)	54 (32%)	96 (56%)	141 (82%)
The Royal Marsden NHS Foundation Trust	1,277	269 (21%)	671 (53%)	786 (62%)	1,097 (86%)	974 (76%)	684 (54%)	796 (62%)	909 (71%)
Croydon Health Services NHS Trust	62	1 (2%)	10 (16%)	37 (60%)	45 (73%)	42 (68%)	33 (53%)	40 (65%)	45 (73%)
Epsom And St Helier University Hospitals NHS Trust	317	65 (21%)	192 (61%)	275 (87%)	271 (85%)	196 (62%)	261 (82%)	274 (86%)	262 (83%)
Kingston Hospital NHS Trust	193	149 (77%)	144 (75%)	137 (71%)	143 (74%)	150 (78%)	152 (79%)	144 (75%)	155 (80%)
St George's Healthcare NHS Trust	546	17 (3%)	280 (51%)	259 (47%)	511 (94%)	473 (87%)	178 (33%)	260 (48%)	370 (68%)
The Royal Marsden NHS Foundation Trust	159	37 (23%)	45 (28%)	78 (49%)	127 (80%)	113 (71%)	60 (38%)	78 (49%)	77 (48%)
University College London Hospitals NHS Foundation Trust	**792**	**209 (26%)**	**191 (24%)**	**403 (51%)**	**660 (83%)**	**712 (90%)**	**353 (45%)**	**331 (42%)**	**578 (73%)**
Royal Free Hampstead NHS Trust	428	73 (17%)	71 (17%)	260 (61%)	352 (82%)	379 (89%)	134 (31%)	198 (46%)	304 (71%)
The Whittington Hospital NHS Trust	113	108 (96%)	106 (94%)	107 (95%)	95 (84%)	102 (90%)	108 (96%)	108 (96%)	102 (90%)
University College London Hospitals NHS Foundation Trust	251	28 (11%)	14 (6%)	36 (14%)	213 (85%)	231 (92%)	111 (44%)	25 (10%)	172 (69%)
University Hospital Southampton NHS Foundation Trust	**595**	**215 (36%)**	**397 (67%)**	**503 (85%)**	**464 (78%)**	**495 (83%)**	**239 (40%)**	**342 (57%)**	**552 (93%)**
Salisbury NHS Foundation Trust	170	144 (85%)	148 (87%)	144 (85%)	143 (84%)	157 (92%)	146 (86%)	142 (84%)	160 (94%)
University Hospital Southampton NHS Foundation Trust	425	71 (17%)	249 (59%)	359 (84%)	321 (76%)	338 (80%)	93 (22%)	200 (47%)	392 (92%)
University Hospitals of North Midlands NHS Trust	1,304	103 (8%)	131 (10%)	515 (39%)	1,121 (86%)	881 (68%)	278 (21%)	546 (42%)	1,275 (98%)
The Dudley Group NHS Hospitals Foundation Trust	277	30 (11%)	5 (2%)	39 (14%)	246 (89%)	143 (52%)	32 (12%)	48 (17%)	264 (95%)
The Royal Wolverhampton Hospitals NHS Trust	349	71 (20%)	42 (12%)	286 (82%)	304 (87%)	265 (76%)	244 (70%)	248 (71%)	349 (100%)

Diagnosing sMDT	No. of Cancer Registry records	ASA completed N(%) (NPCA)	Performance status (COSD)	PSA completed N(%) (COSD)	Gleason Score completed N(%) (Cancer Registry)	TNM completed N(%) (Cancer Registry)	Multiparametric MRI performed completed N(%) (NPCA)	At least 1 planned treatment recorded N(%) (NPCA)	At least 1 treatment modality recorded (COSD) N(%)
The Shrewsbury and Telford Hospital NHS Trust	263	2 (1%)	82 (31%)	113 (43%)	230 (87%)	180 (68%)	2 (1%)	120 (46%)	257 (98%)
University Hospitals of North Midlands NHS Trust	415	0	2 (0%)	77 (19%)	341 (82%)	293 (71%)	0	130 (31%)	405 (98%)
University Hospital of South Manchester NHS Foundation Trust	**155**	**89 (57%)**	**104 (67%)**	**108 (70%)**	**137 (88%)**	**144 (93%)**	**75 (48%)**	**75 (48%)**	**143 (92%)**
University Hospital of South Manchester NHS Foundation Trust	155	89 (57%)	104 (67%)	108 (70%)	137 (88%)	144 (93%)	75 (48%)	75 (48%)	143 (92%)
University Hospitals Birmingham NHS Foundation Trust	**527**	**56 (11%)**	**35 (7%)**	**285 (54%)**	**475 (90%)**	**226 (43%)**	**91 (17%)**	**67 (13%)**	**436 (83%)**
Sandwell and West Birmingham Hospitals NHS Trust	234	32 (14%)	14 (6%)	164 (70%)	215 (92%)	106 (45%)	46 (20%)	26 (11%)	226 (97%)
University Hospitals Birmingham NHS Foundation Trust	293	24 (8%)	21 (7%)	121 (41%)	260 (89%)	120 (41%)	45 (15%)	41 (14%)	210 (72%)
University Hospitals Coventry and Warwickshire NHS Trust	1,065	684 (64%)	678 (64%)	953 (89%)	923 (87%)	784 (74%)	909 (85%)	927 (87%)	944 (89%)
George Eliot Hospital NHS Trust	120	11 (9%)	13 (11%)	115 (96%)	102 (85%)	63 (53%)	112 (93%)	113 (94%)	113 (94%)
South Warwickshire General Hospitals NHS Trust	144	14 (10%)	13 (9%)	101 (70%)	124 (86%)	91 (63%)	71 (49%)	76 (53%)	83 (58%)
University Hospitals Coventry and Warwickshire NHS Trust	**287**	**154 (54%)**	**148 (52%)**	**235 (82%)**	**251 (87%)**	**194 (68%)**	**244 (85%)**	**239 (83%)**	**252 (88%)**
Worcestershire Acute Hospitals NHS Trust	514	505 (98%)	504 (98%)	502 (98%)	446 (87%)	436 (85%)	482 (94%)	499 (97%)	496 (96%)
University Hospitals of Leicester NHS Trust	**1,076**	**75 (7%)**	**96 (9%)**	**356 (33%)**	**893 (83%)**	**611 (57%)**	**338 (31%)**	**65 (6%)**	**943 (88%)**
United Lincolnshire Hospitals NHS Trust	580	67 (12%)	36 (6%)	100 (17%)	497 (86%)	338 (58%)	80 (14%)	55 (9%)	523 (90%)
University Hospitals of Leicester NHS Trust	496	8 (2%)	60 (12%)	256 (52%)	396 (80%)	273 (55%)	258 (52%)	10 (2%)	420 (85%)
Wirral University Teaching Hospitals NHS Foundation Trust	**691**	**584 (85%)**	**618 (89%)**	**617 (89%)**	**547 (79%)**	**569 (82%)**	**568 (82%)**	**622 (90%)**	**629 (91%)**
Clatterbridge Cancer Centre NHS Foundation Trust	59	22 (37%)	31 (53%)	44 (75%)	37 (63%)	43 (73%)	33 (56%)	53 (90%)	53 (90%)
Countess of Chester Hospital NHS Foundation Trust	176	166 (94%)	164 (93%)	170 (97%)	138 (78%)	143 (81%)	135 (77%)	153 (87%)	164 (93%)
Warrington and Halton Hospitals NHS Foundation Trust (WAS North Cheshire Hospitals NHS Trust)	182	161 (88%)	162 (89%)	162 (89%)	150 (82%)	142 (78%)	163 (90%)	159 (87%)	160 (88%)
Wirral University Teaching Hospitals NHS Foundation Trust	274	235 (86%)	261 (95%)	241 (88%)	222 (81%)	241 (88%)	237 (86%)	257 (94%)	252 (92%)

Trust commentary provided by the NCRAS further to data validation exercise (number of cases allocated to a trust at diagnosis and completeness of key data items):

"Airedale NHS Foundation Trust queried the data completeness and the number of cases allocated. Review of the patient level data determined that 12 cases were missing (due to allocation to other trusts and/or differences in diagnosis date) and 14 cases had key data items recorded that were blank in the data submission.

Ashford & St Peter's Hospitals NHS Foundation Trust highlighted that the number of cases allocated is lower than expected. Pathology data is processed by Royal Surrey resulting in these cases being assigned to Royal Surrey rather than Ashford & St Peter's.

Barts Health NHS Trust queried the number of cases allocated. Upon review of the patient level data, Barts found 5 cases that should not be included, 13 missing cases that had been allocated to a different trust, 21 additional cases from Homerton (Barts process pathology data for this trust), and 42 cases missing due to recording errors in the trust cancer database.

City Hospitals Sunderland NHS Foundation Trust queried the number of cases allocated. Review of the patient level data indicates that this may be partly due to differences in diagnosis date definition in COSD and the cancer registry, and partly due to cases being allocated to Durham as they carry out the initial diagnosis.

County Durham and Darlington NHS Foundation Trust queried patient allocation. Investigations carried out by the NCRAS indicate this could be due to patients managed and treated at Sunderland having initial diagnosis at Durham.

Peterborough & Stamford Hospitals NHS Foundation Trust reviewed the patient level data against their cancer database and found 9 cases where performance status was recorded in the wrong field, 2 cases they did not know about and 1 case that was recorded as non-cancer.

Royal Devon & Exeter NHS Foundation Trust queried the number of cases allocated. Upon review of the patient level data, they found 22 cases that were missing in the reported data (11 should have been included, 11 were excluded as they were diagnosed outside of the audit period or the patient was diagnosed with bladder cancer) and 31 additional cases (the majority were considered to result from differing COSD/cancer registry definitions of date of diagnosis).

The Royal Marsden NHS Foundation Trust queried the high number of allocations. As the Marsden provides pathology review for a number of trusts including Kingston and Epsom & St Helier, these cases have been assigned to the Marsden rather than the trust at diagnosis."

Appendix 1b: Overview of data completeness for selected data items in (MDS1) by Health Board in Wales over the period of 1 April 2015 and 31 March 2016.

All 2,121 NPCA records had a valid provider code. Data item 'at least 1 treatment modality recorded' (as shown in Appendix 1a for England) is unavailable in Wales as COSD data are not collected.

Health Board	No. of NPCA records	Expected number of cases (case ascertainment %)	ASA completed N(%)	Performance status	PSA completed N(%)	Gleason Score completed N(%)	TNM completed N(%)	Multiparametric MRI performed completed N(%)	at least 1 planned treatment recorded N(%)
Overall	**2,121**	**2,434 (87%)**	**2,121 (100%)**	**2,121 (100%)**	**1,860 (88%)**	**1,856 (88%)**	**2,118 (100%)**	**2,121 (100%)**	**2,121 (100%)**
Abertawe Bro Morgannwg University Health Board	352	329 (>100%)	352 (100%)	352 (100%)	311 (88%)	311 (88%)	352 (100%)	352 (100%)	352 (100%)
Aneurin Bevan University Health Board	364	452 (81%)	364 (100%)	364 (100%)	305 (84%)	304 (84%)	364 (100%)	364 (100%)	364 (100%)
Betsi Cadwaladr University Health Board	500	628 (80%)	500 (100%)	500 (100%)	428 (86%)	426 (85%)	497 (99%)	500 (100%)	500 (100%)
Cardiff & Vale University Health Board	302	348 (87%)	302 (100%)	302 (100%)	293 (97%)	292 (97%)	302 (100%)	302 (100%)	302 (100%)
Cwm Taf University Health Board	219	253 (87%)	219 (100%)	219 (100%)	200 (91%)	200 (91%)	219 (100%)	219 (100%)	219 (100%)
Hywel Dda Health Board	384	424 (91%)	384 (100%)	384 (100%)	323 (84%)	323 (84%)	384 (100%)	384 (100%)	384 (100%)

Appendix 2a – Overview of data completeness for selected Radical Prostatectomy (MDS2) data items by surgical centre in England over the period of 1 April 2015 and 31 March 2016.

Treating Trust	No. of HES linked CR records with radical prostatectomy recorded	Type of radical prostatectomy completed N(%) [NPCA]	Nerve sparing completed N(%)	Margin status completed N(%)
Overall	**5,841**	**5,841 (100%)**	**2,505 (43%)**	**3,221 (55%)**
Barking, Havering and Redbridge University Hospitals NHS Trust	64	64 (100%)	0	0
Bradford Teaching Hospitals NHS Foundation Trust	135	135 (100%)	0	113 (84%)
Buckinghamshire Healthcare NHS Trust	53	53 (100%)	25 (47%)	27 (51%)
Cambridge University Hospitals NHS Foundation Trust	139	139 (100%)	8 (6%)	6 (4%)
Central Manchester University Hospitals NHS Foundation Trust	61	61 (100%)	60 (98%)	60 (98%)
City Hospitals Sunderland NHS Foundation Trust	75	75 (100%)	21 (28%)	54 (72%)
Colchester Hospital University NHS Foundation Trust	98	98 (100%)	16 (16%)	1 (1%)
Derby Hospitals NHS Foundation Trust	50	50 (100%)	41 (82%)	11 (22%)
East & North Hertfordshire NHS Trust	123	123 (100%)	26 (21%)	0
East Kent Hospitals University NHS Foundation Trust	175	175 (100%)	163 (93%)	162 (93%)
East Lancashire Hospitals NHS Trust	48	48 (100%)	42 (88%)	46 (96%)
East Sussex Healthcare NHS Trust	85	85 (100%)	20 (24%)	10 (12%)
Gloucestershire Hospitals NHS Foundation Trust	89	89 (100%)	0	1 (1%)
Guy's and St Thomas' NHS Foundation Trust	242	242 (100%)	156 (64%)	161 (67%)
Heart of England NHS Foundation Trust	145	145 (100%)	137 (94%)	136 (94%)
Hull and East Yorkshire Hospitals	163	163 (100%)	56 (34%)	119 (73%)
Imperial College Healthcare NHS Trust	101	101 (100%)	20 (20%)	47 (47%)
Lancashire Teaching Hospitals NHS Foundation Trust	73	73 (100%)	35 (48%)	69 (95%)
Leeds Teaching Hospitals NHS Trust	115	115 (100%)	0	113 (98%)
Medway NHS Foundation Trust	114	114 (100%)	82 (72%)	87 (76%)
Newcastle upon Tyne Hospitals NHS Foundation Trust	147	147 (100%)	0	0

Treating Trust	No. of HES linked CR records with radical prostatectomy recorded	Type of radical prostatectomy completed N(%) [NPCA]	Nerve sparing completed N(%)	Margin status completed N(%)
Norfolk & Norwich University Hospitals NHS Foundation Trust	116	116 (100%)	0	0
North Bristol NHS Trust	270	270 (100%)	84 (31%)	184 (68%)
Nottingham University Hospitals NHS Trust	77	77 (100%)	20 (26%)	12 (16%)
Oxford University Hospitals NHS Trust	112	112 (100%)	21 (19%)	26 (23%)
Plymouth Hospitals NHS Trust	71	71 (100%)	0	36 (51%)
Portsmouth Hospitals NHS Trust	103	103 (100%)	47 (46%)	0
Royal Berkshire NHS Foundation Trust	94	94 (100%)	52 (55%)	71 (76%)
Royal Devon & Exeter NHS Foundation Trust	211	211 (100%)	202 (96%)	204 (97%)
Royal Surrey County Hospital NHS Foundation Trust	186	186 (100%)	16 (9%)	29 (16%)
Royal United Hospital Bath NHS Trust	47	47 (100%)	3 (6%)	21 (45%)
Sheffield Teaching Hospitals NHS Foundation Trust	200	200 (100%)	83 (42%)	83 (42%)
South Tees Hospitals NHS Foundation Trust	104	104 (100%)	1 (1%)	24 (23%)
Southend Hospital NHS Trust	12	12 (100%)	0	7 (58%)
St George's Healthcare NHS Trust	136	136 (100%)	0	0
Stockport NHS Foundation Trust	94	94 (100%)	7 (7%)	0
The Christie NHS Foundation Trust	95	95 (100%)	39 (41%)	40 (42%)
The Mid Yorkshire Hospitals NHS Trust	51	51 (100%)	1 (2%)	39 (76%)
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	104	104 (100%)	37 (36%)	83 (80%)
The Royal Liverpool & Broadgreen University Hospitals NHS Trust	122	122 (100%)	107 (88%)	121 (99%)
The Royal Marsden NHS Foundation Trust	130	130 (100%)	103 (79%)	107 (82%)
The Royal Wolverhampton Hospitals NHS Trust	137	137 (100%)	134 (98%)	120 (88%)
The Shrewsbury and Telford Hospital NHS Trust	37	37 (100%)	0	0

Treating Trust	No. of HES linked CR records with radical prostatectomy recorded	Type of radical prostatectomy completed N(%) [NPCA]	Nerve sparing completed N(%)	Margin status completed N(%)
United Lincolnshire Hospitals NHS Trust	18	18 (100%)	2 (11%)	2 (11%)
University College London Hospitals NHS Foundation Trust	279	279 (100%)	225 (81%)	250 (90%)
University Hospital Southampton NHS Foundation Trust	121	121 (100%)	32 (26%)	77 (64%)
University Hospitals of North Midlands NHS Trust	39	39 (100%)	0	0
University Hospitals Birmingham NHS Foundation Trust	126	126 (100%)	111 (88%)	99 (79%)
University Hospitals Coventry and Warwickshire NHS Trust	119	119 (100%)	89 (75%)	103 (87%)
University Hospitals of Leicester NHS Trust	95	95 (100%)	23 (24%)	37 (39%)
Wirral University Teaching Hospitals NHS Foundation Trust	106	106 (100%)	94 (89%)	95 (90%)
Worcestershire Acute Hospitals NHS Trust	134	134 (100%)	64 (48%)	128 (96%)
The denominator in England = the number of men with a radical prostatectomy recorded in HES records that can be linked to cancer registry records (N=5,841)				

Appendix 2b: Overview of data completeness for selected Radical Prostatectomy (MDS2) data items by Health Board in Wales over the period of 1 April 2015 and 31 March 2016.

Health Board	No. of NPCA records received radical prostatectomy	Type of radical prostatectomy completed N(%)	Nerve sparing completed N(%)	Margin status completed N(%)
Overall	**284**	**249 (88%)**	**167 (59%)**	**235 (83%)**
Abertawe Bro Morgannwg University Health Board	22	20 (91%)	13 (59%)	22 (100%)
Aneurin Bevan University Health Board	75	71 (95%)	70 (93%)	70 (93%)
Betsi Cadwaladr University Health Board	66	40 (61%)	16 (24%)	28 (42%)
Cardiff & Vale University Health Board	52	52 (100%)	45 (87%)	52 (100%)
Cwm Taf University Health Board	17	17 (100%)	8 (47%)	17 (100%)
Hywel Dda Health Board	52	49 (94%)	15 (29%)	46 (88%)

The denominator in Wales = the number of men with a radical prostatectomy recorded in NPCA records (N= 284)

Appendix 3a – Overview of data completeness for selected Radical Radiotherapy (MDS3) data items by radiotherapy centre in England over the period of 1 April 2015 and 31 March 2016.

Treating trust	No. of RTDS linked CR records with radical radiotherapy recorded	Planned duration of adjuvant ADT completed N(%)	Planned duration of neoadjuvant ADT completed N(%)	Planned type of image guidance completed N(%)
Overall	**13,252**	**2,131 (16%)**	**2,811 (21%)**	**4,371 (33%)**
Barking, Havering and Redbridge University Hospitals NHS Trust	153	72 (47%)	75 (49%)	79 (52%)
Barts Health NHS Trust	109	36 (33%)	37 (34%)	85 (78%)
Brighton & Sussex University Hospitals NHS Trust	357	0	1 (0%)	2 (1%)
Cambridge University Hospitals NHS Foundation Trust	351	52 (15%)	61 (17%)	43 (12%)
Clatterbridge Cancer Centre NHS Foundation Trust	569	291 (51%)	485 (85%)	502 (88%)
Colchester Hospital University NHS Foundation Trust	203	0	0	0
Derby Hospitals NHS Foundation Trust	163	17 (10%)	91 (56%)	77 (47%)
East & North Hertfordshire NHS Trust	470	3 (1%)	18 (4%)	9 (2%)
Gloucestershire Hospitals NHS Foundation Trust	216	1 (0%)	1 (0%)	0
Guy's and St Thomas' NHS Foundation Trust	292	36 (12%)	86 (29%)	116 (40%)
Hampshire Hospitals NHS Foundation Trust	63	0	0	0
Hull and East Yorkshire Hospitals	270	33 (12%)	51 (19%)	64 (24%)
Imperial College Healthcare NHS Trust	178	0	17 (10%)	0
Lancashire Teaching Hospitals NHS Foundation Trust	527	116 (22%)	116 (22%)	462 (88%)
Leeds Teaching Hospitals NHS Trust	574	201 (35%)	244 (43%)	64 (11%)
Maidstone and Tunbridge Wells NHS Trust	504	125 (25%)	122 (24%)	130 (26%)
Newcastle upon Tyne Hospitals NHS Foundation Trust	333	8 (2%)	10 (3%)	238 (71%)
Norfolk & Norwich University Hospitals NHS Foundation Trust	392	14 (4%)	14 (4%)	0
North Bristol NHS Trust	223	27 (12%)	45 (20%)	60 (27%)
North Cumbria Acute Hospitals NHS Trust	86	0	0	38 (44%)
North Middlesex University Hospital NHS Trust	154	19 (12%)	19 (12%)	25 (16%)
Northampton General Hospital NHS Trust	129	2 (2%)	9 (7%)	13 (10%)

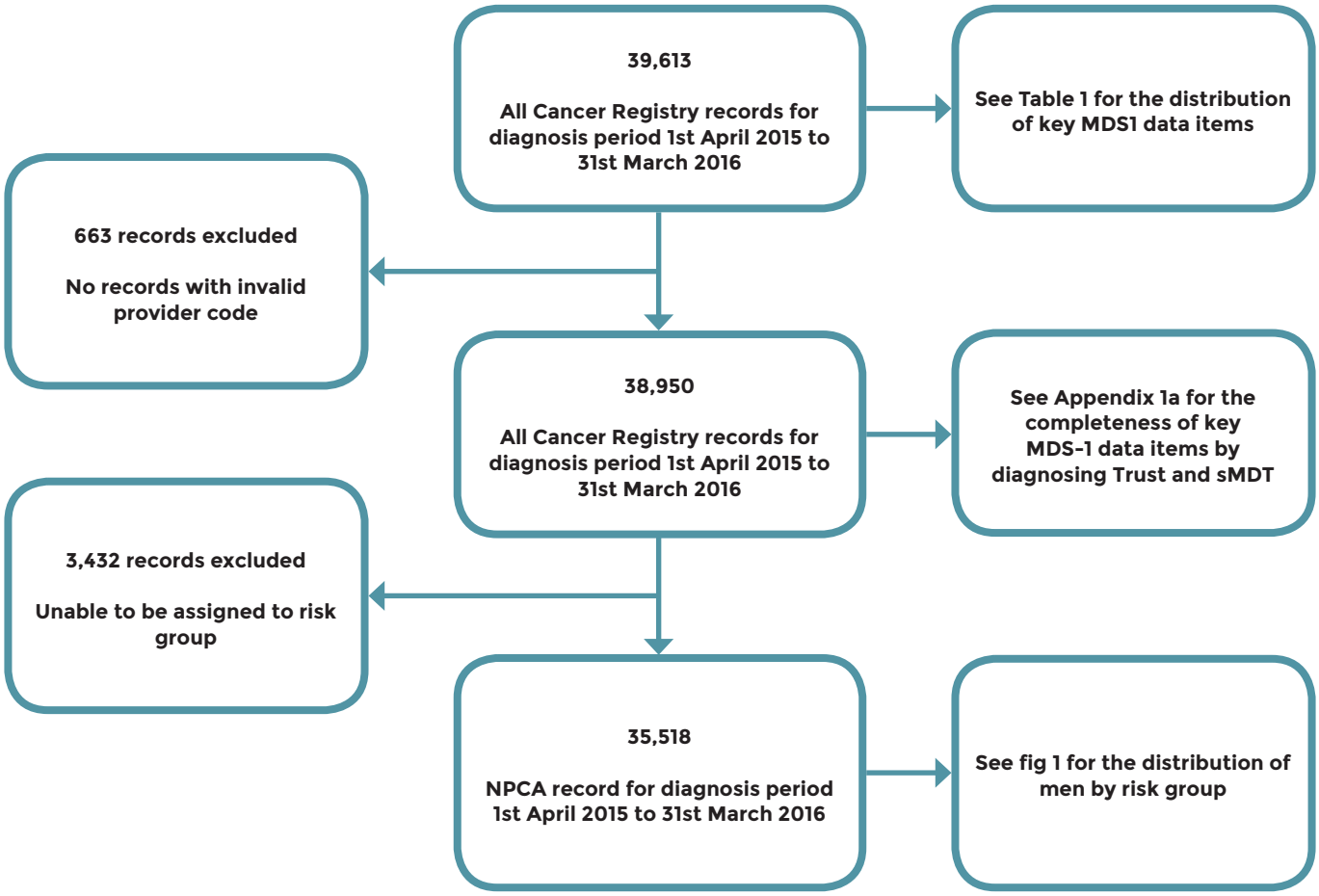
Treating trust	No. of RTDS linked CR records with radical radiotherapy recorded	Planned duration of adjuvant ADT completed N(%)	Planned duration of neoadjuvant ADT completed N(%)	Planned type of image guidance completed N(%)
Nottingham University Hospitals NHS Trust	279	15 (5%)	30 (11%)	20 (7%)
Oxford University Hospitals NHS Trust	407	21 (5%)	63 (15%)	36 (9%)
Peterborough and Stamford Hospitals NHS Foundation Trust	136	44 (32%)	45 (33%)	50 (37%)
Plymouth Hospitals NHS Trust	100	30 (30%)	45 (45%)	26 (26%)
Poole Hospital NHS Foundation Trust	277	22 (8%)	24 (9%)	152 (55%)
Portsmouth Hospitals NHS Trust	295	53 (18%)	86 (29%)	34 (12%)
Royal Berkshire NHS Foundation Trust	221	64 (29%)	60 (27%)	105 (48%)
Royal Cornwall Hospitals NHS Trust	90	3 (3%)	46 (51%)	39 (43%)
Royal Devon & Exeter NHS Foundation Trust	259	36 (14%)	127 (49%)	209 (81%)
Royal Free Hampstead NHS Trust	96	0	0	0
Royal Surrey County Hospital NHS Foundation Trust	401	0	0	1 (0%)
Royal United Hospital Bath NHS Trust	156	100 (64%)	100 (64%)	117 (75%)
Sheffield Teaching Hospitals NHS Foundation Trust	417	54 (13%)	47 (11%)	85 (20%)
South Devon Healthcare NHS Foundation Trust	69	57 (83%)	57 (83%)	54 (78%)
South Tees Hospitals NHS Foundation Trust	290	72 (25%)	85 (29%)	1 (0%)
Southend Hospital NHS Trust	134	0	1 (1%)	87 (65%)
Taunton and Somerset NHS Trust	126	29 (23%)	34 (27%)	43 (34%)
The Christie NHS Foundation Trust	662	124 (19%)	7 (1%)	561 (85%)
The Ipswich Hospital NHS Trust	181	32 (18%)	107 (59%)	73 (40%)
The Royal Marsden NHS Foundation Trust	392	76 (19%)	88 (22%)	247 (63%)
The Royal Wolverhampton Hospitals NHS Trust	239	16 (7%)	22 (9%)	65 (27%)
The Shrewsbury and Telford Hospital NHS Trust	99	0	0	5 (5%)
United Lincolnshire Hospitals NHS Trust	224	42 (19%)	44 (20%)	45 (20%)

Treating trust	No. of RTDS linked CR records with radical radiotherapy recorded	Planned duration of adjuvant ADT completed N(%)	Planned duration of neoadjuvant ADT completed N(%)	Planned type of image guidance completed N(%)
University College London Hospitals NHS Foundation Trust	77	20 (26%)	20 (26%)	33 (43%)
University Hospital Southampton NHS Foundation Trust	184	40 (22%)	42 (23%)	66 (36%)
University Hospitals of North Midlands NHS Trust	167	10 (6%)	11 (7%)	10 (6%)
University Hospitals Birmingham NHS Foundation Trust	473	1 (0%)	2 (0%)	2 (0%)
University Hospitals Coventry and Warwickshire NHS Trust	192	42 (22%)	39 (20%)	81 (42%)
University Hospitals of Leicester NHS Trust	177	0	0	39 (22%)
Worcestershire Acute Hospitals NHS Trust	116	75 (65%)	77 (66%)	78 (67%)
The denominator in England = the number of men with radical radiotherapy recorded in RTDS records that can be linked to cancer registry records (N=13,252)				

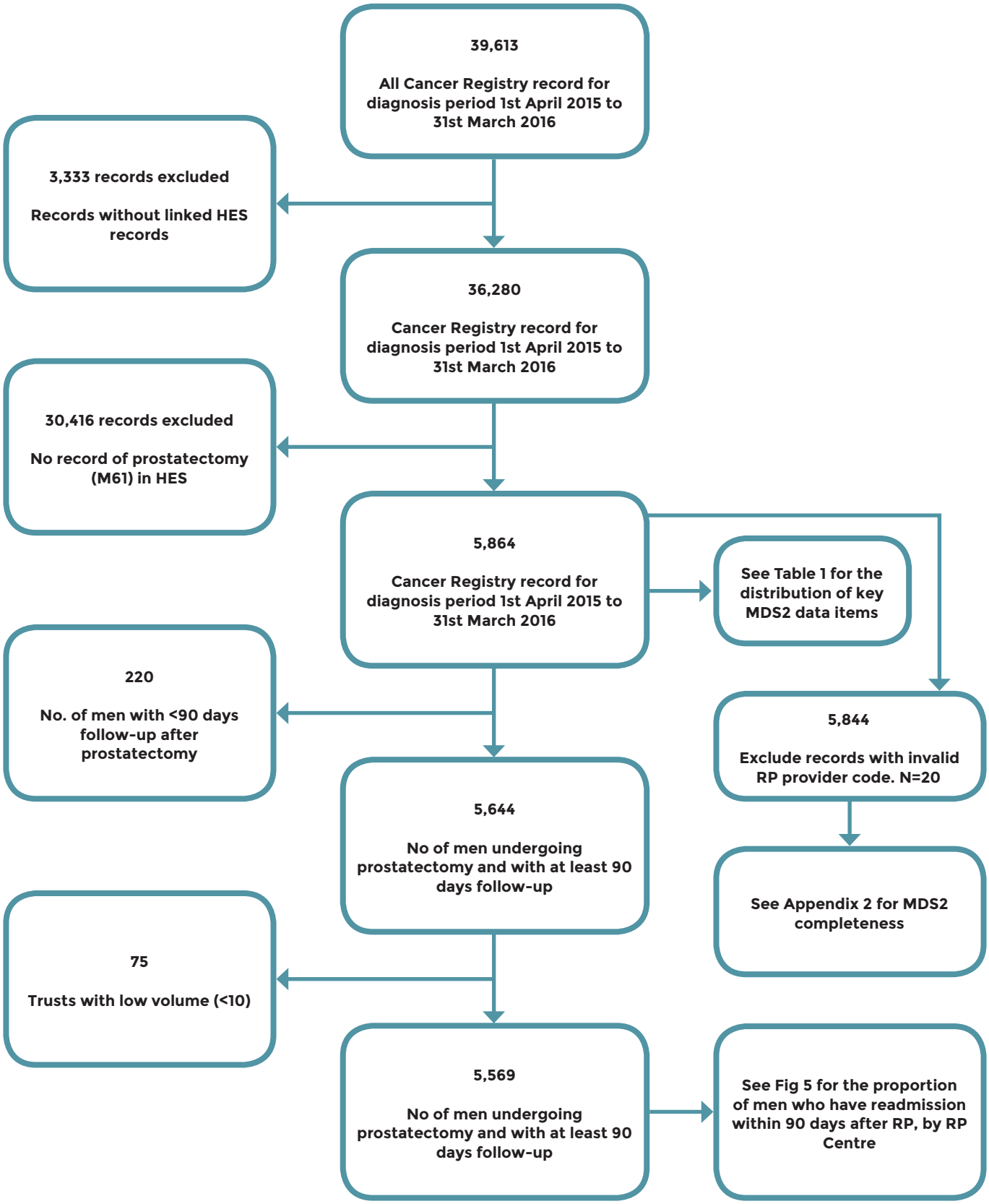
Appendix 3b: Overview of data completeness for selected Radical Radiotherapy (MDS3) data items by Health Board in Wales over the period of 1 April 2015 and 31 March 2016.

Health Board	No. of NPCA records received radical radiotherapy	Planned duration of neoadjuvent ADT completed N(%)	Planned type of radiotherapy completed N(%)	Planned type of image guidance completed N(%)
Overall	**631**	**549 (87%)**	**628 (100%)**	**613 (97%)**
Abertawe Bro Morgannwg University Health Board	140	133 (95%)	139 (99%)	138 (99%)
Aneurin Bevan University Health Board	83	75 (90%)	83 (100%)	83 (100%)
Betsi Cadwaladr University Health Board	141	111 (79%)	140 (99%)	128 (91%)
Cardiff & Vale University Health Board	81	66 (81%)	80 (99%)	81 (100%)
Cwm Taf University Health Board	89	73 (82%)	89 (100%)	89 (100%)
Hywel Dda Health Board	97	91 (94%)	97 (100%)	94 (97%)
The denominator in Wales = the number of men with radical radiotherapy recorded in NPCA records (N= 284)				

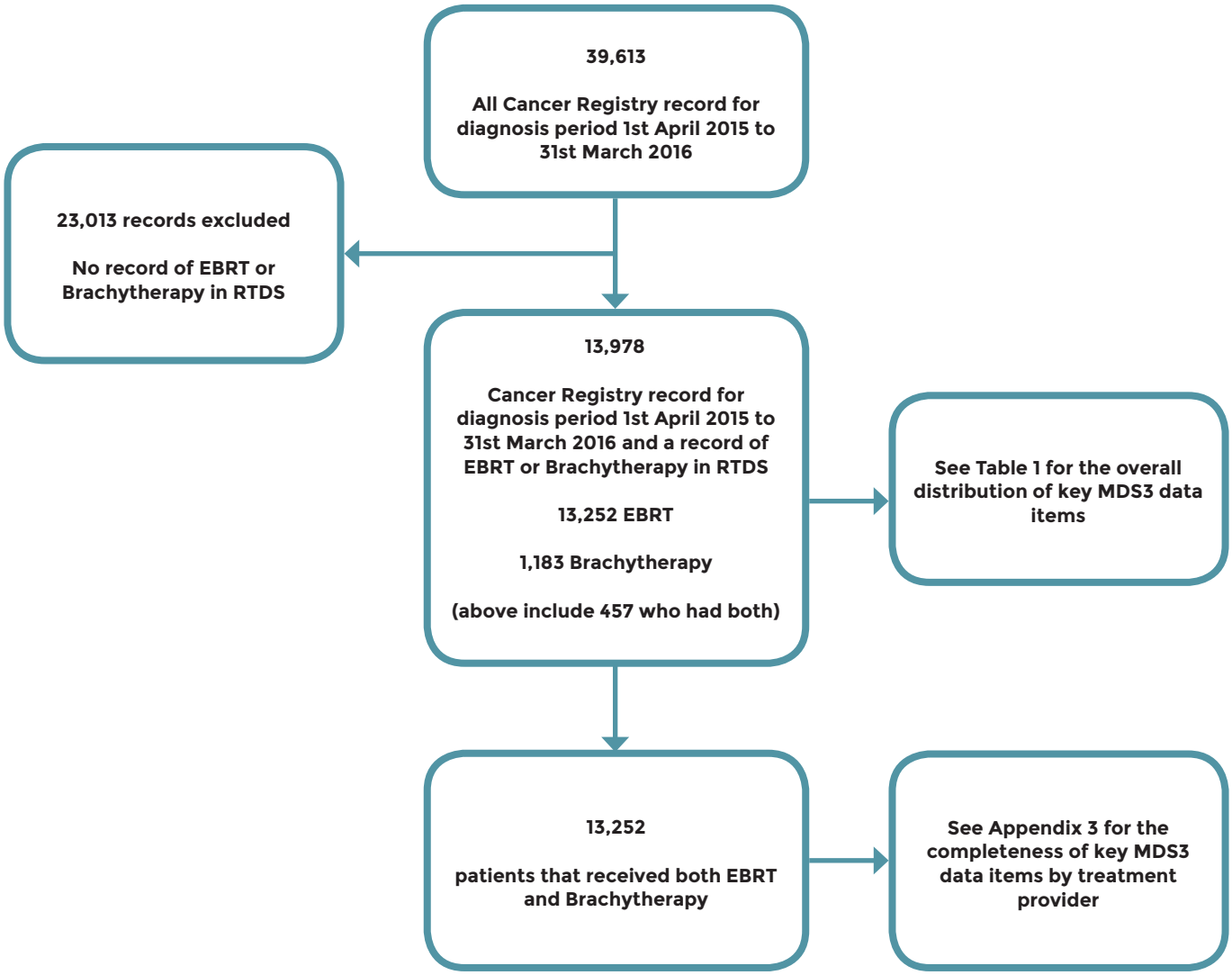
Appendix 4a: Flow chart of MDS-1 data items for men diagnosed with prostate cancer in England.



Appendix 4b: Flow chart of MDS-2 data items for men undergoing radical prostatectomy (RP) in England.



Appendix 4c: Flow chart of MDS-3 data items for men for whom EBRT or brachytherapy is planned in England.



Appendix 5: NPCA disease status algorithm

NPCA risk stratification algorithm developed to allocate disease status category using the following steps:	
Step 1	select all patients with a metastasis M1 (irrespective of whether or not information is available on tumour stage, Gleason grade or nodes) and label these as "**advanced disease"**
Step 2	select all remaining patients with positive nodes N1 (irrespective of whether or not information is available on tumour stage and Gleason grade) and label these as "**locally advanced disease"**
Step 3	select all remaining patients without information on metastatic and nodal status (MX/missing and NX/missing) with Gleason grade of 8 or above (irrespective of whether or not information on tumour stage is available) **OR** tumour stage T3 or T4 (irrespective of whether or not Gleason grade is available) **OR** PSA >20 and label these as a mixed group of "**advanced or locally advanced disease**"
Step 4	select all remaining patients with PSA>20 and label these as "**locally advanced disease**"
Step 5	select all remaining patients with Gleason grade of 8 or above (irrespective of whether or not information on tumour stage is available) and label these as "**locally advanced disease**"
Step 6	select all remaining patients with tumour stage T3 or T4 (irrespective of whether or not Gleason grade is available) and label these as "**locally advanced disease"**
Step 7	select all remaining patients with PSA ≥10 & PSA≤20 and label these as "**intermediate-risk localised disease**"
Step 8	select all remaining patients with tumour stage T2 and (Gleason grade 6 or 7) and label these as "**intermediate-risk localised disease**"
Step 9	select all remaining patients with tumour stage T1 and Gleason grade 7 and label these as "**intermediate-risk localised disease**"
Step 10	select all remaining patients with tumour stage T1 and Gleason 6 grade or lower and label these as "**low-risk localised disease**"
Step 11	consider all other patients as having insufficient information about disease status

Appendix 6a: Provider level data for the performance indicators 1,2 and 3

Performance indicator 1: Proportion of men diagnosed with metastatic disease.
Performance indicator 2: Proportion of men with low-risk localised prostate cancer undergoing radical prostate cancer therapy.
Performance indicator 3: Proportion of men with locally advanced disease receiving radical prostate cancer therapy.

Specialist MDT	No. of men with disease status determined	No. of men diagnosed with metastatic disease (%)	No. of men diagnosed with low-risk localised disease	No. of men with low-risk localised disease receiving radical treatment (%)	No. of men diagnosed with locally advanced disease	No. of men diagnosed with locally advanced disease receiving radical treatment (%)
Overall	**35,518**	**5,650 (16%)**	**3,309**	**275 (8%)**	**12436**	**8,888 (71%)**
Barking, Havering and Redbridge University Hospitals NHS Trust	290	46 (16%)	1	0	119	88 (74%)
Barts Health NHS Trust	474	61 (13%)	25	1 (4%)	159	87 (55%)
Bradford Teaching Hospitals NHS Foundation Trust	592	99 (17%)	36	3 (8%)	241	162 (67%)
Brighton & Sussex University Hospitals NHS Trust	1,181	199 (17%)	47	6 (13%)	481	354 (74%)
Cambridge University Hospitals NHS Foundation Trust	1,762	267 (15%)	266	30 (11%)	525	388 (74%)
Central Manchester University Hospitals NHS Foundation Trust	572	96 (17%)	96	7 (7%)	168	127 (76%)
City Hospitals Sunderland NHS Foundation Trust	357	91 (25%)	48	1 (2%)	106	56 (53%)
Derby Hospitals NHS Foundation Trust	675	126 (19%)	59	1 (2%)	252	164 (65%)
East & North Hertfordshire NHS Trust	757	127 (17%)	45	3 (7%)	212	155 (73%)
East Kent Hospitals University NHS Foundation Trust	643	95 (15%)	52	3 (6%)	248	177 (71%)
Gloucestershire Hospitals NHS Foundation Trust	520	105 (20%)	34	1 (3%)	210	141 (67%)
Guy's and St Thomas' NHS Foundation Trust	979	115 (12%)	82	10 (12%)	351	226 (64%)
Heart of England NHS Foundation Trust	722	78 (11%)	36	5 (14%)	234	162 (69%)
Hull and East Yorkshire Hospitals	1,304	267 (20%)	156	5 (3%)	445	337 (76%)
Imperial College Healthcare NHS Trust	697	110 (16%)	59	6 (10%)	229	170 (74%)
Lancashire Teaching Hospitals NHS Foundation Trust	1,050	187 (18%)	91	7 (8%)	427	332 (78%)
Leeds Teaching Hospitals NHS Trust	151	25 (17%)	40	1 (3%)	56	43 (77%)
Medway NHS Foundation Trust	884	134 (15%)	90	4 (4%)	327	233 (71%)

Specialist MDT	No. of men with disease status determined	No. of men diagnosed with metastatic disease (%)	No. of men diagnosed with low-risk localised disease	No. of men with low-risk localised disease receiving radical treatment (%)	No. of men diagnosed with locally advanced disease	No. of men diagnosed with locally advanced disease receiving radical treatment (%)
Newcastle upon Tyne Hospitals NHS Foundation Trust	835	164 (20%)	110	5 (5%)	309	232 (75%)
Norfolk & Norwich University Hospitals NHS Foundation Trust	806	97 (12%)	61	4 (7%)	278	220 (79%)
North Bristol NHS Trust	1,353	212 (16%)	166	10 (6%)	452	326 (72%)
Northampton General Hospital NHS Trust	443	57 (13%)	36	2 (6%)	138	83 (60%)
Nottingham University Hospitals NHS Trust	511	91 (18%)	58	3 (5%)	165	130 (79%)
Oxford University Hospitals NHS Trust	1,097	145 (13%)	80	3 (4%)	377	253 (67%)
Plymouth Hospitals NHS Trust	663	110 (17%)	58	1 (2%)	232	144 (62%)
Portsmouth Hospitals NHS Trust	566	93 (16%)	50	6 (12%)	213	138 (65%)
Princess Alexandra Hospital NHS Trust	309	31 (10%)	28	0	97	70 (72%)
Royal Berkshire NHS Foundation Trust	310	41 (13%)	60	10 (17%)	93	86 (92%)
Royal Devon & Exeter NHS Foundation Trust	1,127	190 (17%)	135	4 (3%)	428	308 (72%)
Royal Surrey County Hospital NHS Foundation Trust	1,399	195 (14%)	117	14 (12%)	493	367 (74%)
Salford Royal Hospitals NHS Foundation Trust	444	76 (17%)	72	17 (24%)	154	103 (67%)
Sheffield Teaching Hospitals NHS Foundation Trust	1,214	232 (19%)	124	21 (17%)	423	303 (72%)
South Tees Hospitals NHS Foundation Trust	734	155 (21%)	54	5 (9%)	218	174 (80%)
Southend Hospital NHS Trust	978	150 (15%)	86	8 (9%)	300	211 (70%)
Stockport NHS Foundation Trust	584	88 (15%)	72	8 (11%)	198	143 (72%)
The Christie NHS Foundation Trust	86	10 (12%)	14	1 (7%)	24	17 (71%)
The Mid Yorkshire Hospitals NHS Trust	251	48 (19%)	24	1 (4%)	82	55 (67%)
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	684	88 (13%)	53	2 (4%)	299	194 (65%)

Specialist MDT	No. of men with disease status determined	No. of men diagnosed with metastatic disease (%)	No. of men diagnosed with low-risk localised disease	No. of men with low-risk localised disease receiving radical treatment (%)	No. of men diagnosed with locally advanced disease	No. of men diagnosed with locally advanced disease receiving radical treatment (%)
The Royal Liverpool & Broadgreen University Hospitals NHS Trust	720	113 (16%)	33	3 (9%)	293	211 (72%)
The Royal Marsden NHS Foundation Trust	1,108	149 (13%)	67	2 (3%)	387	298 (77%)
University College London Hospitals NHS Foundation Trust	699	74 (11%)	31	1 (3%)	235	168 (71%)
University Hospital Southampton NHS Foundation Trust	520	68 (13%)	50	1 (2%)	195	130 (67%)
University Hospitals of North Midlands NHS Trust	1,223	232 (19%)	62	9 (15%)	433	308 (71%)
University Hospital of South Manchester NHS Foundation Trust	149	22 (15%)	17	4 (24%)	46	26 (57%)
University Hospitals Birmingham NHS Foundation Trust	491	77 (16%)	75	9 (12%)	146	109 (75%)
University Hospitals Coventry and Warwickshire NHS Trust	986	130 (13%)	90	9 (10%)	335	235 (70%)
University Hospitals of Leicester NHS Trust	980	170 (17%)	108	13 (12%)	309	231 (75%)
Wirral University Teaching Hospitals NHS Foundation Trust	638	114 (18%)	55	5 (9%)	294	213 (72%)

Appendix 6b: Provider level data for the performance indicator 4

Performance indicator 4: Proportion of patients who had an emergency readmission within 90 days of radical prostate cancer surgery.

RP trust	No. of men who received RP	No. of men who had an emergency readmission within 90 days of RP (%)	Adjusted rate (%)
Overall	**5,569**	**231 (4)**	**5**
Barking, Havering and Redbridge University Hospitals NHS Trust	62	2(3)	3
Bradford Teaching Hospitals NHS Foundation Trust	127	8(6)	6
Buckinghamshire Healthcare NHS Trust	51	3(6)	6
Cambridge University Hospitals NHS Foundation Trust	133	0(0)	0
Central Manchester University Hospitals NHS Foundation Trust	59	2(3)	3
City Hospitals Sunderland NHS Foundation Trust	74	4(5)	5
Colchester Hospital University NHS Foundation Trust	92	11(12)	12
Derby Hospitals NHS Foundation Trust	48	2(4)	4
East & North Hertfordshire NHS Trust	117	2(2)	2
East Kent Hospitals University NHS Foundation Trust	168	2(1)	1
East Lancashire Hospitals NHS Trust	43	2(5)	5
East Sussex Healthcare NHS Trust	83	4(5)	5
Gloucestershire Hospitals NHS Foundation Trust	87	2(2)	2
Guy's and St Thomas' NHS Foundation Trust	232	8(3)	4
Heart of England NHS Foundation Trust	143	11(8)	8
Hull and East Yorkshire Hospitals	156	8(5)	5
Imperial College Healthcare NHS Trust	95	5(5)	5
Lancashire Teaching Hospitals NHS Foundation Trust	70	4(6)	6
Leeds Teaching Hospitals NHS Trust	111	7(6)	6
Medway NHS Foundation Trust	110	4(4)	4
Newcastle upon Tyne Hospitals NHS Foundation Trust	136	10(7)	7
Norfolk & Norwich University Hospitals NHS Foundation Trust	110	10(9)	9
North Bristol NHS Trust	260	5(2)	2

RP trust	No. of men who received RP	No. of men who had an emergency readmission within 90 days of RP (%)	Adjusted rate (%)
Nottingham University Hospitals NHS Trust	72	3(4)	4
Oxford University Hospitals NHS Trust	107	5(5)	5
Plymouth Hospitals NHS Trust	64	2(3)	3
Portsmouth Hospitals NHS Trust	100	1(1)	1
Royal Berkshire NHS Foundation Trust	90	3(3)	3
Royal Devon & Exeter NHS Foundation Trust	200	8(4)	4
Royal Surrey County Hospital NHS Foundation Trust	179	6(3)	3
Royal United Hospital Bath NHS Trust	43	1(2)	2
Sheffield Teaching Hospitals NHS Foundation Trust	193	7(4)	4
South Tees Hospitals NHS Foundation Trust	99	6(6)	6
Southend Hospital NHS Trust	11	1(9)	9
St George's Healthcare NHS Trust	132	2(2)	2
Stockport NHS Foundation Trust	89	2(2)	2
The Christie NHS Foundation Trust	89	3(3)	3
The Mid Yorkshire Hospitals NHS Trust	48	1(2)	2
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	102	3(3)	3
The Royal Liverpool & Broadgreen University Hospitals NHS Trust	114	1(1)	1
The Royal Marsden NHS Foundation Trust	125	6(5)	5
The Royal Wolverhampton Hospitals NHS Trust	119	5(4)	4
The Shrewsbury and Telford Hospital NHS Trust	35	5(14)	14
United Lincolnshire Hospitals NHS Trust	18	0(0)	0
University College London Hospitals NHS Foundation Trust	267	1(0)	0
University Hospital Southampton NHS Foundation Trust*	119	17(14)	14
University Hospitals of North Midlands NHS Trust	38	6(16)	16

RP trust	No. of men who received RP	No. of men who had an emergency readmission within 90 days of RP (%)	Adjusted rate (%)
University Hospitals Birmingham NHS Foundation Trust	120	4(3)	3
University Hospitals Coventry and Warwickshire NHS Trust	112	1(1)	1
University Hospitals of Leicester NHS Trust	88	7(8)	8
Wirral University Teaching Hospitals NHS Foundation Trust	103	6(6)	6
Worcestershire Acute Hospitals NHS Trust	126	2(2)	2

* Response from University Hospital Southampton NHS Foundation Trust further to investigation of the potential outlier status "The adjusted 90-day emergency readmission rate following radical prostatectomy highlighted the University Hospital Southampton NHS Foundation Trust as a potential outlier. 17 men were flagged as readmissions following 119 radical prostatectomy operations. On closer analysis, 2 cases were wrongly assigned as a readmission due to local coding errors. A further 7 men required urgent attendances to the acute surgical unit, regarding mostly catheter-related issues, but none required an overnight stay in hospital. The remaining 8 men were genuine readmissions requiring an admission to an inpatient ward.

The set-up at Southampton is for men to be directly seen in the acute surgical unit by the urology team as opposed to in the emergency department. This process may not happen at other hospitals and will therefore not trigger as a readmission. Patient satisfaction with this arrangement appears high and is not adversely affecting patient safety. The revised number of readmissions can subsequently be dropped to 8, giving a corresponding readmission rate of 6.7%."

Appendix 6c: Provider level data for the performance indicator 5

Performance indicator 5: Proportion of patients experiencing at least one severe genitourinary (GU) complication within 2 years of radical prostatectomy

RP centre	No. of patients received RP	No. of patients experiencing at least one GU complication (%)	Adjusted rate (%)
Overall	**2,940**	**304 (10)**	**11**
Barking, Havering and Redbridge University Hospitals NHS Trust	40	1(3)	2
Bradford Teaching Hospitals NHS Foundation Trust	78	12(15)	15
Buckinghamshire Healthcare NHS Trust	23	5(22)	22
Cambridge University Hospitals NHS Foundation Trust	74	5(7)	7
Central Manchester University Hospitals NHS Foundation Trust	44	11(25)	25
City Hospitals Sunderland NHS Foundation Trust	51	2(4)	4
Colchester Hospital University NHS Foundation Trust	69	13(19)	19
Derby Hospitals NHS Foundation Trust	25	5(20)	20
East & North Hertfordshire NHS Trust	75	6(8)	8
East Kent Hospitals University NHS Foundation Trust	95	12(13)	13
East Lancashire Hospitals NHS Trust	32	10(31)	31
East Sussex Healthcare NHS Trust	39	5(13)	13
Gloucestershire Hospitals NHS Foundation Trust	41	9(22)	22
Guy's and St Thomas' NHS Foundation Trust	121	4(3)	3
Heart of England NHS Foundation Trust	92	9(10)	10
Hull and East Yorkshire Hospitals	55	8(15)	15
Imperial College Healthcare NHS Trust	61	2(3)	3
Lancashire Teaching Hospitals NHS Foundation Trust	44	9(20)	20
Leeds Teaching Hospitals NHS Trust	53	5(9)	10
Medway NHS Foundation Trust	55	8(15)	14
Newcastle upon Tyne Hospitals NHS Foundation Trust	92	8(9)	9
Norfolk & Norwich University Hospitals NHS Foundation Trust	76	4(5)	5
North Bristol NHS Trust	130	16(12)	12

RP centre	No. of patients received RP	No. of patients experiencing at least one GU complication (%)	Adjusted rate (%)
Nottingham University Hospitals NHS Trust	44	4(9)	9
Oxford University Hospitals NHS Trust	57	9(16)	16
Plymouth Hospitals NHS Trust	18	1(6)	6
Portsmouth Hospitals NHS Trust	16	1(6)	6
Royal Berkshire NHS Foundation Trust	33	2(6)	6
Royal Devon & Exeter NHS Foundation Trust	104	3(3)	3
Royal Surrey County Hospital NHS Foundation Trust	63	7(11)	11
Royal United Hospital Bath NHS Trust	24	0(0)	0
Salford Royal Hospitals NHS Foundation Trust	13	0(0)	0
Sheffield Teaching Hospitals NHS Foundation Trust	93	13(14)	14
South Tees Hospitals NHS Foundation Trust	57	2(4)	4
St George's Healthcare NHS Trust	66	9(14)	13
Stockport NHS Foundation Trust	52	3(6)	6
The Christie NHS Foundation Trust	50	7(14)	14
The Mid Yorkshire Hospitals NHS Trust	55	9(16)	16
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	56	6(11)	11
The Royal Liverpool & Broadgreen University Hospitals NHS Trust	68	4(6)	6
The Royal Marsden NHS Foundation Trust	32	2(6)	6
The Royal Wolverhampton Hospitals NHS Trust	58	1(2)	2
The Shrewsbury and Telford Hospital NHS Trust	20	2(10)	10
United Lincolnshire Hospitals NHS Trust	18	3(17)	17
University College London Hospitals NHS Foundation Trust	134	11(8)	8
University Hospital Southampton NHS Foundation Trust	62	8(13)	13
University Hospitals of North Midlands NHS Trust	16	2(13)	13

/Appendix 6c continued

RP centre	No. of patients received RP	No. of patients experiencing at least one GU complication (%)	Adjusted rate (%)
University Hospitals Birmingham NHS Foundation Trust	105	5(5)	5
University Hospitals Coventry and Warwickshire NHS Trust	43	7(16)	16
University Hospitals of Leicester NHS Trust	16	3(19)	19
Wirral University Teaching Hospitals NHS Foundation Trust	51	2(4)	4
Worcestershire Acute Hospitals NHS Trust	51	9(18)	18

Appendix 6d: Provider level data for the performance indicator 6

Performance indicator 6: Proportion of patients experiencing at least one severe gastrointestinal (GI) complication within 2 years of radical external beam radiotherapy

RT centre	No. of patients received RT	No. of patients experiencing at least one GI complication (%)	Adjusted rate (%)
Overall	**5,039**	**532 (11)**	**11**
Barking, Havering and Redbridge University Hospitals NHS Trust	66	12(18)	18
Barts Health NHS Trust	25	4(16)	16
Brighton & Sussex University Hospitals NHS Trust	82	6(7)	7
Cambridge University Hospitals NHS Foundation Trust	96	12(13)	13
Clatterbridge Cancer Centre NHS Foundation Trust	260	14(5)	5
Colchester Hospital University NHS Foundation Trust	74	12(16)	16
Derby Hospitals NHS Foundation Trust	80	11(14)	14
East & North Hertfordshire NHS Trust	191	21(11)	11
Gloucestershire Hospitals NHS Foundation Trust	82	10(12)	12
Guy's and St Thomas' NHS Foundation Trust	71	6(8)	8
Hull and East Yorkshire Hospitals	113	18(16)	16
Imperial College Healthcare NHS Trust	67	9(13)	13
Lancashire Teaching Hospitals NHS Foundation Trust	226	27(12)	12
Leeds Teaching Hospitals NHS Trust	209	12(6)	6
Maidstone and Tunbridge Wells NHS Trust	212	25(12)	12
Newcastle upon Tyne Hospitals NHS Foundation Trust	142	8(6)	6
Norfolk & Norwich University Hospitals NHS Foundation Trust	121	22(18)	18
North Bristol NHS Trust	59	2(3)	3
North Cumbria Acute Hospitals NHS Trust	37	2(5)	5
North Middlesex University Hospital NHS Trust	53	8(15)	15
Northampton General Hospital NHS Trust	44	1(2)	2
Nottingham University Hospitals NHS Trust	97	8(8)	8
Oxford University Hospitals NHS Trust	144	8(6)	6

RT centre	No. of patients received RT	No. of patients experiencing at least one GI complication (%)	Adjusted rate (%)
Peterborough and Stamford Hospitals NHS Foundation Trust	45	1(2)	2
Plymouth Hospitals NHS Trust	27	0(0)	0
Poole Hospital NHS Foundation Trust	129	18(14)	14
Portsmouth Hospitals NHS Trust	107	10(9)	9
Royal Berkshire NHS Foundation Trust	82	4(5)	5
Royal Cornwall Hospitals NHS Trust	44	6(14)	14
Royal Devon & Exeter NHS Foundation Trust	95	6(6)	6
Royal Free Hampstead NHS Trust	11	1(9)	9
Royal Surrey County Hospital NHS Foundation Trust	147	23(16)	15
Royal United Hospital Bath NHS Trust	79	11(14)	14
Sheffield Teaching Hospitals NHS Foundation Trust	177	17(10)	10
South Devon Healthcare NHS Foundation Trust	36	3(8)	8
South Tees Hospitals NHS Foundation Trust	140	15(11)	11
Southend Hospital NHS Trust	47	7(15)	15
Taunton and Somerset NHS Trust	56	4(7)	7
The Christie NHS Foundation Trust	364	55(15)	15
The Ipswich Hospital NHS Trust	61	3(5)	5
The Royal Marsden NHS Foundation Trust	120	19(16)	16
The Royal Wolverhampton Hospitals NHS Trust	64	8(13)	13
The Shrewsbury and Telford Hospital NHS Trust	43	5(12)	12
United Lincolnshire Hospitals NHS Trust	73	6(8)	8
University College London Hospitals NHS Foundation Trust	14	3(21)	21
University Hospital Southampton NHS Foundation Trust	84	9(11)	11
University Hospitals of North Midlands NHS Trust	66	10(15)	15

RT centre	No. of patients received RT	No. of patients experiencing at least one GI complication (%)	Adjusted rate (%)
University Hospitals Birmingham NHS Foundation Trust	231	19(8)	8
University Hospitals Coventry and Warwickshire NHS Trust	68	8(12)	12
University Hospitals of Leicester NHS Trust	60	3(5)	5
Worcestershire Acute Hospitals NHS Trust	18	0(0)	0