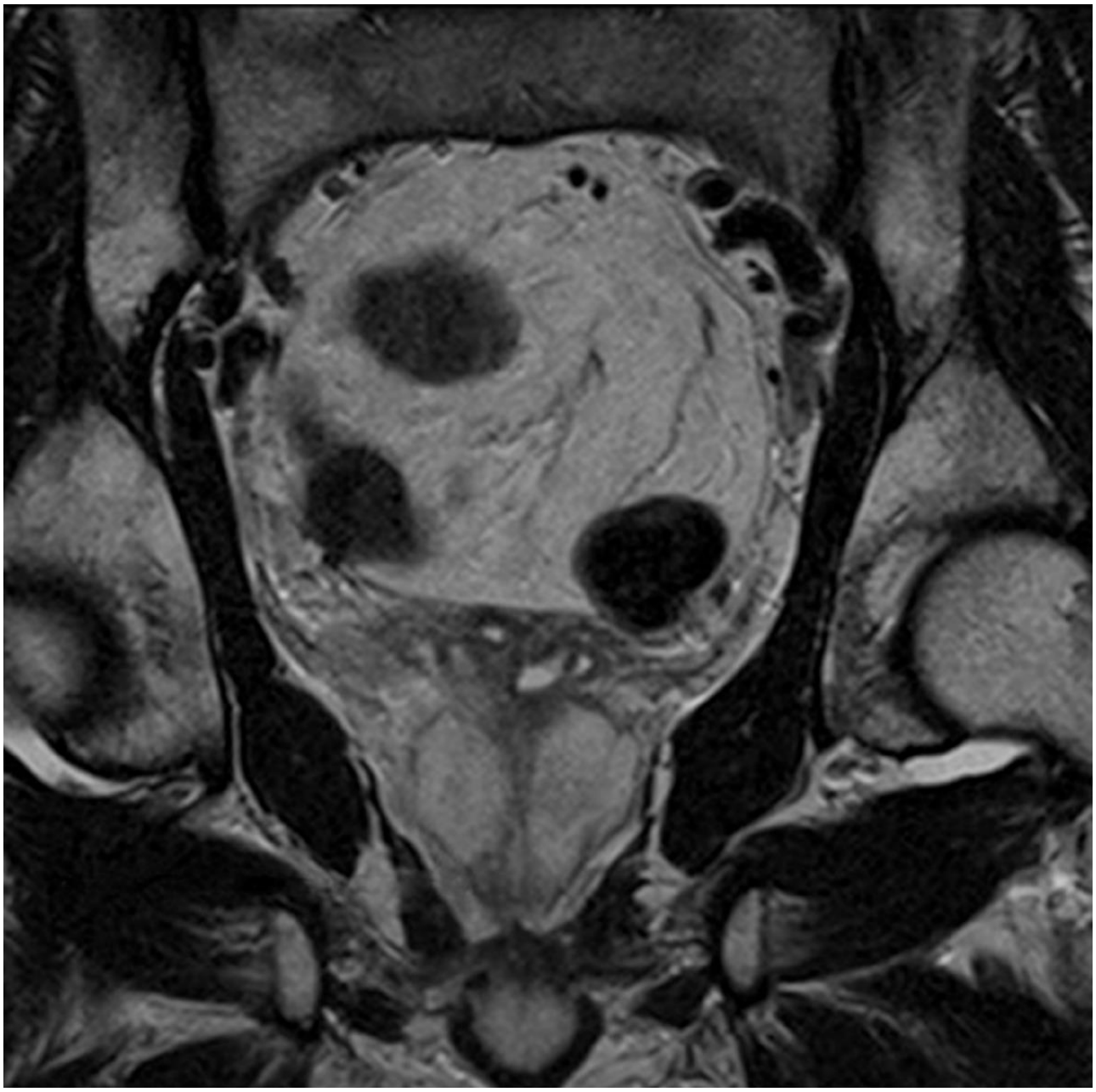
NPCA
National Prostate Cancer Audit

Annual Report 2021

Comparison of standard and rapid cancer registry data



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NPCA Annual Report 2021 – Comparison of standard and rapid cancer registry data

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Introduction

For the NPCA 2020 Annual Report, standard (fully processed) cancer registry data (SCRD) were available from NCRAS for patients diagnosed 1 April 2018 up to 31 March 2019. Data beyond this diagnostic period were unavailable for the NPCA 2021 Annual Report due to the impact of the COVID-19 pandemic as registration teams are currently behind with data processing activities. However, for the 2021 report, data were available from the Rapid Cancer Registration Dataset (RCRD) containing proxy tumour registrations for patients diagnosed between 1 January 2018 and 31 December 2020.

For England, data were therefore available from both sources for the period 1 January 2018 to 31 March 2019.This report compares the two data sources during the overlapping period. Numbers of diagnoses are compared as an overall measure of completeness. Missing data in TNM staging and ethnicity are used as a measure of data quality. A comparison is also made between 'risk group', derived from SCRD data and requiring Gleason score and PSA, and 'stage', from the less comprehensive RCRD where Gleason score and PSA are not available.

Finally, the utility of the RCRD for calculation of NPCA performance indicators is considered.

Numbers of diagnoses

Table 1. Numbers of matching diagnoses in SCRD and RCRD

		Diagnosis recorded in SCRD		
		No	**Yes**	**Total**
Diagnosis recorded in RCRD	**No**		6,240	
	Yes	1,563	54,543	56,106
	Total		60,783	

From 1 January 2018 to 31 March 2019 there were a total of 60,783 diagnoses using NCRAS data, and 56,106 diagnoses using the RCRD. A unique identifier common to both data sources enabled matching of individual patients. Using SCRD as the reference, completeness of the RCRD was good, with 90% (54,543/60,783) of NCRAS diagnoses also appearing in the RCRD (Table 1).

Agreement between SCRD data and the RCRD was also assessed at the level of specialist multidisciplinary team (SMDT) (Figure 1, Appendix Table A1). At SMDT level, agreement remained good, with 38 of 46 SMDTs having between 80% and 100% of SCRD records also appearing in the RCRD. Some larger discrepancies arose where the diagnosing trust was coded as a tertiary centre in the RCRD, for example some patients whose diagnosis trust was Aintree in SCRD were coded as the Clatterbridge in the RCRD, with the effect that their SMDT changed from Liverpool and Broadgreen to Wirral.

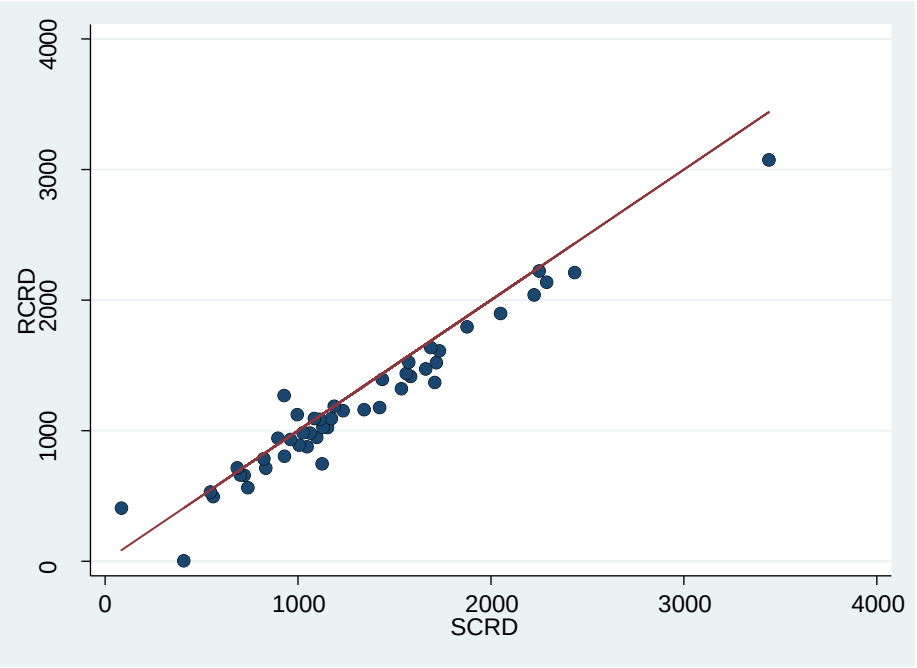

Figure 1. Numbers of diagnoses at sMDT level, agreement between RCRD and SCRD

Missing data

Data on ethnic group was well recorded in the RCRD, and was missing for only 7% of diagnoses compared with 9% missing in SCRD data. However, there was substantially more missing data on disease stage in the RCRD. T stage, N stage and M stage were each missing for more than one third of diagnoses in the RCRD, approximately three times more missing data than in SCRD.

Table 2. Missing data, ethnicity and disease stage

	SCRD		RCRD	
	N=60,783	**(100%)**	**N=56,106**	**(100%)**
Ethnicity missing	5,414	(9%)	3,965	(7%)
T stage missing	7,310	(12%)	19,790	(35%)
N stage missing	10,151	(17%)	22,142	(39%)
M stage missing	7,474	(12%)	23,522	(42%)

SCRD 'risk group' and RCRD 'stage'

Using SCRD data, men are assigned to a modified D'Amico prostate cancer risk group, which is a three-tiered disease classification, according to their TNM stage, Gleason score and PSA, using an algorithm previously developed by the NPCA[1]. These risk groups are used for several of the annual performance indicators. Gleason score and PSA are not available in the RCRD, and as noted above TNM stage variables are missing for many patients. The RCRD uses an alternative disease staging, based on TNM staging alone. Agreement between the SCRD and RCRD groupings is shown in Table 3.

[1] NPCA Annual Report 2016. Download from: https://www.npca.org.uk/reports/npca-annual-report-2016

Table 3. RCRD stage compared to risk group derived from SCRD data

		RCRD stage					
		I (low)	**II**	**III**	**IV (high)**	**Missing**	**Total**
Risk group from NCRAS data	**Metastatic**	68	26	292	4,691	2,694	7,771
	Locally advanced	2,660	1,694	11,435	1,972	5,173	22,934
	Intermediate	9,239	4,631	522	60	6,673	21,125
	Low risk	1,591	60	29	10	1,817	3,507
	Missing	1,118	393	459	257	4,777	7,004
	Total	14,676	6,804	12,737	6,990	21,134	62,341

Agreement between the two categorisations was poor. The group of patients who were metastatic at diagnosis could not be identified from the RCRD system, since stage IV included 1,972 node positive non-metastatic patients. Using the SCRD data 22,934 patients were classified as locally advanced, while RCRD stage III included only 11,435 patients, approximately half of the locally advanced group. For the lowest risk patients, RCRD stage I includes over 10,000 patients who would be intermediate risk or higher using the NCRAS definition. As well as poor agreement among those patients classified, RCRD stage was missing for approximately one third of patients.

NPCA performance indicators

The NPCA routinely reports three validated treatment-related performance indicators:

- *Proportion of patients who had an emergency readmission within 90 days of radical prostate cancer surgery (presented at the level of the surgery centre).*
- *Proportion of patients experiencing at least one genitourinary (GU) complication requiring a procedural/surgical intervention within 2 years of radical prostatectomy (presented at the level of the surgical centre).*
- *Proportion of patients receiving a procedure of the large bowel and a diagnosis indicating radiation toxicity (gastrointestinal (GI) complication) up to 2 years following radical prostate radiotherapy (presented at the level of the radiotherapy centre).*

Linkage of the RCRD to HES, PEDW and/or RTDS provides the data needed for calculating these three indicators [add link to the NPCA Methodology Supplement].

The NPCA also reports one indicator based on patients with metastatic disease at diagnosis, as a potential marker of late diagnosis.

- *Proportion of men diagnosed with metastatic disease (presented at the level of the SMDT).*

Further to a request from the NPCA team, individual TNM components from the RCRD were provided enabling this indicator to be calculated. However, this indicator should be interpreted with caution due to the amount of missing data.

Two further performance indicators use specific patient risk groups:

- *Proportion of men with low-risk localised prostate cancer undergoing radical prostate cancer therapy (presented at the level of the SMDT)* providing information about potential "over-treatment."

- *Proportion of men with high-risk/locally advanced disease receiving radical prostate cancer therapy (presented at the level of the SMDT)* providing information about potential "under-treatment."

These indicators cannot be reliably calculated using the RCRD due to poor identification of the patient risk groups using the RCRD stage categorisation and the unavailability of information on Gleason or PSA in the RCRD data.

Summary

There is good agreement between the RCRD and SCRD data in the number of patients diagnosed, both overall and at specialist multi-disciplinary team level. The timely availability of the RCRD also creates opportunity for more frequent reporting. For the NPCA, the main limitation of the RCRD lies in disease staging data, a large amount of missing TNM data and the lack of information on Gleason score or PSA counts which precludes the assignment of a prostate cancer risk group.

Appendix 1.

Table A1. Numbers of diagnoses at SMDT level, from SCRD and RCRD

SMDT	SCRD	RCRD	RCRD as % of SCRD
Not assigned	408	3	0.7
Liverpool and Broadgreen	1125	746	66.3
Salford Royal	740	563	76.1
Birmingham	1709	1369	80.1
Medway	1423	1177	82.7
Stockport	1047	877	83.8
Sunderland	833	713	85.6
Guys and St Thomas	1536	1321	86.0
East and North Hertfordshire	1343	1161	86.4
Portsmouth	930	804	86.5
Norfolk and Norwich	1097	949	86.5
Princess Alexandra	561	495	88.2
Gloucestershire	1006	889	88.4
Hull	1717	1521	88.6
Royal Marsden	1662	1473	88.6
Brighton and Sussex	1153	1024	88.8
Oxford	1584	1415	89.3
Royal Surrey	3441	3074	89.3
Manchester	1129	1025	90.8
Southend	2434	2211	90.8
Barking, Havering and Redbridge	721	658	91.3
Cambridge	2224	2040	91.7
Imperial	1561	1438	92.1
East Kent	1062	982	92.5
Sheffield	2050	1897	92.5
Coventry and Warwickshire	1733	1611	93.0
Nottingham	1173	1093	93.2
North Bristol	2289	2137	93.4
UCL	1234	1153	93.4
Barts	701	660	94.2
Northampton	823	785	95.4
Royal Devon and Exeter	1876	1795	95.7
Southampton	1026	984	95.9
Lancashire	1574	1524	96.8
Newcastle	1437	1393	96.9
Leicester	1688	1637	97.0
Mid Yorkshire	546	530	97.1
Derby	961	933	97.1
Plymouth	1113	1087	97.7
North Midlands	2250	2223	98.8
Royal Bournemouth and Christchurch	1188	1187	99.9
Bradford	1085	1093	100.7
Royal Berkshire	685	715	104.4
South Tees	896	942	105.1
Leeds	996	1123	112.8
Wirral	928	1269	136.7
Christie	85	407	478.8