



Diagnostic Imaging Dataset Annual Statistical Release 2017/18

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Version number: 1.0

First published: 22nd November 2018

Prepared by: Operational Information for Commissioning

Classification: OFFICIAL

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1 Introduction

The Diagnostic Imaging Dataset (DID) is a monthly data collection covering data on diagnostic imaging tests on NHS patients in England. It provides estimates of GP usage of direct access to key diagnostics tests for cancer, for example chest imaging, non-obstetric ultrasound and Brain MRI.

The DID was introduced to monitor progress on *Improving Outcomes: A Strategy for Cancer*¹. This strategy set out how the Government, NHS and public can help prevent cancer, improve the quality and efficiency of cancer services and move towards achieving outcomes that rival the best. One aspect of that is to ensure that GPs have access to the right diagnostic tests to help them to diagnose or exclude cancer earlier. The DID therefore reports on imaging activity, referral source and timeliness.

These data are collated from Radiology Information Systems (RISs), which are hospital administrative systems used to manage the workflow of radiology departments, and uploaded into a database maintained by NHS Digital.

This publication finalises estimates of imaging activity in 2017/18.

¹ [Improving Outcomes: A Strategy for Cancer](#), first published 12 January 2011.

In May 2016, the cancer strategy implementation plan was updated: [Achieving World-Class Cancer Outcomes: Taking the strategy forward](#).

2 Headline Messages

For all imaging activity:

- 42.7 million imaging tests were reported in England in the year to March 2018, compared with 42.1 million in the previous year, an increase of 1.4%.
- Plain Radiography (X-ray) was most common with 22.9 million procedures, followed by Diagnostic Ultrasonography (Ultrasound, 9.51 million), Computerized Axial Tomography (CT Scan, 5.15 million) and Magnetic Resonance Imaging (MRI, 3.46 million).
- The median period between the request being made and the test being performed varied from the same day for X-ray, Fluoroscopy and Medical Photography up to 21 days for MRI in 2017/18.
- Across all types of imaging, emergency admissions and inpatients have shorter waits than outpatients and referrals made under GP direct access arrangements.
- The median period from a test being performed to the report being issued varied from the same day for CT scan, Ultrasound, Fluoroscopy and Medical Photography up to 3 days for MRI in 2017/18, the same as in 2016/17.

For the key tests² Chest X-ray, Brain MRI and Non-Obstetric Ultrasound of the Abdomen and/or Pelvis:

- In 2017/18, GPs requested over a quarter (26.4%) of all tests that may have been used to diagnose or discount cancer, under direct access arrangements. This compares to 26.8% in 2016/17.
- The test most commonly requested by GPs was Chest X-ray with 2.2 million tests (similar to 2016/17), whilst the test with the highest proportion of GP referrals was ultrasounds that may have been used to diagnose ovarian cancer, 44% of which were requested by GPs in 2017/18.
- The median period between the request being made and the test being performed varied between each of the key tests under GP direct access arrangements. This ranged from the same day for Chest X-ray to 27 days for ultrasound procedures (Kidney or bladder and Abdomen and/or pelvis).

² Although these tests are used to diagnose cancer, many of the tests also have wider clinical uses. Within this dataset it is not possible to distinguish the different uses of these tests.

3 Annual Imaging Activity

3.1 Imaging Activity by modality

- 3.1.1. 42.7 million imaging tests were reported in England in the year to March 2018, compared with 42.1 million in the previous year, an increase of 1.4%³.
- 3.1.2. Plain Radiography (X-ray) had the biggest share of all tests performed during the year, with 22.9 million X-rays reported in 2017/18, the same as in 2016/17. The next most common procedures were Ultrasound (9.51 million, up 1.5% from 2016/17), CT scans (5.15 million, up 6.9%) and MRI Scans (3.46 million, up 3.1%). Both SPECT scans and PET-CT scans had a large proportional increase (up 13% and 16% respectively). Nuclear Medicine continued to fall (down 1.5%) and Fluoroscopy also fell in 2017/18 (by 2.6%, with a reduction especially for Fluoroscopic angiography and Barium procedures). Medical Photography reported in the dataset continued to grow (by 20%). Table 1 shows the imaging counts and growth for each modality.
- 3.1.3. January 2018 was the month with the most reported activity, 3.8 million tests (one of several months with more weekdays than average). April 2017 had the least, at under 3.3 million, but had fewest working days not weekend or bank holiday. Graph 1 shows this seasonal fluctuation overall and by modality. There are dips in reported imaging for most modalities in December and February, but a slight rising trend over the year for some of the reported imaging activities.

Further information on the tests included in these tables is given in the glossary at Section 6.3.

Monthly breakdowns of activity by modality, provider and referral source setting are given in Additional Tables 1a – 6l (separate excel files), available from [NHS England DID website](#).

³ There was little change in data completeness in this period: 99.7% in 2016/17 to 100% in 2017/18.

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Table 1: Count of NHS imaging activity in England, 2012/13 to 2017/18

	X-ray	Ultrasound	CT Scan	MRI	Fluoro-scropy	Nuclear Medicine	PET-CT Scans	SPECT Scans	Medical Photography	% organisations included	Total ¹
2012/13²	21,174,005	7,687,850	3,346,840	2,349,160	1,018,620	437,155	71,080	11,390	6,085	93.6%	36,102,195
2013/14	21,832,985	8,140,175	3,780,405	2,614,865	1,028,735	446,365	75,255	16,350	10,530	97.8%	37,945,665
2014/15	22,576,785	8,566,470	4,199,515	2,890,310	1,018,100	439,655	89,165	21,850	16,180	99.2%	39,818,030
2015/16	22,570,870	8,916,225	4,461,650	3,084,815	1,040,560	432,755	97,990	25,900	23,945	99.6%	40,654,715
2016/17	22,913,795	9,368,335	4,815,200	3,358,515	1,052,750	423,860	132,760	35,420	31,225	99.7%	42,131,855
2017/18	22,908,795	9,507,560	5,146,475	3,464,010	1,025,330	417,460	154,270	40,015	37,550	100.0%	42,701,460
% Growth³	-0.02%	1.5%	6.9%	3.1%	-2.6%	-1.5%	16.2%	13.0%	20.3%	0.7%	1.4%
2017/18											
Apr	1,778,465	711,720	390,180	272,275	77,030	30,535	10,645	2,670	2,285	100%	3,275,810
May	1,985,795	816,665	423,325	287,455	89,845	35,830	12,760	3,235	2,830	100%	3,657,745
Jun	1,963,520	827,275	429,620	289,710	91,375	36,025	12,695	3,160	3,120	100%	3,656,500
Jul	1,921,700	796,560	432,695	295,365	87,665	34,835	13,110	3,225	2,725	100%	3,587,890
Aug	1,872,670	802,925	431,750	291,705	86,865	35,950	12,955	3,410	2,920	100%	3,541,150
Sep	1,864,235	775,315	421,750	284,765	84,800	34,265	12,485	3,310	2,990	100%	3,483,915
Oct	1,973,745	822,470	439,010	297,155	89,110	37,110	13,405	3,440	3,195	100%	3,678,645
Nov	1,959,735	838,300	439,940	298,370	91,665	37,740	13,730	3,905	3,375	100%	3,686,760
Dec	1,761,265	709,755	414,250	269,890	76,660	30,050	11,800	3,010	2,765	100%	3,279,450
Jan	2,040,025	849,590	456,585	299,240	87,330	37,430	14,030	3,805	3,770	100%	3,791,805
Feb	1,807,605	751,440	414,460	279,530	78,940	32,930	12,985	3,250	3,430	100%	3,384,570
Mar	1,980,030	805,535	452,915	298,550	84,045	34,750	13,670	3,590	4,145	100%	3,677,225

Notes:

1. Totals do not always equal the sum of parts due to rounding.
2. 2012/13 was the first year of the DID collection and as such some of the changes since then may be due to improved coverage of the dataset.
3. % Growth is between 2016/17 and 2017/18.

Graph 1: NHS imaging activity in England, April 2017 to March 2018



3.2 Imaging Activity by Age and Gender

3.2.1. 6.7 million more tests were performed on females than on males in 2017/18. The largest difference occurred for ultrasound procedures (4.4 million more on females) and for X-rays (2.1 million more). The majority of ultrasounds were on patients aged under 44 whilst the rate of X-rays increased markedly with age. Approximately half of the 2 million more X-rays for females than males was attributable to demographic differences, especially the higher number of older women compared to older men. Conversely there were more PET-CT scans on males than females, with the rate of Fluoroscopy and CT scanning on males also slightly higher than for females. Table 2 shows the age and gender of patients who have received diagnostic tests in 2017/18.

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Table 2: NHS Imaging activity in England by gender and age, 2017/18

	X-ray	Ultrasound	CT Scan	MRI	Fluoro-scropy	Nuclear Medicine	PET-CT Scan	SPECT Scan	Medical Photography	Total ¹
Female	12,464,735	6,956,095	2,564,245	1,859,370	497,350	224,920	69,510	22,335	19,335	24,677,895
Male	10,398,275	2,540,405	2,576,465	1,598,110	526,655	191,830	84,705	17,670	18,210	17,952,325
Not known / specified ²	45,780	18,875	5,770	6,705	1,325	705	60	10	5	79,235
0-14	2,001,165	438,490	55,850	149,140	55,195	17,365	565	450	1,995	2,720,215
15-44	5,185,085	4,715,720	834,045	1,048,605	177,610	60,055	15,325	7,590	6,885	12,050,920
45-59	4,720,525	1,830,945	1,047,080	971,860	234,475	94,440	33,335	8,145	6,850	8,947,660
60-74	5,662,915	1,501,100	1,555,995	872,535	320,200	148,840	67,715	13,850	9,360	10,152,510
75+	5,331,750	1,027,260	1,651,370	421,100	237,150	96,745	37,325	9,975	12,295	8,824,970
Not Known	7,360	1,860	2,140	940	700	15	5	*	165	13,185

Notes:

1. Totals do not always equal the sum of parts due to rounding.
2. "Not Specified" means that the patient did not want to reveal their gender. "Not known" means that the patient's gender was recorded as "Not known" or else was not reported.

4 Patient Test Times

4.1 Patient Test Times – Request to test

4.1.1. The DID collects data on four dates for each imaging event:

- Date of Test Request (by a health care professional).
- Date of Test Request Received (by the organisation that provides the imaging necessary for the test).
- Date of Test
- Date of Test Report Issued (by a health care professional interpreting the imaging output).

4.1.2. This publication is based on all imaging which had a Date of Test between April 2017 and March 2018.

4.1.3. There were big differences in the median period between the request being made and the test being performed for the different tests. The median ranged from the same day for X-ray, Fluoroscopy and Medical Photography to 21 days for MRI scans. There was also some variability within individual tests over the course of the year, with the median for MRI varying by up to almost a week, from 20 to 26 days, see Table 3.

Table 3: Median number of days between date of test request and date of test, by modality, April 2017 to March 2018

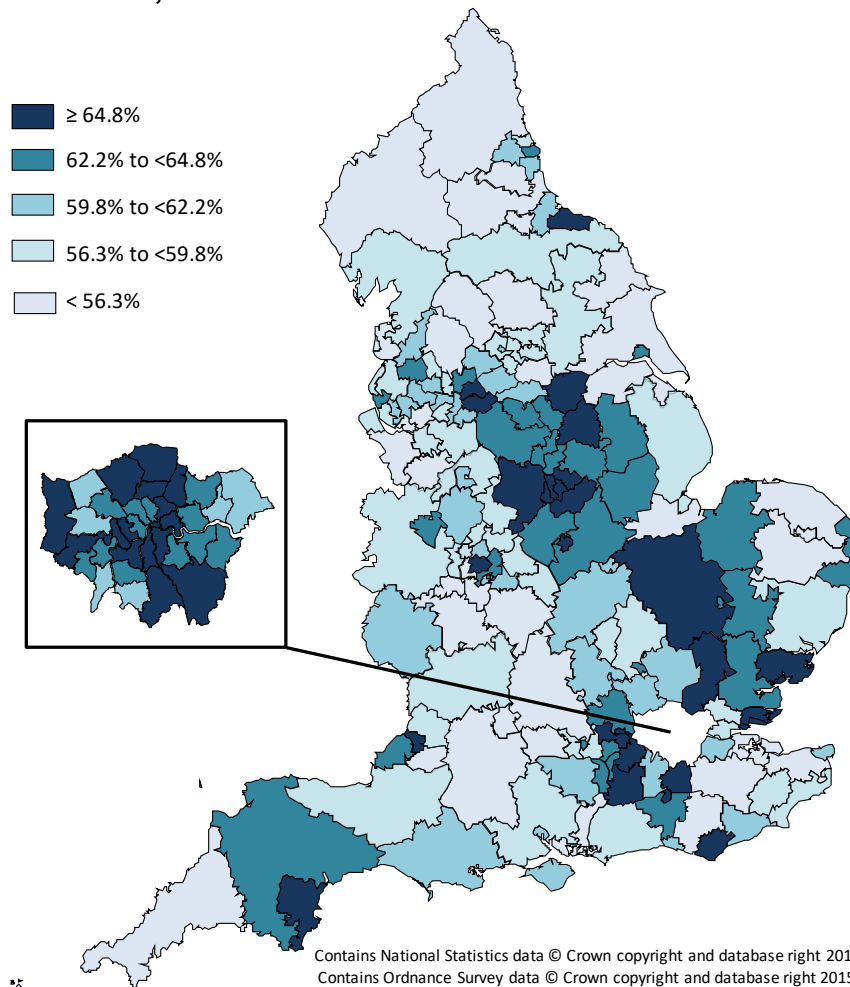
	X-ray	Ultra-sound	CT Scans	MRI	Fluoro-scopy	Nuclear Medicine	PET-CT Scans	SPECT Scans	Medical Photography
2012/13	0	13	2	23	0	15	8	14	0
2013/14	0	13	2	24	0	14	7	17	0
2014/15	0	13	2	24	0	15	8	15	0
2015/16	0	13	1	22	0	16	7	15	0
2016/17	0	13	1	22	0	16	7	17	0
2017/18	0	14	1	21	0	18	7	17	0
Apr	0	14	1	22	0	18	8	17	0
May	0	14	1	20	0	18	7	18	0
Jun	0	14	1	20	0	18	7	17	0
Jul	0	13	1	20	0	17	7	17	0
Aug	0	14	1	21	0	18	7	18	0
Sep	0	14	1	20	0	18	7	17	0
Oct	0	14	1	20	0	18	7	17	0
Nov	0	14	2	22	0	17	7	17	0
Dec	0	14	1	23	0	17	7	16	0
Jan	0	14	1	26	0	21	7	19	0
Feb	0	13	1	20	0	17	7	16	0
Mar	0	14	1	21	0	17	7	16	0

Note: Median values of 0 occur where at least 50% of activity has a 'date of test request' and 'date of test' which is recorded as the same day. Records where either of these dates is missing are not used to calculate medians.

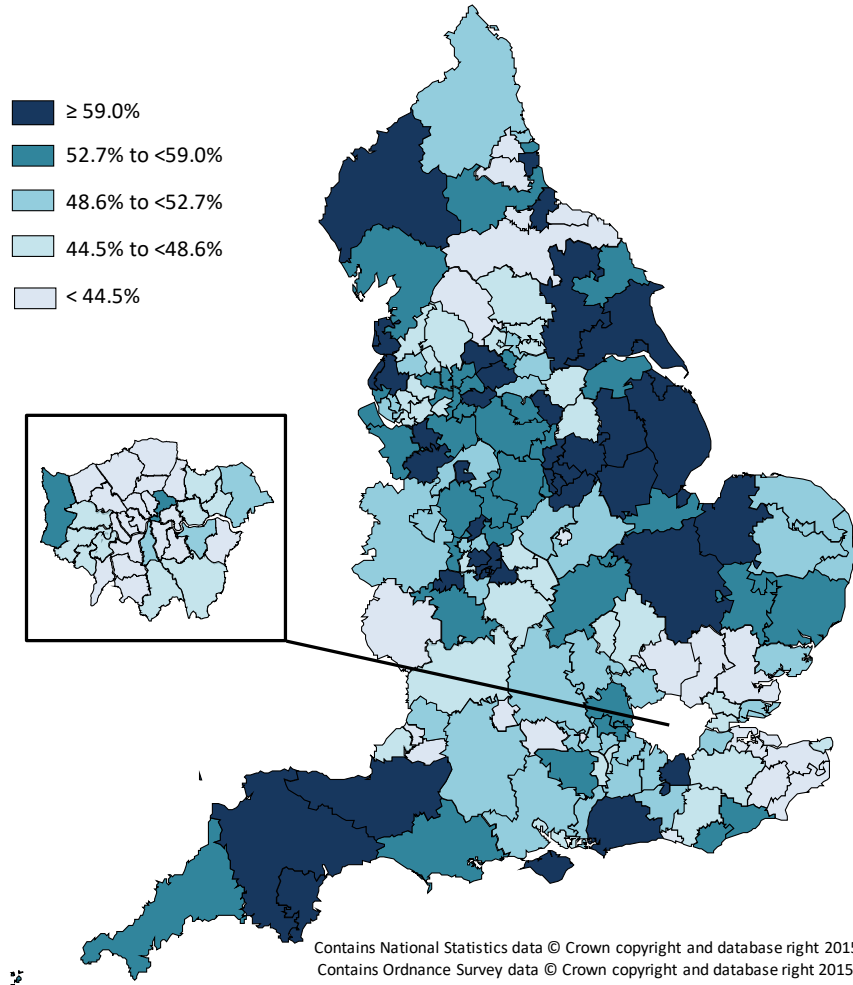
4.1.4. The median number of days between test request and date of test rose by one day for Ultrasound scan and two days for Nuclear medicine scans while MRI scans dropped by one day in 2017/18 compared to 2016/17. All other modalities remained the same as in 2016/17.

- 4.1.5. The figures in Table 3 should not be compared to “waiting time” statistics that measure how long patients are on a waiting list for a procedure, since these figures included both planned and unplanned imaging activity. In addition, these figures exclude any cancelled or missed appointments and they count the period for individual tests not each patient appointment.
- 4.1.6. There was some regional variation in the proportion of imaging which occurred within seven days of the test being requested for CT Scans and within fourteen days of the test being requested for Ultrasound and MRI Scans. Maps 1-3 illustrate this for each CCG in England (with a fifth of CCGs in each band shown). The underlying data for these charts are given in Table 7a-7h (separate Excel file).
- 4.1.7. Patients from Accident & Emergency departments and admitted patients have shorter waits for their test than other sources of referral. GP direct access and outpatient referrals show a longer “waiting time” distribution. This affects the median number of days from request to test for those modalities with more outpatient and GP referrals. This is illustrated in Graph 2, which shows the distribution of periods from request to test for individual procedures, by patient source setting and modality. Table 9 (separate Excel file) gives the underlying figures for these charts.

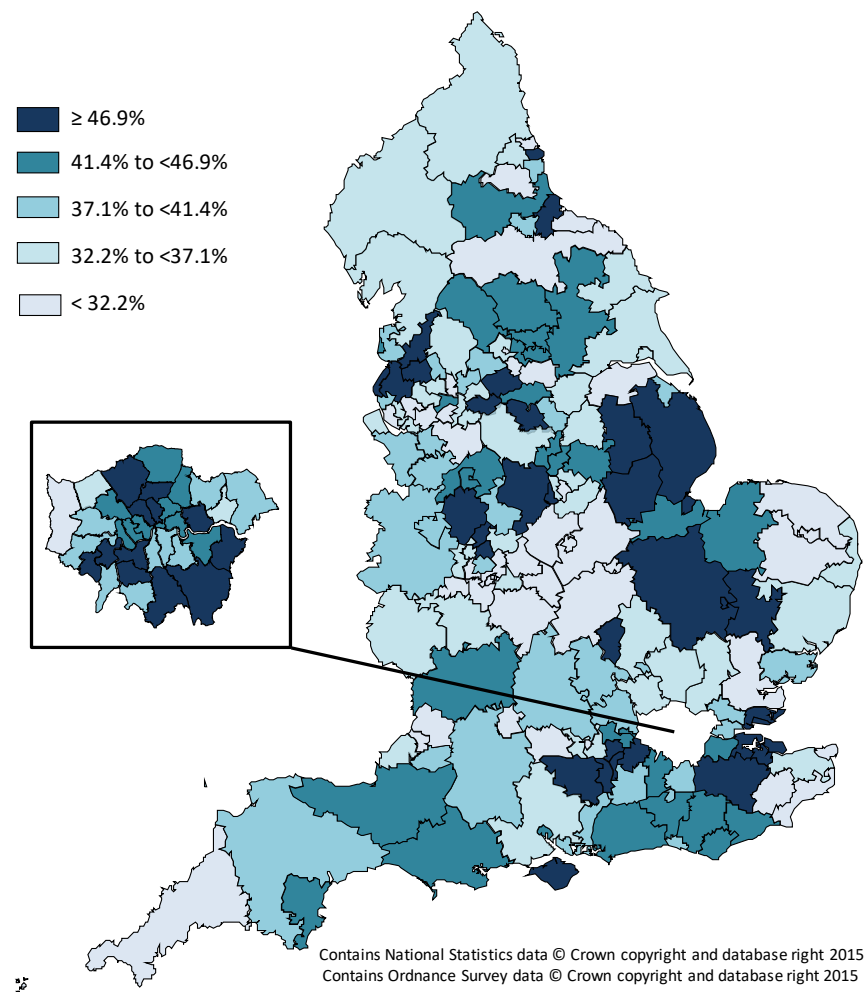
Map 1: Proportion of CT scans where date of test is less than 7 days after date of referral, for each CCG, 2017/18



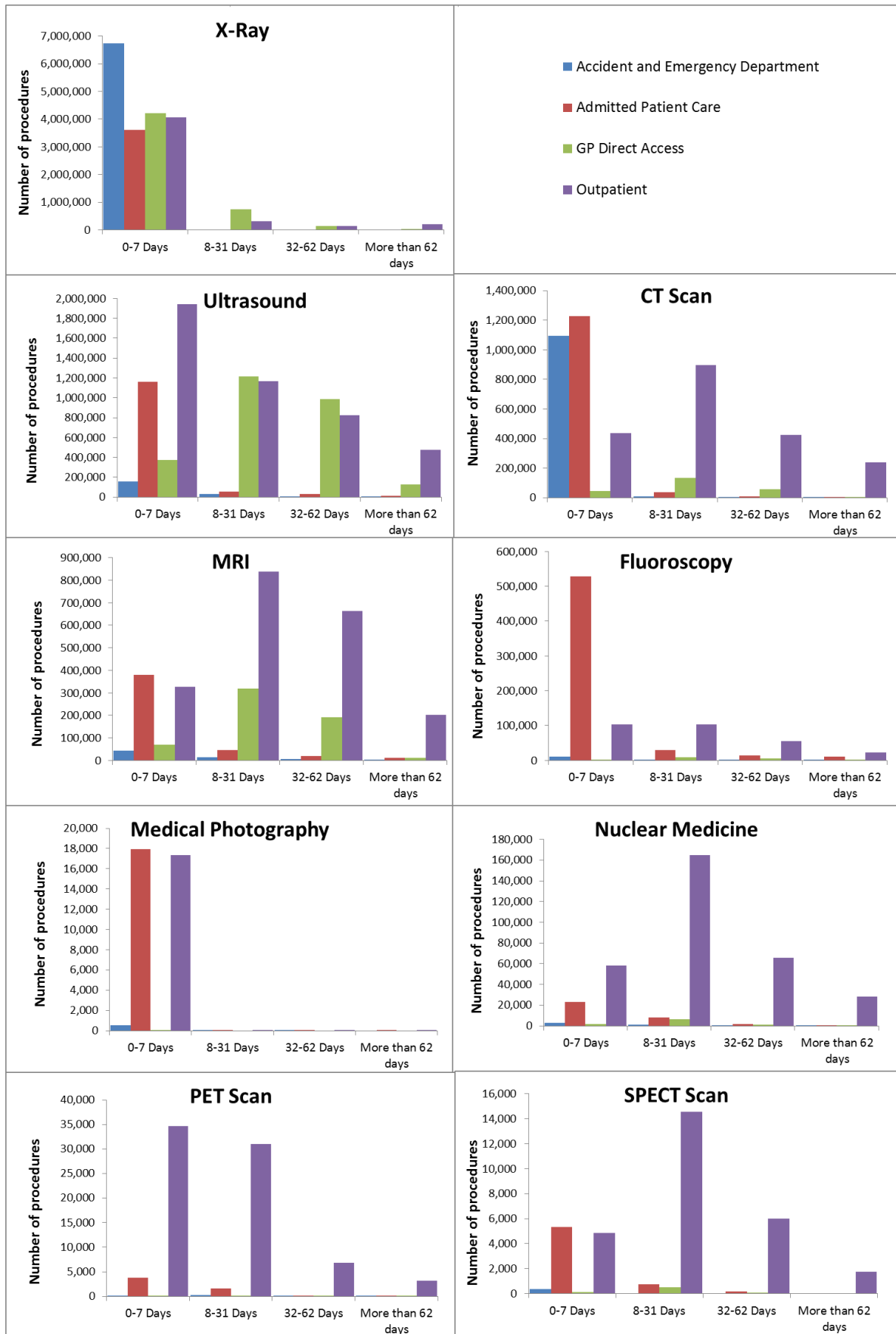
Map 2: Proportion of Ultrasounds where date of test is less than 14 days after date of request, for each CCG, 2017/18



Map 3: Proportion of MRI Scans where date of test is less than 14 days after date of request, for each CCG, 2017/18



Graph 2: Imaging activity by number of days from date of test request to date of test, by modality and source of referral, 2017/18



4.2 Patient Test Times – Test to report

4.2.1. The median number of days between the ‘date of test’ and the ‘date of test report issued’ varied between the different modalities, see Table 4. For Ultrasound, CT Scans, Fluoroscopy and Medical Photography, at least half the procedures (with a report issue date) were reported the same day as the test (that is, a median of 0). For MRI the median difference was 3 days, for PET-CT scans the median difference was 2 days, and for the other modalities the median difference was 1 day.

4.2.2. Within each modality, the elapsed period for a test report in 2017/18 was the same as the previous year and remained fairly consistent throughout the 12 months, with three modalities showing slight fluctuations of one day.

Table 4: Median number of days between date of test and date test report issued, by modality, April 2017 to March 2018

	X-ray	Ultra-sound	CT Scans	MRI	Fluoro-scropy	Nuclear Medicine	PET-CT Scans	SPECT Scans	Medical Photography
2012/13	1	0	0	2	0	2	2	1	1
2013/14	1	0	0	2	0	1	2	1	0
2014/15	1	0	0	3	0	1	2	1	0
2015/16	1	0	0	3	0	1	2	1	0
2016/17	1	0	0	3	0	1	2	1	0
2017/18	1	0	0	3	0	1	2	1	0
Apr	1	0	0	4	0	1	2	2	0
May	1	0	0	3	0	1	2	2	0
Jun	1	0	0	3	0	1	2	1	0
Jul	1	0	0	3	0	1	2	1	0
Aug	1	0	0	3	0	1	2	1	0
Sep	1	0	0	3	0	1	2	1	0
Oct	1	0	0	3	0	1	2	1	0
Nov	1	0	0	3	0	1	2	1	0
Dec	1	0	0	3	0	1	2	1	0
Jan	1	0	0	3	0	1	2	1	0
Feb	1	0	0	3	0	1	2	1	1
Mar	1	0	0	3	0	1	2	1	0

4.2.3. The National Imaging Board guidance states that investigations will be seen and accurately reported within as short a time as possible and stresses the importance of reporting imaging activity in a timely manner. It suggested that Inpatient and Accident & Emergency referrals should be reported the same working day whilst all other referrals should be reported by the next working day. A tolerance of 90% for this was considered reasonable.

4.2.4. Most modalities show some progress towards this standard in 2017/18, but fall short of achieving such rapid reporting. Table 5 shows the percentage of reports that were issued the same day as the test and those issued by the end of the next day separately for Admitted patient and A&E referred tests and for Outpatient and GP direct access tests, for each modality. Tables 10a-10d (separate Excel file) gives this breakdown by provider.

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Table 5: Proportion of imaging reports that were issued, either the same day as the test or by the end of the following day, by modality, April 2017 to March 2018

Inpatient and A&E

Reported by:		X-ray		Ultrasound		CT Scans		MRI		Fluoroscopy		Nuclear Medicine		PET-CT Scans		SPECT Scans		Medical Photography	
		Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day
Inpatient and A&E	2012/13	25%	50%	91%	94%	81%	92%	64%	81%	70%	79%	58%	76%	23%	54%	75%	84%	20%	59%
	2013/14	25%	51%	92%	96%	84%	94%	65%	81%	71%	80%	59%	78%	28%	52%	73%	84%	48%	76%
	2014/15	26%	53%	93%	96%	85%	95%	66%	82%	72%	81%	60%	78%	29%	57%	67%	87%	49%	73%
	2015/16	28%	55%	94%	96%	88%	96%	67%	83%	72%	82%	62%	77%	35%	61%	72%	85%	52%	74%
	2016/17	29%	55%	94%	96%	88%	96%	65%	80%	73%	82%	64%	77%	39%	64%	76%	85%	48%	66%
	2017/18	28%	53%	95%	97%	88%	97%	66%	80%	73%	82%	66%	79%	36%	61%	80%	88%	52%	65%
	Apr	27%	50%	95%	97%	89%	97%	64%	79%	76%	84%	66%	79%	37%	64%	75%	85%	54%	68%
	May	28%	54%	94%	97%	88%	96%	65%	80%	73%	82%	65%	80%	32%	61%	79%	84%	47%	61%
	Jun	28%	53%	95%	97%	89%	96%	67%	81%	74%	82%	67%	79%	37%	57%	81%	90%	52%	63%
	Jul	27%	52%	95%	97%	87%	96%	62%	77%	74%	83%	60%	73%	40%	67%	79%	87%	51%	61%
	Aug	29%	54%	95%	97%	88%	97%	67%	82%	73%	82%	65%	79%	38%	61%	81%	88%	51%	64%
	Sep	29%	52%	95%	97%	89%	97%	66%	80%	73%	81%	69%	81%	35%	58%	82%	88%	56%	70%
	Oct	29%	55%	95%	97%	89%	97%	66%	81%	73%	82%	67%	81%	41%	62%	81%	89%	53%	65%
	Nov	29%	55%	94%	97%	88%	97%	66%	81%	71%	81%	66%	80%	34%	61%	80%	85%	50%	64%
Dec	28%	51%	94%	97%	89%	97%	67%	80%	72%	81%	67%	81%	35%	61%	83%	90%	58%	71%	
Jan	29%	54%	95%	97%	88%	96%	64%	78%	73%	82%	62%	75%	36%	67%	77%	85%	58%	69%	
Feb	28%	53%	95%	97%	88%	96%	66%	80%	73%	81%	63%	75%	35%	64%	81%	89%	52%	62%	
Mar	26%	49%	95%	97%	87%	96%	64%	77%	71%	80%	60%	75%	31%	53%	73%	85%	47%	60%	

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Outpatient and GP Direct Access

Reported by:		X-ray		Ultrasound		CT Scans		MRI		Fluoroscopy		Nuclear Medicine		PET-CT Scans		SPECT Scans		Medical Photography	
		Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day
Outpatient and GP Direct Access	2012/13	37%	53%	84%	90%	34%	50%	20%	35%	54%	68%	23%	45%	9%	39%	23%	46%	25%	70%
	2013/14	38%	53%	87%	91%	32%	47%	19%	34%	56%	70%	25%	46%	9%	35%	22%	43%	66%	90%
	2014/15	38%	54%	88%	93%	29%	45%	18%	33%	59%	72%	26%	47%	10%	38%	20%	44%	70%	86%
	2015/16	39%	54%	89%	93%	27%	42%	17%	32%	61%	73%	29%	50%	13%	38%	23%	44%	57%	76%
	2016/17	38%	54%	90%	94%	27%	40%	17%	31%	63%	74%	30%	50%	16%	41%	24%	44%	58%	72%
	2017/18	39%	54%	91%	94%	25%	37%	16%	29%	65%	76%	31%	51%	14%	43%	23%	43%	60%	71%
	Apr	38%	52%	91%	94%	24%	36%	14%	27%	64%	76%	32%	51%	16%	41%	22%	41%	65%	77%
	May	38%	53%	90%	94%	25%	38%	16%	29%	64%	75%	31%	51%	16%	45%	20%	41%	63%	75%
	Jun	38%	53%	92%	95%	26%	38%	17%	31%	65%	76%	31%	52%	16%	44%	23%	42%	66%	80%
	Jul	38%	52%	92%	95%	25%	37%	16%	29%	65%	76%	32%	52%	16%	46%	23%	43%	55%	64%
	Aug	39%	54%	92%	95%	25%	37%	16%	29%	66%	77%	32%	51%	17%	46%	22%	44%	64%	75%
	Sep	38%	52%	92%	94%	25%	37%	16%	29%	64%	75%	32%	50%	16%	42%	24%	42%	63%	78%
	Oct	40%	55%	91%	95%	26%	39%	17%	31%	64%	75%	31%	52%	16%	44%	24%	46%	56%	66%
	Nov	40%	56%	91%	94%	25%	38%	15%	30%	64%	75%	30%	51%	12%	40%	23%	43%	59%	70%
	Dec	41%	57%	92%	95%	24%	37%	14%	28%	67%	77%	31%	49%	13%	41%	23%	41%	70%	80%
Jan	41%	58%	91%	95%	26%	40%	16%	31%	66%	77%	30%	51%	12%	44%	23%	44%	53%	65%	
Feb	38%	54%	92%	95%	24%	37%	15%	29%	67%	78%	30%	50%	11%	40%	23%	42%	48%	57%	
Mar	37%	52%	91%	94%	24%	38%	15%	29%	67%	77%	30%	50%	10%	38%	26%	44%	70%	81%	

5 Imaging Tests that could contribute to Early Diagnosis of Cancer

5.1 Definition of the tests

5.1.1 One of the main drivers for establishing the DID was to assess the use of diagnostic imaging that could contribute to the early diagnosis of cancer and, in particular, General Practitioner (GP) direct access to these tests. To enable this analysis, a subset of procedures that are often used to diagnose or discount a diagnosis of cancer has been identified:

Brain (MRI)

- This may diagnose brain cancer, this includes – MRI of brain (often with contrast);

Kidney or bladder (Ultrasound)

- This may diagnose kidney or bladder cancer, this includes – ultrasound of kidney, ultrasound scan of bladder or ultrasound and Doppler scan of kidney;

Chest and/or abdomen (CT)

- CTs which may diagnose lung cancer, this includes – chest + abdominal CT, CT of chest (high resolution or other), CT thorax + abdomen with contrast, CT thorax with contrast or CT chest + abdomen;

Chest (X-ray)

- This may diagnose lung cancer, this includes – plain chest X-ray only;

Abdomen and/or pelvis (Ultrasound)

- This may diagnose ovarian cancer, this includes – ultrasonography of pelvis, ultrasonography of abdomen (upper, lower or other) or abdomen + pelvis.

5.1.2 Although these tests are used to diagnose cancer, many of them also have wider clinical uses. Within this data, it is not possible to distinguish between the different uses of these tests.

5.1.3 Brain MRI, chest X-ray, and ultrasounds of the abdomen and pelvis to diagnose Ovarian Cancer were three of the key tests outlined in *Improving Outcomes: a Strategy for Cancer*.

5.2 Imaging activity and GP referral

5.2.1 In 2017/18, 11.1 million of these tests that may have been used to diagnose or discount cancer were performed, up 1.0% from 11.0 million in 2016/17. There were sustained increases for Brain MRI and Chest and/or abdomen CT and slight reductions for the ultrasound tests (Kidney or bladder and Abdomen and/or pelvis). There is some seasonal fluctuation in the number of these tests directly referred by GPs, shown in Graph 3.1.

5.2.2 The most common of these tests was Chest X-ray, with 8.3 million tests being requested through all source settings in 2017/18 (up 1.0% from 2016/17). This was also the most common test requested by GPs (2.2 million, similar to 2016/17). Next most common were tests that may have been used to diagnose ovarian cancer (abdominal or pelvic ultrasound, roughly 1.3 million), with 44% of such tests being requested by a GP. Table 6 shows the total number of tests suitable for diagnosing cancer, with the subset of these that had a referral source of GP direct access.

Table 6: Imaging activity for groups of tests suitable for diagnosing cancer, for all patients referred and for those directly referred by a GP, April 2017 to March 2018

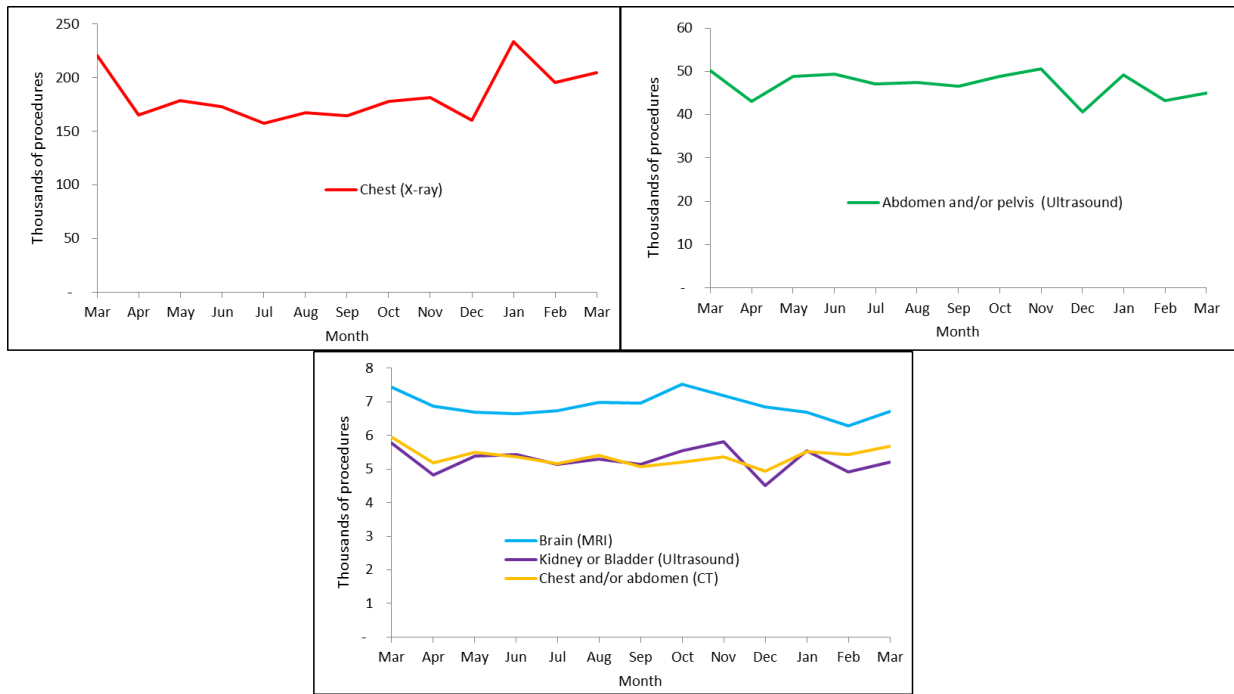
	Brain (MRI)		Kidney or bladder (Ultrasound)		Chest and/or abdomen (CT)		Chest (X-ray)		Abdomen and/or pelvis (Ultrasound)	
	All	GP	All	GP	All	GP	All	GP	All	GP
2012/13	472,755	31,030	220,230	67,460	388,655	32,185	7,723,410	1,991,705	1,165,345	536,930
2013/14	528,870	39,540	220,075	65,450	438,245	39,180	7,691,055	1,931,250	1,246,225	570,235
2014/15	582,905	50,090	228,525	67,035	489,195	46,620	8,149,525	2,124,255	1,300,660	598,910
2015/16	629,095	68,330	222,765	65,925	512,865	50,995	8,070,460	2,019,315	1,312,745	600,435
2016/17	686,390	76,925	233,615	66,120	539,405	58,875	8,253,330	2,167,875	1,287,095	576,845
2017/18	717,650	82,115	228,970	62,700	566,610	63,790	8,332,405	2,161,805	1,264,240	559,955
Growth	4.6%	6.7%	-2.0%	-5.2%	5.0%	8.3%	1.0%	-0.3%	-1.8%	-2.9%
2017/18										
Apr	56,525	6,860	17,275	4,825	43,835	5,185	637,775	165,450	96,480	43,150
May	59,455	6,685	19,715	5,380	47,410	5,505	687,935	178,550	109,140	48,770
Jun	59,840	6,635	19,755	5,420	47,970	5,355	660,840	173,105	110,540	49,345
Jul	59,925	6,725	19,455	5,140	47,060	5,165	646,975	157,565	106,650	47,045
Aug	60,280	6,990	19,585	5,300	47,300	5,410	645,030	167,620	105,605	47,455
Sep	59,015	6,960	18,800	5,140	45,680	5,060	642,375	165,015	104,015	46,540
Oct	61,740	7,520	19,815	5,535	47,490	5,195	690,845	177,960	109,810	48,920
Nov	61,210	7,180	20,000	5,810	48,510	5,365	701,120	181,770	112,120	50,650
Dec	55,590	6,845	16,800	4,500	44,465	4,940	708,655	160,535	92,825	40,725
Jan	63,045	6,700	20,535	5,540	50,800	5,515	832,955	233,915	112,690	49,185
Feb	58,580	6,295	18,015	4,915	46,115	5,435	709,910	195,410	98,755	43,200
Mar	62,435	6,715	19,220	5,200	49,975	5,670	767,990	204,920	105,615	44,965

Totals do not always equal the sum of parts due to rounding.

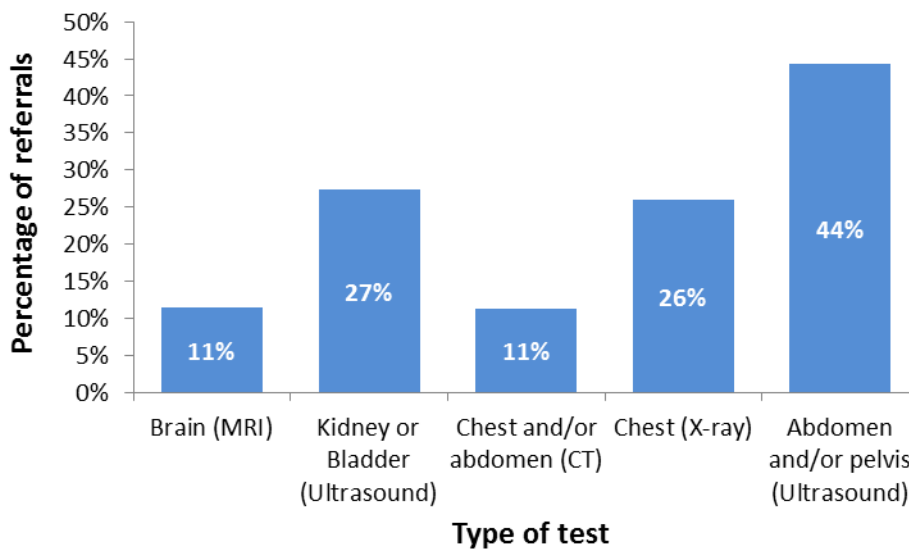
% Growth is between 2016/17 and 2017/18.

5.2.3 Of the 11.1 million tests requested in 2017/18, 26.4% were requested by GPs under direct access arrangements, compared with 26.8% in 2016/17. Graph 3.2 shows the proportion of each test requested by GPs. The lowest proportions of GP direct access were for Brain MRI and Chest and/or abdomen CT (11%), but these continued to be the tests with most growth overall and for which GP requests increased faster than all sources.

Graph 3.1: Imaging activity for patients directly referred by a GP, March 2017 to March 2018



Graph 3.2: Percentage of referrals made by GPs by type of test, 2017/18



5.3 Patient test times

Patient test times – Request to test

5.3.1 For the key tests that may be used to diagnose or discount cancer, the median period from a test being requested to being performed is longer for GP direct access than for all referrals, see Table 7. The exception is Chest X-ray, where the median is zero (same day) for GP and all referrals. The main reason for this difference is that ‘all referrals’ includes tests on emergency admissions and inpatients, which have shorter waits.

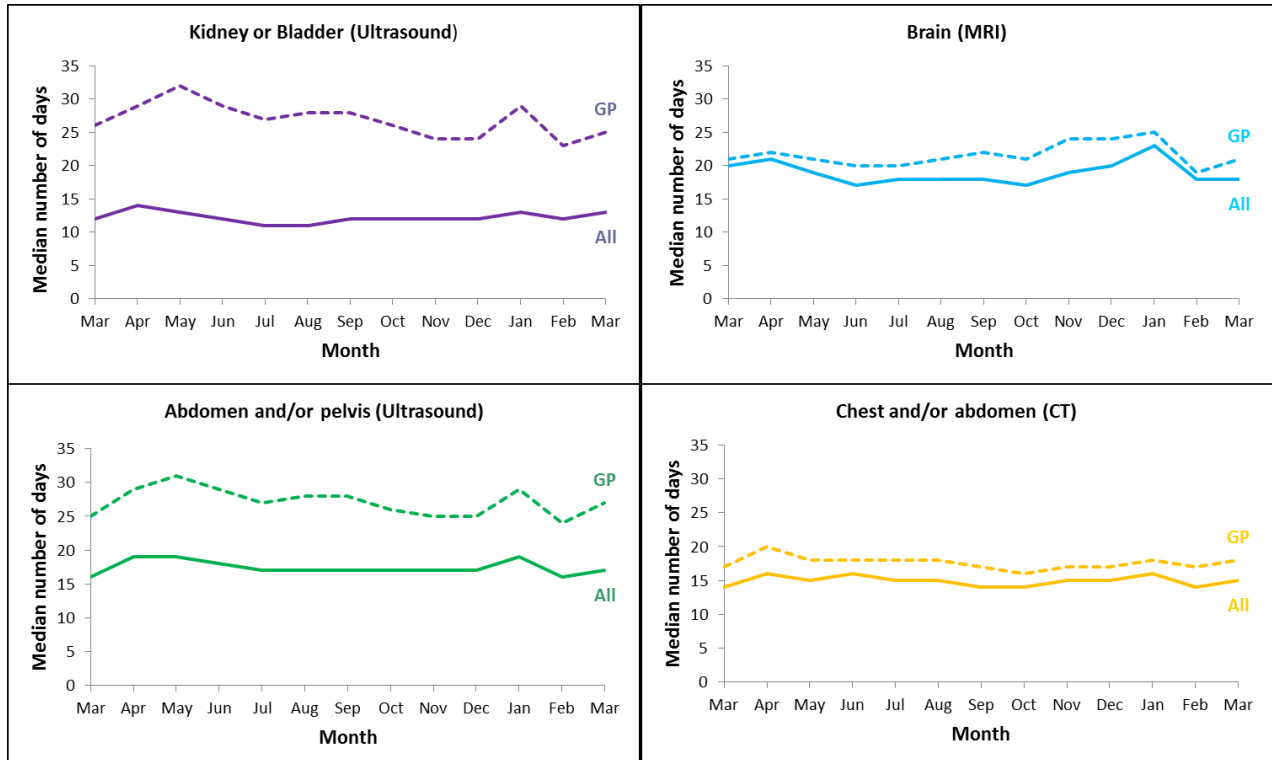
Table 7: Median number of days between date of test request and date of test for groups of tests suitable for diagnosing cancer, overall and for GP Direct Access, April 2017 to March 2018

	Brain (MRI)		Kidney or bladder (Ultrasound)		Chest and/or abdomen (CT)		Chest (X-ray)		Abdomen and/or pelvis (Ultrasound)	
	All	GP	All	GP	All	GP	All	GP	All	GP
2012/13	21	25	13	23	13	17	0	0	14	22
2013/14	21	25	13	23	13	16	0	0	15	24
2014/15	21	26	13	24	14	17	0	0	17	26
2015/16	19	21	11	26	14	16	0	0	17	27
2016/17	19	21	12	27	14	17	0	0	17	27
2017/18	19	22	12	27	15	18	0	0	17	27
Apr	21	22	14	29	16	20	0	0	19	29
May	19	21	13	32	15	18	0	0	19	31
Jun	17	20	12	29	16	18	0	0	18	29
Jul	18	20	11	27	15	18	0	0	17	27
Aug	18	21	11	28	15	18	0	0	17	28
Sep	18	22	12	28	14	17	0	0	17	28
Oct	17	21	12	26	14	16	0	0	17	26
Nov	19	24	12	24	15	17	0	0	17	25
Dec	20	24	12	24	15	17	0	0	17	25
Jan	23	25	13	29	16	18	0	0	19	29
Feb	18	19	12	23	14	17	0	0	16	24
Mar	18	21	13	25	15	18	0	0	17	27

5.3.2 Two out of the five tests had an increase of one day in the median period from request to test for GP referrals in 2017/18: MRI of brain and CT-scan of chest and/or abdomen. However most medians were similar to 2016/17.

5.3.3 The median number of days between date of request and date of test has shown some fluctuation throughout 2017/18 for tests that are suitable for diagnosing cancer, as shown in Graph 4. Ultrasound procedures (Kidney or bladder and Abdomen and/or pelvis) for GP direct access have shown the largest variation across the months of 2017/18 with a range of about 8 days, but there is no consistent seasonality except a peak in January for most tests.

Graph 4: Median number of days between date of test request and date of test for groups of tests suitable for diagnosing cancer, overall and for GP Direct Access, March 2017 to March 2018



Patient test times – Test to report

- 5.3.4 There is generally little difference in the time taken for a test report to be issued for GP direct access and all referrals, as shown in Table 8. However, the median period between the date of test and the date the report was issued was 3 days for GP-referred brain MRI, compared with 2 days overall, and 4 days for GP-referred chest and/or abdomen CT, compared with 2 days overall.
- 5.3.5 The median time between test and report issued has remained the same for most modalities between 2016/17 and 2017/18. Only Chest and abdomen CT had an increase in the median (of one day) in 2017/18 compared to 2016/17, which was widespread across providers for GP-referred patients.
- 5.3.6 Throughout 2017/18 there has been some fluctuation of the median test to report period but no consistent pattern over the year for any referrals.

Table 8: Median number of days between date of test and date test report issued and Percentage of records where report issued on day of test, for groups of tests suitable for diagnosing cancer, for All referrals and GP Direct Access, April 2017 to March 2018

	Brain (MRI)				Kidney or bladder (Ultrasound)			
	All Median	All % Same day	GP Median	GP % Same day	All Median	All % Same day	GP Median	GP % Same day
2012/13	2	32%	3	17%	0	85%	0	80%
2013/14	2	34%	3	18%	0	89%	0	85%
2014/15	2	33%	3	18%	0	91%	0	88%
2015/16	2	35%	3	21%	0	92%	0	89%
2016/17	2	33%	3	19%	0	93%	0	89%
2017/18	2	32%	3	16%	0	94%	0	90%
Apr	3	30%	3	15%	0	94%	0	88%
May	2	32%	2	18%	0	93%	0	89%
Jun	2	34%	2	20%	0	94%	0	90%
Jul	2	32%	2	18%	0	94%	0	91%
Aug	2	33%	3	14%	0	94%	0	91%
Sep	2	32%	3	13%	0	95%	0	91%
Oct	2	32%	2	17%	0	94%	0	90%
Nov	2	32%	3	15%	0	94%	0	92%
Dec	2	32%	3	16%	0	94%	0	90%
Jan	2	32%	2	17%	0	94%	0	91%
Feb	2	32%	3	16%	0	94%	0	90%
Mar	2	33%	3	16%	0	95%	0	91%

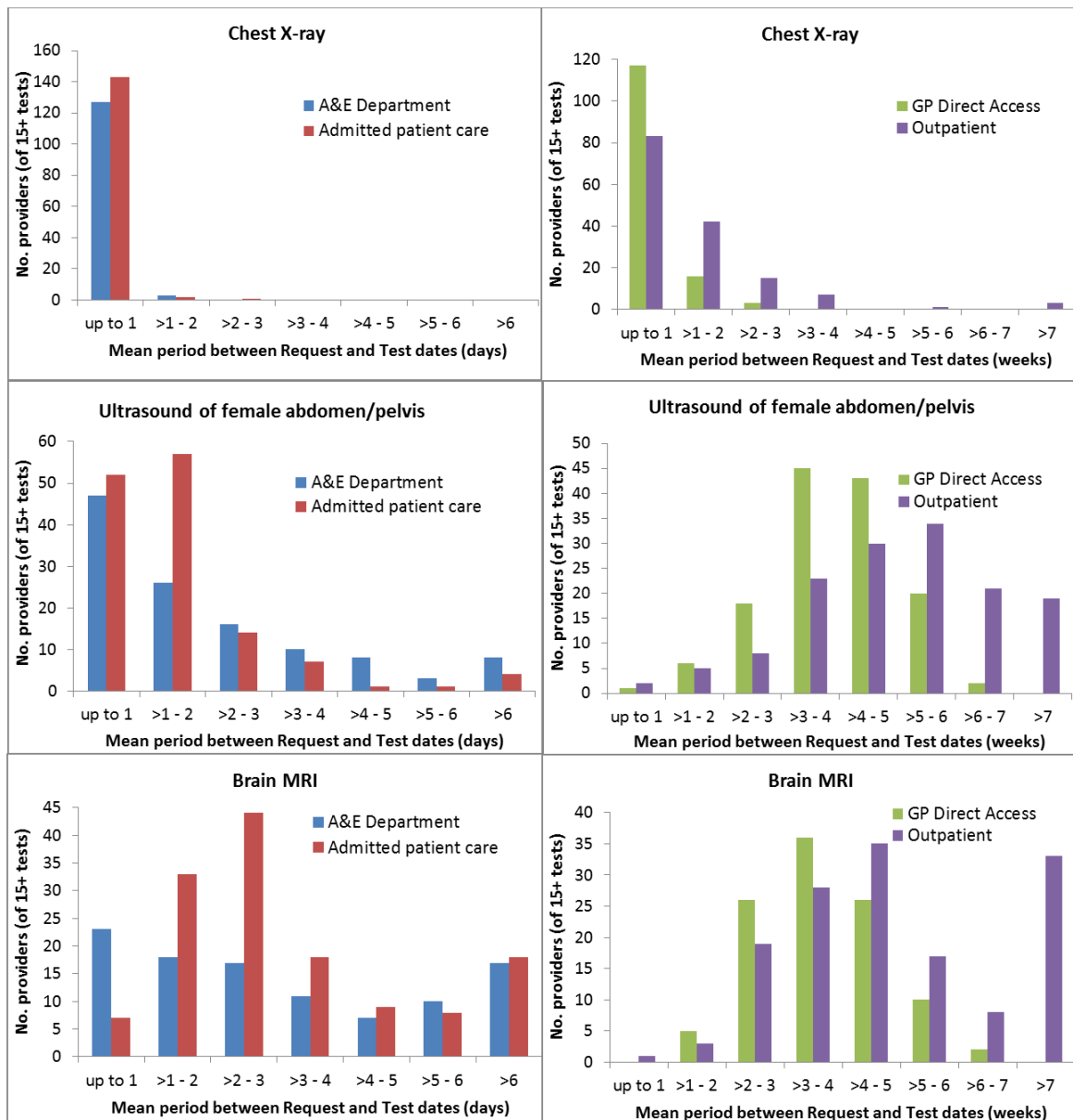
	Chest and/or abdomen (CT)				Chest (X-ray)				Abdomen and/or pelvis (Ultrasound)			
	All Median	All % Same day	GP Median	GP % Same day	All Median	All % Same day	GP Median	GP % Same day	All Median	All % Same day	GP Median	GP % Same day
2012/13	1	42%	2	32%	2	25%	2	29%	0	86%	0	84%
2013/14	1	40%	2	29%	2	25%	2	28%	0	89%	0	88%
2014/15	1	38%	2	27%	2	25%	2	28%	0	90%	0	89%
2015/16	1	36%	2	25%	2	26%	2	29%	0	92%	0	90%
2016/17	2	36%	3	23%	2	26%	2	27%	0	93%	0	91%
2017/18	2	34%	4	19%	2	24%	2	28%	0	94%	0	92%
Apr	3	33%	4	19%	2	23%	2	25%	0	94%	0	92%
May	2	33%	3	21%	2	24%	2	26%	0	93%	0	92%
Jun	2	34%	3	22%	2	24%	2	27%	0	94%	0	93%
Jul	3	32%	4	17%	2	24%	2	27%	0	94%	0	93%
Aug	2	33%	4	19%	2	24%	2	26%	0	94%	0	92%
Sep	2	34%	4	18%	2	25%	2	27%	0	94%	0	92%
Oct	2	34%	3	20%	2	25%	1	28%	0	94%	0	92%
Nov	2	33%	3	19%	2	25%	1	30%	0	94%	0	92%
Dec	2	35%	4	19%	2	25%	1	32%	0	94%	0	92%
Jan	2	35%	3	21%	2	25%	1	29%	0	94%	0	92%
Feb	2	33%	3	21%	2	24%	2	27%	0	94%	0	92%
Mar	2	33%	4	18%	3	22%	2	27%	0	94%	0	92%

Variation by provider

5.3.7 The mean period between date of test request and date of test varies by provider as well as by referral source and modality; see Graph 5.1 for Chest X-ray, Ultrasound of the abdomen and/or pelvis in females and Brain MRI.

For chest X-ray, there is more variation by provider for GP referrals and outpatients, where the averages from request to test range from less than one day to over a week⁴, than for admitted patients and those referred by A&E, where most providers average less than one day⁵ between request and test. For female ultrasound there is also more variation for GP referrals and outpatients, with providers differing in their mean request to test period by several weeks. For brain MRI, there is variation between providers for A&E and admitted patients (of several days) as well as for GP referrals and outpatients (of several weeks).

Graph 5.1 Average period from date of test request to date of test for procedures suitable for diagnosing cancer, by provider and referral source, 2017/18

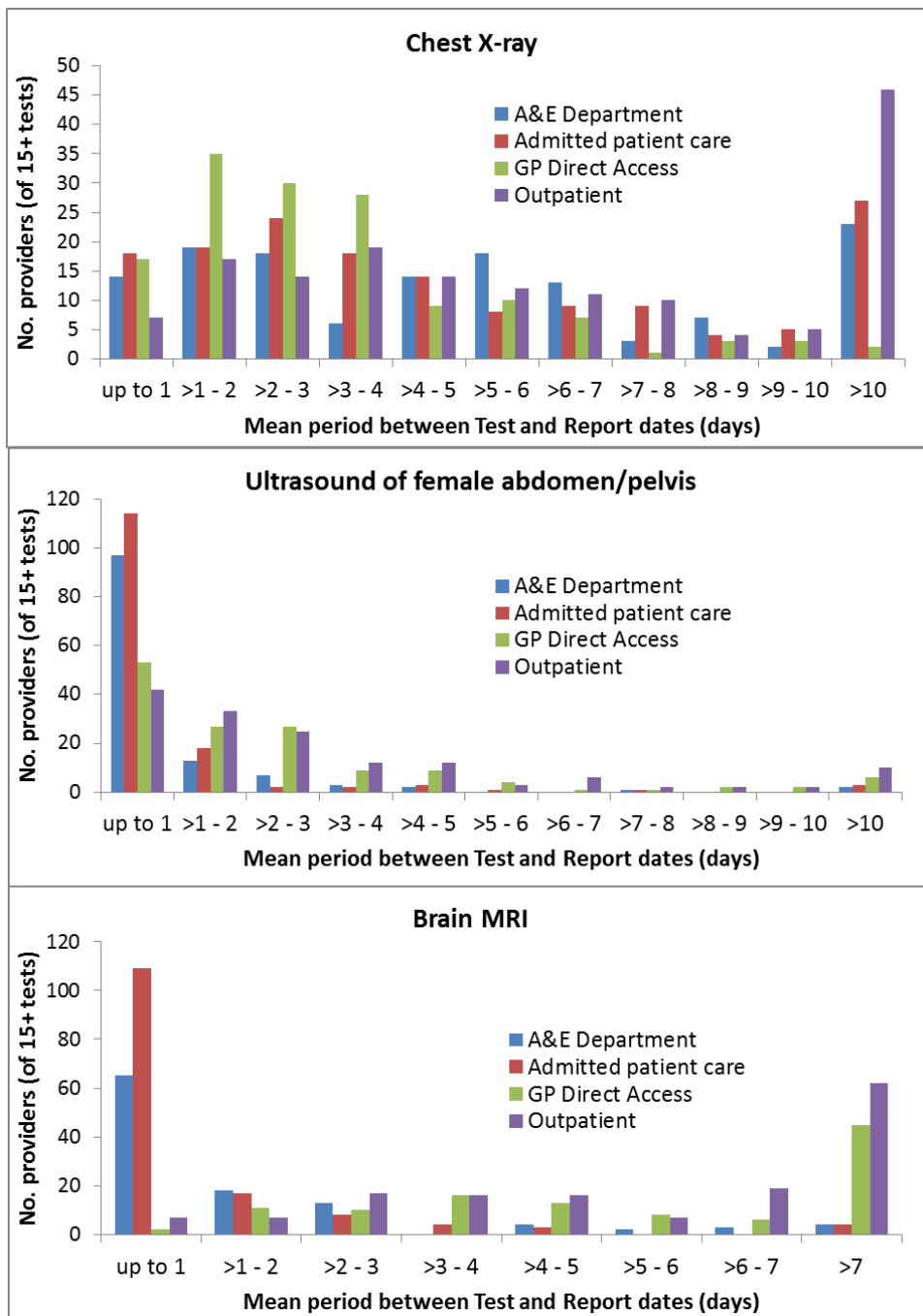


⁴ Very high values may reflect inaccurately reported dates.

⁵ Period measured between dates and not times of day.

5.3.8 The mean period between date of test and date of test report also varies by provider for Chest X-ray, Ultrasound of the abdomen and/or pelvis in females and Brain MRI, see Graph 5.2. There is less variation in test to report periods by source of referral than for the period from test request to test, but there are still big differences between the diagnostic types. Female ultrasounds were generally reported the same day, but chest X-ray and brain MRI were up to a week or so later. No significant correlation was observed between the mean request to test period and the mean test to report period at provider level, neither were the provider means for either period related to the volume of imaging tests performed for these three diagnostics.

Graph 5.2 Average period from date of test to date test report issued for procedures suitable for diagnosing cancer, by provider and referral source, 2017/18



6 Annex

6.1 Data Quality Statement

- 6.1.1 Although data from Radiology Information Systems (RISs) were not originally intended for statistical purposes and have some inconsistencies, they do provide a rich resource with great potential for wider analysis. This data collection aligns with the code of practice for official statistics in making better use of administrative data and evaluating existing data sources to limit the burden on respondents.
- 6.1.2 There are a large number of validations built into the DID upload system, verifying that the data provided by organisations makes sense. Whilst validations and other checks have been made to ensure that the data are complete and accurately reflect activity, data issues may affect activity for some providers.
- 6.1.3 Final data for each month are extracted from the DID data warehouse around the 28th of the sixth month after the period. Any data submitted after this date may not be included in the publication but would be available in the iView tool. In 2017/18, this includes data for the following providers that is missing in the published report:
- Brighton and Sussex University Hospitals NHS Trust (RXH) have 1,140 imaging tests missing for August 2017.
 - Surrey and Sussex Healthcare NHS Trust (RTP) does not have any test report issued date for records in October 2017. This caused the days between test to report issued to be labelled as unknown.
- 6.1.4 Data coverage and quality has continued to improve in 2017/18, with 100% providers having data for each month. However, within this, some data submissions may be incomplete. Known problems are:
- Alliance Medical (NT9) had a shortfall of around 350-400 tests in their data for November to December 2017, due to registering new provider sites which could not be added in time.
 - Barking, Havering and Redbridge University Hospitals NHS Trust (RF4) incorrectly apportioned activity from January to March 2018 between patient source settings due to a change in reporting procedure.
 - Bart's Health NHS Trust (R1H) erroneously reported all imaging activity as having the test and test report issued on the same day for two of their provider sites from April to September 2017 and for all provider sites in October 2017, due to an extraction error.
 - Bradford Teaching Hospitals NHS Foundation Trust (RAE) only submitted test report issued dates for February 2018. The report issued date was missing from records in all other months in 2017/18 due to a misunderstanding.
 - Great Western Hospitals NHS Foundation Trust (RN3) had a shortfall in reported imaging activity throughout 2017/18, due to unresolved reporting issues.

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- Isle of Wight NHS Trust (R1F) had a shortfall in reported activity across 2017/18 due to processing errors. A total of 26,465 imaging scans were omitted from DID.
- King's College Hospital NHS Foundation Trust (RJZ) had a shortfall in their data in May-17 which is unexplained.
- Kingston Hospital NHS Foundation Trust (RAX) had a small shortfall in their data in August 2017, due to omission of two provider sites.
- Northern Lincolnshire and Goole NHS Foundation Trust (RJL) had a shortfall in their submitted activity throughout 2017/18 due to excluding all activity where the test report was issued on the day of the test. This resulted in 173,820 imaging scans being omitted from DID in 2017/18.
- Royal Surrey County Hospital NHS Foundation Trust (RA2) had a 50% shortfall in activity in April 2017, due to extraction errors.
- Salford Royal NHS Foundation Trust (RM3) reported delayed test report issued dates for medical photography in January to February 2018. Although correct, the delay reflects administrative sign-off not reporting as such.
- Sherwood Forest Hospitals NHS Foundation Trust (RK5) had a shortfall in reported X-ray activity from July to September 2017. A total of 9,500 X-ray scans were omitted from DID over the three months.
- South Tyneside NHS Foundation Trust (RE9) did not assign any activity referred from an inpatient setting or GP with the correct patient source setting in March-18 (default 'Other' used).
- Southport and Ormskirk Hospital NHS Trust (RVY) had a shortfall in submitted imaging activity from April to October 2017, due to issues with the reporting procedure.
- Surrey and Sussex Healthcare NHS Trust (RTP) did not submit a test report issued date for any records from April to September 2017, due to a submission error that could not be corrected in time.
- Sussex Community NHS Foundation Trust (RDR) had a shortfall in their data throughout 2017/18, due to the omission of provider sites.
- The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust (RCX) had a shortfall in reported activity for some modalities in 2017/18 due to an error arising from an upgrade to the RIS system and omission of provider sites. A total of 30,185 imaging scans were omitted from DID over the 12 months, of which 23,950 were ultrasound scans (mainly August onward) and 1,720 were MRI (May to July 2017).
- University College London Hospitals NHS Foundation Trust (RRV) had a shortfall in activity in June 2017 relating to nuclear medicine imaging, PET-CT and SPECT-CT, amounting to around 530 scans.

6.1.5 The Technical Report gives more information on data completeness and quality in Section 4.

6.1.6 Reported times from test request to test should not be compared to diagnostic test waiting time statistics, as these are collected using different definitions. Unlike these statistics, the DM01 diagnostic test waiting times statistics exclude records where, for example:

- The patient is waiting for a planned (or surveillance) diagnostic test/procedure, that is a procedure or series of procedures as part of a treatment plan which is required for clinical reasons to be carried out at a specific interval or repeated at a specific frequency, such as 6-month check cystoscopy;
- The patient is currently admitted to a hospital bed and is waiting for a diagnostic test/procedure as part of their inpatient treatment.

6.1.7 In addition, for the data published here, approximately 91% of tests had a date of test request included (up from 89% in 2016/17) and 92% of tests had a date of test report issue included (up from 90% in 2016/17).

6.1.8 Some patient records have no known commissioner as this is derived from patient registered GP practice which is not a mandatory field. In 2017/18, where this was missing, CCG was derived from Lower Super Output Area (LSOA) based on patient postcode instead. Data are submitted by provider, so data quality is better for providers than for commissioners.

6.1.9 Details of coverage, completeness, comparability with other data sources and a discussion on the types of data quality issues encountered are provided in the Technical Report which is available on the [NHS England Statistics website](#).

6.2 Revisions

6.2.1 In the provisional publications, several Trusts did not provide data on time and their figures were either blank or "0" for all or selected fields. Most of these subsequently submitted data, with the exceptions listed above. Submissions made after the deadline may be available in iView, but these data are now finalised and revisions will only be made in exceptional circumstances. For more detail of the revisions policy, see the Technical Report.

6.3 Glossary

Computerised Axial Tomography (CT Scan)

Computed tomography (CT), sometimes called CAT scan, uses special X-ray equipment to obtain image data from different angles around the body, then uses computer processing of the information to show a cross-section of body tissues and organs. In the DID this means all codes mentioning CAT or computed tomography except those also mentioning PET.

Diagnostic Ultrasonography (Ultrasound)

The use of ultrasonic waves for diagnostic or therapeutic purposes, specifically to image an internal body structure, monitor a developing foetus or generate localised deep heat to the tissues. In the DID this means any code relating to ultrasound.

Fluoroscopy

Fluoroscopy is an imaging technique commonly used by physicians to obtain real-time images of the internal structures of a patient through the use of a fluoroscope. In its simplest form, a fluoroscope consists of an X-ray source and fluorescent screen between which a patient is placed. In the DID this is a collection of codes mentioning

fluoroscopy or using fluoroscopic guidance, Barium enema or swallow. Interventional procedures are classified under imaging modalities which provide guidance. Almost all interventional procedures are under fluoroscopy procedure. A very small number of interventional procedures are under CT or MRI procedures.

Magnetic Resonance Imaging (MRI)

Magnetic resonance imaging (MRI) is a method of producing extremely detailed pictures of body tissues and organs without the need for X-rays. The electromagnetic energy that is released when exposing a patient to radio waves in a strong magnetic field is measured and analysed by a computer, which forms two- or three-dimensional images that may be viewed on a TV monitor. In the DID this means all codes mentioning MRI.

Plain Radiography (X-ray)

A Radiograph is an image produced on a radiosensitive surface, such as a detector, by radiation other than visible light, especially by X-rays passed through an object or by photographing a fluoroscopic image. In the DID this means any code referring to radiography or X-ray.

Medical Photography

A Photograph is an image recorded on sensitised material by energy from the light spectrum, which is then processed to create a print that can be viewed clearly. Medical Photography is used in order to document a variety of different medical conditions and their treatment.

Nuclear Medicine

Nuclear medicine (NM) is a branch of medicine and medical imaging that uses unsealed radioactive substances in diagnosis and therapy. These substances consist of radionuclides, or pharmaceuticals that have been labelled with radionuclides (radiopharmaceuticals). In diagnosis, radioactive substances are administered to patients and the radiation emitted is measured.

Nuclear medicine imaging tests differ from most other imaging modalities in that the tests primarily show the physiological function of the system being investigated, as opposed to the anatomy. It has both diagnostic and therapeutic uses, such as planning cancer treatments and evaluating how well a patient has responded to a treatment. It can be used with other diagnostic methods, including CT scans and MRI, where the images are superimposed to produce complex cross-sectional, three-dimensional scans.

Position Emission Tomography – Computer Tomography (PET-CT Scans)

Position Emission Tomography - Computed Tomography (PET-CT Scan) is an imaging technique used in the diagnosis and treatment of cancer which combines PET with CT. PET uses gamma-type cameras to produce crude three-dimensional images highlighting radionuclide concentration in the body. CT allows precise localisation of the radionuclide concentration. PET-CT scans can be used to show how far a cancer has spread and can determine if a patient is responding positively to a treatment. In the DID this means all codes mentioning PET, whether or not they also mention CT.

Single Photon Emission Computerised Tomography (SPECT scans)

Single Photon Emission Computerised Tomography (SPECT scans) is an imaging method that allows for analysis of internal organs. Gamma photon-emitting radionuclides are administered to a patient prior to being exposed to gamma cameras that rotate around a patient to produce cross-sectional slices that can then be reformatted into a true three-dimensional image of the patient.

Median

The median is the preferred measure of the average time between pairs of dates within records as it is less susceptible to extreme values than the mean. The median number of days between pairs of dates is calculated by ordering the values obtained by subtracting the dates for each record and selecting the middle value when all records are ranked by these numbers of days.

Modality

The broad procedure or method used for examination, for example MRI. This may include procedures assisted by the method, e.g. biopsy or injection. In the DID the modality of the examination is derived from SNOMED CT (Systematised Nomenclature of Medicine – Clinical Terms) or NICIP (National Interim Clinical Imaging Procedure) codes.

Referral source setting

This is a categorisation of the department or organisation making the referral for the imaging activity. It includes categories for admitted patient care, outpatients, GP Direct Access, A&E and health care providers other than the organisation providing the imaging activity.

6.4 Contact Us

6.4.1 Feedback

We welcome feedback on this publication. Please contact us at england.did@nhs.net.

6.4.2 iView

NHS Digital allow health sector colleagues to access DID information through their web-based reporting tool, iView. Registered users may access anonymised data at an aggregate level in a consistent and flexible format:

- **Access Information** – choose from a variety of data areas.
- **Build Reports** – select data to suit your needs.
- **Generate Charts** – customise report tables and graphs.
- **Export Data** – copy to Excel and manipulate data your way.
- **Save Reports** – store your favourite views for future use.

For more information, please visit the iView website [iView website](#). If you would like to register to use iView for DID, please email enquiries@nhsdigital.nhs.uk (subject: DID iView Access).

6.4.3 Websites

NHS Digital collects the DID on behalf of NHS England. Further information about the dataset can be found on [NHS Digital DID website](#).

Those who submit data to DID do so via a secure submission portal. Further information about submissions can be found on the [submission website](#).

The DID Additional Tables and Technical Report can be found on [NHS England DID website](#).

6.4.4 Additional Information

For press enquiries contact the NHS England Media team on 0113 825 0958 or 0113 825 0959. Email enquiries should be directed to nhsengland.media@nhs.net

The Government Statistical Service (GSS) statistician responsible for producing these data is:

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