

A review of current and future demand and capacity for cancer diagnostic services in the Thames Valley

Gynaecology, Urology, Lung, Colorectal, Upper GI

Summary of Findings

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1 Introduction

1.1 Aims of the Project

This project was commissioned by the Thames Valley Strategic Clinical Network (TVSCN) to review current and future demand for cancer diagnostic activity.

The aim of the project was to identify areas of improvement required across the cancer pathway focussing on cancer diagnostics.

The project objectives were to:

- Review current diagnostics capacity and infrastructure of 5 cancer specialties
- Review demand for diagnostics from patients entering the cancer pathway via the urgent two week wait (2WW) route, compared with other routes
- Develop a model to predict future referrals and tests (to 2021) taking account of demographics and new NICE urgent referral guidance
- Run a workshop to share the project findings and explore the significance of the results.

1.2 Project Scope

The project covered a number of different elements including:

- 12 CCGs in East Berkshire, Buckinghamshire, Milton Keynes, Oxfordshire, Swindon and West Berkshire
- 6 Trusts:
 - Oxford University Hospitals NHS Foundation Trust
 - Royal Berkshire NHS Foundation Trust
 - Buckinghamshire Healthcare NHS Trust
 - Frimley Health NHS Foundation Trust
 - Milton Keynes University Hospital NHS Foundation Trust
 - Great Western Hospitals NHS Foundation Trust
- 5 specialties: Colorectal, Gynaecology, Lung, Upper GI, Urology
- 11 cancers: ovarian, cervical, vulval, endometrial, oesophageal, pancreas, stomach, bladder, kidney prostate, lung.

2 Methodology

Solutions for Public Health (SPH) undertook a range of different activities to fulfil the aims and objectives set out above. These comprised:

- Reviewing recent national guidance on cancer relevant to diagnosis
- Collating nationally available data on recent trends in cancer data relevant to diagnosis
- Collecting data on capacity and staffing from providers in Thames Valley using a questionnaire developed with the TVSCN
- Undertaking interviews with Cancer Managers, Pathology Managers and Radiology Managers at each provider
- Developing a spreadsheet model to estimate future numbers of referrals for suspected cancers and numbers of cancer diagnostic tests

- Co-facilitating a workshop with TVSCN to share the main findings of the work and discuss appropriate responses.

3 Project Deliverables

SPH provided the following outputs from the project:

- A sequence of mini-reports comprising
 - *National Guidance* summarising key aspects of national guidance relevant to cancer diagnosis
 - *Trends in Cancer Data* summarising key trends in data relating to cancer diagnosis in the Thames Valley
 - *Modelling Referrals and Diagnostic Tests* estimating future numbers of suspected cancer referrals and diagnostic tests
 - *Individual Trust Mini-Reports* containing information from the returned questionnaires and the interviews with cancer managers, pathology managers and radiology managers
 - *Summary* document
- An Excel file for each Trust providing detailed results of the modelling and the facility for them to input their own diagnostic test data and obtain revised test projections
- A workshop co-facilitated by SPH and TVSCN to review and discuss the main findings from the project and a slide set from the workshop for distribution.

4 Key Findings from Recent Trends in Cancer Data

Data was extracted from a range of national sources to inform the report 'Trends in cancer Data'. The information was presented by CCG or health economy and provider Trust. The table below shows how the CCGs, Health economies and Trusts relate to each other.

Table 1: Thames Valley CCGs and their equivalent health economy and main provider for referral for suspected cancer

CCG Name	Health Economy Name	Main provider for suspected cancer referral
NHS Bracknell and Ascot	East Berkshire	Frimley Park NHS Foundation Trust (Frimley North Hospital)
NHS Slough		
NHS Windsor, Ascot & Maidenhead		
NHS Newbury and District	West Berkshire	Royal Berkshire NHS Foundation Trust
NHS North and West Reading		
NHS South Reading		
NHS Wokingham		
NHS Aylesbury Vale CCG	Buckinghamshire	Buckinghamshire Healthcare NHS Trust
NHS Chiltern CCG		
NHS Milton Keynes	Milton Keynes	Milton Keynes NHS Foundation Trust
NHS Oxfordshire	Oxfordshire	Oxford University Hospitals NHS Foundation Trust
NHS Swindon	Swindon	Great Western Hospitals NHS Foundation Trust

Sections 4.1 to 4.11 summarise the key results from national data sources for Thames Valley.

4.1 National Cancer Waiting Time Targets

- The Thames Valley CCGs have achieved the 93% two week wait target for most quarters since Q1 2013/14 with the exception of the CCGs in West Berkshire, where the level of achievement has declined since the end of 2013/14. The Royal Berkshire is the only hospital trust to have repeatedly not met the two week wait national target since the beginning of 2013/14.
- All the Thames Valley CCGs and providers met the 96% 31 day diagnosis to first definitive treatment target in the first two quarters of 2015/16.
- Seven of the twelve Thames Valley CCGs failed to meet the 85% national 62 day GP referral to treatment target in Q2 2015/16. However, the English CCGs collectively have also failed to meet this target since Q3 2013/14. The Thames Valley providers that have not consistently met this target since 2013/14 are Oxford University Hospitals NHS Trust and the Royal Berkshire Foundation NHS Trust.
- A new cancer waiting times target of 95% of cancer cases receiving a definitive cancer diagnosis within 28 days of referral will come into force in 2020. Current mapping of the Thames Valley CCGs and providers against this target show that specialties and Trusts vary in the proportion of people diagnosed within 28 days from 0% to 60%.

4.2 Two Week Referrals for Suspected Cancer

- The numbers of two week wait referrals for the five cancer specialties of interest increased by 31% in the first two quarters of the financial year between 2013/14 and 2015/16. The increase in two week wait referrals for the same cancer specialties over the same period for England as a whole was 25%.
- However, two week wait referral rates in the Thames Valley remain lower than for England for four of the five cancer specialties (the exception being urological cancers).
- The increase in two week wait referrals in the first two quarters of the year in the Thames Valley was greater for upper GI cancers (57% increase) than for the other four cancer specialties. The Thames Valley increase (61%) in upper GI cancer referrals is also greater than the England average (39% increase).
- Across the five cancer specialties of interest, NHS South Reading CCG (50%), NHS Chiltern CCG (45%) and NHS Milton Keynes CCG (36%) had the largest increase in two week wait referrals in the first half of the year between 2013/14 and 2015/16.

4.3 Trends in Referrals from Cancer Screening Programmes

- Between 2010/11 and 2014/15 the number of referrals from cervical cancer screening programmes received by hospital providers in the Thames Valley increased by 61%. This compares to a 39% increase for England as a whole over the same period.
- The number of referrals from the bowel cancer screening programme for suspected bowel cancer was relatively stable from 2010/11 to 2013/14, but increased by around 10% in 2014/15 and based on year to date data this increase is likely to be sustained in 2015/16.

4.4 Numbers of New Cancer Diagnoses

- Incidence of the 11 cancers of interest grew by 9% in the Thames Valley between 2009 and 2013. The incidence of some individual cancers increased by a greater amount than this, notably kidney cancer, where the number of new diagnoses increased by 25% and vulval cancer where the number of new diagnoses increased by 18%.
- The proportions of cancers diagnosed via two week wait referrals compared to referrals from other routes varies by cancer specialty, with urological cancers being the only cancer specialty where the majority of cancers were diagnosed via the two week wait at Thames Valley provider trusts between 2013/14 and 2015/16. Most of the cancer specialties apart from urological cancers have seen a decline in the proportion of cancers diagnosed via the two week wait and a corresponding increase in the proportion of cancers diagnosed by other routes.

4.5 Routes to Diagnoses

- The cancers with the highest proportion of diagnoses made through the two week wait in the Thames Valley between 2006 and 2013 were bladder and uterine (both 40%). Across all cancer sites (not just the 11) only 29% of cancers were detected by the two week wait route, a similar figure to the England average (30%).
- Pancreas (44%) and lung cancers (34%) had the highest proportion of cancers diagnosed via emergency presentations in the Thames Valley over the period 2006 to 2013.
- Referrals from cancer screening programmes in the Thames Valley accounted for 28% of cervical cancer diagnoses and 6% of colorectal cancer diagnoses between 2006 and 2013.

4.6 Stage at Diagnosis

- In common with much of the rest of England, the completeness of staging data for cancers diagnosed in Thames Valley residents and at providers in the Thames Valley varies from place to place and by specialty.
- The available data suggest that the Thames Valley had a slightly higher proportion of gynaecological cancers diagnosed at stages 3 and 4 compared to England.

4.7 Late presentations

- In common with England as a whole, the proportion of emergency cancer presentations for all cancers combined has been declining over the last couple of years. The majority of the Thames Valley CCGs have had lower proportions of emergency presentations for all cancers than the England average.

4.8 Diagnostic Imaging Activity

NHS England publishes monthly data on diagnostic imaging tests on NHS patients in England, known as the Diagnostic Imaging Dataset (DID).

The national dataset does not specifically identify all patients whose imaging concerned cancer diagnosis, follow up or recurrence. Imaging technology is used for a wide variety of

conditions but access to figures about total activity and how this is split between imaging for suspected carcinomas versus activity for other conditions such as cardiovascular disease is not available. It is therefore not possible to determine with any accuracy all imaging activity related to diagnosis of the 11 cancers that are the focus of the report and indeed activity related to cancer diagnosis overall. As it's unclear what proportion of imaging activity is cancer related it's difficult to evaluate how implementation of the NICE guidance will impact on imaging capacity in the Thames Valley.

NHS England have extracted a subset of the DID to give some support in the assessment of 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 the following procedures particularly used to identify or discount a diagnosis of cancer have been identified:

- Kidney or bladder (Ultrasound). This may diagnose kidney or bladder cancer, and includes ultrasound of kidney, ultrasound scan of bladder or ultrasound and Doppler scan of kidney;
- Chest and/or abdomen (CT). This may diagnose lung cancer and 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 and includes plain chest X-ray only;
- Abdomen and/or pelvis (Ultrasound). This may diagnose ovarian cancer and includes – ultrasonography of pelvis, ultrasonography of abdomen (upper, lower or other) or abdomen + pelvis.

Across the 6 provider trusts, the largest percentage increase in such tests has been in ultrasounds of the kidney or bladder, where the number of imaging events was 112% higher in April to September 2015 than in April to September 2013 (shown in Table 2). The number of tests was higher in 2015 than in 2013 for all types of test except chest x-rays which dropped by 9% compared to April to September 2013.

Table 2: Trend in imaging events between April-September 2013/14, 2014/15 and 2015/16 which may have been performed to diagnose or discount cancer by body site on NHS funded patients in England, for all patients referred

Provider Name	Time Period	Kidney or Bladder (Ultrasound)	Chest and/or abdomen (CT)	Chest (X-ray)	Abdomen and/or pelvis (Ultrasound)
All TVSCN Providers	April to Sept 2013/14	2,955	6,615	176,090	22,570
	April to Sept 2014/15	4,295	9,155	186,550	27,715
	April to Sept 2015/16	6,265	9,180	160,965	27,445
	<i>Percentage Change since 2013/14</i>	112%	39%	-9%	22%

Source: Diagnostic Imaging Dataset – HSCIC, January 21st 2016

Table 3 shows that directly referred imaging events for ultrasounds of the kidney or bladder have increased the most since April to September 2013.

Table 3: Trend in imaging events between April-September 2013/14, 2014/15 and 2015/16 which may have been performed to diagnose or discount cancer by body site on NHS funded patients in England, for patients directly referred by their GP

Provider Name	Time Period	Kidney or Bladder (Ultrasound)	Chest and/or abdomen (CT)	Chest (X-ray)	Abdomen and/or pelvis (Ultrasound)
All TVSCN Providers	April to Sept 2013/14	1,180	520	34,790	12,395
	April to Sept 2014/15	1,645	575	38,970	14,340
	April to Sept 2015/16	2,050	730	34,815	15,390
	<i>Percentage Change since 2013/14</i>	74%	40%	0%	24%

Source: Diagnostic Imaging Dataset – HSCIC, January 21st 2016

Table 4 shows the average number of days from test request to the test being performed for tests suitable for diagnosing cancer for all patients referred and those patients directly referred by their GP for the period April to September 2015.

Table 4: Median number of days from 'Date of Test Request' to 'Date of Test' between April 1st 2015-September 30th 2015 for Groups of Tests Suitable for Diagnosing Cancer, by Body Site on NHS funded patients in England, for all patients referred and those directly referred by a GP

Provider Name	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
Milton Keynes Hospital NHS Foundation Trust	2.4	13.7	18.1	17.1	0.0	1.0	20.7	22.2
Buckinghamshire Healthcare NHS Trust	2.3	3.0	10.7	10.4	0.9	3.7	20.9	29.4
Frimley Health NHS Foundation Trust	4.4	23.8	18.3	no data	0.9	3.0	16.7	20.0
Great Western Hospitals NHS Foundation Trust	28.5	28.5	9.2	9.2	2.4	2.4	26.4	26.4
Oxford University Hospitals NHS Trust	16.6	18.7	16.4	24.0	0.9	0.9	16.6	27.6
Royal Berkshire NHS Foundation Trust	0.9	7.5	3.3	4.2	0.9	0.9	4.0	4.3

Source: Diagnostic Imaging Dataset – HSCIC, January 21st 2016

Table 4 shows that the Royal Berkshire Hospital had the shortest median number of days from request to test for all referrals including ultrasound of kidney or bladder, chest and/or abdomen CT and ultrasound of abdomen and/or pelvis. For tests directly referred by a GP, the Royal Berkshire also had the shortest median time from request to test for chest and/or abdomen CT and ultrasound of abdomen and/or pelvis, but Buckinghamshire Healthcare had the shortest time from test to request for ultrasounds of the kidney or bladder.

Table 5 shows the average number of days from test request to the test being performed for **all diagnostic imaging tests** for all patients referred and those patients directly referred by their GP for the period April to September 2015.

Table 5: Median number of days from 'Date of Test Request' to 'Date of Test' by Modality between April 1st 2015-September 30th 2015 on NHS funded patients in England, for all patients referred and those directly referred by a GP.

Provider Name	CT	Diagnostic Ultrasound	Fluoroscopy	MRI	Nuclear Medicine	Plain Radiography	PET	Single Photon Emission CT
Milton Keynes Hospital NHS Foundation Trust	1.4	19.3	0.9	11.0	No data	0.9	No data	No data
Buckinghamshire Healthcare NHS Trust	3.4	10.0	4.6	13.1	16.1	0.9	no data	no data
Frimley Health NHS Foundation Trust	3.0	2.6	1.7	13.3	no data	0.9	no data	no data
Great Western Hospitals NHS Foundation Trust	18.7	29.6	18.0	12.8	no data	2.3	no data	no data
Oxford University Hospitals NHS Trust	1.7	8.3	0.9	25.1	21.1	0.9	6.9	27.1
Royal Berkshire NHS Foundation Trust	1.3	3.9	0.9	3.7	3.6	0.9	no data	no data

Source: Diagnostic Imaging Dataset – HSCIC, January 21st 2016

Table 5 shows that the Royal Berkshire Hospital had the shortest median time between request and test for CT scans and MRI scans. Frimley Health had the shortest median time between request and test for diagnostic ultrasounds. The Great Western Hospital had a higher median time from request to test than the other providers for Fluoroscopy and for plain radiography.

Table 6 shows the median time from date of test to date that the report was issued for groups of tests suitable for diagnosing cancer for the period April to September 2015.

Table 6: Median number of days from 'Date of Test' to 'Date of Test Report Issued' for Groups of Tests Suitable for Diagnosing Cancer, by Body Site

Provider Name	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
Milton Keynes Hospital NHS Foundation Trust	1.0	2.0	7.3	4.2	7.4	2.0	0.9	0.9
Buckinghamshire Healthcare NHS Trust	0.9	2.0	3.9	4.9	5.4	2.3	0.9	0.9
Frimley Health NHS Foundation Trust	0.9	1.2	3.7	4.4	2.3	1.6	0.9	0.9
Great Western Hospitals NHS Foundation Trust	0.9	0.9	0.9	0.9	1.0	1.0	0.9	0.9
Oxford University Hospitals NHS Trust	0.9	0.9	1.6	1.9	3.4	1.9	0.9	0.9
Royal Berkshire NHS Foundation Trust	0.9	3.0	2.9	3.9	1.7	1.7	0.9	0.9

Source: Diagnostic Imaging Dataset – HSCIC, January 21st 2016

Table 6 shows that Great Western Hospital had a median time between test and report of a day or less for all the types of test suitable for diagnosing cancer, both for all tests and for tests directly referred by GPs.

4.9 Atlas of variation

The Atlas of Variation in diagnostic services was published in November 2013 by NHS RightCare. It brings together data from around 60 different diagnostic tests from radiology, pathology and endoscopy, presented as a rate by CCGs (of which there are 211) per weighted population for either 2012/13 or 2011/12. From the data of the 60 tests available, data for 10 which are commonly used in the diagnosis of the 11 cancers (amongst other conditions) were extracted. However, as with the DID it is not possible to determine accurately activity related to diagnosis of just the 11 cancers that are the focus of the report and indeed activity related to cancer diagnosis overall. It is clear though where there is variation in the use of these tests across TVSCN.

Data from all the CCGs are ranked in order of rate of test per head of population and then quintiles are applied to the range. Quintile 1 is the 20% of CCGs with the highest rate per head of population and Quintile 5 the lowest 20%.

Table 7: Table Quintiles assigned to each of the Thames Valley health economies for 10 procedures suitable to aid the diagnosis of cancer.

	E Berks	W Berks	Bucks	Milton Keynes	Oxon	Swin
MRI scans performed per 1,000 weighted population for TVSCN health economies and England in 2012/13	4	4	1	1	1	4
CT scans performed per 1,000 weighted population for TVSCN health economies and England in 2012/13	5	5	1	5	3	1
Non-obstetric ultrasounds per 1000 weighted population for TVSCN health economies and England in 2012/13	2	5	1	3	3	1
Colonoscopy and flexible sigmoidoscopy procedures per 10,000 weighted population for TVSCN health economies and England in 2011/12	3	5	4	2	3	3
CT colonoscopy procedures per 10,000 weighted population for TVSCN health economies and England from April to November 2012	5	3	3	2	2	-
Gastroscopy procedures per 10,000 weighted population for TVSCN health economies and England in 2011/12	2	5	4	3	4	2
Endoscopic ultrasound procedures per 10,000 weighted population for TVSCN health economies and England in 2011/12	5	4	5	5	4	5
Percentage of Gastroscopy procedures in < 55 year olds for TVSCN health economies and England in 2011/12	2	5	4	1	3	3
CA125 blood tests ordered by GPs per 1000 practice population for TVSCN health economies and England in 2012	4	4	1	1	1	4
PSA tests ordered by GPs per 1,000 GP practice population for TVSCN health economies and England in 2012	3	3	1	2	2	4

5 Key Findings from Modelling of Future Referrals

The modelling undertaken by SPH used the national data to estimate the future demand for cancer diagnostics in each of the five cancer specialties, for each health economy and hospital provider in the Thames Valley SCN area. Health economy was considered to be a more realistic commissioning level than individual CCG where a number of CCGs looked towards the same provider for cancer diagnostics and treatment and for small CCGs the number of patients with a particular cancer was <5.

The modelling looked at a range of scenarios with and without the impact of the NICE guidance. The table below shows the estimated change in GP 2 week wait cancer referrals as a result of implementing the NICE guidance.

Table 8: Estimates of changes to GP 2 week wait cancer referrals from NICE

Cancer Specialty	Lower Estimate	Upper Estimate
Gynaecology	0%	0%
Colorectal	5%	15%
Upper GI	-40%	-80%
Lung	10%	15%
Urological	5%	10%

Source: NICE NG12 Suspected Cancer - Recognition and Referral

The reduction in 2 week wait cancer referrals for Upper GI of between -40% to -80% is predicated on the assumption that primary care will have direct access to endoscopy services commissioned by the CCG and this diagnostic test will identify those patients who are highly unlikely to have cancer prior to a 2 week wait cancer referral. A much smaller proportion of patients will therefore require a 2 week wait cancer referral to the hospital Trust. It is important to note that the overall number of referrals will not be impacted by this change only whether they are referred as a 2 week wait cancer pathway referral to the hospital Trust or an urgent 2 week wait direct access referral to an endoscopy service. The assumed benefit of this change in pathway is a significant reduction in the number of outpatient appointments required in the hospital Trust and associated costs.

The modelling involved large scale data manipulation with different variables. These were:

- Organisations (6 providers + TV total, 6 health economies + TV total) =14
- Specialties = 5
- Scenarios (Baseline + Scenarios 1,2 and 3) =4
- Referral types (2ww, non-2ww, screening and total) =4
- Test types

In order to produce estimates of referrals and tests for Thames valley trend data from 2009-2014 was gathered and was forecast forwards for 7 years. These rates were applied to population projections for the next 7 years. This was the baseline forecast. The change in referrals as estimated in three scenarios set out in the NICE guidance were then added to the baseline forecast. These scenarios were the minimum, maximum and mid-point change in referrals depending on level of implementation of the guidance.

Data received from Milton Keynes hospital was used as a baseline for the estimated change in test requests. No other data was submitted that could be used to estimate test requests in the Thames Valley. Estimates of test requests for providers other than Milton Keynes hospital are therefore unlikely to be accurate. However the modelling spread sheet developed by SPH is available for Trusts to input their own data.

5.1 Referrals

The tables below outline the estimated referrals and percentage change between 2014 and 2021 for each provider Trust for baseline and NICE guidance Scenario 3 (maximum implementation of guidance). Further detail and estimates by health economy and for individual tests are available in the report 'Modelling future demand for cancer diagnostics'.

5.1.1 Gynaecology

Table 9: Number of referrals for suspected upper GI cancers for TVSCN providers in 2014, and 2021 based on Baseline and Scenario 3

Number of Referrals - Gynae	2014 Actual	2021 Baseline	2021 Scenario 3	% Change 2014 Actual and 2021 Baseline	% Change 2014 Actual and 2021 Scenario 3
Buckinghamshire Healthcare NHS Trust	2,275	2,446	2,446	8%	8%
Great Western Hospitals NHS Foundation Trust	1,778	2,033	2,033	14%	14%
Milton Keynes Hospital NHS Foundation Trust	1,902	2,096	2,096	10%	10%
Oxford University Hospitals NHS Trust	3,730	4,341	4,341	16%	16%
Royal Berkshire NHS Foundation Trust	2,978	3,021	3,021	1%	1%
Wexham Park Hospital	2,693	2,970	2,970	10%	10%
Total	15,356	16,907	16,907	10%	10%

5.1.2 Colorectal

Table 10: Number of referrals for suspected colorectal cancer for TVSCN providers in 2014, and 2021 based on Baseline and Scenario 3

Number of Referrals - Colorectal	2014 Actual	2021 Baseline	2021 Scenario 3	% Change 2014 Actual and 2021 Baseline	% Change 2014 Actual and 2021 Scenario 3
Buckinghamshire Healthcare NHS Trust	2,253	2,308	2,581	2%	15%
Great Western Hospitals NHS Foundation Trust	1,879	2,199	2,460	17%	31%
Milton Keynes Hospital NHS Foundation Trust	1,454	1,645	1,847	13%	27%
Oxford University Hospitals NHS Trust	3,341	4,183	4,743	25%	42%
Royal Berkshire NHS Foundation Trust	2,554	3,038	3,393	19%	33%
Wexham Park Hospital	2,233	2,690	3,006	20%	35%
Total	13,714	16,063	18,031	17%	31%

5.1.3 Upper GI

Table 11: Number of referrals for suspected upper GI cancers for TVSCN providers in 2014, and 2021 based on Baseline and Scenario 3

Number of Referrals - Upper GI	2014 Actual	2021 Baseline	2021 Scenario 3	% Change 2014 Actual and 2021 Baseline	% Change 2014 Actual and 2021 Scenario 3
Buckinghamshire Healthcare NHS Trust	1,133	1,310	1,310	16%	16%
Great Western Hospitals NHS Foundation Trust	1,033	1,185	1,185	15%	15%
Milton Keynes Hospital NHS Foundation Trust	607	655	655	8%	8%
Oxford University Hospitals NHS Trust	1,754	1,728	1,728	-1%	-1%
Royal Berkshire NHS Foundation Trust	1,282	1,494	1,494	17%	17%
Wexham Park Hospital	999	1,100	1,100	10%	10%
Total	6,808	7,472	7,472	10%	10%

5.1.4 Lung

Table 12: Number of referrals for suspected lung cancer for TVSCN providers in 2014, and 2021 based on Baseline and Scenario 3

Number of Referrals - Lung	2014 Actual	2021 Baseline	2021 Scenario 3	% Change 2014 Actual and 2021 Baseline	% Change 2014 Actual and 2021 Scenario 3
Buckinghamshire Healthcare NHS Trust	368	440	502	19%	36%
Great Western Hospitals NHS Foundation Trust	327	308	349	-6%	7%
Milton Keynes Hospital NHS Foundation Trust	336	349	399	4%	19%
Oxford University Hospitals NHS Trust	928	957	1,090	3%	17%
Royal Berkshire NHS Foundation Trust	478	559	630	17%	32%
Wexham Park Hospital	209	222	245	6%	17%
Total	2,646	2,834	3,215	7%	22%

5.1.5 Urology

Table 13: Number of referrals for suspected urological cancers for TVSCN providers in 2014, and 2021 based on Baseline and Scenario 3

Number of Referrals - Urology	2014 Actual	2021 Baseline	2021 Scenario 3	% Change 2014 Actual and 2021 Baseline	% Change 2014 Actual and 2021 Scenario 3
Buckinghamshire Healthcare NHS Trust	2,128	2,435	2,664	14%	25%
Great Western Hospitals NHS Foundation Trust	1,321	1,571	1,712	19%	30%
Milton Keynes Hospital NHS Foundation Trust	854	901	988	6%	16%
Oxford University Hospitals NHS Trust	2,566	3,035	3,301	18%	29%
Royal Berkshire NHS Foundation Trust	1,931	2,099	2,293	9%	19%
Wexham Park Hospital	1,347	1,684	1,833	25%	36%
Total	10,147	11,725	12,791	16%	26%

6 Qualitative information provided by Trusts

6.1 Radiology

Overall radiology managers are exploring innovative solutions to cope with an increasing demand for imaging services. A combination of factors has led to departments becoming stretched and dealing with unsustainable levels of requests. The varied ways of developing capacity has led to a patchwork service in many Trusts and the failing of any part of that service leaves a hole which is becoming increasingly difficult to patch.

Within the Thames Valley, radiology departments cited the following reasons for the pressure they are experiencing:

- Increasing complexity of tests taking longer to undertake
- Increased number of tests especially when direct access is implemented
- Block contracts for payment of service rather than activity based commissioning
- Lack of inclusion in new service planning of pathways that involve radiology
- Downtime from ageing and failing scanners
- Inability to recruit and retain staff as expensive area to live and better terms and conditions with independent providers
- Trust requesting year on year savings within the department
- Capping of agency staff by Monitor.

The solutions to these pressures across the Thames Valley include:

- Outsourcing simple straightforward requests to a range of independent providers so the Trust department can focus on complex cases
- Hiring additional scanners to help with downtime from ageing equipment
- Extending opening hours to 12 hours per day 7 days a week
- Using consultants in Australia to report on images during the UK night time
- Training more staff and upgrading them to the next AfC band as soon as possible
- Attracting consultants with enhanced pay
- Submission of business cases to fund equipment.

These measures are enabling departments to deal with demand on a short term basis but with any significant increase in requests there will be no further capacity in the system leading to longer and longer waiting and reporting times. Some Trusts have had to reduce their service to accommodate staff shortages (e.g.: Royal Berkshire Hospital has stopped MRI appointments at weekends due to lack of staff and at Heatherwood hospital a failing CT scanner has impacted on the urology one stop shop and bladder cancer pathway).

The table below shows the current equipment level and issues within radiology departments across the Thames Valley.

Table 14: Diagnostic imaging

	Number	Hours operation per week	Comments
Buckinghamshire Healthcare NHS Trust			
MRI	2 static	12 hrs x 5 days 8 hrs x 2 days	<ul style="list-style-type: none"> • Replacement MRI at Wycombe needed as high % downtime and repeat scanning • Independent provider used for additional 2 days per week • Could work to 10pm on week nights but need to poll patients to see if acceptable • Consultant reporting outsourcing to 3 companies • People salaried in Australia do emergency reporting at night for BHT
CT	3 static	9.5 hrs x 5 days emergency lists at w/e	<ul style="list-style-type: none"> • Capacity is fine at the moment and could withstand small increase
Ultrasound	11 non-obstetric 8 maternity	9.5 hrs x 5 days emergency lists w/e	<ul style="list-style-type: none"> • Under-availability of recovery beds for ultrasound guided biopsies .
Great Western Hospitals NHS Foundation Trust			
MRI	2 static	12 hrs x 5 days 8 hrs x 2 days	
CT	2 static	10 hrs x 5 days 4 hrs x 1 day	
Ultrasound	4 general 3 maternity	8 hrs x 5 days Occasional w/e sessions	
Milton Keynes Hospital NHS Foundation Trust			
MRI	2 static	8.5 hrs x 5 days	
CT	1 static	8.5 x 5 days	<ul style="list-style-type: none"> • Non- emergency session held at weekends
Ultrasound	5 general 6 maternity	8.5 hrs x 5 days	<ul style="list-style-type: none"> • Non- emergency session held at weekends
Oxford University Hospitals NHS Trust			
MRI	3 JR 2 Churchill	12 hrs x 7 days 12 hrs x 7 days	<ul style="list-style-type: none"> • In additional patients requiring MRI in Banbury area go to Ramsey Health care for MRI scan which is reported by

	1 Nuffield	12 hrs x 7 days	<ul style="list-style-type: none"> consultants from the Horton 1 mobile unit outsourced on JR site
CT	3 JR 2 Churchill 1 Horton	12 hrs x 7 days 12 hrs x 7 days 10 hrs x 5 days	<ul style="list-style-type: none"> Undertaking and reporting CT colonography challenging CT equipment is old (lifespan 5 years normally but CT now 13 years old) and 3 need replacing. Horton CT has significant downtime In addition to replacement need 1 extra scanner
PET CT	2	12 hrs x 5 days	<ul style="list-style-type: none"> When not needed for PET can be used as CT
Ultrasound	X JR 5 Churchill 3 Horton 2 Nuffield	8 hrs x 5 days 8 hrs x 5 days 8hrs x 5 days Depends on list	<ul style="list-style-type: none"> Ultrasound – sonographer workforce under pressure Independent providers based in community settings (medical centres and community hospital)
Royal Berkshire NHS Foundation Trust			
MRI	2 static 1 mobile	10.5 hrs x 7 days a week	<ul style="list-style-type: none"> Due to staffing constraints MRI operating Monday to Friday 12 hours per day Services supplemented by commercial rental scanner operating Mon-Thu 11 hrs per day in Bracknell
CT	2 static	11 hrs x 5 days	<ul style="list-style-type: none"> Due to staffing constraints CT operating Monday to Friday 12 hours per day Services supplemented by a staffed commercial rental scanner Mon-Fri 11 hrs per day Out of hours on call service and ad-hoc lists staffed on voluntary basis
Ultrasound	6 RBH 1 Newbury 1 Bracknell	8.5 hrs x 5 days	
Frimley Hospitals NHS Foundation Trust (Frimley North Hospital)			
MRI	1 Frimley North 1 Heatherwood	12 hrs x 7 days 12 hrs x 7 days	<ul style="list-style-type: none"> In general, the capital equipment is overdue for replacement and/or overstretched

CT	1 Frimley North 1 Heatherwood 1 hired mobile unit	12 hrs x 7 days 12 hrs x 7 days	<ul style="list-style-type: none"> CT capacity is challenging at Heatherwood Hospital as the scanner has stopped working and they are functioning on hired scanner equipment. This has impacted on the bladder pathway at Heatherwood Hospital and the one stop urology clinic
Ultrasound	2 Frimley North 2 Heatherwood Maternity have additional machines.	8 hrs x 5 days 8 hrs x 5 days	<ul style="list-style-type: none"> Frimley North has been using agency staff to cover holidays, but the capping of the use of agencies by DH and Monitor will have a financial impact from Feb 2016. The service has written to Ultrasound agency staff to say they can only offer them 60% of the salary they received last year. So there is some uncertainty about what that will mean for workforce availability
Thames Valley Strategic Clinical Network			
MRI	15	Max 12hrs x 7 days Min 8.5 hrs x 5 days Ad hoc lists at w/e for those running 5 days a week	<ul style="list-style-type: none"> At least an additional 10 days a week of scanning time outsourced to independent providers across Thames valley. No feedback from 2 Trusts so may be additional outsourcing and requirements to sustain service.
CT	16	Max 12 hrs x 7 days Min 8.5 hrs x 5 days Ad hoc lists at w/e for those running 5 days per week.	<ul style="list-style-type: none"> An additional mobile unit hired to cover downtime 4 scanners at least need replacing At least an additional 4 days outsourced Additional 1 scanner required to respond to demand No feedback from 2 Trusts so may be additional outsourcing and requirements to sustain service
Ultrasound	X non-obstetric	8-9 hrs x 5 days with ad hoc lists at w/e	<ul style="list-style-type: none"> Equipment does not appear to be an issue and opening times of service are typically 9-5 mon-Fri. Limiting factor is staffing, especially agency staff the use of which is capped by Monitor. Unclear the level of outsourcing to independent providers of whole service (equipment and staffing/reporting).

NB. Data in this table has been provided by each TVSCN Trust, via questionnaires and interviews

6.2 Pathology

Overall pathology services were facing similar issues across the Thames Valley and a combination of factors has led to departments becoming stretched and dealing with unsustainable levels of requests. These factors include:

- There is a trend of more complex drugs and tailored treatments which typically all need new tests adding to workload (eg one Trust had a 60% increase in immunocytochemistry requests between 2014 and 2015)
- Genetic testing activity and cost is increasing as it becomes more and more relevant for different cancers
- There are more tests requested per pathology sample and more samples of the same patient
- Block contracts for payment of service rather than activity based commissioning
- There is a national shortage of qualified people in laboratories especially in the south of England with high standard of living and combined with the retirement of highly skilled people there is a widening gap in the capability
- Students are now no longer NHS funded for their year placement in a pathology department in order to qualify as a Biomedical Scientist
- It is difficult to outsource as there are limited options. Other NHS Trusts are too busy and there are not many independent providers
- The pathology service is not always included in planning of new service developments
- Metrics for each cancer site are now required by PHE which has added to workload.

The solutions to these pressures across the Thames Valley include:

- Outsourcing where possible
- Overtime for staff evenings and weekends
- Using agency staff where possible
- Looking at how and where new technology may speed up processes/pathways:
 - E.g. digitilisation of images to improve storage and enables access to opinions from specialists across the world
 - Electronic tracking of samples
- Using students straight out of university although they are very inexperienced and need to be supervised.

6.3 Cancer Managers

Interviews with cancer managers identified general and specific issues with the cancer pathways across Thames valley. Cancer managers focussed on problems that were within their control in order to meet the national cancer waiting time (CWT) targets. The following factors were common reasons for not being able to meet CWT targets:

- Quality of referrals from primary care poor so further information has to be sought
- Primary care do not undertake all available direct access testing prior to referral

- Difficult to keep within targets if a tertiary centre involved as information and tracking of patients is difficult
- Patient choice is a significant reason for breach of waiting time targets either because they cannot attend the next available appointment or they need thinking time to choose their preferred procedure/treatment option
- The traditional sequential diagnostics pathway is in place (outpatient appointment then test then outpatient appointment then next test etc.) rather than a more complex parallel system of planning and booking appointments ahead for likely procedures for the most likely outcome
- Patients present late and have complex difficult conditions that extend the pathway.

Solutions cancer managers are employing include:

- Use of trackers who follow each suspected cancer through the system in order to maximise the chances of meeting the CWT targets
- Working with clinicians to modify pathways to parallel systems where possible.
- Working with other cancer managers across Thames Valley to implement a new referral form for primary care
- Development of the 2WW leaflet for GPs to give to people on the suspected cancer pathway to explain why it is important to make hospital appointments a priority.

7 Conclusion and next steps

This has been a large and wide ranging project looking at the diagnostic cancer pathways across the Thames Valley for five specialties and how the demand for services will be impacted by the implementation of the NICE guidance in the future.

Capacity issues, whilst sometimes down to old and failing equipment in radiology, were more generally concerned with the lack of trained workforce attracted to working in the expensive south of England, the capping of the use of agency staff and the retirement of highly qualified pathologists and radiologists. Cancer managers have an uphill battle to meet cancer waiting time targets and have employed a range of ways of overcoming delays which are typically about speed and accuracy of communication between primary care, patients and secondary care and between secondary care and tertiary services.

Staff are continually problem solving to meet short term targets with limited control and time to consider implementing long term solutions. Multidisciplinary workshops across the cancer diagnostics pathway to give staff protected time to work through longer term networked options may be one way forward.

When the project findings were presented at a workshop held in the Kassam stadium in Oxford on 10th March a number of actions were identified as useful next steps:

- TVSCN to work with existing tumour site specific groups to ensure that common diagnostic pathways are in place for each cancer specialty. It would be helpful to disseminate these pathways to CCGs.
- TVSCN to investigate the following with pathology services:
 - Will new metrics for samples from patients with suspected cancer enable a better understanding of the pressures and volume of cancer related work?

- Is there any way for sub-specialisation to be developed and networked across the Thames valley?
- Is there a way of supporting technological development to speed up processes within pathology services especially in histopathology, cell pathology and genetic testing?
- TVSCN to work with the imaging sub group of the SCN and the imaging group of the AHSN to:
 - develop common imaging protocols across all Trusts in the Thames Valley
 - explore any other initiatives such as sub-specialisation development for the benefit of the whole network
 - Produce costed 'diagnostic packages' to inform commissioning

All workshop participants were urged to share local initiatives regarding the cancer pathway across the Thames valley.



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