



Public Health
England

Protecting and improving the nation's health

National Cancer Intelligence Network

Surgical treatment of thyroid cancer and other thyroid conditions 2007 to 2011

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The National Cancer Intelligence Network (NCIN) is a UK-wide initiative, working to drive improvements in cancer awareness, prevention, diagnosis and clinical outcomes by improving and using the information collected about cancer patients for analysis, publication and research.

National Cardiovascular Intelligence Network

The National Cardiovascular Intelligence Network (NCVIN) analyses information and data and turns it into meaningful timely health intelligence for commissioners, policy makers, clinicians and health professionals to improve services and outcomes.

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The National Child and Maternal Health Intelligence Network (NCMHIN) provides information and intelligence to improve decision-making for high quality, cost effective services. Their work supports policy makers, commissioners, managers, regulators, and other health stakeholders working on children's, young people's and maternal health.

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The National End of Life Care Intelligence Network (NEoLCIN) aims to improve the collection and analysis of information related to the quality, volume and costs of care provided by the NHS, social services and the third sector to adults approaching the end of life. This intelligence will help drive improvements in the quality and productivity of services.

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Introduction

About this report

The aims of this report were twofold. The first aim was to describe patterns of major surgery for thyroid cancer by place of surgery (hospital trust), workload volume (by hospital trust and by consultant) and by type of trust. In this report, a trust is defined as a specialist centre if it hosts a thyroid cancer multidisciplinary team (MDT) comprising members that have a special interest and expertise in thyroid cancer or an upper aero-digestive tract (UAT) MDT and/or a combined UAT/thyroid cancer MDT. In England, in 2011, there were 26 hospital trusts that hosted a thyroid cancer multidisciplinary team (MDT), see 2011 peer review list in appendix 1. Appendix 2 contains a list of 31 trusts that host either an upper aero-digestive tract (UAT) cancer MDT and/or a combined UAT/thyroid cancer MDT. No distinction is made between UAT MDTs alone or combined MDTs in the list.

The second aim was to describe patterns of surgery for other non-cancerous thyroid conditions by place of surgery (hospital trust) and workload volume (by hospital trust and by consultant). We looked at non-cancer surgery because major thyroid surgery for thyroid cancer and other thyroid conditions is often carried out by the same surgeons.

About thyroid cancer and other thyroid conditions

Thyroid cancer is a rare cancer accounting for around 1% of all new cancers diagnosed in England, although it is the most common malignant disease of the endocrine system. There are many different types of thyroid cancer but the most frequent are: papillary (accounting for around 80% of cases), follicular (10%), medullary (5%) and anaplastic (3%). Most thyroid cancers are slow growing and curable. The common presentation is a discovery of a thyroid nodule or an increase in size of an existing lump but the majority of nodules are benign.

There are other conditions of the thyroid gland: hyperthyroidism (overactive thyroid), hypothyroidism (underactive thyroid), goitre (thyroid swelling) or enlarged thyroid gland, noncancerous (benign) nodules, and thyroid eye disease. Thyroid surgery is used to treat both thyroid cancer and other thyroid conditions such as benign disease, goitre, thyroid nodules and, rarely, hyperthyroidism. Through surgery, part or all of the thyroid gland is removed.

Appendix 3 lists the disorders of the thyroid gland that are included in this analysis.

Methods

Identifying thyroid cancer and other thyroid conditions

This report uses data from Hospital Episode Statistics (HES) for England for the five year period 2007 to 2011 in order to identify operations for thyroid cancer and other thyroid conditions. Hospital admissions with a diagnosis of thyroid cancer (ICD-10 code C73) have been included in this analysis. In addition, if the diagnosis fields (the primary diagnosis field and up to the 4th secondary diagnosis fields were used) had a thyroid related condition, as identified in appendix 3, they were included in the analysis.

This report excludes conditions affecting the larynx, parathyroid gland and pyriform sinus.

HES data was extracted where the below procedure (OPCS4.6) codes are present in any procedure position for both thyroid cancer and other thyroid conditions.

Table 1: Procedure codes for thyroid gland related procedures

OPCS 4.6	Description
B08.1	Total thyroidectomy – thyroid gland is removed
B08.2	Subtotal thyroidectomy – enough of the gland is left to produce some hormones
B08.3	Hemithyroidectomy – half of the thyroid is removed
B08.4	Lobectomy of thyroid gland NEC – removal of effected lobe only
B08.5	Isthmectomy of thyroid gland – removal of band of tissue that connects two lobes
B08.6	Partial thyroidectomy NEC – removal of affected lobe only
B08.8	Other specified excision of thyroid gland
B08.9	Unspecified excision of thyroid gland

Calculating workload volume

Workload volume was calculated for each trust included in the analysis based on the number of thyroid patients diagnosed and treated within the periods examined. Workload volume was grouped into three bands (low, medium and high) calculated by dividing the annual median workload range into three equal groups. Consultant workload volume was calculated in the same way. As HES data includes private activity

done in NHS trusts as well as NHS funded patients treated in independent treatment centres this was included when calculating consultant workloads. When attributing consultant activity to type of trust, where consultants worked across different locations and different types of trust, this has been allocated to an MDT trust if worked in during the period of study.

Definition of type of trust

To capture the concentration of specialist skills and access to services needed for thyroid cancer care, trusts have been allocated into three groups defined by the peer review list:

- i) thyroid cancer MDT – define hospitals hosting a specific stand alone peer reviewed thyroid cancer MDT (as appearing in Appendix 1)
- ii) upper aero-digestive tract (UAT)/thyroid cancer MDT – hospital trusts that host either a UAT cancer MDT and/or a combined UAT/thyroid cancer MDT (Appendix 2)
- iii) other trusts - hospitals that do not host a UAT cancer or thyroid cancer MDT

This reflects the classification on the National Peer Review MDT lists in 2011/12.

When attributing workload volume by consultant, if surgeons work across different types of hospitals the individual's workload has been assigned in the order of thyroid, UAT/thyroid and then calculated as above.

Results

Summary

This section presents the results of the analyses of patterns of thyroid surgery for people with thyroid cancer and people with other thyroid conditions in England. HES recorded 51,168 unique hospital admissions in the period 2007 to 2011 where thyroid surgery was identified as taking place and these were included in the study. Of these admissions, 17% (8,906) had a diagnosis of thyroid cancer in any of the following diagnosis fields: primary diagnosis up to the 4th secondary diagnosis. The other 83% (42,259) of hospital admissions for thyroid surgery had no diagnosis of thyroid cancer in any of the examined diagnostic fields. In the same period, 10,256 newly diagnosed thyroid cancers were registered in England. Looking at surgery for all other thyroid conditions, 92% (39,546) of these hospital admissions had a primary diagnosis that was a thyroid condition as specified in appendix 3.

Figure 1 shows that there has been a year-on-year increase in the number of hospital admissions for other thyroid conditions, increasing from 7,293 in 2007 to 8,451 in 2011. The number of hospital admissions for thyroid cancer has increased, from 1625 in 2007 to 2,142 in 2011.

Figure 1: Number of hospital admissions by primary diagnosis, England

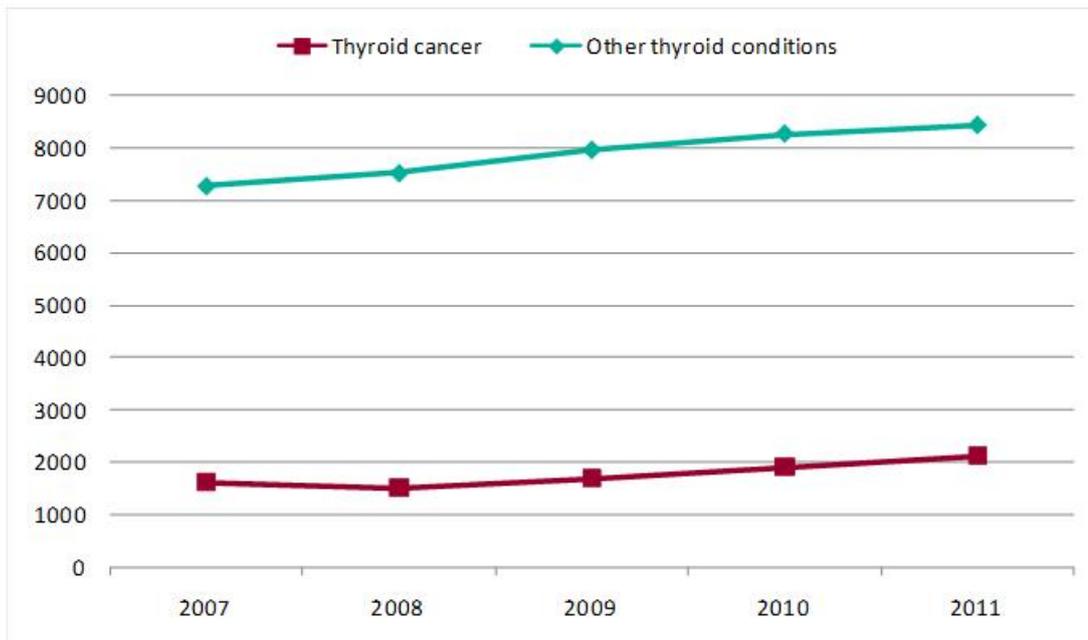


Figure 2: Diagnoses for other (non-malignant) thyroid conditions undergoing surgery

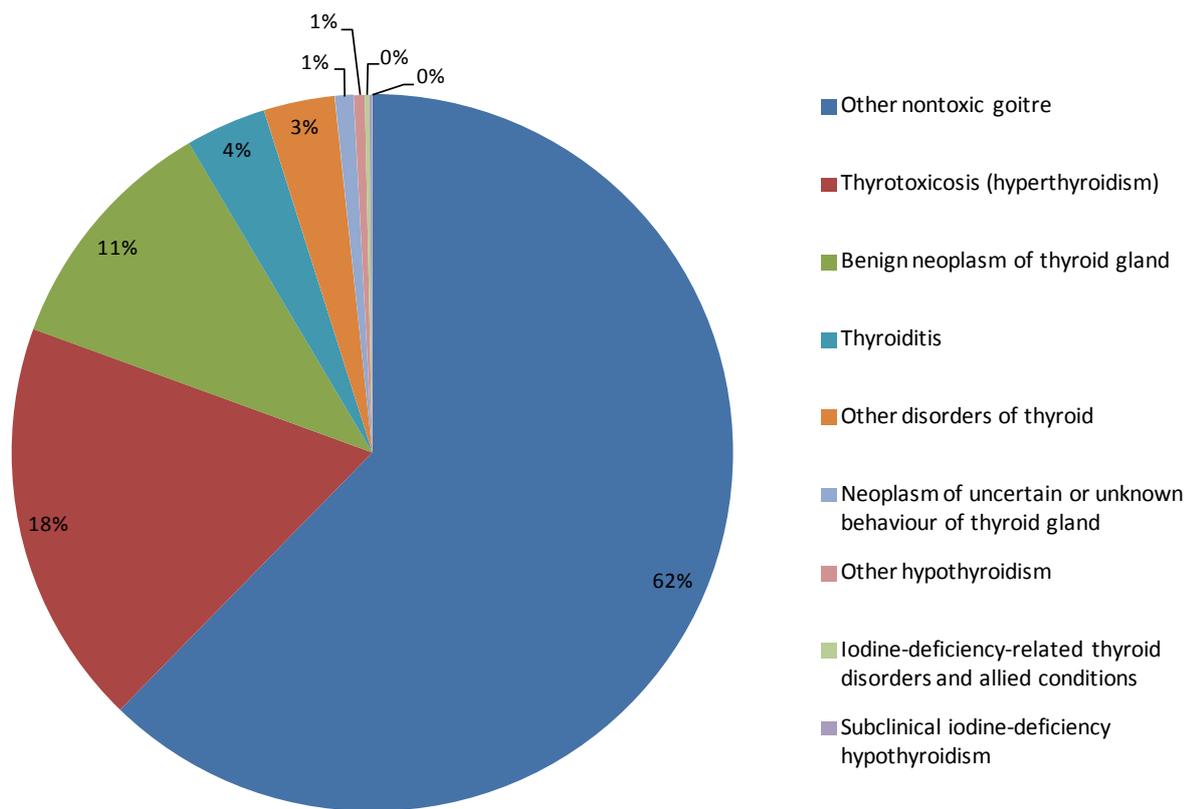


Figure 2 shows the percentage of admissions that have a diagnosis of a non-malignant thyroid condition in the primary diagnosis field broken down into the main types of condition. Over half, or 24,628, of the hospital admissions have surgery related to other non-toxic goitre.

Main operative procedure

Analysis of the main operative procedure was undertaken to show the distribution of types of surgery for thyroid cancer and for other thyroid conditions (Table 2). The top three procedures for both thyroid cancer and other thyroid conditions were total thyroidectomy, hemithyroidectomy and lobectomy of thyroid gland. The terms hemithyroidectomy and lobectomy of thyroid gland are often used to describe very similar procedures; if combined these would comprise 48% and 58% of the types of surgery for thyroid cancer and other thyroid conditions, respectively.

Table 2: Type of surgery for thyroid cancer and other thyroid conditions

OPCS4 codes	Procedure Description	Thyroid cancer		Other thyroid conditions	
		Number	%	Number	%
B081	Total thyroidectomy – thyroid gland is removed	3,712	41.7%	12,311	31.1%
B082	Subtotal* thyroidectomy – enough of the gland is left to produce some hormones	101	1.1%	1624	4.1%
B083	Hemithyroidectomy – half of the thyroid is removed	2,332	26.2%	11,537	29.2%
B084	Lobectomy of thyroid gland NEC – removal of affected lobe only	1,955	22.0%	11,533	29.2%
B085	Isthmectomy of thyroid gland – removal of band of tissue that connects two lobes	108	1.2%	790	2.0%
B086	Partial thyroidectomy NEC – removal of affected lobe only	122	1.4%	534	1.4%
B088	Other specified excision of thyroid gland	220	2.5%	173	0.4%
B089	Unspecified excision of thyroid gland	229	2.6%	632	1.6%
Other	Other surgical procedures not specified above	126	1.4%	412	1.0%
Total records		8,905		39,546	

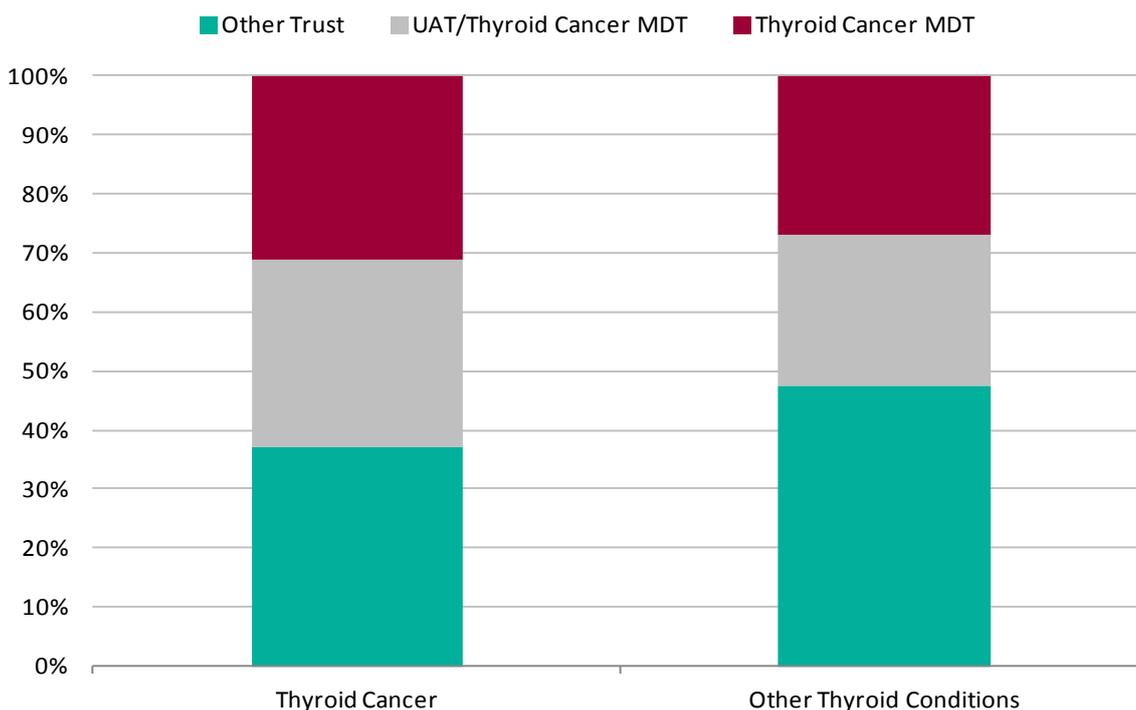
*subtotal is an imprecise term, recommended terminology for thyroid cancer is near-total

Hospital trusts hosting thyroid cancer multidisciplinary teams

Figure 3 shows the percentage of operations that were carried out in hospital trusts with a specialist separate thyroid cancer MDT, compared to those with either an upper aerodigestive tract cancer MDT and/or a combined UAT/thyroid cancer MDT, compared to all other trusts. It is important to note that the HES data does not identify where local care agreements mean that surgeons who are part of specialist multidisciplinary thyroid cancer teams carry out surgery at other hospital trusts.

The majority of operations for both thyroid cancer and other thyroid conditions were undertaken in trusts with a thyroid cancer or UAT cancer MDT. In total, 153 trusts were recorded as undertaking thyroid cancer procedures. Of these, 26 trusts (17%) host a thyroid cancer MDT and 31 host a UAT or UAT/thyroid cancer MDT (20%). Slightly more thyroid cancer procedures than other thyroid conditions were undertaken in a trust hosting a thyroid cancer MDT (31% and 27%). More procedures for cancer than for other thyroid conditions were undertaken in trusts with UAT or UAT/thyroid cancer MDTs (32% and 26%). This shows that surgical activity is largely being conducted in the specialist head and neck cancer centres. Over a third of all cancer procedures, however, occur in a trust that does not host a thyroid or combined UAT/thyroid cancer MDT. In this analysis, it was not possible to separately identify microcarcinomas. For cancers diagnosed from 2011 onwards using the most recent version of the TNM staging classification (TNM7), it will be possible to separately identify stage T1a cancers, which are most likely to be incidental findings of cancer in surgery undertaken initially for a benign indication.

Figure 3: Proportion of operations done in hospital trusts by type of cancer MDT



A separate analysis of cancer registry data examined 280 cases with a histological diagnosis of medullary thyroid cancer (diagnosed with morphology codes 85113 and 85103) as this is a rare disease, accounting for around 3% of new thyroid diagnoses, and requires specific management. Table 3 shows that 73% of medullary cancers having a curative surgical procedure were treated in a hospital trust that hosts a separate thyroid cancer MDT or a UAT or combined UAT/thyroid cancer MDT. But 75 (27.5%) of these rare cases had surgery in other provider trusts.

Table 3: Proportion of medullary thyroid cancers with surgery done in hospitals by type of cancer MDT, England, 2007–2011

	Other Trust	UAT/ Thyroid Cancer MDT**	Thyroid Cancer MDT**
Total number of cases	75	70	128
Percentage of cases (in 5 years)	27.5%	25.6%	46.9%

***for cases with multiple events or shared pathways include in Thyroid MDT group if any surgery occurred within a hospital that hosts a Thyroid Cancer MDT etc. Six cases had blank/invalid procedure or trust codes*

Annual median workload – thyroid cancer

As described in the methods section, workload volume by trust was grouped into three bands (low, medium and high) by dividing the annual median workload range (based on the number of hospital admissions within each year) into three equal groups.

Overall, the annual median workload ranged between 1 and 53:

- 120 trusts had a low median workload (annual median workload ranged from 0 to 17) with 48 (31%) of trusts seeing less than 5 patients a year
- 30 trusts had a medium workload (annual median workload ranged from 18 to 35)
- 3 trusts had a high median workload (annual median workload ranged from 36 to 53)

Figure 4 shows the annual median workload rounded up for 2007–2011 for hospital trusts undertaking surgery for thyroid cancer. Most trusts see very low volumes of cancer patients.

Figure 4: Annual median thyroid cancer workload by hospital trust, 2007–2011

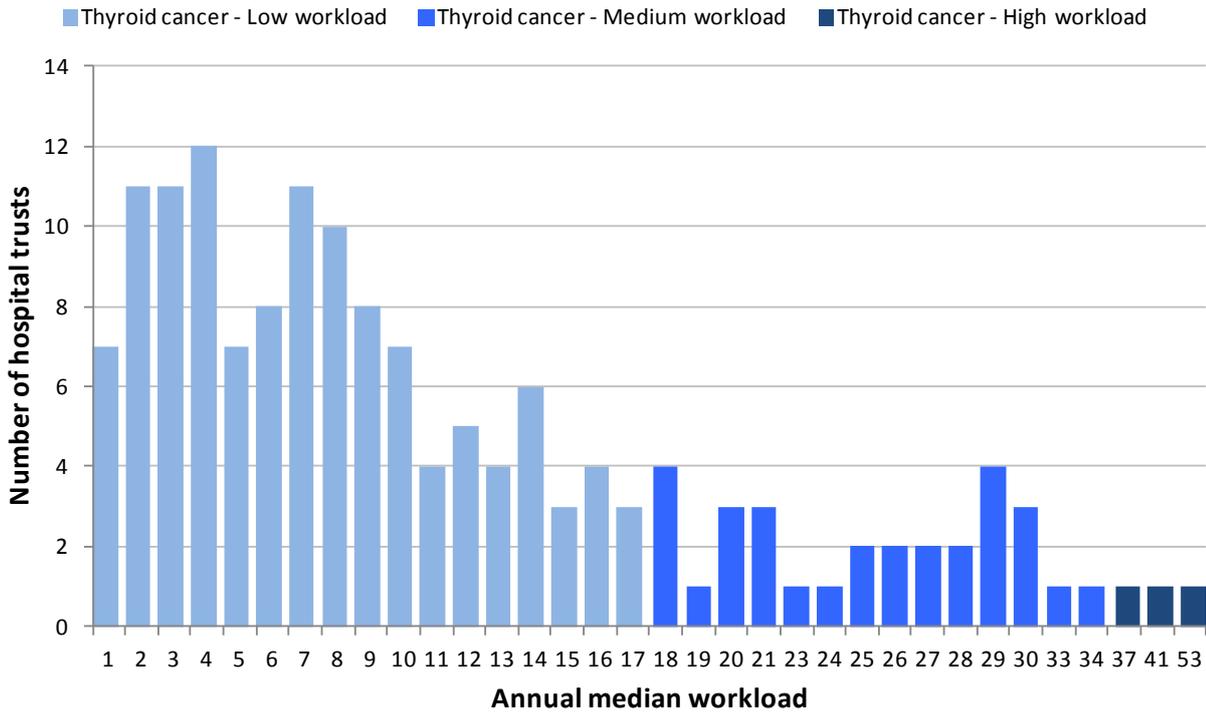
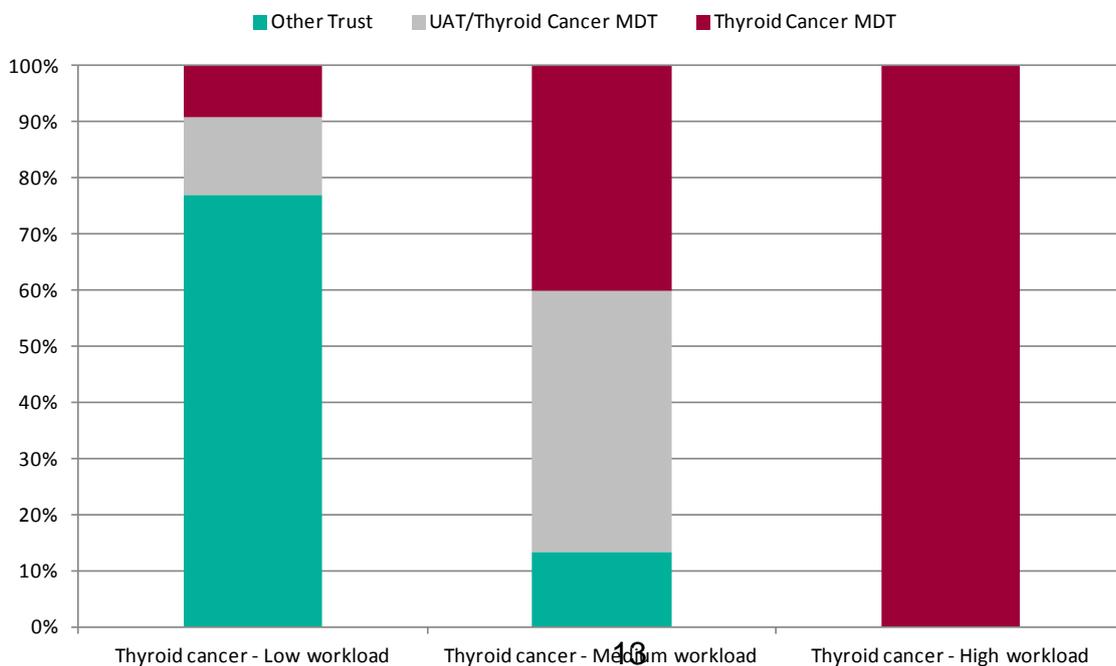


Figure 5 shows that most trusts where the annual median workload is medium or high, host a thyroid cancer or UAT/thyroid cancer MDT. Most of the trusts with a low annual median workload did not host a thyroid or UAT/thyroid cancer MDT. A few trusts with a thyroid cancer or UAT/thyroid cancer fall into the low workload band. Interpreting this needs an understanding of the local arrangements where surgery is performed. For example, the Christie Cancer Centre is a low workband trust that hosts a thyroid cancer MDT, but surgery is carried out by MDT members at other hospitals in the area, which have medium or high workload. See appendix 4 for a list of MDT trusts by workload band.

Figure 5: Location of thyroid cancer surgery by annual median workload, 2007–2011



Workload volume – consultant

This section presents an analysis of the average annual median surgical workload by surgeon in England. It also looks at whether high workload surgeons are based in hospital trusts that host a thyroid cancer or UAT/thyroid cancer MDT. The analysis used the pseudonymised GMC consultant code in HES, which attributes procedures to a single surgeon but does not identify the individual consultant.

The average annual workload ranged from 1 to 23. Figure 6 shows that the majority of surgeons who carried out a procedure on a patient with a thyroid cancer condition had a low annual median workload. Few consultants had a high annual median workload.

Figure 6: Annual median workload by consultant, thyroid cancer, 2007-2011

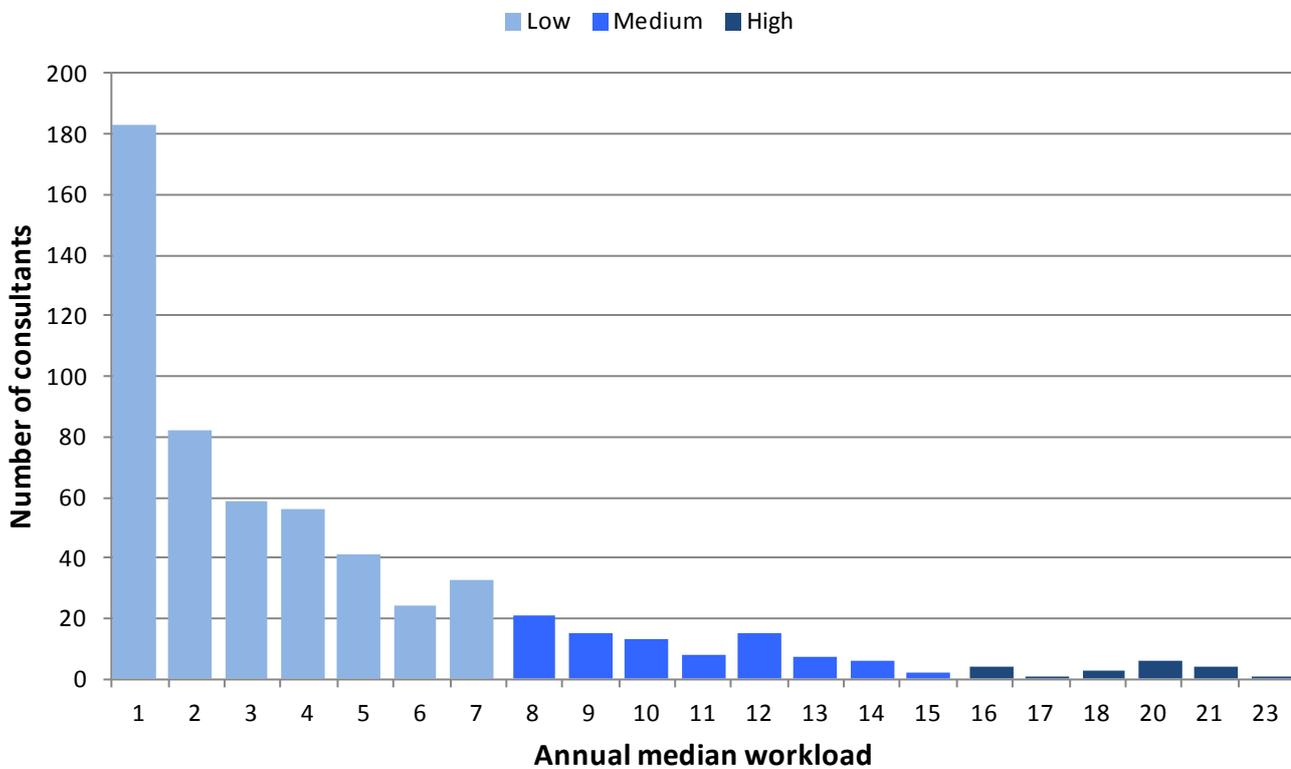
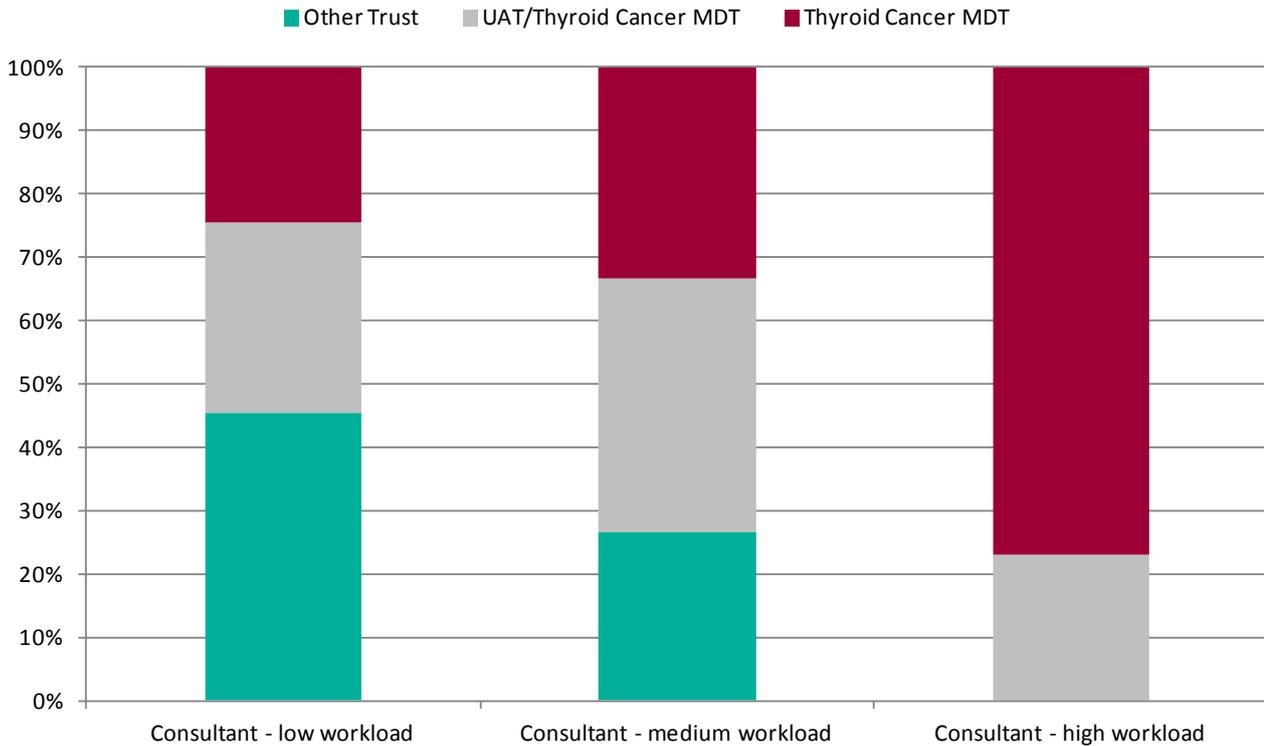


Figure 7 shows that as the annual median workload by consultant increases, there is an increasing proportion of consultants working in hospitals that host a thyroid cancer or UAT/thyroid cancer MDT.

Figure 7: Consultant workload by type of trust, thyroid cancer 2007–2011



Annual median workload – other thyroid conditions

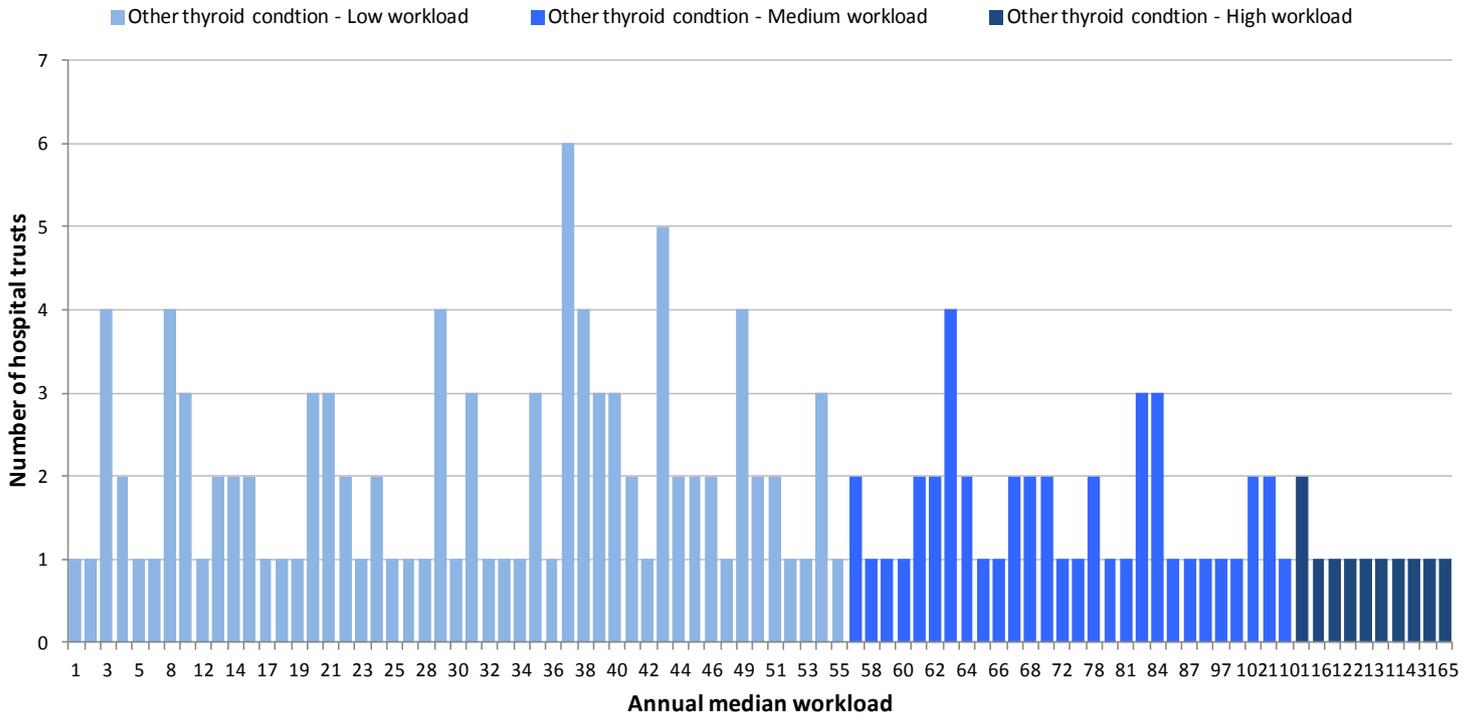
As described in the previous section on thyroid cancer, workload volume for all other thyroid conditions was grouped into three bands (low, medium and high) by dividing the annual median workload range (based on the number of hospital admissions within each year) into three equal groups.

Overall, the annual median workload by trust ranged between 1 and 165:

- 101 trusts had a low median workload (annual median ranged from 0 to 55)
- 45 trusts had a medium median workload (annual median ranged from 56 to 110)
- 11 trusts had a high median workload (annual median workload ranged from 111 to 165)

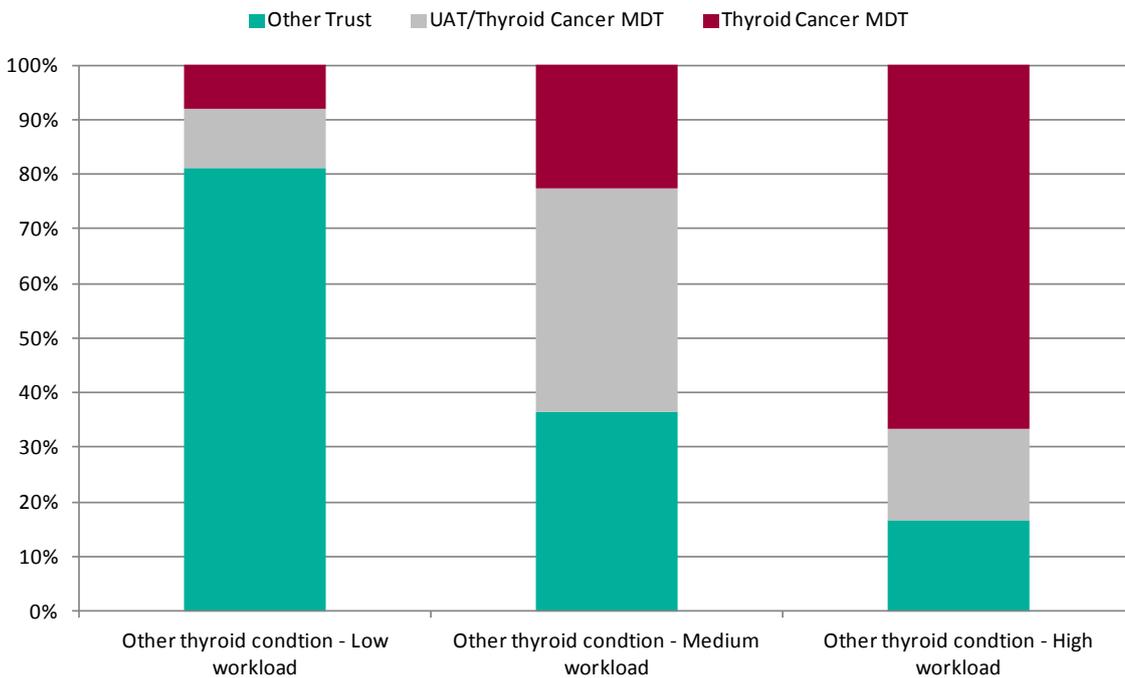
Figure 8 shows the annual median workload, rounded for 2007–2011, for trusts undertaking surgery for other (non cancer) thyroid conditions.

Figure 8: Annual median workload for other thyroid conditions by hospital trust, 2007–2011



Where the annual median workload of a trust is higher, this is more likely to be a hospital hosting a thyroid cancer MDT as shown in figure 9.

Figure 9: Location of surgery for other thyroid conditions by annual median workload by trust, 2007–2011

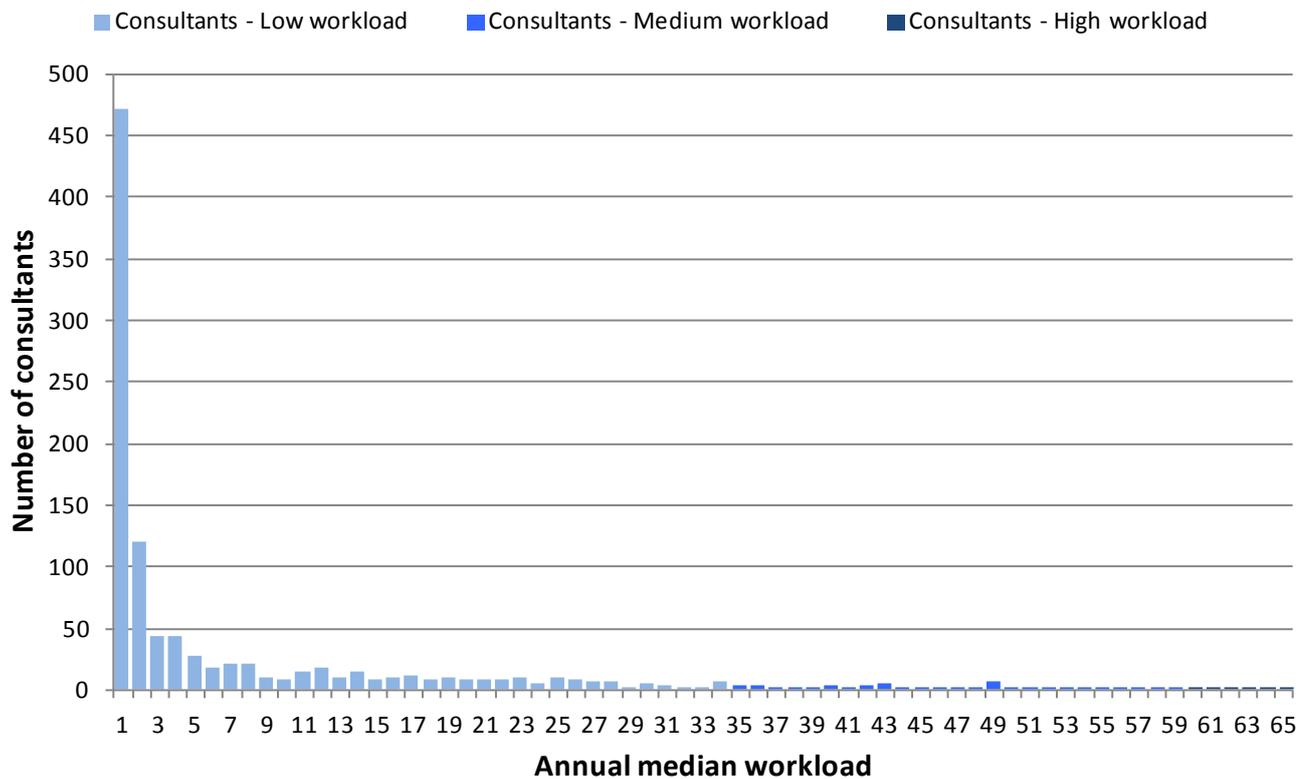


Median surgical workload by consultant – other thyroid conditions

This section presents an analysis of the annual median surgical workload by surgeon and by whether or not the trust where the surgery takes place has a thyroid cancer or UAT/thyroid cancer MDT.

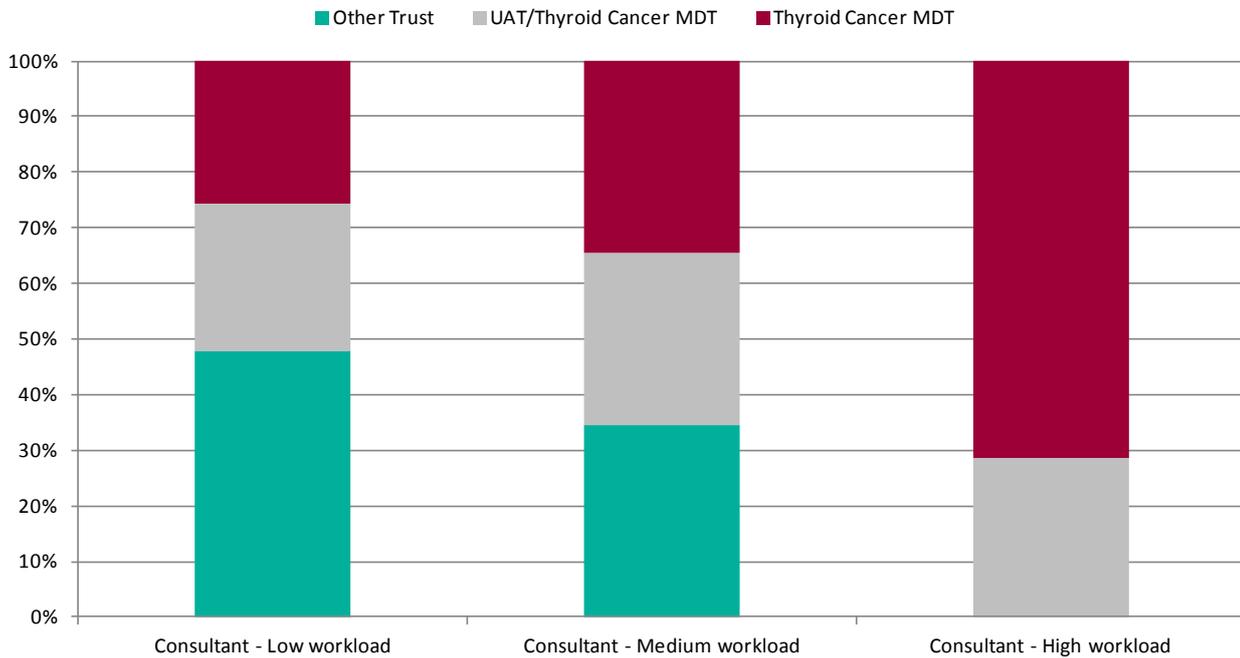
A total of 1,059 consultants were recorded as performing major thyroid procedures related to other thyroid conditions during the period. Figure 10 shows that the majority of surgeons, who carried out surgery on a patient with a non cancerous thyroid condition, had a low annual median workload; 706 surgeons performed five or fewer procedures. A few consultants had a high annual median workload.

Figure 10: Annual median workload by consultant, other thyroid conditions, 2007-2011



The data was analysed to ascertain whether consultants with a high median workload were more likely to be based at a trust that hosts a thyroid or UAT cancer MDT. Figure 11 shows an increasing proportion of consultants working in trusts with a MDT as the annual median workload increases.

Figure 11: Consultant workload by type of hospital trust, other thyroid conditions 2007–2011



Median surgical workload by consultant for all thyroid conditions cancer and non-cancer combined

Over the study period peer review guidance has been developed. Currently, there is a recommendation for surgeons undertaking major thyroid surgery to carry out a minimum of 20 procedures a year. The same surgeons often carry out surgery for cancer and other thyroid conditions and incidental diagnoses of cancer may initially be recorded as a benign diagnosis on the HES record. So treatments for cancer and all other thyroid conditions were combined.

Figure 12 shows that for all thyroid procedures (cancer and non cancer) the average consultant workload ranged from 1 to 112 procedures per year. A total of 934 surgeons were performing less than 20 thyroid procedures on average a year, of which 512 had an annual median workload of one. It may be that very small workload numbers are errors or due to workforce factors such as recruitment or retirement that affect workload over the five-year period of study. However, 13,635 (28%) procedures were performed by individuals operating on less than the recommended volume of at least 20 procedures a year. By contrast, 186 surgeons were performing an average of 20 or more procedures a year and they carried out 34,816 (72%) thyroid operations.

Figure 12: Annual median workload by consultant for all thyroid conditions cancer and non-cancer combined, 2007–2011

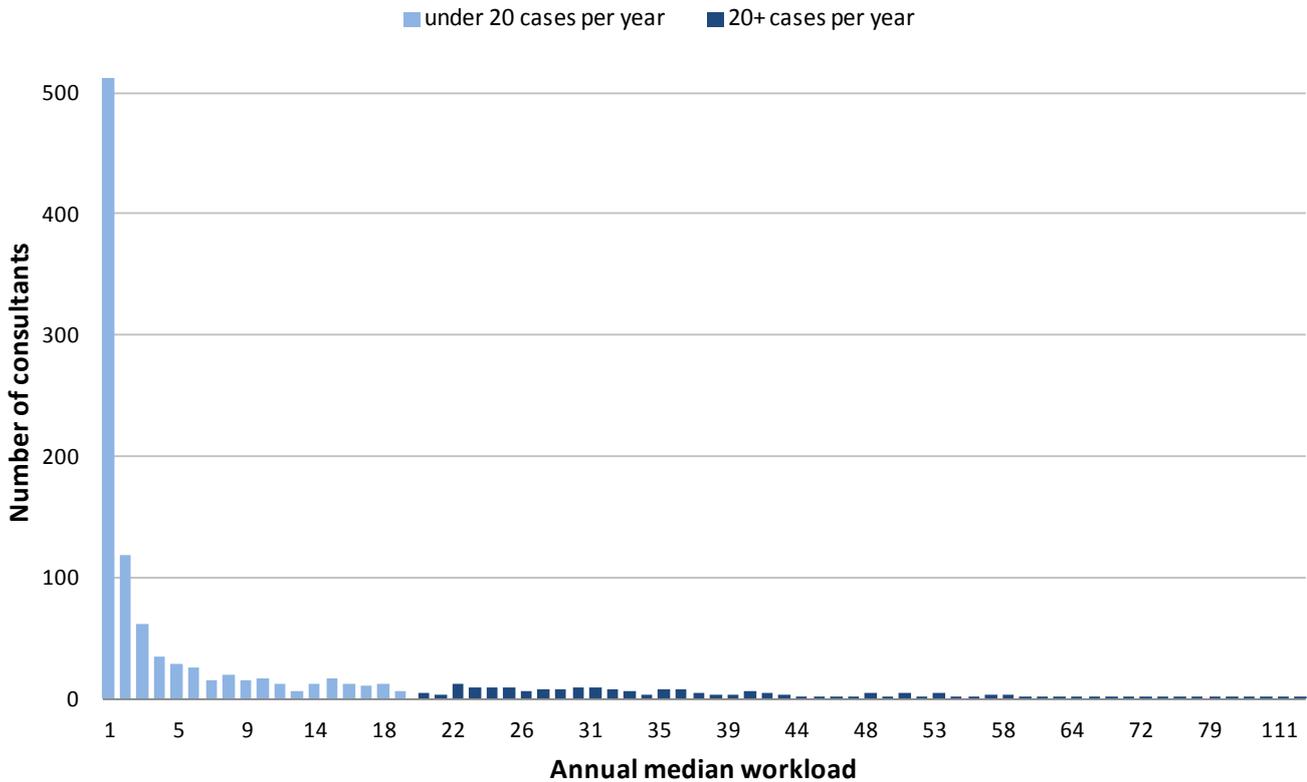
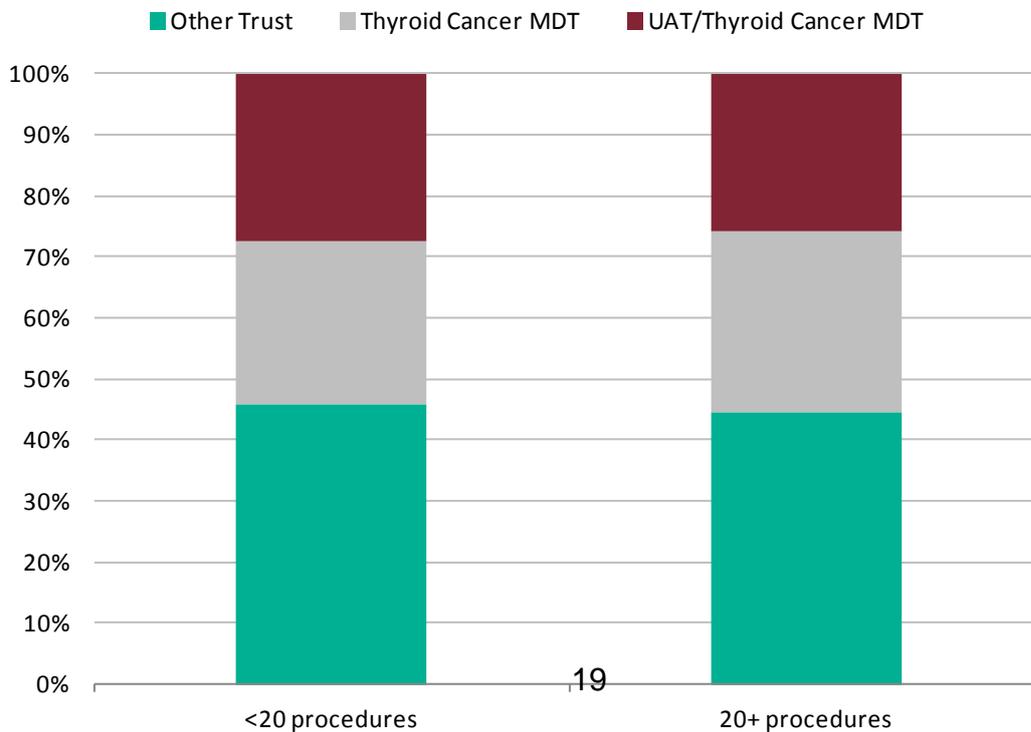


Figure 13 shows that the average workload of consultants is more spread across all types of trusts, further suggesting that the very small average workloads may be due to natural workforce factors or data factors that are common across the system.

Figure 13: Consultant workload by type of hospital trust, all thyroid conditions cancer and non-cancer combined, 2007–2011



Summary and conclusions

The purpose of this report is to describe patterns of surgery between 2007 and 2011 both for thyroid cancer and for other thyroid conditions by trust and consultant. In 2004, NICE published *Guidance on cancer services – improving outcomes in head and neck cancers*, which recommended that complex thyroid surgery should be carried out by specialist surgeons and teams with appropriate thyroid expertise and interest.¹

These findings indicate that during the study period, 2007 to 2011, over a third of thyroid cancer surgery was being undertaken in trusts that did not host either a standalone thyroid or a combined thyroid or UAT cancer MDT. In addition, 31% of trusts were still undertaking five or less thyroid cancer operations annually. If surgeons are working within MDT agreements it may be suitable for routine cases, such as some early stage cancers, to be treated at other hospitals.^{2, 3} For complex cases or rarer types of thyroid cancer that need more extensive surgery, such as total thyroidectomy with lymph node dissection, it is best practice for these to be done by surgeons with expertise in thyroid surgery and who are authorised by the MDT to perform these specific procedures.^{2, 4} Even for medullary cancer, one of the rarer sub-types of thyroid cancer, 27.5% of surgery was undertaken in trusts that did not host a thyroid cancer or UAT/thyroid cancer MDT.

The current National Cancer Services Peer Review Programme guidance for thyroid cancer services states that patients should be treated in designated hospitals with appropriate head and neck wards and also that surgeons undertaking major thyroid surgery should undertake a minimum of 20 procedures a year.² Looking at surgery for thyroid cancer alone, the majority of surgeons were performing an average of less than 10 surgical procedures for cancer a year. This underlines the rarity of the condition. The same surgeons, however, are likely to operate on thyroid cancer and other non-cancerous thyroid conditions. Furthermore, thyroid procedures done for an initially benign indication may lead to a new cancer diagnosis, such as incidental microcarcinoma. In the current analysis, it was not possible to separately identify microcarcinomas. But for cancers diagnosed from 2011 onwards using the most recent version of the TNM staging classification (TNM7), it will be possible to separately identify stage T1a cancers (very small cancers less than 1cm and entirely confined to the thyroid), which are most likely to be incidental findings. When treatments for cancer and all other thyroid conditions were combined, there were still a large number of surgeons performing less than 20 thyroid procedures a year. Yet 72% of all thyroid operations were undertaken by surgeons performing at least 20 or more major thyroid procedures on average a year.

As discussed, there are limitations with the data analysed within this study. There are no routinely available data identifying local agreements about place of surgery.

Surgeons who are part of specialist multidisciplinary thyroid cancer teams may carry out surgery at various locations with the oversight and authorisation of the specialist thyroid cancer MDT. High workload volume alone may not necessarily be a good predictor of best practice and many factors other than workload volume will impact on patient outcomes.³ The analysis does suggest, however, that there is scope for improving the pathways for care of patients with thyroid cancer. Cancer networks and commissioners should review local protocols for referral and management of thyroid cancer patients to ensure specialised care is delivered to these patients in line with national guidance.

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4. British Thyroid Association and Royal College of Physicians. Guidelines for the management of thyroid cancer. 2nd ed. British Thyroid Association and RCP, 2007. [paper](#)

Appendix 1: Hospital trusts hosting a thyroid cancer MDT – based on 2011/12 MDT list, Cancer Peer Review website

Code	Network	Trust	Team
RA2	SWSHCN - Surrey, West Sussex & Hampshire	ROYAL SURREY COUNTY NHS FOUNDATION TRUST	MDT - RSCH
RAL	NCLWECCN - North Central London and West Essex CCN	ROYAL FREE HAMPSTEAD NHS TRUST	MDT - Royal Free Hampstead NHS Trust
RBV	GMCCN - Greater Manchester & Cheshire	THE CHRISTIE NHS FOUNDATION TRUST	MDT - Christie Hospital
RD3	DCN - Dorset	POOLE HOSPITAL NHS FOUNDATION TRUST	MDT - Poole
REF	PCN - Peninsula	ROYAL CORNWALL HOSPITALS NHS TRUST	MDT - Royal Cornwall
RGT	AngCN - Anglia	CAMBRIDGE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	MDT - Addenbrookes
RH8	PCN - Peninsula	ROYAL DEVON AND EXETER NHS FOUNDATION TRUST	MDT - Royal Devon & Exeter
RHQ	NTCN - North Trent	SHEFFIELD TEACHING HOSPITALS NHS FOUNDATION TRUST	MDT - Sheffield
RHU	CSCCN - Central South Coast	PORTSMOUTH HOSPITALS NHS TRUST	MDT - Portsmouth
RK9	PCN - Peninsula	PLYMOUTH HOSPITALS NHS TRUST	MDT - Plymouth
RM1	AngCN - Anglia	NORFOLK AND NORWICH UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	MDT - Norfolk & Norwich
RNJ	NELCN - North East London	BARTS AND THE LONDON NHS TRUST	MDT - Barts & London
RNQ	EMCN - East Midlands	KETTERING GENERAL HOSPITAL NHS FOUNDATION TRUST	MDT - Kettering
RQN	NWLCCN - North West London	Imperial College Healthcare NHS Trust	MDT - Hammersmith
RR8	YCN - Yorkshire	LEEDS TEACHING HOSPITALS NHS TRUST	MDT - Leeds Teaching
RTD	NECN - North of England	THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST	MDT - Newcastle
RTG	EMCN - East Midlands	DERBY HOSPITALS NHS FOUNDATION TRUST	MDT - Derby Hospital
RTH	TVCN - Thames Valley	OXFORD RADCLIFFE HOSPITALS NHS TRUST	MDT - Oxford Radcliffe
RTR	NECN - North of England	SOUTH TEES HOSPITALS NHS FOUNDATION TRUST	MDT - South Tees
RV8	NWLCCN - North West London	NORTH WEST LONDON HOSPITALS NHS TRUST	MDT - Northwick Park
RVV	KMCN - Kent & Medway	EAST KENT HOSPITALS UNIVERSITY NHS FOUNDATION TRUST	MDT - Kent & Canterbury
RWA	HYCCN - Humber & Yorkshire Coast	HULL AND EAST YORKSHIRE HOSPITALS NHS TRUST	MDT - Hull And East Yorkshire Hospitals
RWE	EMCN - East Midlands	UNIVERSITY HOSPITALS OF LEICESTER NHS TRUST	MDT - Leicester Royal Infirmary

Surgical treatment of thyroid cancer and other thyroid conditions, 2007 to 2011

Code	Network	Trust	Team
RWF	KMCN - Kent & Medway	MAIDSTONE AND TUNBRIDGE WELLS NHS TRUST	MDT - Maidstone Hospital MDT - Nottingham University Hospitals NHS Trust
RX1	EMCN - East Midlands	Nottingham University Hospitals NHS Trust	NHS Trust
RXH	SCN - Sussex	BRIGHTON AND SUSSEX UNIVERSITY HOSPITALS NHS TRUST	MDT - BSUH

Appendix 2: Hospital trusts hosting an upper-aerodigestive tract (UAT) MDT or a combined UAT/thyroid MDT – taken from 2011/12 Cancer Peer Review list

Code	Network	Trust	Team
RA7	ASWCN - Avon, Somerset & Wiltshire	UNIVERSITY HOSPITALS BRISTOL NHS FOUNDATION TRUST	MDT - UHB
RA9	PCN - Peninsula	SOUTH DEVON HEALTHCARE NHS FOUNDATION TRUST	MDT - South Devon
RAE	YCN - Yorkshire	BRADFORD TEACHING HOSPITALS NHS FOUNDATION TRUST	MDT - Bradford
RBA	ASWCN - Avon, Somerset & Wiltshire	TAUNTON AND SOMERSET NHS FOUNDATION TRUST	MDT - Taunton
RC9	MVCN - Mount Vernon	LUTON AND DUNSTABLE HOSPITAL NHS FOUNDATION TRUST	MDT - Luton & Dunstable
RCB	YCN - Yorkshire	YORK TEACHING HOSPITAL NHS FOUNDATION TRUST	MDT - York
RD1	ASWCN - Avon, Somerset & Wiltshire	ROYAL UNITED HOSPITAL BATH NHS TRUST	MDT - RUH
REM	MCCN - Merseyside & Cheshire	AINTREE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	MDT - Aintree
RHM	CSCCN - Central South Coast	UNIVERSITY HOSPITAL SOUTHAMPTON NHS FOUNDATION TRUST	MDT - SUHT
RHW	TVCN - Thames Valley	ROYAL BERKSHIRE NHS FOUNDATION TRUST	MDT - Royal Berkshire
RJ1	SELCN - South East London	GUY'S AND ST THOMAS' NHS FOUNDATION TRUST	MDT - Guy's & St Thomas'
RJ7	SWLCN - South West London	ST GEORGE'S HEALTHCARE NHS TRUST	MDT - St Georges
RJE	GMCN - Greater Midlands	UNIVERSITY HOSPITAL OF NORTH STAFFORDSHIRE NHS TRUST	MDT - UHNS
RJZ	SELCN - South East London	KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST	MDT - Kings College
RKB	ArCN - Arden	UNIVERSITY HOSPITALS COVENTRY AND WARWICKSHIRE NHS TRUST	MDT - UHCW
RL4	GMCN - Greater Midlands	THE ROYAL WOLVERHAMPTON HOSPITALS NHS TRUST	MDT - The Royal Wolverhampton Hospitals Trust
RLN	NECN - North of England	CITY HOSPITALS SUNDERLAND NHS FOUNDATION TRUST	MDT - Sunderland
RM2	GMCCN - Greater Manchester & Cheshire	UNIVERSITY HOSPITAL OF SOUTH MANCHESTER NHS FOUNDATION TRUST	MDT - University Hospital of South Manchester NHS Foundation Trust
RNS	EMCN - East Midlands	NORTHAMPTON GENERAL HOSPITAL NHS TRUST	MDT - NGH
RPY	SWLCN - South West London	THE ROYAL MARSDEN NHS FOUNDATION TRUST	MDT - RMH Sutton
RQ8	ECN - Essex	MID ESSEX HOSPITAL SERVICES NHS TRUST	MDT - Broomfield (Chelmsford)
RRK	PBCN - Pan-Birmingham	UNIVERSITY HOSPITALS BIRMINGHAM NHS FOUNDATION TRUST	MDT - University Hospitals Birmingham Foundation Trust

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Code	Network	Trust	Team
RRV	NCLWECCN - North Central London and West Essex CCN	UNIVERSITY COLLEGE LONDON HOSPITALS NHS FOUNDATION TRUST	MDT - University College London Hospitals
RVJ	ASWCN - Avon, Somerset & Wiltshire	NORTH BRISTOL NHS TRUST	MDT - North Bristol
RVL	NCLWECCN - North Central London and West Essex CCN	BARNET AND CHASE FARM HOSPITALS NHS TRUST	MDT - Barnet And Chase Farm Hospitals
RW3	GMCCN - Greater Manchester & Cheshire	CENTRAL MANCHESTER UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	MDT - Central Manchester & Manchester Childrens
RW6	GMCCN - Greater Manchester & Cheshire	PENNINE ACUTE HOSPITALS NHS TRUST	MDT - Pennine Acute
RWP	3CCN - 3 Counties	WORCESTERSHIRE ACUTE HOSPITALS NHS TRUST	MDT - Worcestershire Acute Hospitals NHS Trust
RXN	LSCCN - Lancashire & South Cumbria	LANCASHIRE TEACHING HOSPITALS NHS FOUNDATION TRUST	MDT - Lancashire Teaching Hospitals
RXR	LSCCN - Lancashire & South Cumbria	EAST LANCASHIRE HOSPITALS NHS TRUST	MDT - East Lancashire Hospitals
RXW	GMCN - Greater Midlands	SHREWSBURY AND TELFORD HOSPITAL NHS TRUST	MDT - Shrewsbury & Telford Hospitals

Appendix 3: Other thyroid conditions, with ICD – 10 codes

Category	Description
Other nontoxic goitre	
E040	Nontoxic diffuse goitre
E041	Nontoxic single thyroid nodule
E042	Nontoxic multinodular goitre
E048	Other specified nontoxic goitre
E049	Nontoxic goitre, unspecified
Thyrotoxicosis (hyperthyroidism)	
E050	Thyrotoxicosis with diffuse goitre
E051	Thyrotoxicosis with toxic single thyroid nodule
E052	Thyrotoxicosis with toxic multinodular goitre
E053	Thyrotoxicosis from ectopic thyroid tissue
E054	Thyrotoxicosis factitia
E055	Thyroid crisis or storm
E058	Other thyrotoxicosis
E059	Thyrotoxicosis, unspecified
Benign neoplasm of thyroid gland	
D34	Benign neoplasm of thyroid gland
Thyroiditis	
E060	Acute thyroiditis
E061	Sub acute thyroiditis
E062	Chronic thyroiditis with transient thyrotoxicosis
E063	Autoimmune thyroiditis
E064	Drug-induced thyroiditis
E065	Other chronic thyroiditis
E069	Thyroiditis, unspecified
Other disorders of thyroid	
E070	Hypersecretion of calcitonin
E071	Dyshormogenetic goitre
E078	Other specified disorders of thyroid
E079	Disorder of thyroid, unspecified
Neoplasm of uncertain or unknown behaviour of endocrine glands thyroid gland	
D440	Neoplasm of uncertain or unknown behaviour of endocrine glands
Other Hypothyroidism	
E030	Congenital hypothyroidism with diffuse goitre
E031	Congenital hypothyroidism without goitre
E032	Hypothyroidism due to medicaments and other exogenous substances
E034	Atrophy of thyroid (acquired)
E035	Myxoedema coma
E038	Other specified hypothyroidism

Category	Description
E039	Hypothyroidism, unspecified
Iodine-deficiency-related thyroid disorders and allied conditions	
E010	Iodine-deficiency-related diffuse (endemic) goitre
E011	Iodine-deficiency-related multinodular (endemic) goitre
E012	Iodine-deficiency-related (endemic) goitre, unspecified
Subclinical iodine-deficiency hypothyroidism	
E02	Subclinical iodine-deficiency hypothyroidism

Appendix 4: Hospitals hosting a Thyroid, Combined or UAT MDT – average annual workload volume by band for thyroid cancer surgery

- Low <18 cancer surgeries typically performed per year
- Medium 18 to 35
- High > 35

Hospitals with a thyroid, combined UAT/thyroid, or UAT MDT	Workload
AINTREE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	Medium
BARNET AND CHASE FARM HOSPITALS NHS TRUST	Low
BARTS AND THE LONDON NHS TRUST	Medium
BRADFORD TEACHING HOSPITALS NHS FOUNDATION TRUST	Medium
BRIGHTON AND SUSSEX UNIVERSITY HOSPITALS NHS TRUST	Low
CAMBRIDGE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	Medium
CENTRAL MANCHESTER UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	Medium
CITY HOSPITALS SUNDERLAND NHS FOUNDATION TRUST	Medium
DERBY HOSPITALS NHS FOUNDATION TRUST	Medium
EAST KENT HOSPITALS UNIVERSITY NHS FOUNDATION TRUST	Medium
EAST LANCASHIRE HOSPITALS NHS TRUST	Medium
GUY'S AND ST THOMAS' NHS FOUNDATION TRUST	Medium
HULL AND EAST YORKSHIRE HOSPITALS NHS TRUST	Medium
IMPERIAL COLLEGE HEALTHCARE NHS TRUST	Medium
KETTERING GENERAL HOSPITAL NHS FOUNDATION TRUST	Low
KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST	Low
LANCASHIRE TEACHING HOSPITALS NHS FOUNDATION TRUST	Low
LEEDS TEACHING HOSPITALS NHS TRUST	Medium
LUTON AND DUNSTABLE HOSPITAL NHS FOUNDATION TRUST	Low
MAIDSTONE AND TUNBRIDGE WELLS NHS TRUST	Low
MID ESSEX HOSPITAL SERVICES NHS TRUST	Low
NORFOLK AND NORWICH UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	Medium
NORTH BRISTOL NHS TRUST	Medium
NORTH WEST LONDON HOSPITALS NHS TRUST	Medium
NORTHAMPTON GENERAL HOSPITAL NHS TRUST	Low
NOTTINGHAM UNIVERSITY HOSPITALS NHS TRUST	High
OXFORD UNIVERSITY HOSPITALS NHS TRUST	High
PENNINE ACUTE HOSPITALS NHS TRUST	Medium
PLYMOUTH HOSPITALS NHS TRUST	Medium
POOLE HOSPITAL NHS FOUNDATION TRUST	Low
PORTSMOUTH HOSPITALS NHS TRUST	Medium
ROYAL BERKSHIRE NHS FOUNDATION TRUST	Low
ROYAL CORNWALL HOSPITALS NHS TRUST	Low
ROYAL DEVON AND EXETER NHS FOUNDATION TRUST	Low
ROYAL FREE HAMPSTEAD NHS TRUST	Low
ROYAL SURREY COUNTY HOSPITAL NHS FOUNDATION TRUST	Low
ROYAL UNITED HOSPITAL BATH NHS TRUST	Low
SHEFFIELD TEACHING HOSPITALS NHS FOUNDATION TRUST	Medium
SHREWSBURY AND TELFORD HOSPITAL NHS TRUST	Low
SOUTH DEVON HEALTHCARE NHS FOUNDATION TRUST	Low
SOUTH TEES HOSPITALS NHS FOUNDATION TRUST	Low
ST GEORGE'S HEALTHCARE NHS TRUST	Medium
TAUNTON AND SOMERSET NHS FOUNDATION TRUST	Low

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Hospitals with a thyroid, combined UAT/thyroid, or UAT MDT	Workload
THE CHRISTIE NHS FOUNDATION TRUST*	Low
THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST	High
THE ROYAL MARSDEN NHS FOUNDATION TRUST	Low
THE ROYAL WOLVERHAMPTON HOSPITALS NHS TRUST	Low
UNIVERSITY COLLEGE LONDON HOSPITALS NHS FOUNDATION TRUST	Medium
UNIVERSITY HOSPITAL OF NORTH STAFFORDSHIRE NHS TRUST	Medium
UNIVERSITY HOSPITAL OF SOUTH MANCHESTER NHS FOUNDATION TRUST	Low
UNIVERSITY HOSPITAL SOUTHAMPTON NHS FOUNDATION TRUST	Low
UNIVERSITY HOSPITALS BIRMINGHAM NHS FOUNDATION TRUST	Medium
UNIVERSITY HOSPITALS BRISTOL NHS FOUNDATION TRUST	Low
UNIVERSITY HOSPITALS COVENTRY AND WARWICKSHIRE NHS TRUST	Medium
UNIVERSITY HOSPITALS OF LEICESTER NHS TRUST	Low
WORCESTERSHIRE ACUTE HOSPITALS NHS TRUST	Low
YORK TEACHING HOSPITAL NHS FOUNDATION TRUST	Medium

**likely to be a data anomaly as surgery performed elsewhere*