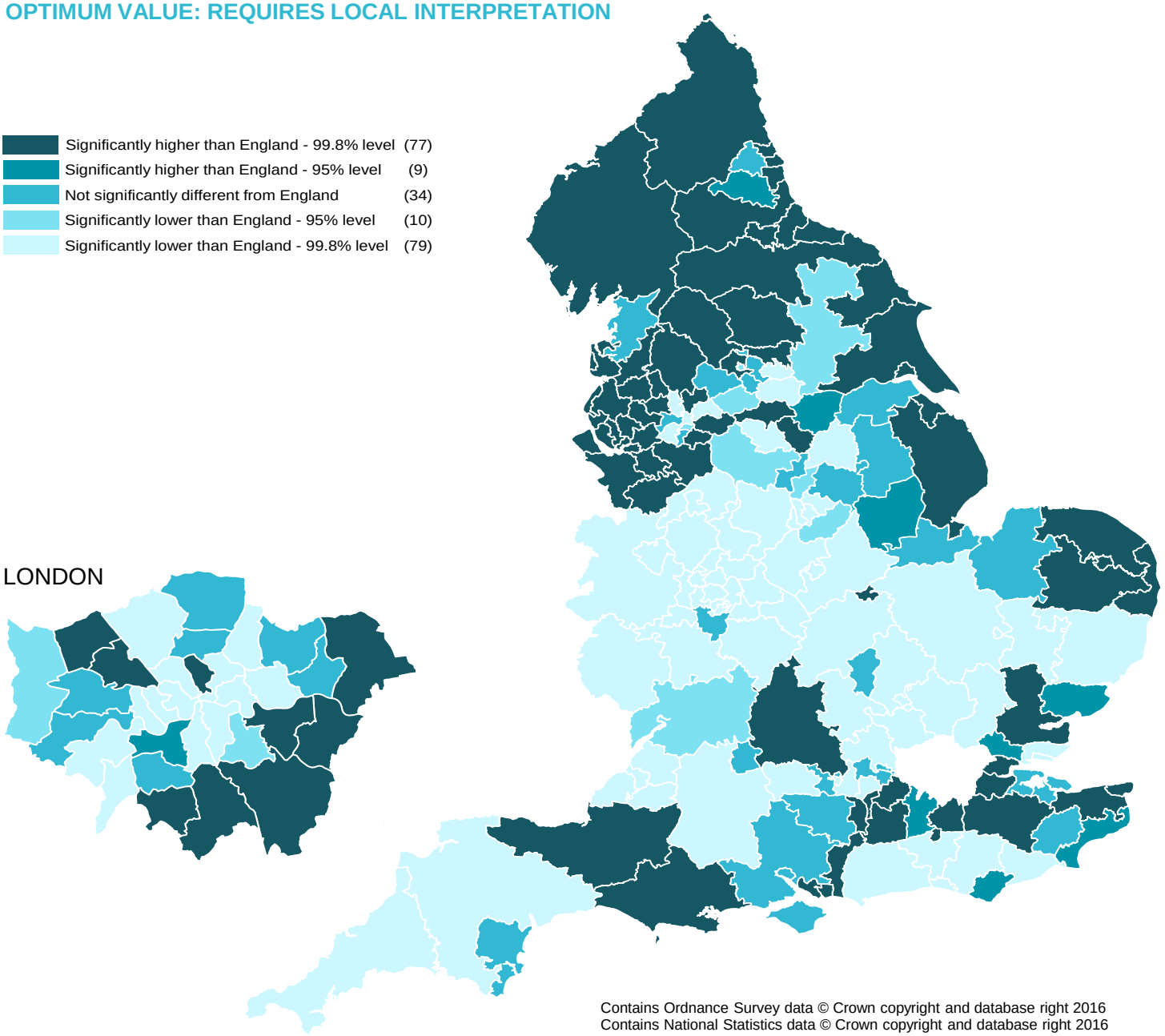
ENDOSCOPY SERVICES

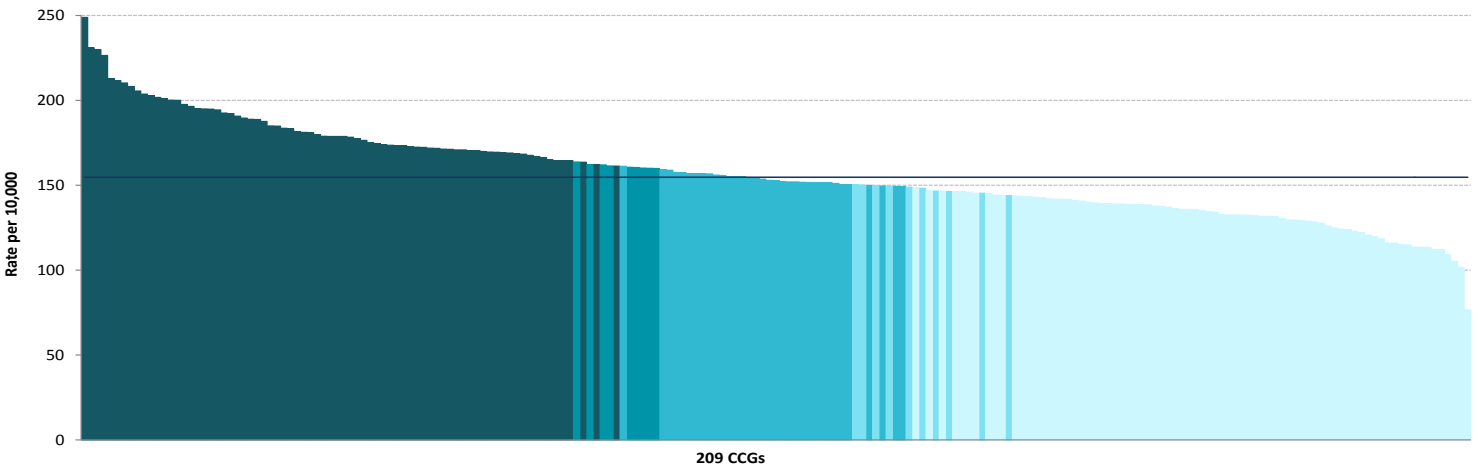
MAP 16: Rate of colonoscopy procedures and flexible sigmoidoscopy procedures per population by CCG

Indirectly standardised for age, sex and deprivation, 2014/15

Domain 1: Preventing people from dying prematurely

OPTIMUM VALUE: REQUIRES LOCAL INTERPRETATION





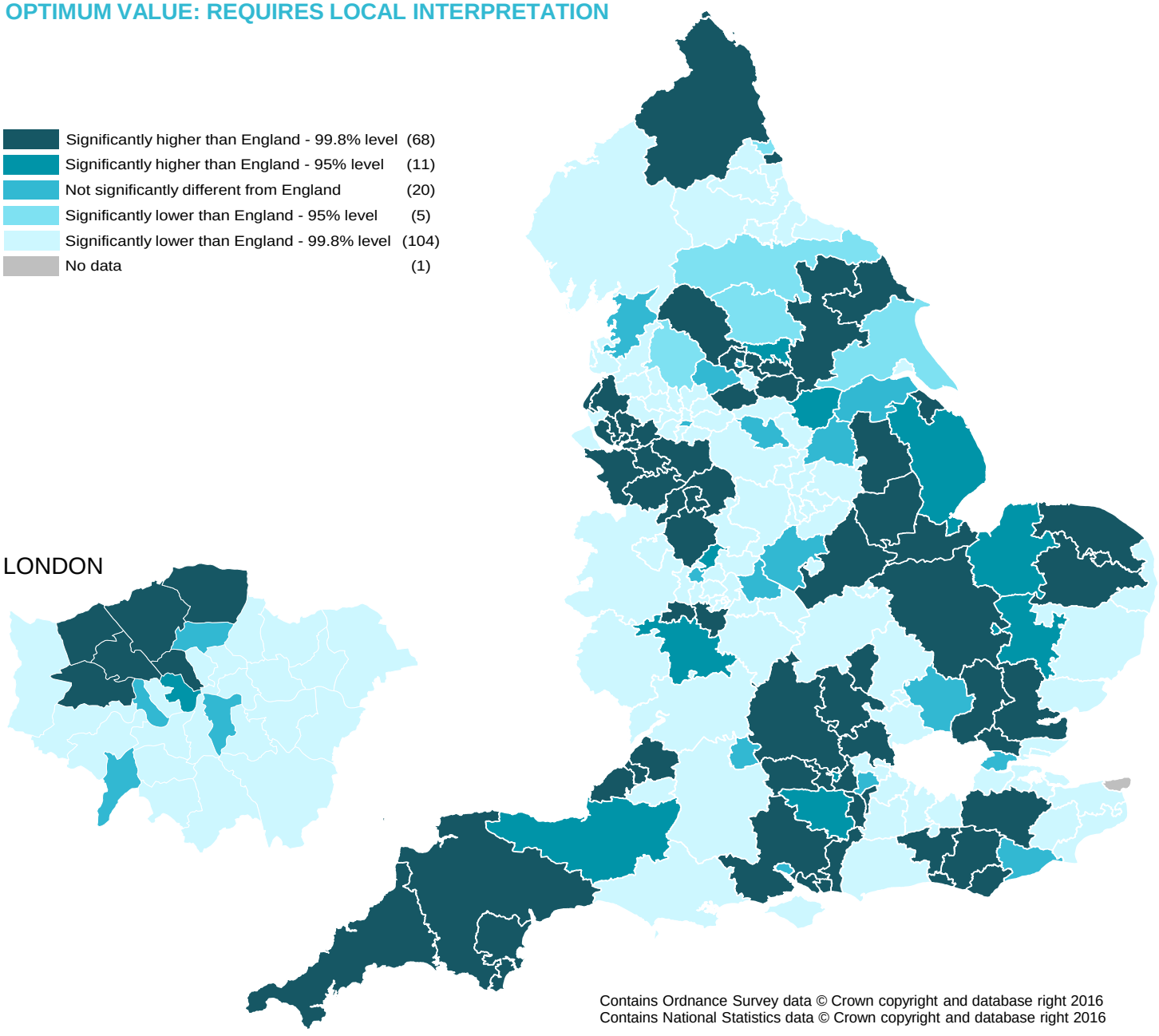
ENDOSCOPY SERVICES

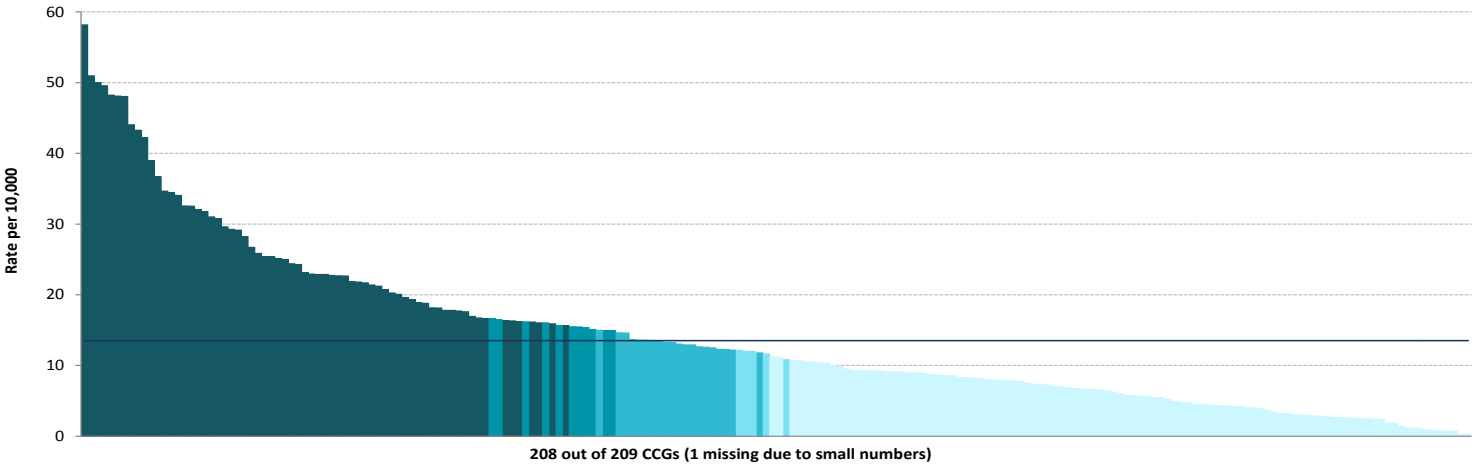
MAP 17: Rate of computed tomography (CT) colonography procedures per weighted population by CCG

Adjusted for age, sex and 'need', 2014/15

Domain 1: Preventing people from dying prematurely

OPTIMUM VALUE: REQUIRES LOCAL INTERPRETATION





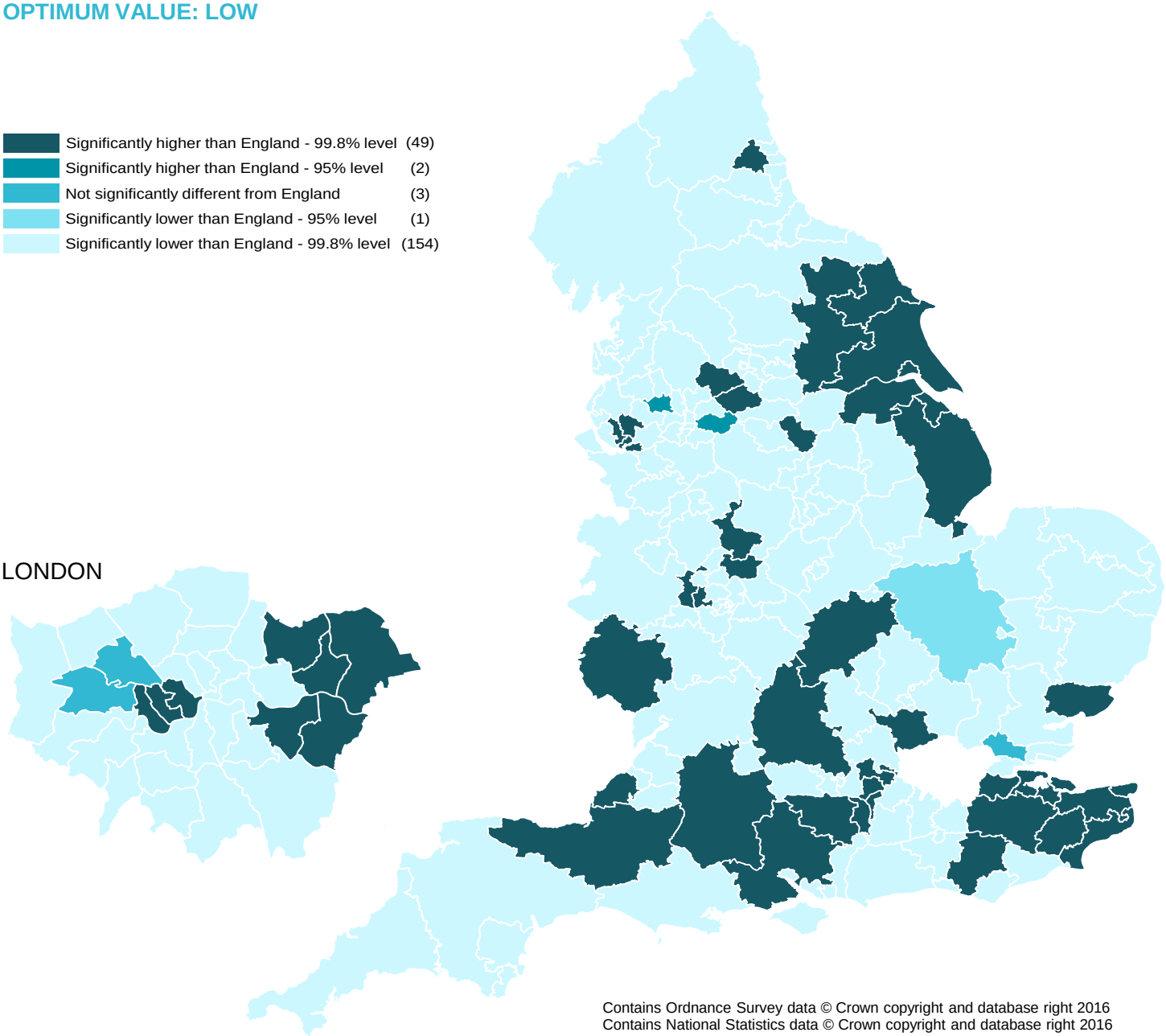
ENDOSCOPY SERVICES

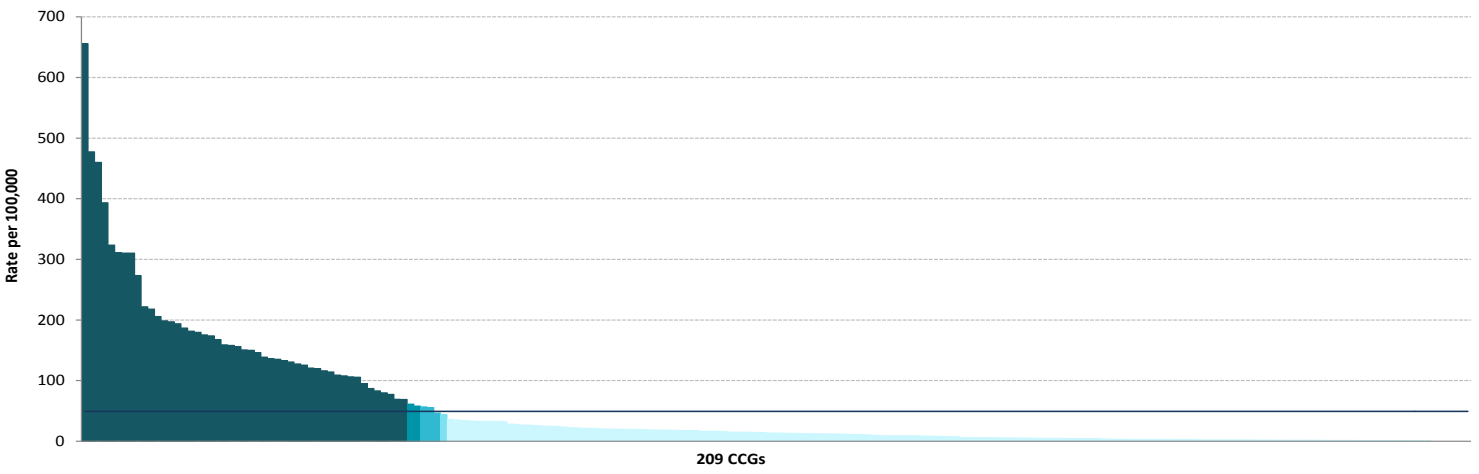
MAP 18: Rate of barium enema procedures per weighted population by CCG

Adjusted for age, sex and 'need', 2015/16

Domain 1: Preventing people from dying prematurely

OPTIMUM VALUE: LOW





Context

There are several methods available for imaging the large bowel (colon), particularly in the diagnosis of cancer of the colon, including:

- colonoscopy
- flexible sigmoidoscopy
- CT colonography
- barium enema

The aim of the National Awareness and Early Diagnosis Initiative (NAEDI)[1] is to improve cancer survival outcomes in England, including that for colorectal (bowel) cancer. Although not all colonic investigations are done because of the suspicion of cancer, ruling out colorectal cancer is considered the most important reason for such an investigation, particularly because early diagnosis of colorectal cancer is vital in order to improve outcomes. It was thought that investigations could be targeted at patients with specific clinical features, but studies have shown that, in patients with lower gastrointestinal (GI) symptoms, selecting out those to investigate gives a poor correlation with cancer, and particularly early cancer. This suggests that the overall threshold for lower GI investigation should be lowered:

- to improve the overall diagnostic rate for colorectal cancer
- to increase the proportion of people diagnosed early when the cancer is curable

In colonoscopy an endoscope is used to investigate the lining of the colon (entire large bowel). In flexible sigmoidoscopy only the sigmoid colon (last part of the large bowel) and rectum is examined using a flexible endoscope.

Both procedures are used to diagnose or exclude cancer of the colon or to look for pre-cancerous polyps, small growths on the inner lining of the bowel or rectum. If polyps are found on examination, they are often removed. Flexible sigmoidoscopy and colonoscopy can also be used in the diagnosis of, and monitoring of treatment for, inflammatory bowel disease (IBD). About 60-70% of these procedures are performed for the diagnosis of cancer, 15-20% for the diagnosis of, and monitoring of treatment for, IBD, and 10% for other reasons.

Flexible sigmoidoscopy is the preferred procedure in some clinical situations because sedation is not required, and it is quicker and carries less risk than colonoscopy. Furthermore, the bowel needs to be prepared only with an enema before the procedure, whereas a colonoscopy requires strong laxatives to clear the bowel. Thus, flexible sigmoidoscopy is safer for the patient, and is particularly useful if there is rectal bleeding. Another reason for choosing flexible sigmoidoscopy in clinical situations is the higher incidence in the UK of left-sided colorectal cancer to right-sided colorectal cancer in people under the age of 70 years, when this trend reverses in women but not in men.

Other countries with developed economies have higher rates of colonoscopy than those in the UK. In the 2011 national colonoscopy audit Scotland and Northern Ireland had higher rates of colonoscopy than England.[2] Need for colonoscopy will be driven by a greater awareness of investigating symptoms that are less marked, especially in light of recent NICE guidelines for suspected cancer (NG12; see 'Resources'). It is also anticipated increased demand (about 8 procedures per 1,000 population per year), a doubling of the current rate, will be generated by the NHS Bowel Cancer Screening Programme (BCSP) bowel scope screening, currently being rolled out to all men and women aged 55 years; as of May 2016, 77% of screening centres were offering this test to 55-year-olds. In November 2015 (minutes published in January 2016[3]) the National Screening Committee recommended that the faecal immunochemical test (FIT) should replace the faecal occult blood (FOB) test, the current first test used in the NHS BCSP. It is anticipated that the FIT will:

- increase the number of cancers both detected and prevented
- reduce the number of false-positive results
- increase uptake because the test is easier to use

If the cut-off for FIT is set appropriately, it is unlikely to increase demand for screening colonoscopy, but it is likely to increase the demand for surveillance.

Computed tomography (CT) colonography (or colonoscopy) is a relatively new radiological technique designed to image the colon. It is sometimes referred to as 'virtual colonoscopy' because a CT scanner and a computer are used to generate three-dimensional images of the colon.

As such CT colonography is minimally invasive because there is no need to introduce an endoscope into the colon to obtain the images, and therefore no need for the sedation of patients, although a laxative bowel preparation is still required.

[1] Cancer Research UK. National Awareness and Early Diagnosis Initiative (NAEDI). http://www.cancerresearchuk.org/cancer-info/spotcancerearly/naedi/AboutNAEDI/
[2] Gavin DR, Valori RM, Anderson JT et al. The national colonoscopy audit: a nationwide assessment of the quality and safety of colonoscopy in the UK. Gut 2013; 62: 242-249. http://www.ncbi.nlm.nih.gov/pubmed/22661458
[3] Public Health England. UK NSC recommendations include new bowel cancer screening test. 15 January 2016. https://www.gov.uk/government/news/uk-nsc-recommendations-include-new-bowel-cancer-screening-test

CT Colonography is used to investigate patients with symptoms suggestive of colorectal cancer. The results of a meta-analysis showed that CT colonography had greater sensitivity for colorectal cancer than optical colonoscopy: 96.1% (95% CI 93.8%-97.7%; 49 studies) versus 94.7% (95% CI 90.4%-97.2%; 25 studies).[4] Thus, CT colonography is as effective in the initial diagnosis of colorectal cancer as optical colonoscopy: a negative CT colonography is a good exclusion of cancer, and a positive CT colonography is likely to require optical colonoscopy and biopsy to confirm the diagnosis.

Unlike colonoscopy and flexible sigmoidoscopy, CT colonography is less useful for the diagnosis of IBD because biopsy material is invariably required to support or refute the diagnosis, whereas a thorough cancer exclusion can follow a satisfactory CT colonography.

Barium enema is an X-ray procedure that creates images of the large intestine. During the procedure barium sulphate liquid and air are introduced into the bowel, following which X-rays are taken to obtain double-contrast images of the colon and rectum, which are then used to identify the following problems:

- cancerous or non-cancerous growths (also known as adenomas or polyps)
- colorectal cancer
- inflammation (ulcerative colitis and Crohn's disease)
- diverticular disease

Other conditions for which barium enema may be performed include:

- blockage of the large intestine
- intussusception, where one part of the intestine slides into another
- Hirschsprung's disease

In a multicentre randomised controlled trial for the diagnosis of colorectal cancer or large polyps in symptomatic patients (SIGGAR) the detection rate for barium enema was 5.6% whereas that for CT colonography was 7.3%.[5] The findings of the SIGGAR trial support considerable non-controlled evidence that barium enema is an inferior test when compared with CT colonography. Halligan et al suggest CT colonography should be the preferred radiological test for patients with symptoms suggestive of colorectal cancer.[1]

Barium enema is not appropriate for the primary diagnosis of colorectal problems.

Barium enema is also inappropriate for the diagnosis of IBD because biopsy material is invariably required to support the diagnosis.

Barium enema is a useful test in only a very small number of patients, particularly when it is necessary to visualise the particular shape of the colon, such as in megacolon.

Although in recent years it has become less common to perform a barium enema, it is still in use for patients in whom there is a contra-indication for, or in geographical areas where there is limited provision of, colonoscopy or CT colonography (Map 17). Nonetheless, all inappropriate requests for barium enema need to be stopped (see 'Options for action').

Magnitude of variation

Map 16: Colonoscopy and flexible sigmoidoscopy

The map and column chart display the latest period (2014/15), during which CCG values ranged from 76.5 per 10,000 population to 248.8 per 10,000 population, which is a 3.3-fold difference between CCGs. The England value for 2014/15 was 154.8 per 10,000 population.

The boxplot shows the distribution of CCG values for the period 2005/06 to 2014/15. There was no significant change over time in any of the three variation measures between 2005/06 and 2014/15.

However, the median increased significantly from 82.2 per 10,000 in 2005/06 to 152.7 per 10,000 in 2014/15.

Reasons for the degree of variation in the rate of colonoscopy procedures and flexible sigmoidoscopy procedures include differences in:

- local non-attendance rates for the procedure (the national non-attendance rate is 4.7%)
- the number of trained endoscopists (gastroenterologists, GI surgeons and nurse endoscopists) per head of local population and endoscopy sessions
- the amount of complex therapeutic work undertaken – in some specialist centres where the volume of complex therapeutic work is relatively high there is a concomitant reduction in diagnostic capacity

[4] Colorectal cancer: CT colonography and colonoscopy for detection — systematic review and meta-analysis. Structured abstract, DARE. Original article: Pickhardt PJ, Hassan C, Halligan S, Marmo R. Colorectal cancer: CT colonography and colonoscopy for detection — systematic review and meta-analysis. Radiology 2011; 259: 393-405. http://onlinelibrary.wiley.com/o/cochrane/cldare/articles/DARE-12011002875/frame.html

[5] Halligan S, Wooldrage K, Dadswell E et al for the SIGGAR investigators. Computed tomographic colonography versus barium enema for diagnosis of colorectal cancer or large polyps in symptomatic patients (SIGGAR): a multicentre randomised trial. The Lancet. Published online February 14, 2013. http://www.ncbi.nlm.nih.gov/pubmed/23414648

- the number of procedures conducted in the independent sector

Possible reasons for unwarranted variation include differences in:

- access to endoscopy provision
- the use of barium enema (Map 18) in some geographical areas to image the colon in people with suspected bowel cancer
- the availability of CT colonography and of local protocols for its use
- the application of guidelines for referral
- the vetting of referrals for appropriateness
- the professional practice of GPs and hospital clinicians
- local service configuration
- the volume of activity outsourced to an external provider
- the numbers of trainees at an NHS Trust and in a region in relation to the list capacity to accommodate training

Map 17: CT colonography

The map and column chart display the latest period (2014/15), during which CCG values ranged from 0.2 per 10,000 weighted population to 58.2 per 10,000 weighted population, which is a 248.2- fold difference between CCGs. The England value for 2014/15 was 13.5 per 10,000 weighted population.

The boxplot shows the distribution of CCG values for the period 2013/14 to 2014/15. The statistical significance of changes in the three variation measures or the median was not tested for those indicators with fewer than three data periods.

Reasons for the degree of variation observed in the rate of diffusion of this new technology and consequent CT colonography include differences in:

- the availability of CT scanners capable of producing CT colonography images
- the availability of radiologists skilled in interpreting CT colonography scans
- training opportunities for radiologists in CT colonography
- access to CT colonography, especially travelling distance to service provision

Map 18: Barium enema

The map and column chart display data for 2015/16, during which CCG values ranged from 0.0 to 655.8 per 100,000 weighted population. The England value for 2015/16 was 49.3 per 100,000 weighted population.

The boxplot shows the distribution of CCG values for the period 2013/14 to 2015/16 by quarter.

The range of variation between the maximum and minimum values has narrowed significantly due entirely to a decrease in the maximum CCG rate. Barium enema should not be used for the investigation of colorectal/bowel cancer and so the contraction of the upper end of the distribution suggests that its use is being modified appropriately.

The 75th to 25th percentile gap narrowed significantly. This contraction, bringing the middle 50% of CCG rates closer to the median rate is largely due a decrease in the 75th percentile of the distribution of CCG rates.

There was no significant change in the 95th to 5th percentile gap.

The median decreased significantly from 7.0 per 100,000 weighted population in April-June 2013 to 2.5 per 100,000 weighted population in January-March 2016.

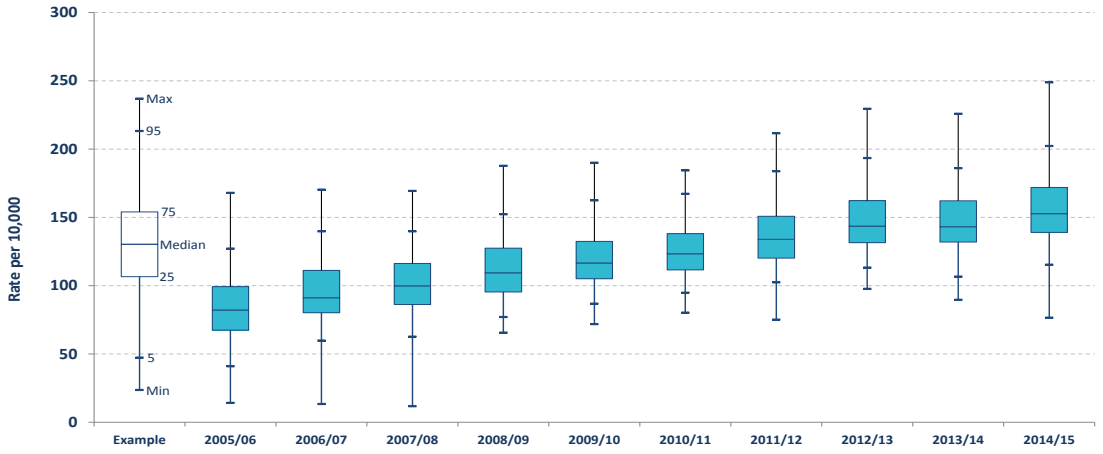
It is likely that the principal reason for the degree of variation observed in the rate of barium enema is insufficient capacity for and therefore insufficient access to colonoscopy and flexible sigmoidoscopy or CT colonography.

Options for action

For the improved diagnosis of colorectal cancer, commissioners need to specify that service providers:

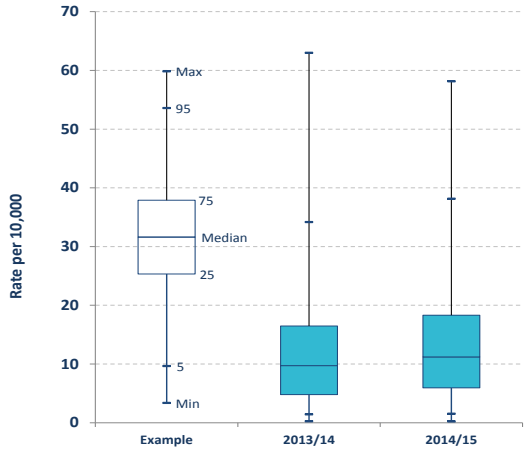
- review current levels of access to CT colonography, colonoscopy and flexible sigmoidoscopy to ensure that clinicians responsible for referrals for suspected bowel cancer no longer use barium enema to image the colon when it is best practice not to do so
- develop local referral guidelines for colonoscopy, flexible sigmoidoscopy and CT colonography, including a consideration of ‘Straight to Test’ services
- calculate, on the basis of referral guidelines, the need for colonoscopy, flexible sigmoidoscopy and CT colonography to inform planning for capacity

Map 16: Boxplot of colonoscopy and flexible sigmoidoscopy procedures by CCG



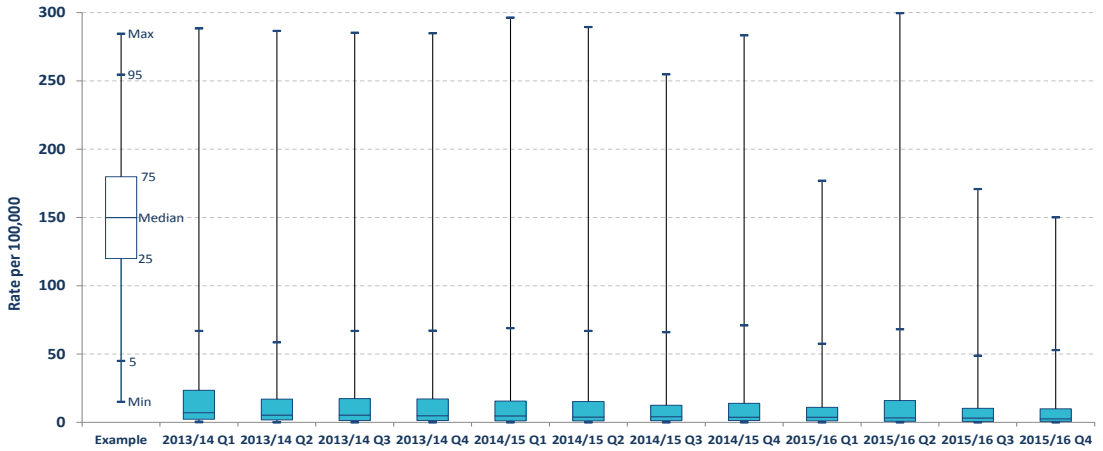
Max-Min (Range)		153.7	157.0	157.7	122.3	118.2	104.2	136.4	131.8	136.2	172.3	No significant change
95th-5th percentile		86.3	79.9	77.2	75.3	75.5	72.4	81.4	80.1	79.3	86.9	No significant change
75th-25th percentile		32.0	31.1	30.1	32.1	27.4	26.6	30.6	30.7	30.2	32.9	No significant change
Median		82.2	91.1	99.8	109.3	116.6	123.3	133.9	143.6	143.1	152.7	INCREASING Significant

Map 17: Boxplot of CT colonography procedures by CCG



Max-Min (Range)		62.8	57.9	NARROWING
95th-5th percentile		32.7	36.6	WIDENING
75th-25th percentile		11.7	12.4	WIDENING
Median		9.7	11.2	INCREASING

Map 18: Boxplot of barium enema procedures by CCG



Max-Min (Range)		288.3	286.6	285.2	284.8	296.4	289.4	254.8	283.3	176.9	299.6	170.7	150.0	NARROWING Significant
95th-5th percentile		66.5	58.5	66.8	67.1	68.8	66.9	65.9	70.9	57.6	68.0	48.8	52.9	No significant change
75th-25th percentile		21.2	15.2	16.1	15.8	14.5	14.2	11.3	12.6	9.9	15.1	9.6	9.3	NARROWING Significant
Median		7.0	5.3	5.3	4.8	4.6	3.8	4.1	3.8	3.8	3.2	3.2	2.5	DECREASING Significant

If, despite adequate provision for CT colonography and colonoscopy in relation to need in the local population, there is still demand for barium enema, commissioners need to specify that local service providers:

- investigate the reasons for this
- take action to stop inappropriate requests for barium enema – it is necessary to phase out the use of barium enema for the primary diagnosis of colorectal problems

The use of barium enema for the primary diagnosis of colorectal problems is one of the issues addressed during accreditation visits by the Joint Advisory Group (JAG) on GI endoscopy, which defines and maintains the standards by which endoscopy is practised in the UK. If the number of barium enema procedures is found to be large, key actions to stop inappropriate requests are identified.

To support the effective use of CT colonography:

- Health Education England (HEE) and the centre for Workforce Intelligence (CFWI) need to address the shortage of radiologists nationally
- local service providers need to provide training opportunities for radiologists in the interpretation of CT colonography scans, and ensure that CT equipment is of adequate capacity

With respect to the provision and management of endoscopy services overall, commissioners need to review with service providers and bowel surgeons:

- the referral rate for flexible sigmoidoscopy and colonoscopy in relation to local population needs
- local service configuration

The JAG on GI endoscopy has developed a Productivity & Planning Assessment Tool (PPAT; see 'Resources') for endoscopy services and commissioners. It provides a checklist of objectives that the most productive endoscopy services apply systematically to ensure endoscopy resource is used appropriately and efficiently. To ensure effective planning, JAG recommends that commissioners require local services to use the PPAT.

The Global Rating Scale (GRS; see 'Resources') is a tool that enables provider units to assess whether the service is patient-centred, and it includes dimensions for quality and safety, and customer care. Applying the 'Appropriateness' item reassures commissioners that referrals are vetted against best practice.

Commissioners together with service providers need to consider the totality of resources used for endoscopy procedures to achieve optimal value for individual patients and the population.

RESOURCES

- NHS Bowel Cancer Screening Programme. Guidelines for the use of imaging in the NHS Bowel Cancer Screening Programme. 2nd edition. NHSBCSP No 5. November 2012. http://www.cancerscreening.nhs.uk/bowel/publications/nhsbcsp05.pdf
- Cairns SR, Scholefield JH, Steele RJ et al developed on behalf of The British Society of Gatroenterology, and the Association of Coloproctology for Great Britain and Ireland. Guidelines for colorectal cancer screening and surveillance in moderate and high risk groups (update from 2002). Gut 2010;59:666e690. doi:10.1136/gut.2009.179804 http://www.bsg.org.uk/images/stories/docs/clinical/guidelines/endoscopy/ccs_10.pdf
- NICE. Suspected cancer: recognition and referral. NICE guidelines [NG12]. June 2015. https://www.nice.org.uk/guidance/ng12
- NICE pathways. Suspected cancer recognition and referral overview. http://pathways.nice.org.uk/pathways/suspected-cancer-recognition-and-referral
- NICE. Colonoscopic surveillance for preventing colorectal cancer in adults with ulcerative colitis, Crohn's disease or adenomas. NICE guidelines [CG118]. March 2011. http://www.nice.org.uk/guidance/CG118
- NICE pathways. Colonoscopic surveillance overview. http://pathways.nice.org.uk/pathways/colonoscopic-surveillance
- NICE. Computed tomographic colonography (virtual colonoscopy). NICE interventional procedure guidance [IPG129]. June 2005. http://guidance.nice.org.uk/IPG129
- The British Society of Gastrointestinal and Abdominal Radiology and The Royal College of Radiologists. Guidance on the use of CT colonography for suspected colorectal cancer. BFGR(14)9. 2014. https://www.rcr.ac.uk/guidance-use-ct-colonography-suspected-colorectal-cancer
- Health Services Management Centre. Scoping the future: An evaluation of endoscopy capacity across the NHS in England. September 2015. http://www.cancerresearchuk.org/sites/default/files/scoping_the_future_-_final.pdf
- Joint Advisory Group (JAG) for GI endoscopy. Website has a section on 'Commissioning'. http://www.thejag.org.uk/
- JAG for GI endoscopy. Global Rating Scale (GRS). http://www.globalratingscale.com/
- JAG for GI endoscopy. GRS Productivity & Planning Assessment Tool (PPAT) User Guidance. http://www.thejag.org.uk/downloads%5CPlanning%20&%20Productivity%5CPPAT%20User%20Guide%2022042012.pdf

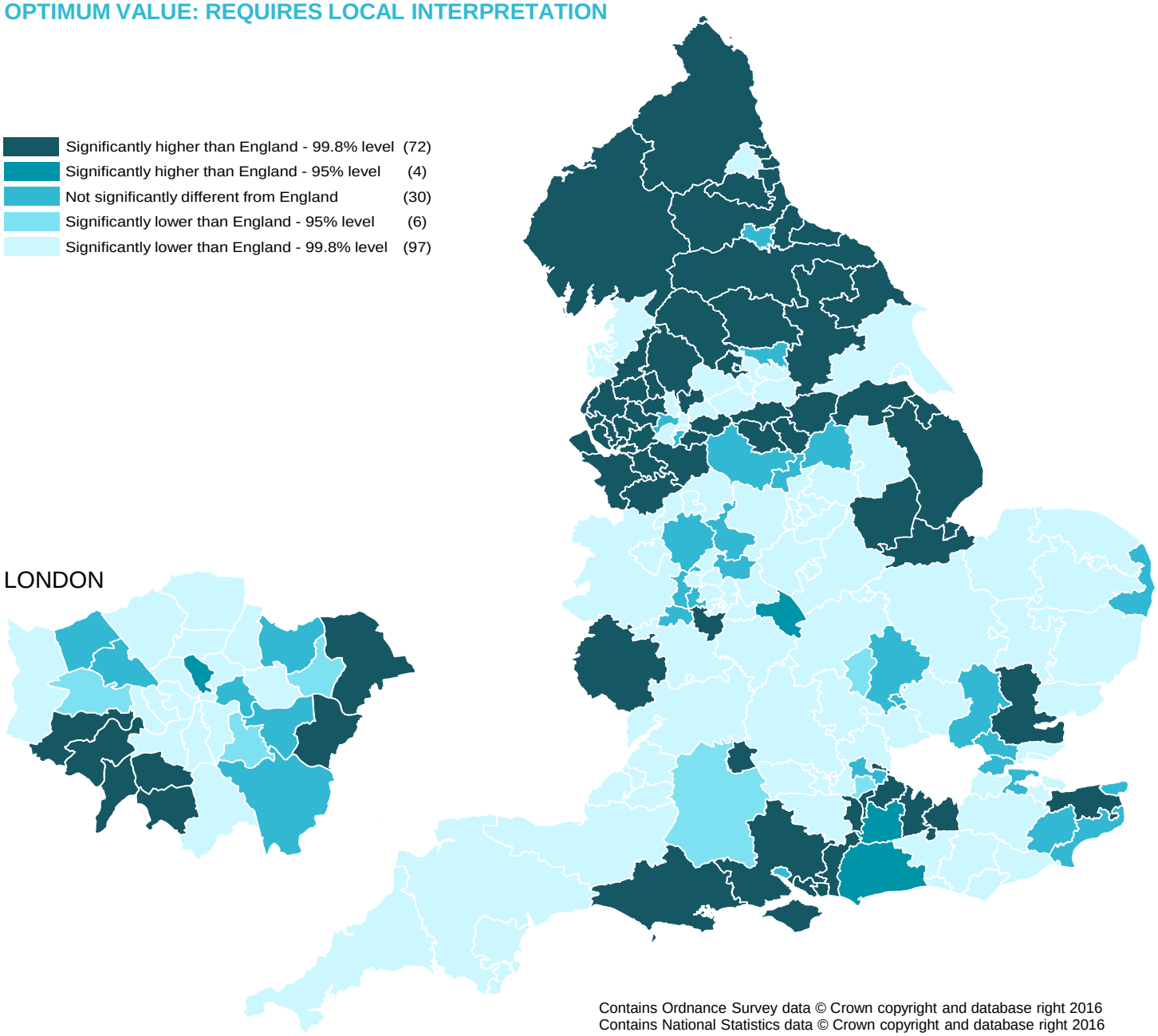
ENDOSCOPY SERVICES

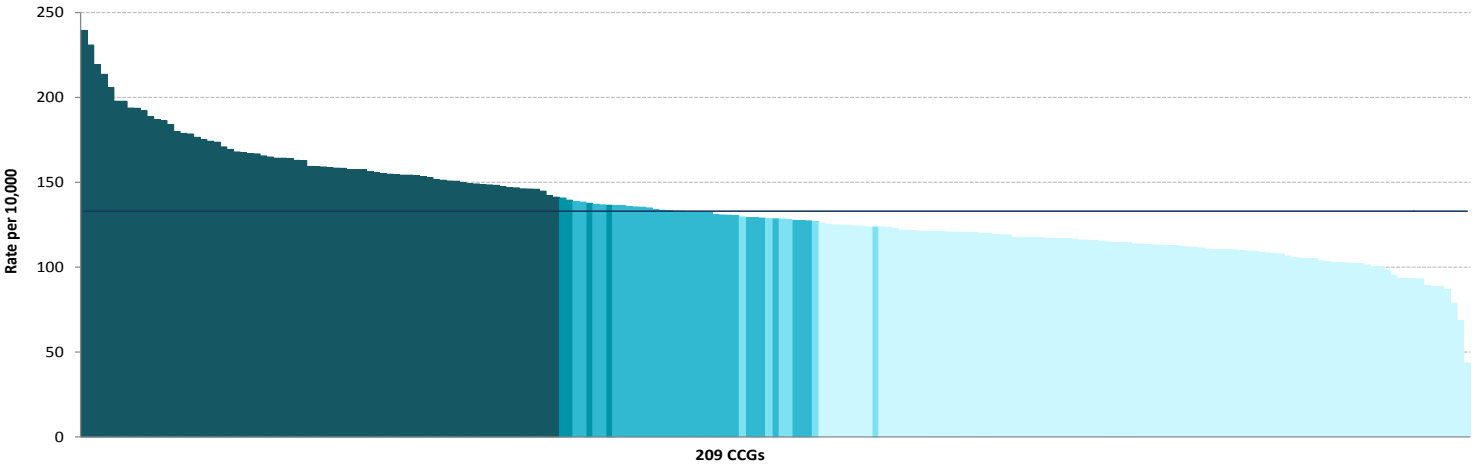
MAP 19: Rate of gastroscopy (upper gastrointestinal endoscopy) procedures per population by CCG

Indirectly standardised for age, sex and deprivation, 2014/15

Domain 1: Preventing people from dying prematurely

OPTIMUM VALUE: REQUIRES LOCAL INTERPRETATION





Context

Gastroscopy is an investigation of the upper gastrointestinal (GI) tract – oesophagus, stomach and duodenum (first part of the small intestine) – using a flexible endoscope. Diagnostic gastroscopy is used in any person presenting with:

- new onset dyspepsia if they are aged 55 years or over
- new onset dyspepsia with 'alarm' symptoms, such as dysphagia, weight loss, upper GI bleeding, vomiting and/or anaemia
- 'alarm' symptoms for upper GI cancer, such as dysphagia, weight loss, anaemia, upper GI bleeding and/or persistent vomiting
- dyspepsia who has not responded to standard medical treatment

The value of the surveillance of chronic oesophageal disease to prevent cancer from a condition called Barrett's oesophagus is being evaluated in research studies, but surveillance is increasingly being accepted as an important way of preventing advanced oesophageal cancer.

Approximately three-quarters of a million gastroscopies are performed in the NHS in England every year. Much of the demand for gastroscopy comes through referrals made by primary care.

In general, the rate of gastroscopy (Map 19) needs to be at a level at which cancers can be detected in people aged over 55 years. If national guidelines for dyspepsia and reflux are being followed appropriately, the percentage of people undergoing gastroscopy procedures who are aged under 55 years (Map 20) should be relatively low: for instance, if Helicobacter is present, treating patients with dyspepsia without a gastroscopy, and, if no 'alarm' symptoms are present, treating patients with reflux symptomatically.

The percentage of people undergoing gastroscopy procedures who are aged under 55 years (Map 20) is an indicator of the appropriateness and effectiveness with which referrals for gastroscopy are managed in the context of NICE guidance on dyspepsia and on cancer referral (see 'Resources').

Magnitude of variation

Map 19: Gastroscopy rate

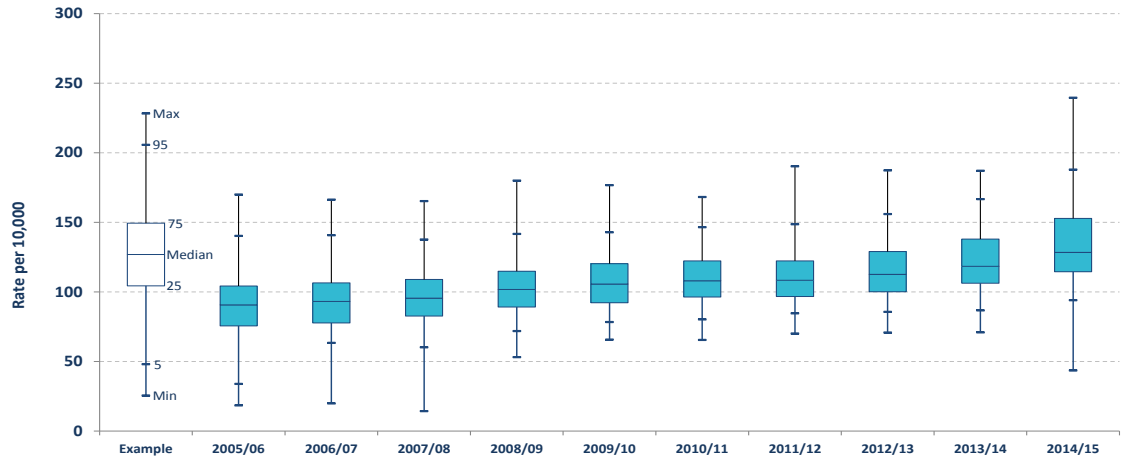
The map and column chart display the latest period (2014/15), during which CCG values ranged from 43.5 to 239.5 per 10,000 population, which is a 5.5-fold difference between CCGs. The England value for 2014/15 was 133.1 per 10,000 population.

The boxplot shows the distribution of CCG values for the period 2005/06 to 2014/15. There was no significant change in any of the three variation measures between 2005/06 and 2014/15.

The median of CCG rates of gastroscopy procedures increased significantly from 90.6 per 100,000 in 2005/06 to 128.4 per 10,000 in 2014/15 which would aid earlier detection of cancer.

One reason for variation in the rate of gastroscopy procedures is differences in regional cancer rates, which in turn are affected by smoking habit and prevalence of obesity. The degree of variation observed, however, is greater than can be explained by variations in the incidence and prevalence of disease.

Map 19: Boxplot of gastroscopy procedure rate by CCG



		2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	
Max-Min (Range)		151.6	146.5	151.0	126.8	111.0	102.7	120.1	116.6	116.2	196.0	No significant change
95th-5th percentile		106.5	77.4	77.4	69.9	64.4	66.3	64.1	70.2	80.0	93.9	No significant change
75th-25th percentile		28.6	28.8	26.3	25.7	28.1	26.0	25.6	28.8	31.7	38.3	No significant change
Median		90.6	93.2	95.5	101.7	105.7	108.0	108.4	112.6	118.4	128.4	INCREASING Significant

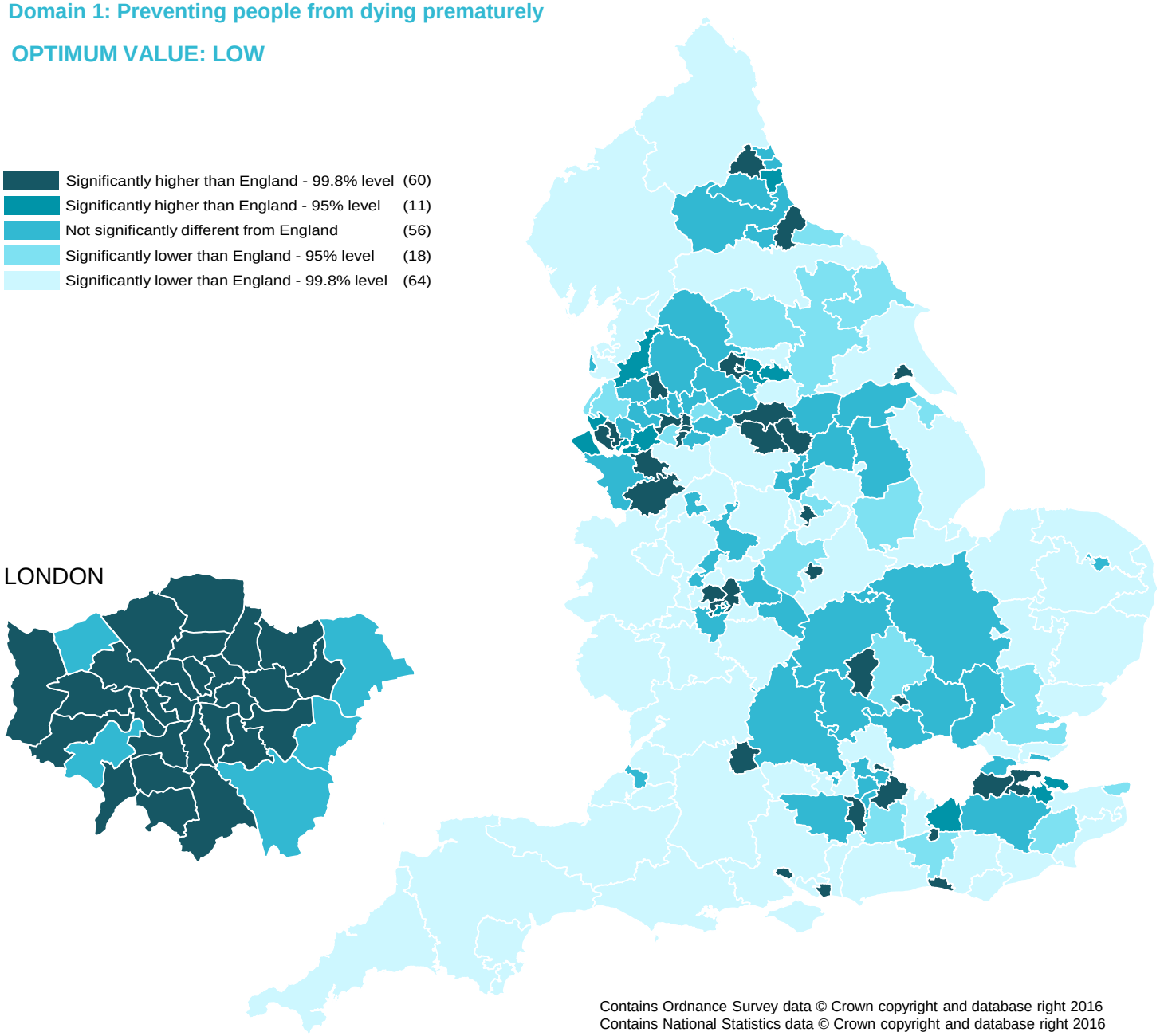
ENDOSCOPY SERVICES

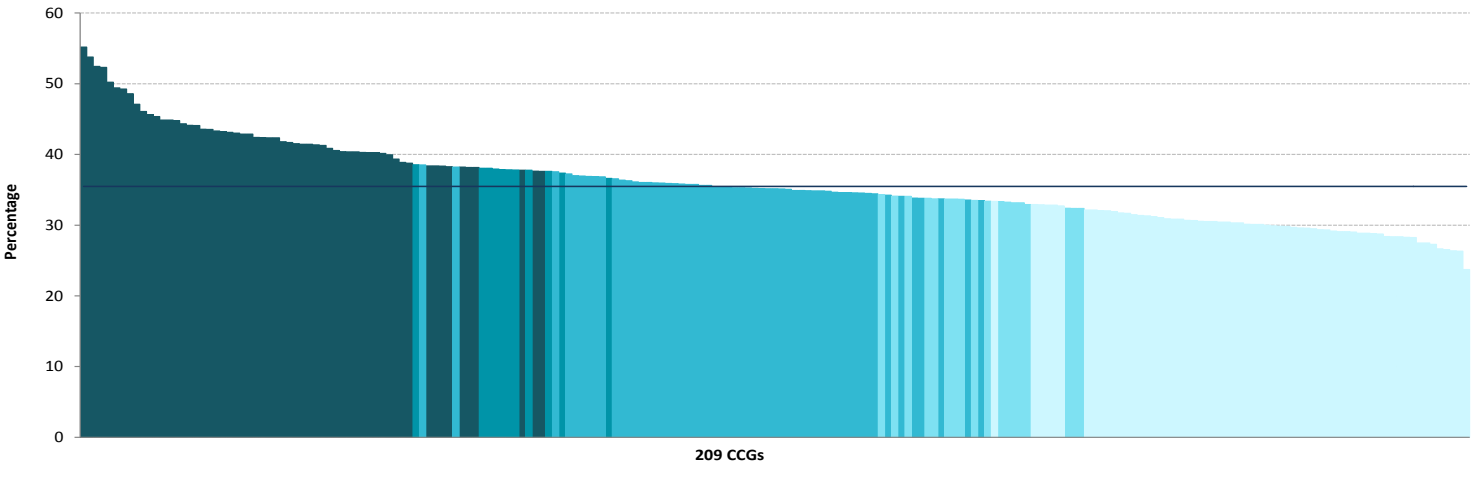
MAP 20: Percentage of patients undergoing gastroscopy (upper gastrointestinal endoscopy) procedures aged under 55 years by CCG

2014/15

Domain 1: Preventing people from dying prematurely

OPTIMUM VALUE: LOW





The most plausible explanation for unwarranted variation is variation in trained endoscopists. Other possible reasons for unwarranted variation include differences in:

- thresholds for referral by GPs
- the application of guidelines for referral for gastroscopy by both GPs and hospital clinicians
- vetting the appropriateness of referrals
- the amount of resources available locally for both diagnosis and surveillance of gastroscopy cases

Map 20: Percentage undergoing gastroscopy aged under 55 years

The map and column chart display the latest period (2014/15), during which CCG values ranged from 23.7% to 55.2%, which is a 2.3-fold difference between CCGs. The England value for 2014/15 was 35.5%.

The boxplot shows the distribution of CCG values for the period 2005/06 to 2014/15. There was no significant change in any of the three variation measures nor in the median between 2005/06 and 2014/15.

The most plausible reason for warranted variation in the percentage of gastroscopy procedures is variation in the age profile of the populations.

Reasons for unwarranted variation include differences in levels of service provision and in the local management of referrals for gastroscopy in the context of NICE guidance on dyspepsia and on cancer referral.

Options for action

Commissioners need to work with all local GPs to ensure that the referral rate for gastroscopy relates to the needs of the local population, including:

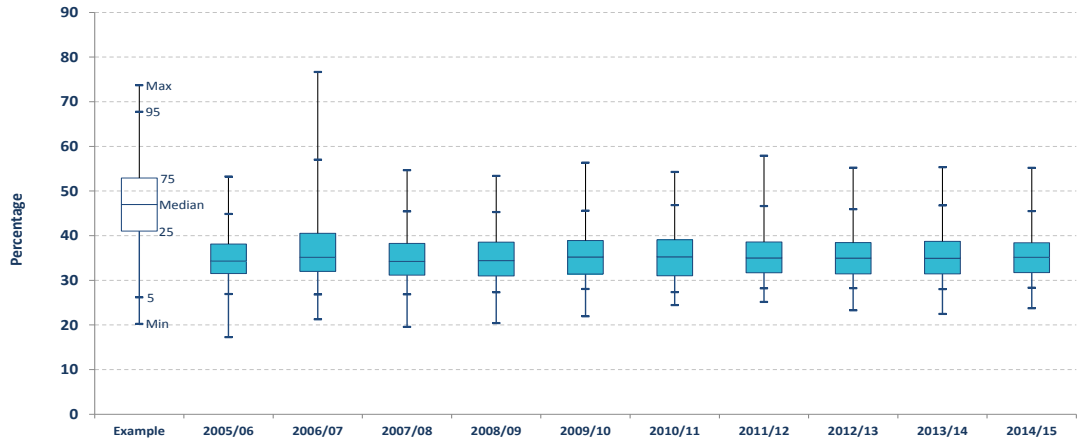
- reviewing local guidelines for dyspepsia and chronic or recurrent upper abdominal pain, especially in CCGs where there appear to be a high proportion of people aged under 55 years undergoing gastroscopy
- auditing local referral rates for gastroscopy to identify both under- and over-referral
- liaison working between endoscopy services and all local GPs to update GPs on ways to maximise value from the endoscopy service for patients

The NICE commissioning guide can help commissioners and providers develop referral criteria and determine local service levels (see ‘Resources’).

The Joint Advisory Group (JAG) on GI endoscopy, which defines and maintains the standards by which endoscopy is practised in the UK, has developed a Productivity & Planning Assessment Tool (PPAT; see ‘Resources’) for endoscopy services and commissioners. It provides a checklist of the objectives that the most productive endoscopy services apply systematically to ensure endoscopy resource is used appropriately and efficiently. For effective planning JAG recommends that commissioners require local services to use PPAT.

The Global Rating Scale (GRS; see ‘Resources’) enables provider units to assess the provision of patient-centred services, including dimensions for quality and safety, and customer care. Applying the ‘Appropriateness’ item reassures commissioners that referrals are vetted against best practice.

Map 20: Boxplot of patients undergoing gastroscopy aged under 55 years (%) by CCG



		2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	
Max-Min (Range)		36.0	55.4	35.1	33.0	34.4	29.8	32.8	32.0	32.9	31.5	No significant change
95th-5th percentile		18.0	30.2	18.6	18.0	17.5	19.5	18.4	17.7	18.8	17.2	No significant change
75th-25th percentile		6.6	8.5	7.1	7.6	7.5	8.0	6.9	7.0	7.3	6.7	No significant change
Median		34.3	35.1	34.2	34.4	35.2	35.3	35.0	35.0	34.9	35.1	No significant change

RESOURCES

- Joint Advisory Group (JAG) for GI endoscopy. Website has a section on 'Commissioning'. http://www.thejag.org.uk/
- JAG for GI endoscopy. Global Rating Scale (GRS). http://www.globalratingscale.com/
- JAG for GI endoscopy. GRS Productivity & Planning Assessment Tool (PPAT) User Guidance. http://www.thejag.org.uk/downloads%5CPlanning%20&%20Productivity%5CPPAT%20User%20Guide%22042012.pdf
- NICE. Dyspepsia and gastro oesophageal reflux disease in adults NICE quality standard [QS96]. July 2015. https://www.nice.org.uk/guidance/qs96
- NICE. Gastro-oesophageal reflux disease and dyspepsia in adults: investigation and management. NICE clinical guidelines [CG184]. November 2014. https://www.nice.org.uk/guidance/cg184
- NICE. Suspected cancer: recognition and referral. NICE guidelines [NG12]. June 2015. https://www.nice.org.uk/guidance/ng12
- NICE pathways. Suspected cancer recognition and referral overview. http://pathways.nice.org.uk/pathways/suspected-cancer-recognition-and-referral
- NICE pathways. Acute upper gastrointestinal bleeding overview. http://pathways.nice.org.uk/pathways/acute-upper-gastrointestinal-bleeding
- NICE. Acute upper gastrointestinal bleeding in adults. NICE quality standards [QS38]. July 2013. https://www.nice.org.uk/guidance/qs38
- NICE. Acute upper gastrointestinal bleeding in over 16s: management (CG141) June 2012, updated April 15. https://www.nice.org.uk/guidance/cg141
- Health Services Management Centre (2015). Scoping the future: An evaluation of endoscopy capacity across the NHS in England. http://www.cancerresearchuk.org/sites/default/files/scoping_the_future_-_final.pdf

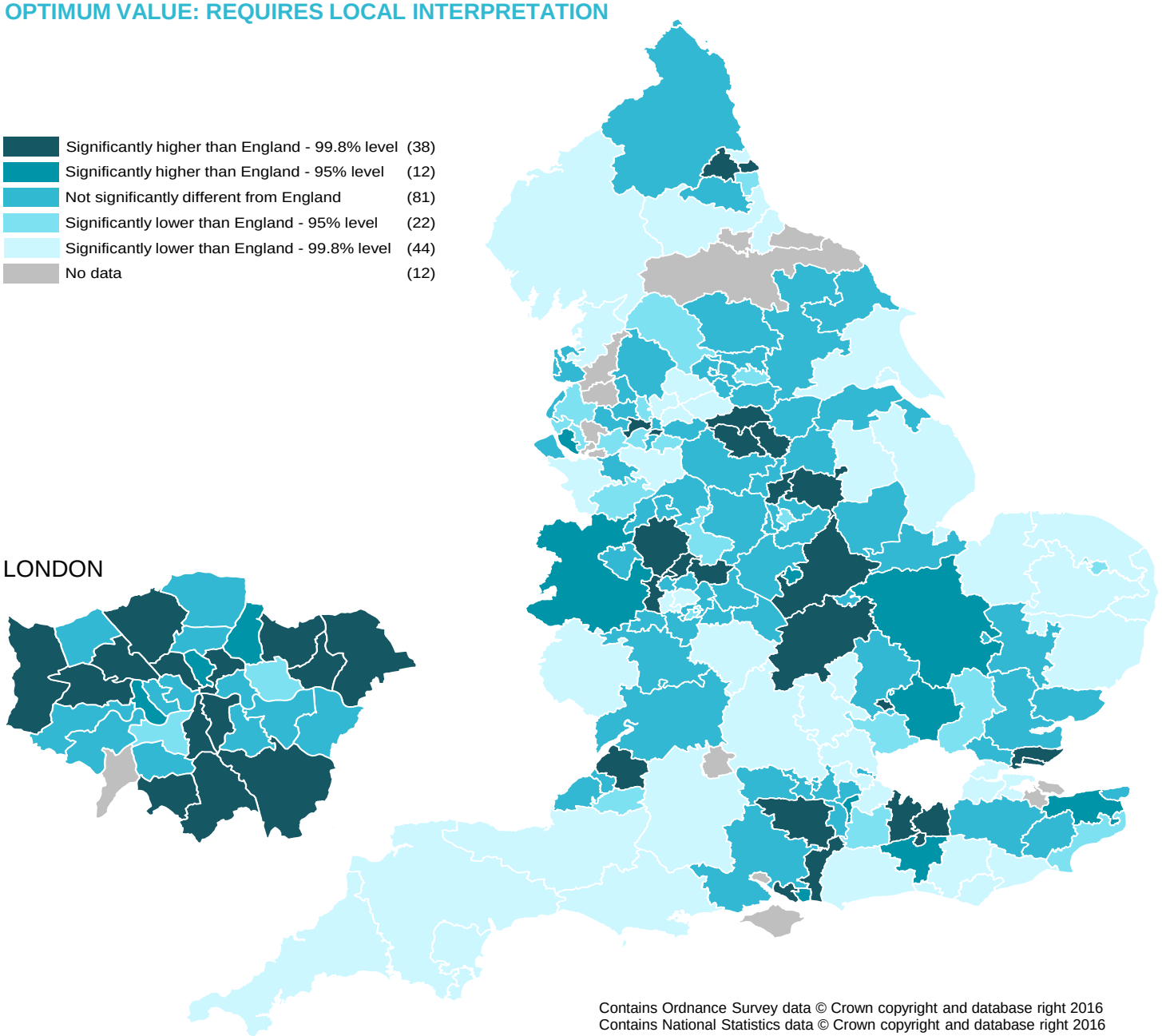
ENDOSCOPY SERVICES

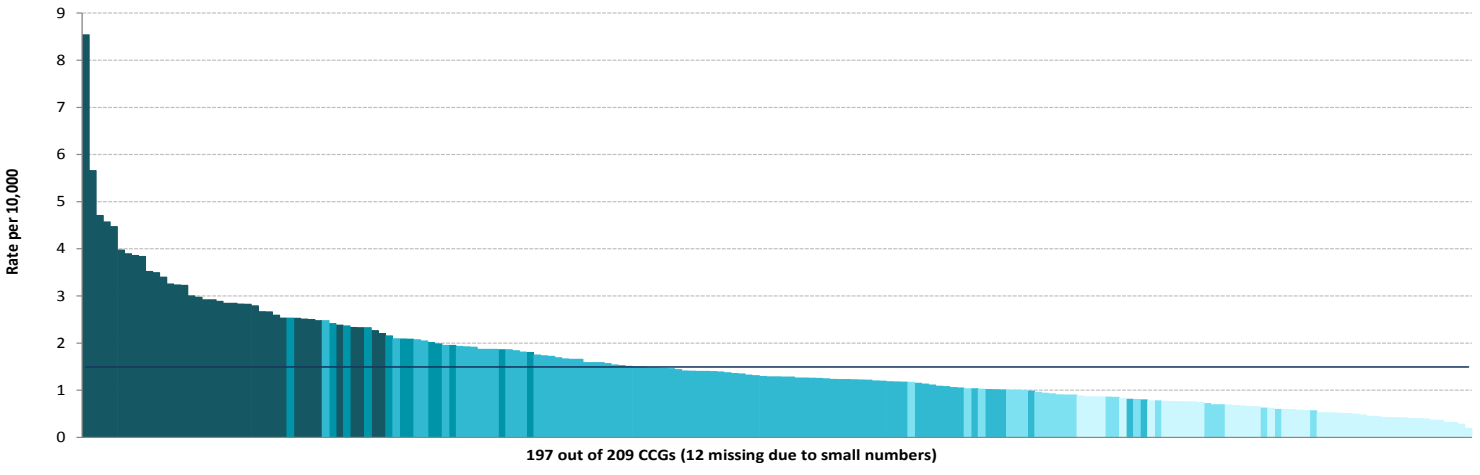
MAP 21: Rate of capsule endoscopy procedures per population by CCG

Indirectly standardised for age, sex and deprivation, 2014/15

Domain 2: Enhancing quality of life for people with long-term conditions

OPTIMUM VALUE: REQUIRES LOCAL INTERPRETATION





Context

Capsule endoscopy is a first-line, non-invasive small bowel imaging technique. It is more likely to identify flat vascular or inflammatory lesions than radiological methods, but the techniques are complementary when studying transmural disease (disease involving all layers of the bowel, for example, established Crohn's disease) or when mass lesions such as tumours are suspected.

Indications for capsule endoscopy are:

- obscure gastrointestinal (GI) bleeding
- small bowel Crohn's disease
- assessment of coeliac disease
- screening and surveillance for polyps in familial polyposis syndromes

The main risk associated with capsule endoscopy is capsule retention, but this can be eliminated to a large extent by testing the patient with a dissolvable 'patency' capsule before the main test in at-risk patients. Patients at higher risk of retention are people with:

- extensive small bowel Crohn's disease
- chronic usage of non-steroidal anti-inflammatory drugs
- abdominal radiation injury

Capsule endoscopy is contra indicated in patients known to have strictures or swallowing disorders.

Since the introduction of capsule endoscopy over a decade ago demand has increased. In a survey of British Society of Gastroenterology (BSG) members in 2011, 91% of respondents referred patients for capsule endoscopy.[1]

Capsule endoscopy is cost-effective[2] because it prevents unnecessary cycles of investigation in patients with obscure GI bleeding and inflammatory bowel disease.

Magnitude of variation

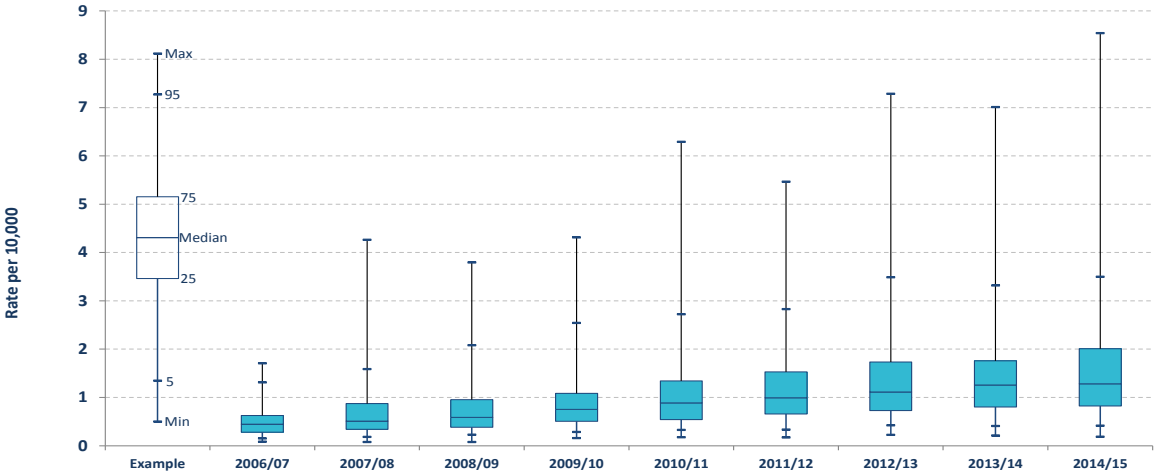
The map and column chart display the latest period (2014/15), during which CCG values range from 0.2 per 10,000 population to 8.5 per 10,000 population, which is a 45.2-fold difference between CCGs. The England value for this period was 1.5 per 10,000 population.

The boxplot shows the distribution of CCG values for the period 2006/07 to 2014/15. Throughout this period the distribution of values has been strongly positively skewed.

There has been significant widening of all three measures of variation. This is due to an upward stretching of the distribution with much greater increases in the maximum, 95th percentile and 75th percentile, than in the minimum, 5th percentile and 25th percentile.

The median increased significantly from 0.4 per 10,000 population in 2006/07 to 1.3 per 10,000 population in 2014/15.

Map 21: Boxplot of capsule endoscopy procedures by CCG



		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	
Max-Min (Range)		1.6	4.2	3.7	4.2	6.1	5.3	7.1	6.8	8.4	WIDENING Significant
95th-5th percentile		1.2	1.4	1.9	2.3	2.4	2.5	3.1	2.9	3.1	WIDENING Significant
75th-25th percentile		0.3	0.5	0.6	0.6	0.8	0.9	1.0	1.0	1.2	WIDENING Significant
Median		0.4	0.5	0.6	0.8	0.9	1.0	1.1	1.3	1.3	INCREASING Significant

[1] McAlindon ME, Parker CE, Hendy P et al. Provision of service and training for small bowel endoscopy in the UK. Frontline Gastroenterology 2012; 3; 98-103. doi: 10.1136/flgastro-2011-100044. http://fg.bmj.com/content/3/2/98

[2] Marmo R, Rotondano G, Rondonotti E et al. Capsule enteroscopy vs. other diagnostic procedures in diagnosing obscure gastrointestinal bleeding: a cost-effectiveness study. Eur J Gastroenterol Hepatol 2007; 19: 535-542.

The degree of variation observed is unlikely to be due to differences in the prevalence of the conditions in the local population for which capsule endoscopy is indicated.

One reason for the degree of variation could be differences in the level of access to capsule endoscopy. Access to capsule endoscopy can be affected by several factors, including:

- willingness to invest in a new procedure[1]
- the perceived barriers to setting up a new service, including cost and potential workload[1]
- the availability of trained staff to interpret the results of capsule endoscopy
- thresholds for use
- lack of formal arrangements for service provision
- historical levels of the tariff for the procedure, and consequent restrictions on use[1]

Options for action

To reduce the degree of unwarranted variation in the level of activity for capsule endoscopy, commissioners, clinicians and service providers need:

- to review the level of provision in relation to need in the local population
- to deliver capsule endoscopy in line with NICE interventional procedure guidance (IPG101; see 'Resources') and the guidelines commissioned by the Clinical Services and Standards Committee of the BSG (Sidhu et al, 2008; see 'Resources')
- to audit the capsule endoscopy service at regular intervals
- to introduce formal training and accreditation programmes in the use and interpretation of capsule endoscopy

RESOURCES

- NICE. Wireless capsule endoscopy for investigation of the small bowel. NICE interventional procedure guidance [IPG101]. December 2004. http://guidance.nice.org.uk/IPG101
- Sidhu R, Sanders DS, Morris AJ, McAlindon ME. Guidelines on small bowel enteroscopy and capsule endoscopy in adults. Gut 2008; 57: 125-136. doi: 10.1136/gut.2007.129999 http://www.bsg.org.uk/pdf_word_docs/capsule.pdf
- Pennazio M, Spada C, Biakim R et al. Small-bowel capsule endoscopy and device-assisted enteroscopy for diagnosis and treatment of small-bowel disorders: European Society of Gastrointestinal Endoscopy (ESGE) Clinical Guideline. Endoscopy 2015; 47: 352-376. doi http://dx.doi.org/10.1055/s-0034-1391855 http://www.esge.com/assets/downloads/pdfs/guidelines/2015_enterosocopy_and_small_bowel.pdf

ENDOSCOPY SERVICES

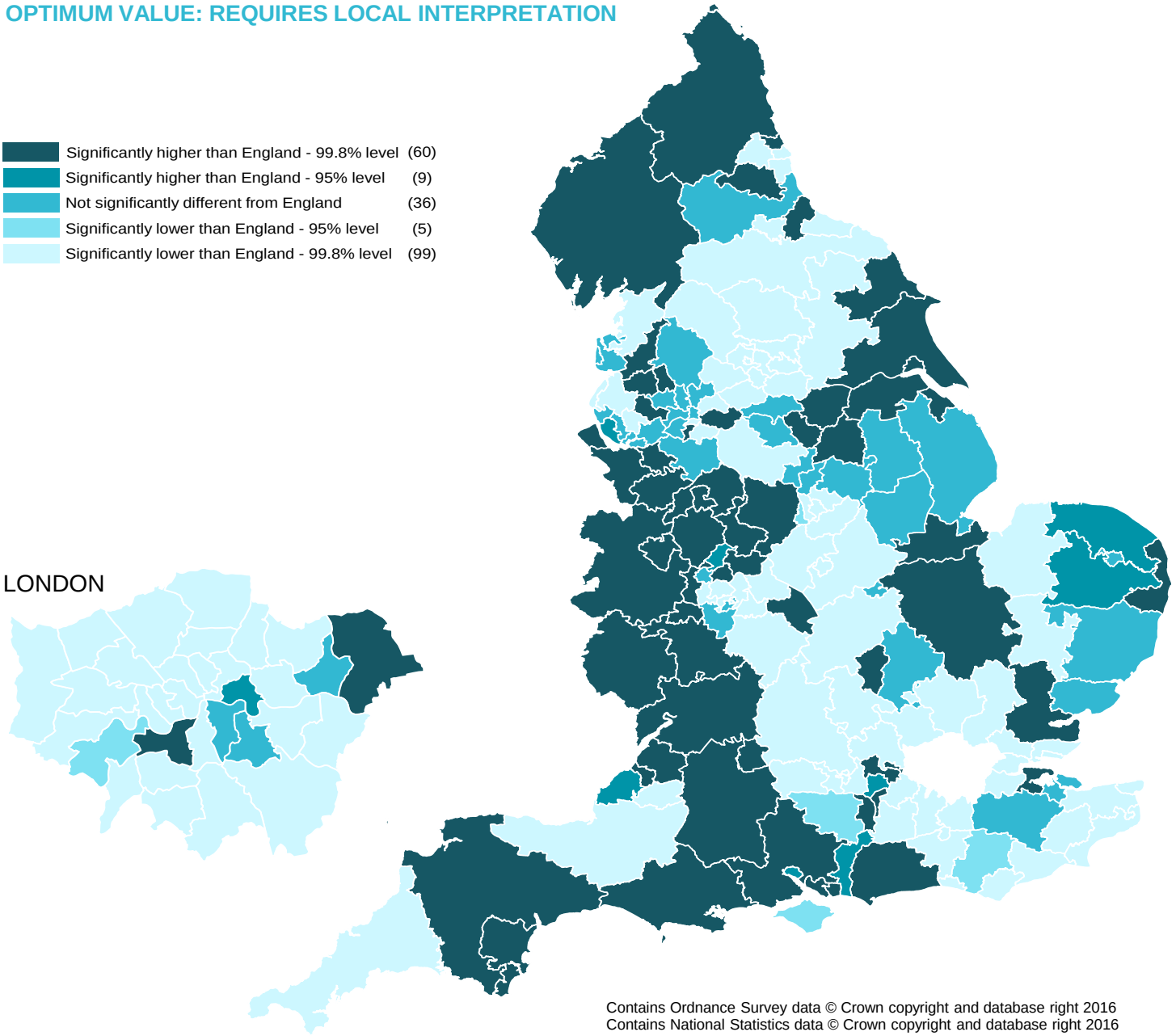
MAP 22: Rate of endoscopic ultrasound procedures per population by CCG

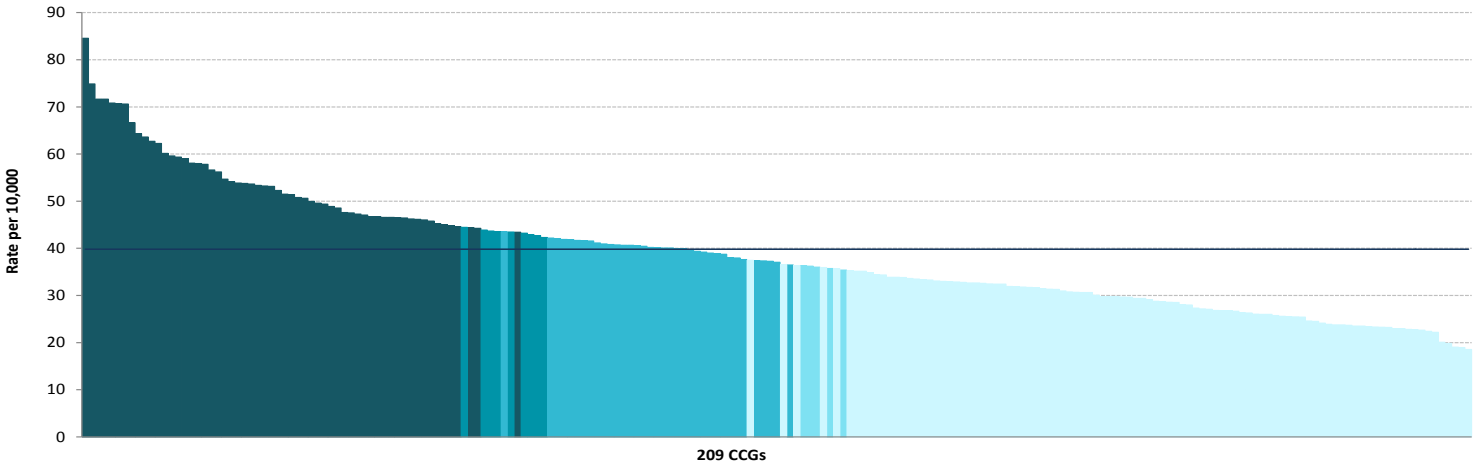
Indirectly standardised for age, sex and deprivation, 2014/15

Domain 1: Preventing people from dying prematurely

Domain 2: Enhancing quality of life for people with long-term conditions

OPTIMUM VALUE: REQUIRES LOCAL INTERPRETATION





Context

An endoscopic ultrasound scan combines the features of endoscopy and ultrasonography. A high-resolution ultrasound device is incorporated into the tip of an endoscope, which is introduced into the gastrointestinal (GI) tract via mouth or anus. If the ultrasound probe is immediately adjacent to the area of interest the images are much clearer, and targeted biopsy is more accurate and more likely to show a positive diagnosis.

- From entry via the oesophagus, the device can image and allow sampling from the mediastinum and chest, and from the stomach, the pancreas, adrenal glands, spleen, liver and adjacent nodes
- From entry via the rectum, the device can image and allow sampling from adjacent pelvic structures

In the UK endoscopic ultrasound is performed by gastroenterologists, surgeons and radiologists. It takes a long time for clinicians to develop the knowledge, skills and experience necessary to use the technique, and the equipment is expensive.

There are a variety of conditions in which endoscopic ultrasound can be used as a diagnostic tool, including:

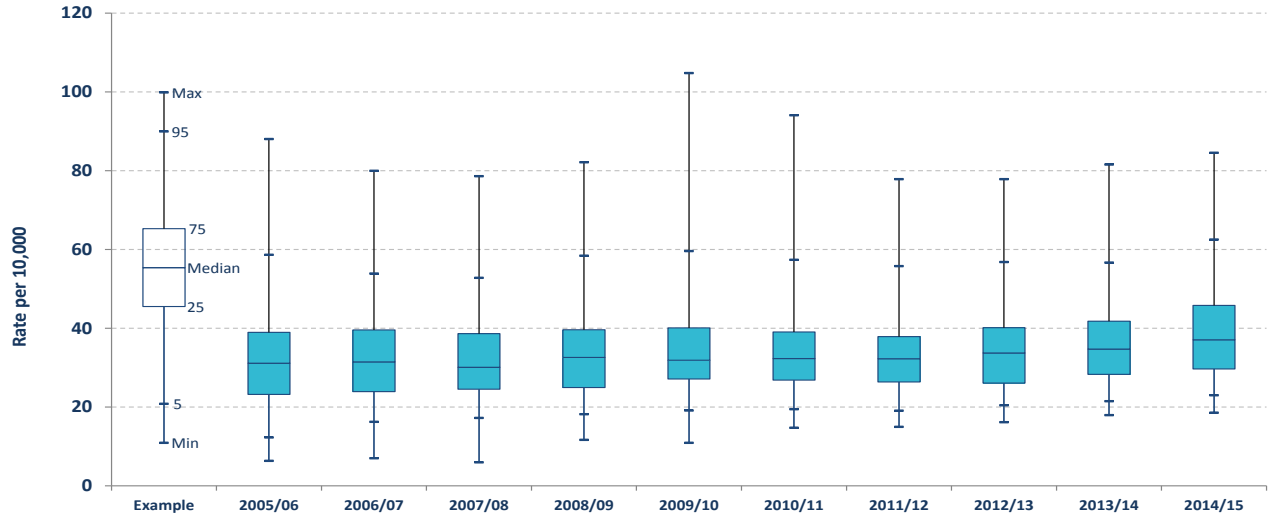
- the diagnosis of benign pancreato-biliary disease, including unsuspected gallstones
- the diagnosis of pancreatic cysts
- the diagnosis and staging of a number of GI malignancies, including those of the pancreas, stomach and oesophagus
- the diagnosis and staging of lung cancer and other chest malignancies
- the diagnosis and staging of lymphoma
- the diagnosis of masses of unknown origin

Of the well-delineated uses of endoscopic ultrasound, that for the diagnosis of suspected pancreatic malignancy is the most established and investigated. For people with suspected pancreatic malignancy, endoscopic ultrasound-guided biopsy is the standard of care when a tissue diagnosis is required.

Complications during diagnostic endoscopic ultrasound are uncommon (a rate of approximately 1%). As with any endoscopic procedure, patients should be warned of the risk of perforation. Complications specific to biopsy procedures include pain, bleeding, infection and pancreatitis; serious complications are rare.

The therapeutic use of endoscopic ultrasound occurs primarily in specialist units following discussion within a multidisciplinary team. Endoscopic ultrasound-guided drainage of pancreatic fluid collections (arising as a complication of pancreatitis) is safe and effective, and is increasingly being performed as the technique of choice for draining accessible symptomatic fluid collections. The complication rate for the drainage of pancreatic fluid collections is between 5% and 20%. Endoscopic ultrasound-guided access to the biliary tree is a new intervention providing access to and drainage of the biliary tree as an alternative to conventional means. It is not commonly performed at present, but its use is likely to increase in future.

Map 22: Boxplot of endoscopic ultrasound procedures by CCG



		2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	
Max-Min (Range)		81.7	73.0	72.6	70.5	93.9	79.3	62.9	61.7	63.6	66.0	No significant change
95th-5th percentile		46.4	37.6	35.6	40.2	40.5	37.9	36.7	36.4	35.2	39.5	No significant change
75th-25th percentile		15.8	15.7	14.1	14.6	13.0	12.2	11.5	14.1	13.5	16.1	No significant change
Median		31.1	31.4	30.1	32.6	31.8	32.3	32.2	33.7	34.7	37.0	INCREASING Significant

Magnitude of variation

The map and column chart display the latest period (2014/15), during which CCG values ranged from 18.6 per 10,000 population to 84.6 per 10,000 population, which is a 4.6-fold difference between CCGs. The England value for 2014/15 was 39.8 per 10,000 population.

The boxplot shows the distribution of CCG values for the period 2005/06 to 2014/15. There was no significant change in any of the three variation measures between 2005/06 and 2014/15.

The median increased significantly from 31.1 per 10,000 population in 2005/06 to 37.0 per 10,000 population in 2014/15.

The degree of variation observed is unlikely to be due to differences among local populations of the prevalence of the conditions for which endoscopic ultrasound is indicated.

Reasons for unwarranted variation could include differences in:

- the level of access to endoscopic ultrasound
- the availability of trained operators and/or endosonographers
- clinician awareness of the diagnostic and therapeutic uses of endoscopic ultrasound

Options for action

To reduce the degree of unwarranted variation in the level of activity for endoscopic ultrasound, commissioners, clinicians and service providers need:

- to review the level of provision in relation to need in the local population
- to audit the endoscopic ultrasound service at regular intervals
- to ensure appropriate training and skills development are available for endosonographers
- to ensure the peer-review of diagnostic and staging pathways in order to demonstrate compliance with available guidance on the use of endoscopic ultrasound (see Meenan et al, ‘Resources’)

RESOURCES

- Meenan J, Harris K, Oppong K et al. Service provision and training for endoscopic ultrasound in the UK. Frontline Gastroenterology 2011; 2: 188-194. Published Online First: 8 April 2011 doi:10.1136/fg.2010.004101. http://fg.bmj.com/content/2/3/188.abstract
- Wani S, Wallace MB, Cohen J et al. Quality Indicators for EUS. Gastrointestinal Endoscopy 2015; 81: 67-80.

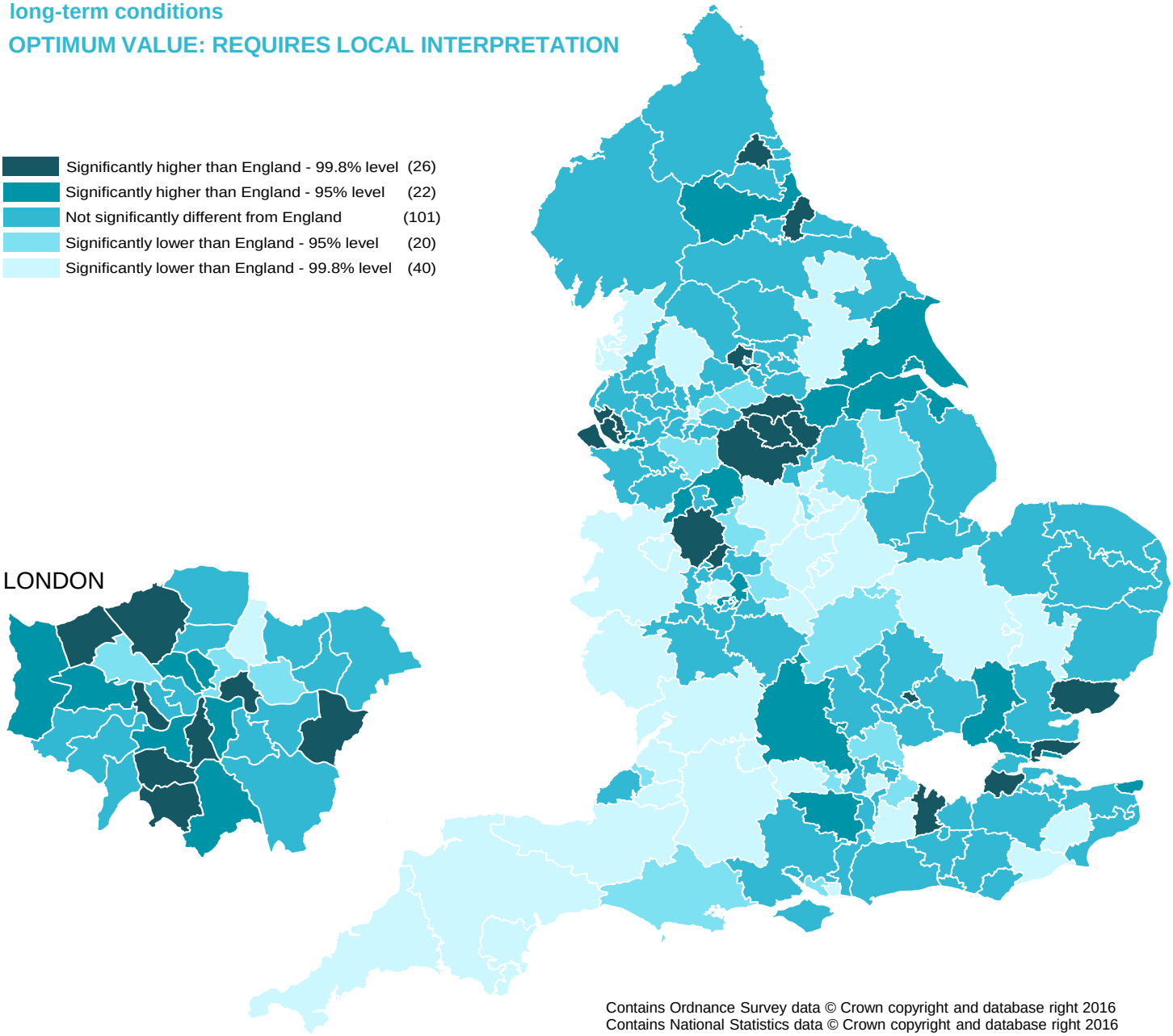
ENDOSCOPY SERVICES

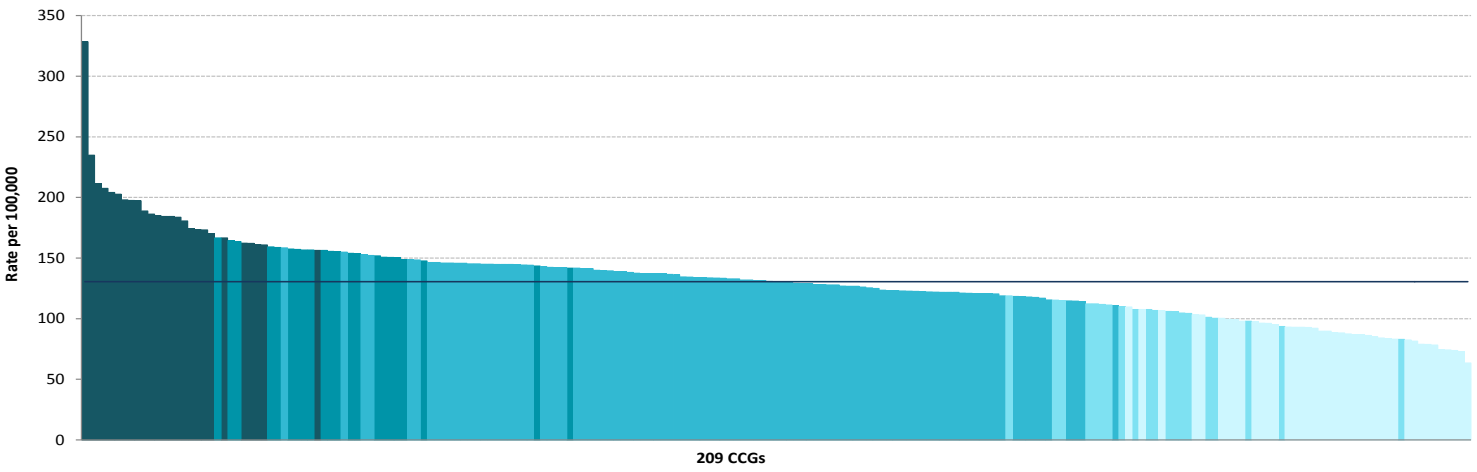
MAP 23: Admission rate for children for upper and/or lower gastro-intestinal endoscopy per population aged 0-17 years by CCG

Directly standardised for age, 2012/13–2014/15

Domain 2: Enhancing quality of life for people with long-term conditions

OPTIMUM VALUE: REQUIRES LOCAL INTERPRETATION





Context

Diagnostic gastrointestinal (GI) endoscopy enables the GI tract to be visualised directly, and for biopsies to be carried out to aid diagnosis. Endoscopy is usually undertaken in children with GI symptoms to diagnose or exclude serious GI disease, such as inflammatory bowel disease[1], coeliac disease, enteropathy and gastro-oesophageal reflux. Where investigations (including GI endoscopy) fail to find an organic cause for these symptoms, a diagnosis of functional GI disorder (GI symptoms without structural or physical abnormalities) is considered.

Over the past decade the rates of diagnostic GI endoscopy have greatly increased in the UK, associated with a trend for earlier and more accurate diagnosis of severe GI disease. There are, however, no data available on the 'appropriate' number of endoscopies per population to improve clinical outcomes.

Magnitude of variation

The map and column chart display the latest period (2012/13-2014/15), during which CCG values ranged from 63.4 to 328.3 per 100,000 population, which is a 5.2-fold difference between CCGs. The England value for this period was 130.6 per 100,000 population.

The boxplot shows the distribution of CCG values for the period 2005/06-2007/08 to 2012/13-2014/15. Throughout this period the distribution of values has been positively skewed.

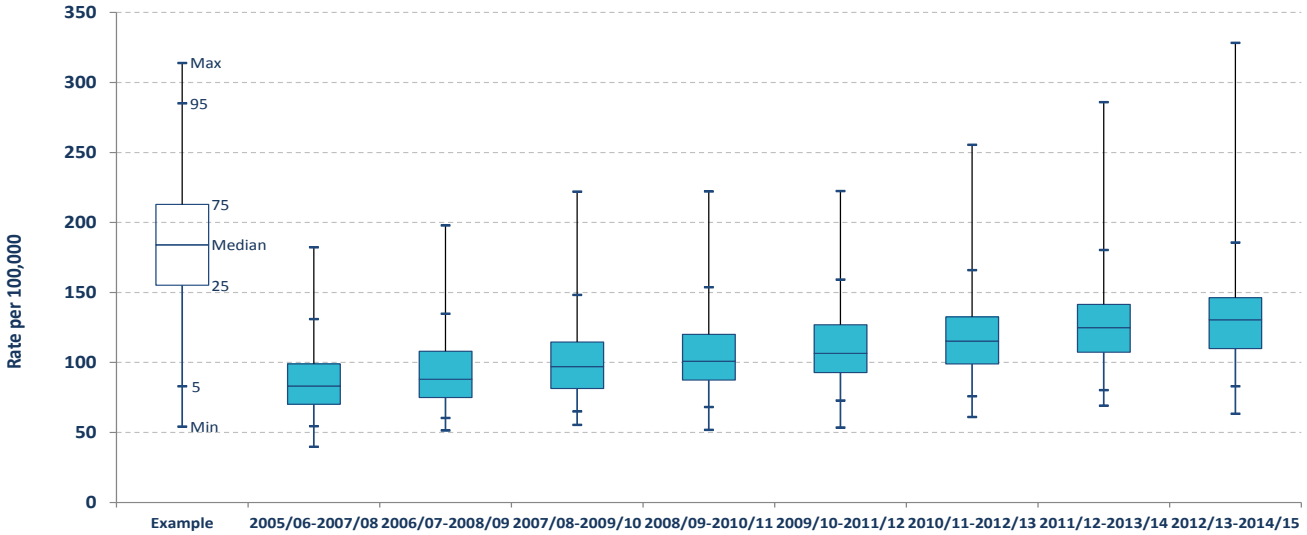
There has been significant widening of all three measures of variation. This is due to an upward stretching of the distribution with much greater increases in the maximum, 95th percentile and 75th percentile, than in the minimum, 5th percentile and 25th percentile.

There was a relatively great and statistically significant increase the median from 83.1 per 100,000 population in 2005/06-2007/08 to 130.5 per 100,000 population in 2012/13-2014/15.

The degree of variation observed is unlikely to be explained by differences in the number of children with symptoms or the incidence of serious organic GI disease. The geographical clustering of high intervention rates is also likely to reflect variation in the number of paediatric endoscopists and gastroenterologists which may may lead to different thresholds in intervention.

Low rates of GI endoscopy may reflect inadequate provision or poor access, leading to delayed or missed diagnosis in the local population of children. Variation in applying updated guidance, in which blood markers for coeliac disease should now obviate the need for endoscopy (Murch et al; see 'Resources'), may also have an effect.

Map 23: Boxplot of admissions for upper and/or lower GI endoscopy in children by CCG



		2005/06-2007/08	2006/07-2008/09	2007/08-2009/10	2008/09-2010/11	2009/10-2011/12	2010/11-2012/13	2011/12-2013/14	2012/13-2014/15	
Max-Min (Range)		142.6	146.5	166.6	170.4	168.9	194.4	216.9	265.0	WIDENING Significant
95th-5th percentile		76.5	74.5	83.2	85.5	86.4	90.0	100.1	102.7	WIDENING Significant
75th-25th percentile		28.8	33.1	33.2	32.6	34.2	33.6	34.2	36.4	WIDENING Significant
Median		83.1	88.0	97.1	100.9	106.5	115.3	124.9	130.5	INCREASING Significant

[1] This term is mainly used to describe two diseases – Crohn's disease and ulcerative colitis.

High rates may reflect:

- the ready availability of and lower thresholds for paediatric endoscopy at some centres
- relative lack of access to alternative diagnostic or management strategies, such as psychological support for children with functional disorders (children with GI symptoms without structural or physical abnormalities).

Options for action

Although there are diagnostic guidelines for the use of GI endoscopy to investigate specific conditions, no guidance exists for the selection of children commonly presenting with non-specific symptoms or signs most likely to benefit from diagnostic GI endoscopy. This is urgently needed to maximise yield and reduce unnecessary risk to patients. It is important to develop clinical guidance, based on best evidence rather than clinical consensus, particularly as thresholds for endoscopy are refined through advances in medical practice (such as for coeliac disease), and from the emergence of newer conditions for which endoscopy is a pre-requisite, such as eosinophilic oesophagitis.

In the absence of national guidance commissioners and clinicians need to agree local criteria for diagnostic GI endoscopies in children based on best available evidence, and the criteria need to be based on outcomes as well as process. It is important to benchmark criteria against agreements made in other localities to ensure equity of access and high-quality outcomes. A networked system of delivering paediatric endoscopy will help to rationalise the criteria for endoscopy, ensuring:

- sustainable levels of activity that relate to local population needs
- a comparison of outcomes within and among networks
- support for training and quality assurance
- equity of access through common thresholds for intervention
- rare but life-saving provision of out-of-hours interventional endoscopy in children

RESOURCES

- NICE. Coeliac disease: recognition assessment and management. NICE guidelines [NG20]. September 2015. https://www.nice.org.uk/guidance/ng20
- NICE. Inflammatory bowel disease. NICE quality standard [QS81]. February 2015. https://www.nice.org.uk/guidance/qs81
- Royal College of Physicians. Inflammatory Bowel Disease Quality Improvement Project. http://www.ibdqip.co.uk
- NHS England. 2013/14 NHS Standard Contract. Paediatric Medicine: Gastroenterology, Hepatology and Nutrition. Section B Part 1 – Service specifications. Service Specification No. E03/S/c. https://www.england.nhs.uk/wp-content/uploads/2013/06/e03-paedi-med-gastro-hepa-nut.pdf
- Murch S, Jenkins H, Auth M et al. Joint BSPGHAN and Coeliac UK guidelines for the diagnosis and management of coeliac disease in children. Arch Dis Child 2013; 98: 806-811. doi: 10.1136/archdischild-2013-303996 https://bspghan.org.uk/sites/default/files/guidelines/Coeliac%20Guidelines%202013_0.pdf
- Bretthauer M, Aabakken L, Dekker E et al on behalf of the ESGE Quality Improvement Committee. Requirements and standards facilitating quality improvement for reporting systems in gastrointestinal endoscopy: European Society of Gastrointestinal Endoscopy (ESGE) Position Statement. *Endoscopy* 2016: 48: 1-4. http://dx.doi.org/10.1055/s-0042-100186 https://www.esge.com/assets/downloads/pdfs/guidelines/2016_s_0042_100186.pdf
- Joint Advisory Group (JAG) for GI endoscopy. JAG defines and maintains the standards by which endoscopy is practised in the UK. Website has a section on ‘Commissioning’. http://www.thejag.org.uk/Commissioning.aspx
- JAG Accreditation System incorporating GRS (Global Rating Scale). Productivity & Planning Assessment Tool (PPAT) User Guide. http://www.thejag.org.uk/downloads%5CPlanning%20&%20Productivity%5CPPAT%20User%20Guide%2022042012.pdf