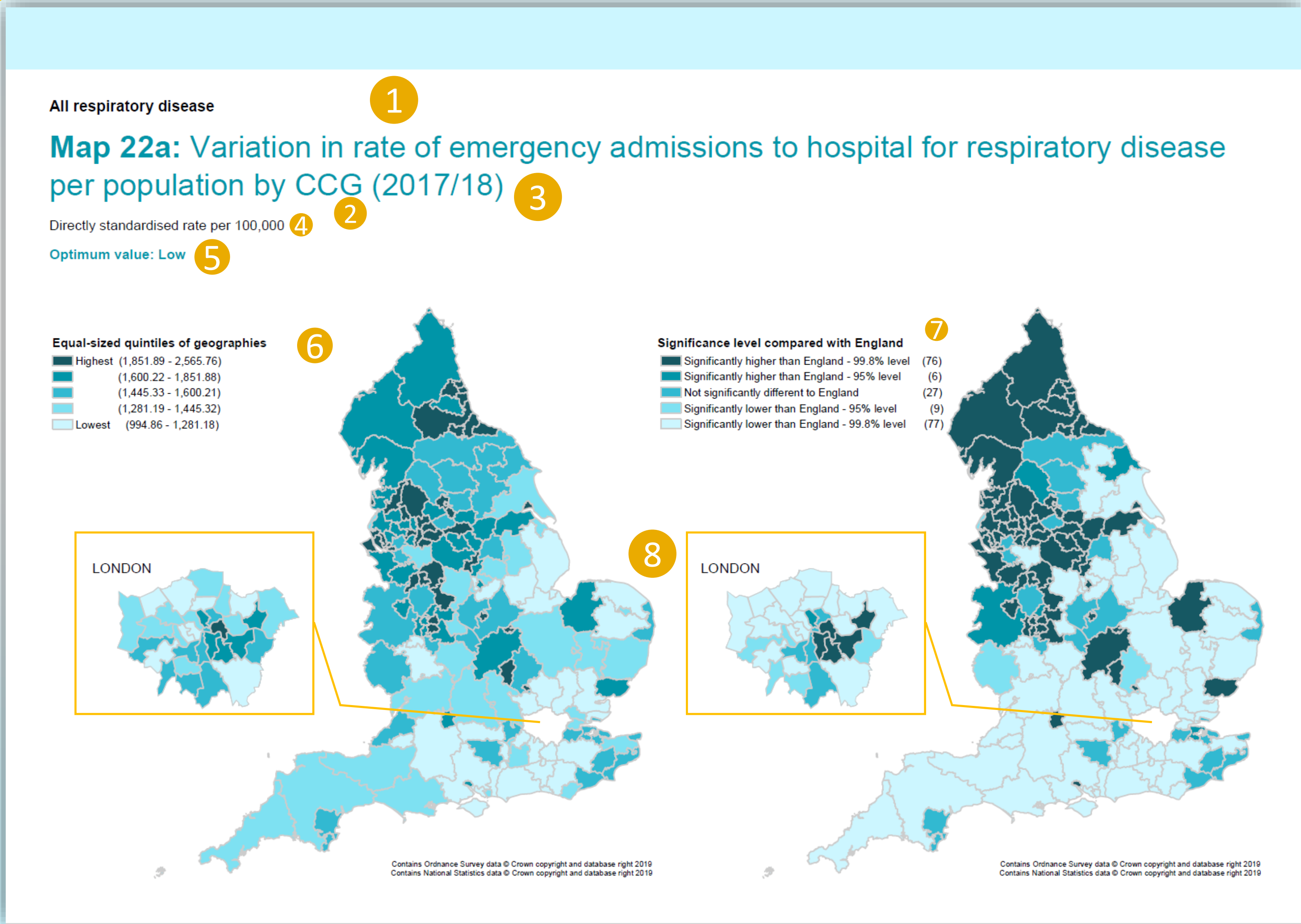
Maps

1. **Type of statistic** (e.g. rate, proportion)
2. **Geographic boundaries**
3. **Year of data presented**
4. **Rate calculated per x number of people**
5. **Optimum values** Low indicates lower values are preferential (high indicates higher values are preferential). Local interpretation maybe required for some indicators.



6. **Equal sized quintiles** The number of areas presented on the map are divided equally between the 5 categories with those with the highest values forming the 'Highest' group etc.

   For example, in 2018 there were 195 CCGs, so 39 CCGs are in each category. Darker areas have the highest values.

7. **Significance level compared with England** The darkest and lightest shading on map shows CCGs whose confidence intervals do not overlap with the England value.

   The second darkest and lightest colours show areas where the England value falls between the CCG's 95% and 99.8% CI.

   The number in brackets indicates the number of CCGs in each category.

8. **London** is presented as a separate zoomed in map for clarity.

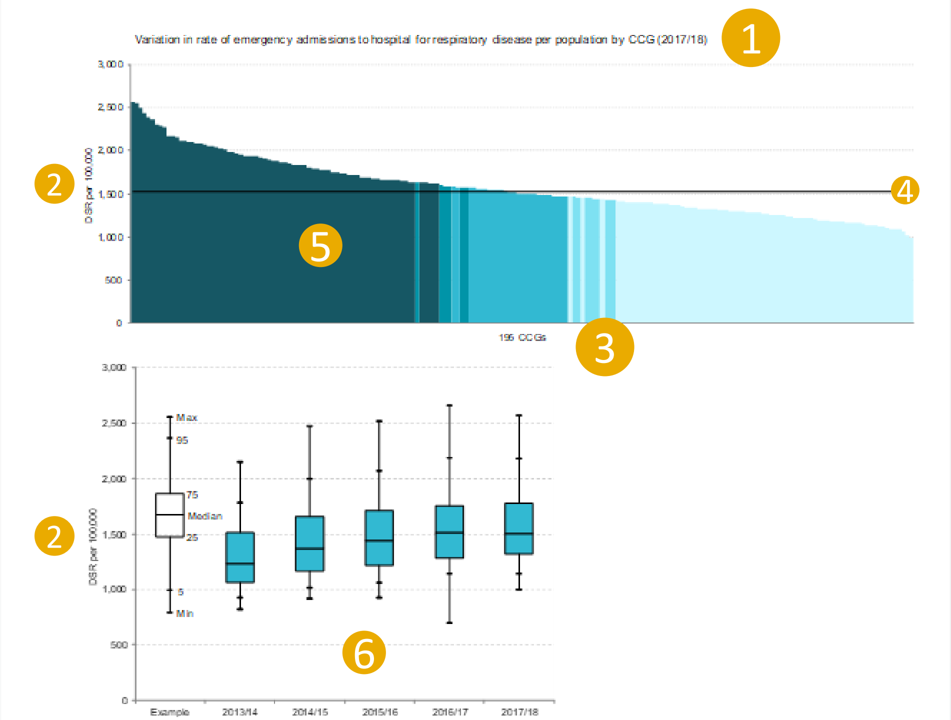
Chart, box plot and table

1. Title shows indicator details including: value type, geography and year .

2. The y-axis plots the value and gives details of the value type e.g. rate / proportion and the unit e.g. per 100,000 population.

3. The x-axis shows the geography and the number of areas on chart.

4. The line shows the England average.



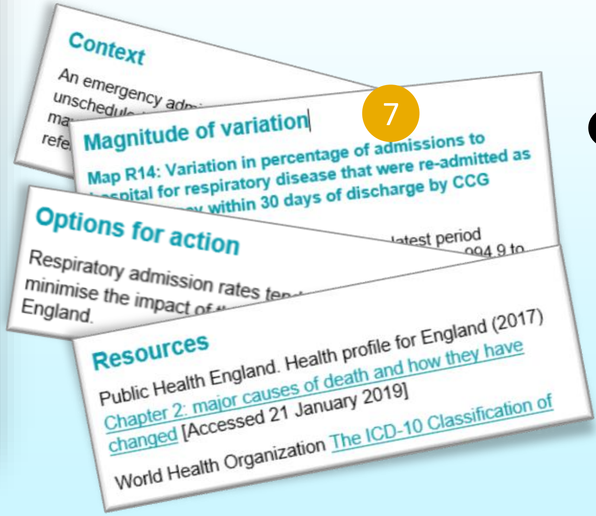
	Example	2013/14	2014/15	2015/16	2016/17	2017/18	
Max-Min (Range)		1325.7	1553.5	1590.2	1960.2	1570.9	No significant change
95th-5th percentile		858.1	974.4	1008.7	1044.1	1039.9	WIDENING significant
75th-25th percentile		454.2	493.9	496.6	474.3	457.9	No significant change
Median		1232.7	1376.6	1439.9	1511.4	1506.4	INCREASING significant

5. Each bar represents an area (e.g. a CCG). The height of the bar is relative to the value for that area. Collectively, the bars show the spread of values across England.

The colour of the bar represents how significant the area's value is in relation to England based on the area's confidence interval. Areas utilise the same colours and categories as the maps.

Areas that are significantly higher than England at a 99.8% or 95% level are shown as darker bars whereas those with lower significance to England, at a 99.8% or 95% level, are lighter. The colour in the middle represents areas that are not significantly different from England.

Where the significance bar chart shows little variation across the CCGs, the equal interval map colours have been used.



6. For each indicator, data is presented visually in a time series of box and whisker plots. The box plots show the distribution of data.

The line inside each box shows the median (the mid-point, so if the 195 CCGs were sorted in order of value, the value halfway between the CCGs in the 97th and 98th position would give the median). The bottom and top of the teal box represents the values which 25% and 75% of the areas fall below. 50% of the areas have a value within this range.

The whiskers mark the values at which 5% and 95% of areas fall below. The median and maximum values are also shown.

The time series allows us to see how the median has changed over time, but also whether the gap between the extreme values has changed.

The table accompanying the box and whisker plots shows whether there has been any statistically significant change in the median, or in the degree of variation over time.

7. **Sections in the chapter**

Context – provides an overview of why the indicator is of public health interest

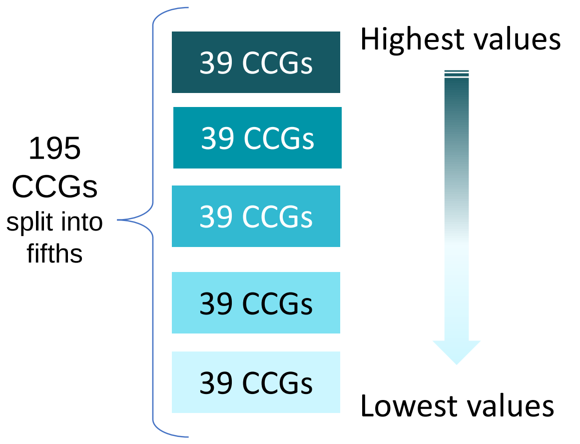
Magnitude of variation – provides commentary in relation to the chart, box plot and table

Option for action – gives suggestions for best practice

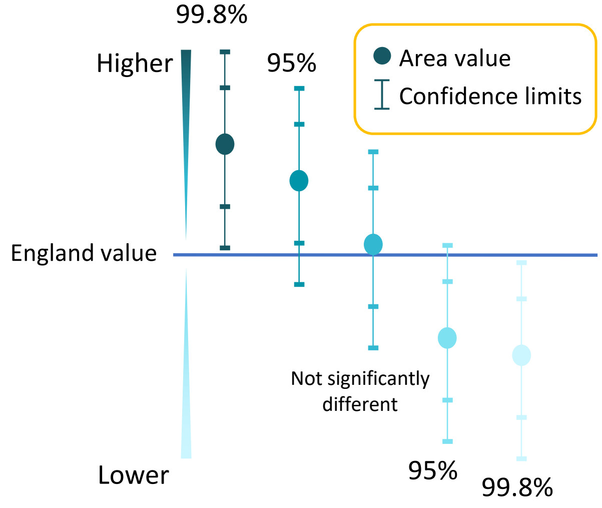
Resources – gives links to useful documents

How were the categories calculated?

Equal-sized quintiles



Significance to England



Confidence intervals give an estimated range in which the true CCG value lies.

Where the CCG's confidence interval does not overlap with the England value, the CCG is classed as being *significantly higher* or *lower than England at a 99.8% level*.

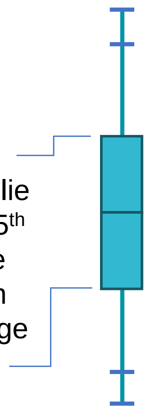
If the England value lies between the 99.8% and 95% CI, this value is classed as being *significantly higher* or *lower than England at a 95% level*.

Where the England value is between the upper and lower 95% CI, the CCG is classed as *not being significantly different from England*.

Box & whisker plot

Whiskers
Show the extreme values in the dataset.

Box
50% of the data values lie between the 25th and 75th percentile. The distance between these is known as the inter-quartile range (IQR).



Maximum The value of the area with the highest value.

95th percentile 95% of areas have values below this.

75th percentile 75% of areas have values below this.

Median (50th percentile) The median is the middle value of an ordered dataset. Half of the observations are below it and half above.

25th percentile 25% of areas have values below this.

5th percentile 5% of areas have a value below this.

Minimum The value of the area with the lowest value.

Box plot percentile	CCG rank position (195 CCGs in 2018)
Max	195
95%	Mid value between values of CCGs in ranks 185 and 186
75%	Mid value between values of CCGs in ranks 146 and 147
50% - Median	Mid value between values of CCGs in ranks 97 and 98
25%	Mid value between values of CCGs in ranks 48 and 49
5%	Mid value between values of CCGs in ranks 9 and 10
Min	1

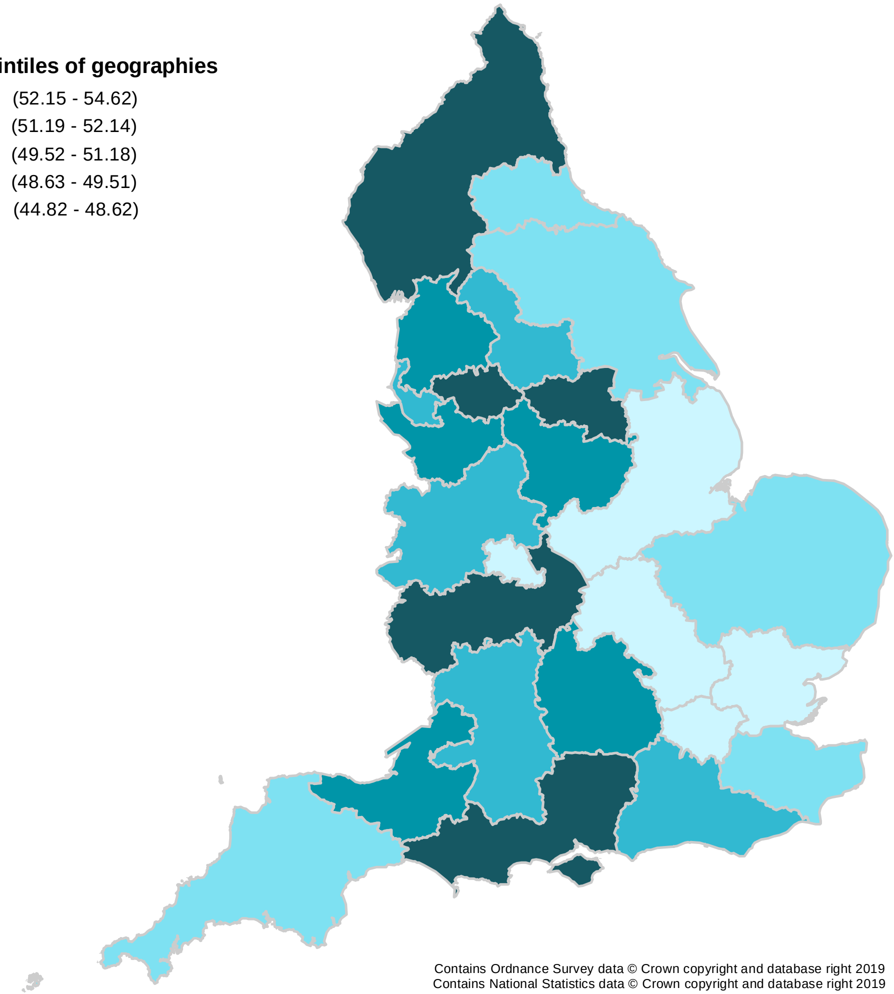
Health Service Provision – Influenza vaccination

Map 23: Variation in percentage of people aged 6 months to 65 years with chronic respiratory disease who have received the influenza vaccine by NHS Area Team according to national ambitions (2018/19)

Optimum value: High

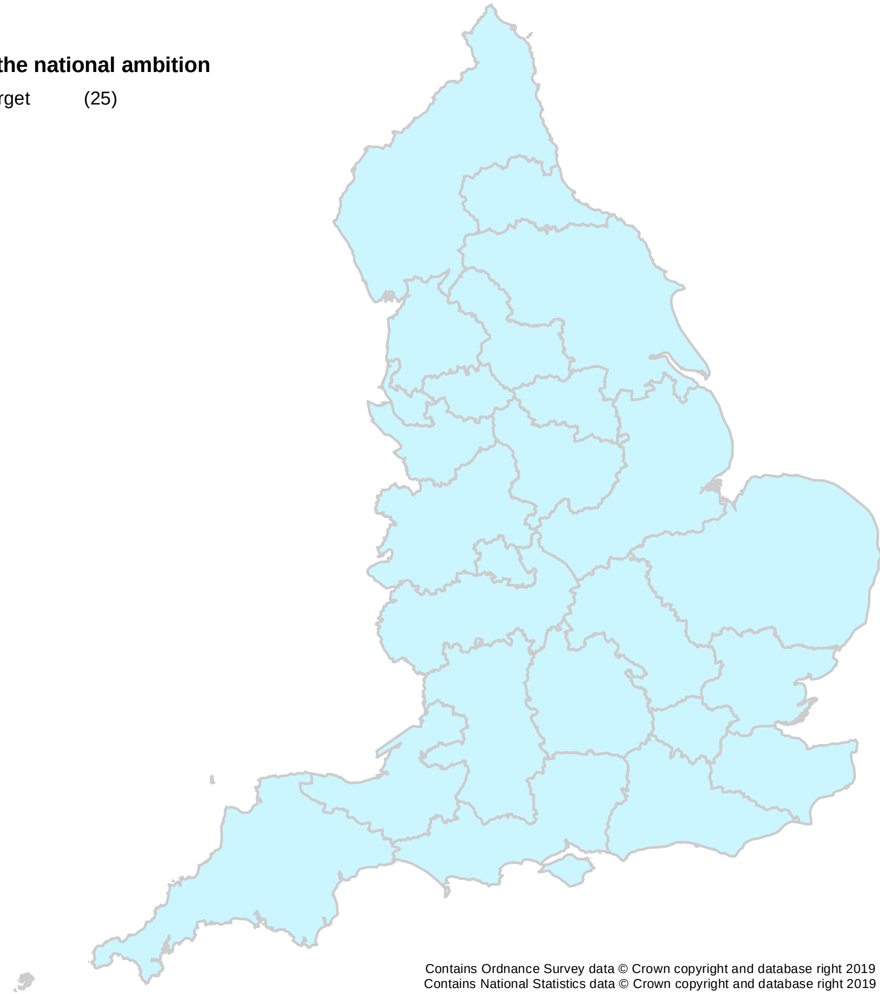
Equal-sized quintiles of geographies

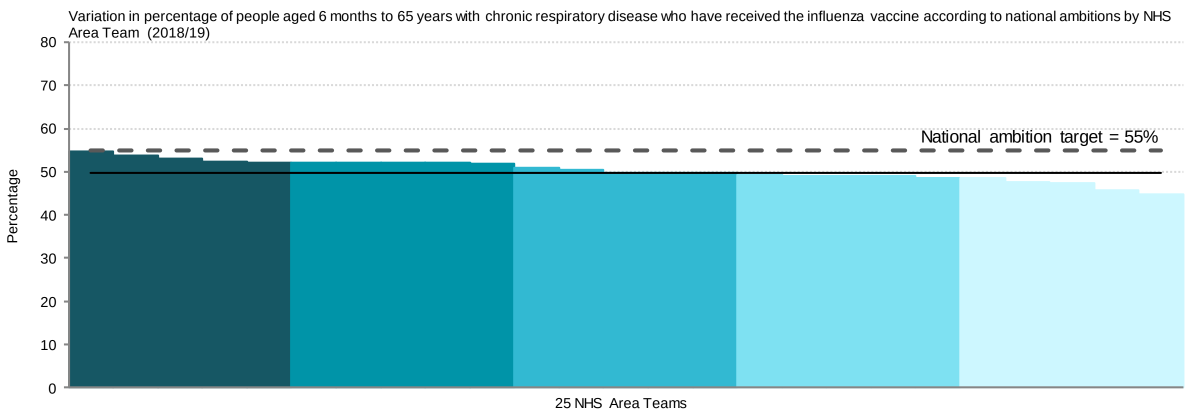
Highest		(52.15 - 54.62)
		(51.19 - 52.14)
		(49.52 - 51.18)
		(48.63 - 49.51)
Lowest		(44.82 - 48.62)

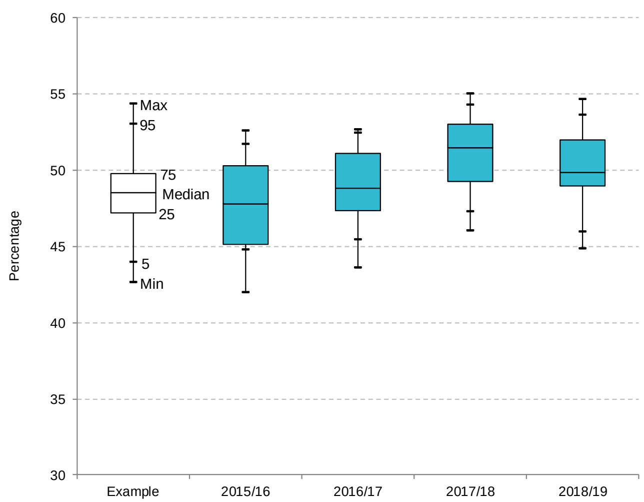


Comparison to the national ambition

Below 55% target (25)







Max-Min (Range)		10.6	9.1	9.0	9.8	No significant change
95th-5th percentile		7.0	7.0	7.0	7.6	No significant change
75th-25th percentile		5.2	3.8	3.7	3.1	No significant change
Median		47.8	48.9	51.5	49.8	No significant change

Context

The common symptoms of influenza are chills, fever, nasal and sinus congestion, sore throat and extreme fatigue, however, people with chronic respiratory disease are at increased risk from the complications of influenza, such as bronchitis or pneumonia. Some of these complications can be life-threatening: every year several thousand people in England die from the complications of influenza.

In people with chronic respiratory disease, there is a higher risk of hospital admission to an intensive care unit and requirement for respiratory support. Asthma is associated with an elevated risk of pneumonia, and chronic obstructive pulmonary disease increases the risk of ventilatory support.

Vaccination every year can protect against the influenza virus, Public Health England recommends that everyone with a chronic respiratory condition should have a free influenza vaccination.[1]

The influenza vaccination season is from October to December, but most people get influenza from December onwards. To protect people with chronic respiratory disease from the influenza virus and its complications it is best to offer vaccination as early as possible in the campaign before influenza circulation starts.

Magnitude of variation

Map 23: Variation in percentage of people aged 6 months to 65 years with chronic respiratory disease who have received the influenza vaccine by NHS Area Team according to national ambitions (2018/19)

The maps and column chart display the latest period (2018/19), during which NHS Area Team values ranged from

44.8% to 54.6%, which is a 1.2-fold difference between NHS Area Teams. The England value for 2018/19 was 49.8%. No areas reached the national ambition of 55% vaccination. The box plot shows the distribution of NHS Area Team values for the period 2015/16 to 2018/19. There was no significant change in any of the 3 variation measures between 2015/16 and 2018/19.

The data shows that at best only one person in every 2 people under the age of 65 years with chronic lung disease received an influenza vaccination.

Potential reasons for the degree of variation observed include differences in:

- level of awareness among people with chronic lung disease of the need for influenza vaccination
- effectiveness of the promotion and offer of influenza vaccination to people with chronic lung disease, particularly in primary care
- access to free influenza vaccination services

Options for action

To increase the number of people with chronic respiratory disease receiving influenza vaccination, commissioners need to ensure that service providers, particularly general practitioners and community pharmacies, promote and offer the service to people with asthma, chronic obstructive pulmonary disease and other chronic lung disease.

General practitioners need to invite people with chronic lung disease for influenza vaccination using a variety of methods, such as letter, telephone call, text message or email, either for a specific appointment or to an influenza vaccination clinic. Influenza vaccination clinics need to be promoted on practice websites.

Commissioners can encourage community pharmacies to participate in free influenza vaccination programmes. Being able to access vaccination at a community pharmacy may be more convenient for some people with chronic lung disease than attending the general practice.

Commissioners could consider specifying that primary care service providers responsible for delivering the national flu vaccination programme undergo education and training in promoting the uptake of influenza vaccination (see ‘Resources’ for e-learning package).

All healthcare professionals responsible for the care and treatment of people with chronic lung disease need to take the opportunity of Making Every Contact Count (MECC; see ‘Resources’) to highlight the importance of annual influenza vaccination especially as the season approaches.

Resources

Mertz D, Kim T, Johnstone J, Lam P and others (2013) Populations at risk for severe or complicated influenza illness: systematic review and meta-analysis BMJ 23(347):f5061 doi: 10.1136/bmj.f5061 [Accessed 15 February 2019]

NHS Health Education England in partnership with Public Health England. e-Learning for Healthcare Flu Immunisation [Accessed 12 July 2019]

Public Health England Annual flu programme Last updated: 11 July 2019 [Accessed 12 July 2019]

Public Health England Influenza, the green book, chapter 19 Last updated: 23 April 2019 [Accessed 12 July 2019]

Public Health England Making Every Contact Count (MECC): practical resources Last updated: 16 July 2018 [Accessed 12 July 2019]

Public Health England The flu vaccination winter 2018 to 2019: who should have it and why Last updated 6 June 2019 [Accessed 12 July 2019]

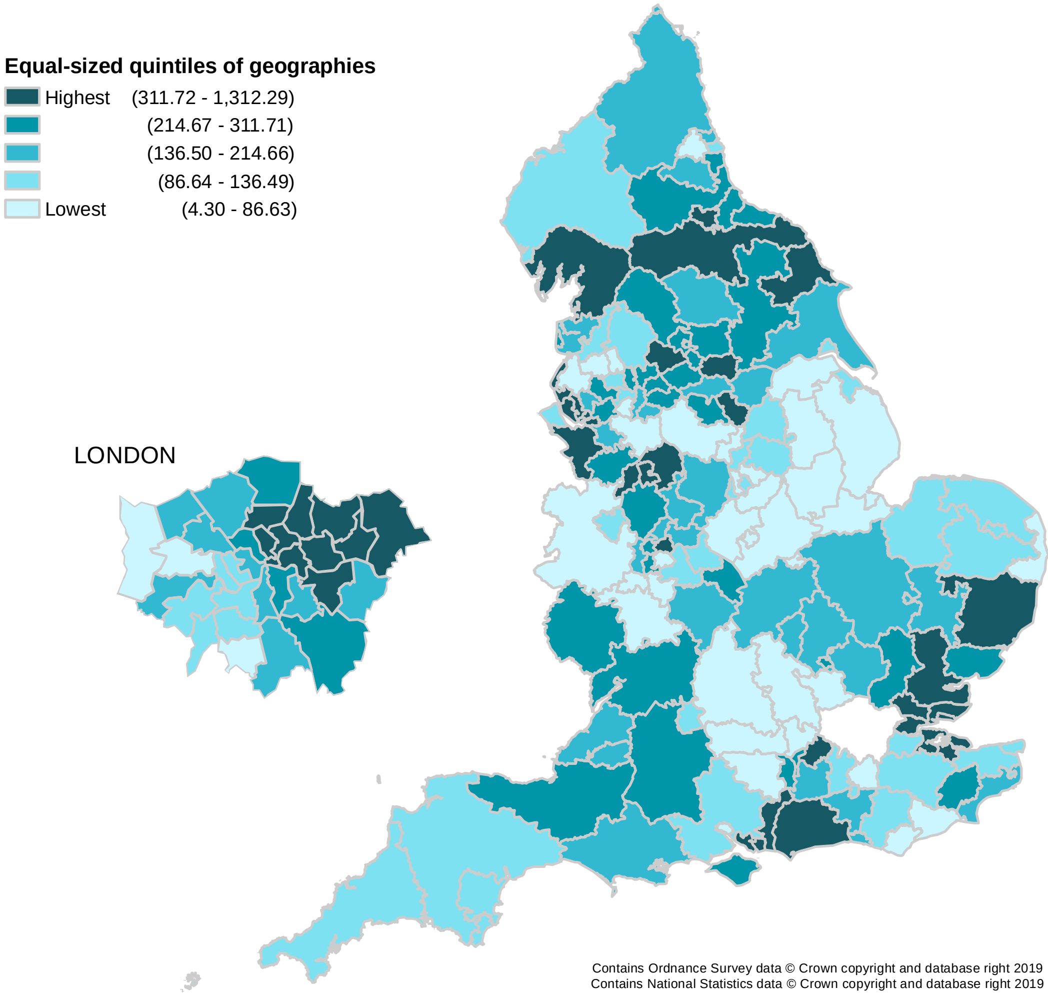
[1] NHS England, Department of Health & Social Care and Public Health England (2018) The national flu immunisation programme 2018/19 (flu letter: no.1) [Accessed 12 July 2019]

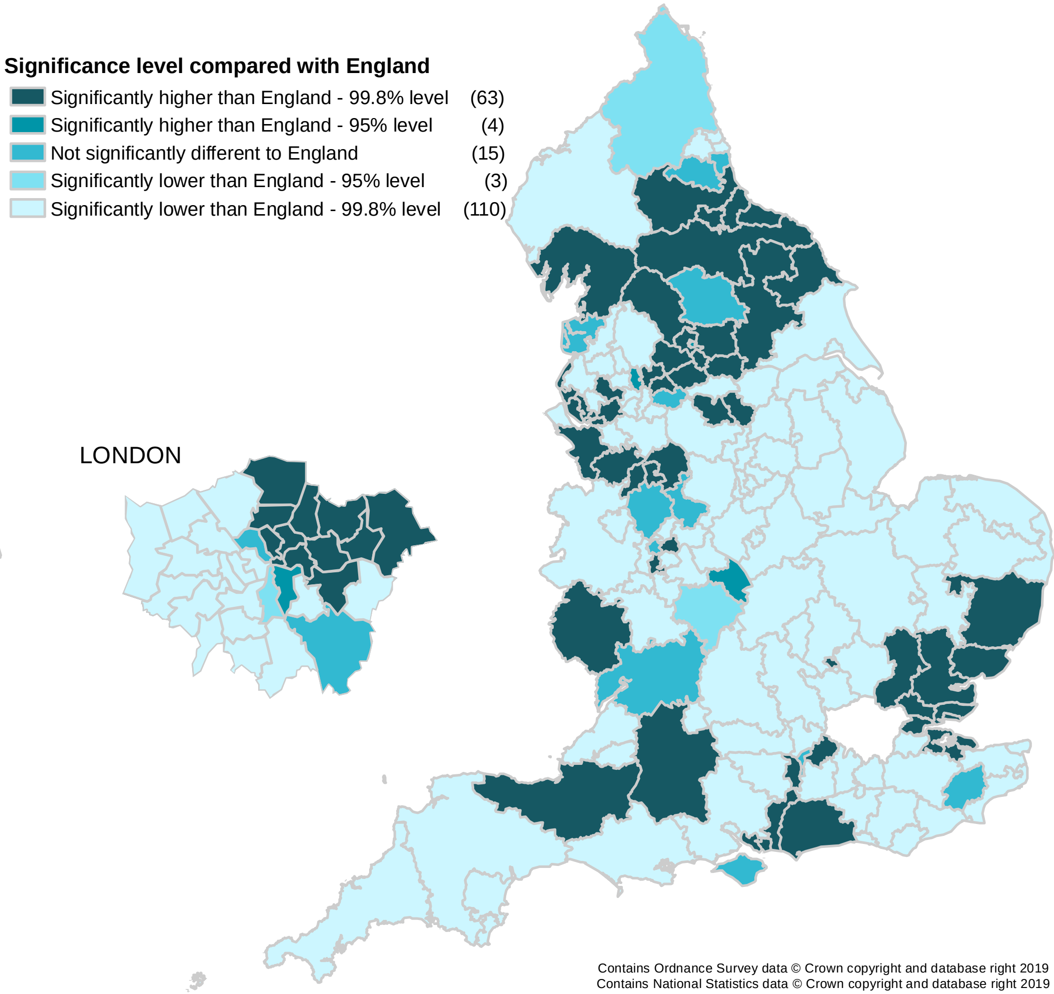
Health service provision - Sleep studies

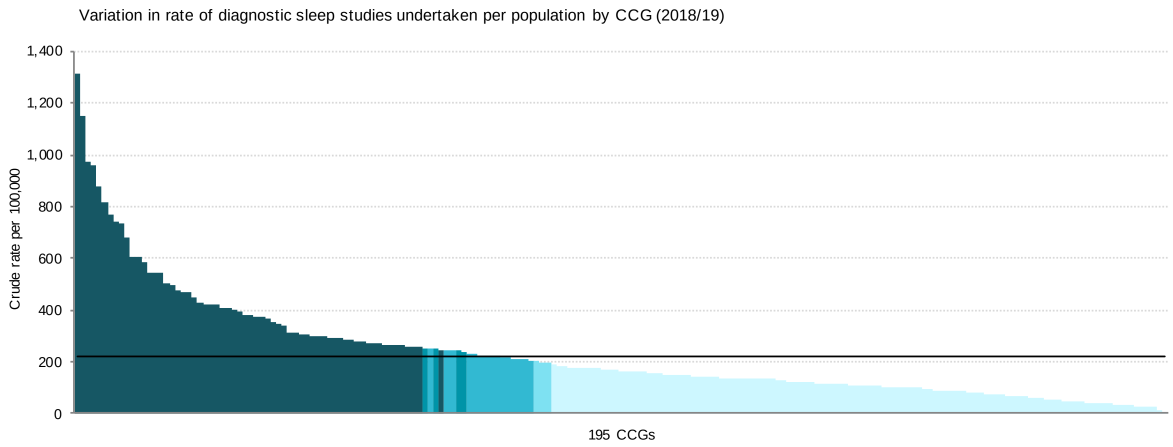
Map 24: Variation in rate of diagnostic sleep studies undertaken per population by CCG (2018/19)

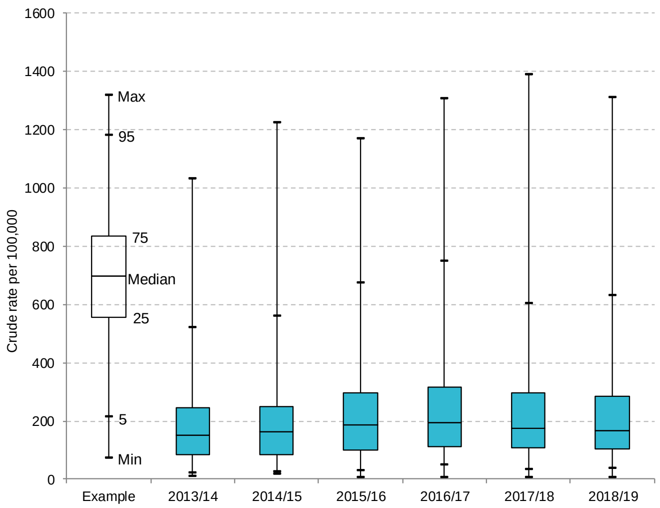
Crude rate per 100,000

Optimum value: High









	Example	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	
Max-Min (Range)		1023.2	1205.0	1163.5	1302.1	1381.6	1308.0	WIDENING Significant
95th-5th percentile		496.3	536.4	644.0	702.8	570.3	594.0	No significant change
75th-25th percentile		160.1	164.5	195.6	206.2	188.8	181.3	No significant change
Median		149.4	162.5	188.1	192.4	173.1	165.4	No significant change

Context

Sleep studies can be considered of 2 types, the less common being full polysomnography, used to explore neurological sleep problems where brainwave recordings and eye movements together with muscle tone are monitored. The more common respiratory sleep study looks at respiratory movement, airflow, arterial oxygen saturation, pulse rate and other parameters used to identify if sleep disordered breathing is present and, if so, its severity.

Obstructive sleep apnoea (OSA) is the most common sleep disordered breathing problem with an uncertain prevalence in the UK but one that is less common in premenopausal women and increases with age. Unfortunately, it remains under diagnosed with patients still presenting with symptoms of sleep apnoea of many years duration and often have consulted clinicians on several occasions regarding their symptoms.

Following a campaign from the British Lung Foundation in 2013/14 that highlighted the key symptoms of loud snoring, witnessed apnoeas and daytime somnolence, referrals appeared to increase. The increasing recognition of the association of sleep apnoea with raised blood pressure, diabetes, atrial fibrillation and heart failure has maintained a high demand for sleep investigations. The National Institute for Health and Care Excellence (NICE) technology appraisal guidance 139[1] confirmed that continuous positive airway pressure (CPAP) is an effective treatment and has supported the increase in diagnosis, given it is such an effective therapy.

Unfortunately, there remains a variation in the number of sleep studies performed as highlighted in the bar chart. Whilst there is no norm defined for the number of sleep studies per thousand population, the magnitude of the variation should lead commissioners to review the nature of the services they commission. The tool published in 2013 by Steier remains the only tool to try and estimate prevalence.[2] The forthcoming NICE guideline on sleep disordered breathing will help delineate the best pathways of care.[3]

Magnitude of Variation

Map 24: Variation in rate of diagnostic sleep studies undertaken per population by CCG (2018/19)

The maps and column chart display the latest period (2018/19), during which CCG values ranged from 4.3 to 1,312.3 per 100,000 population, which is a 305.0-fold difference between CCGs. The England value for 2018/19 was 221.5 per 100,000 population.

The box plot shows the distribution of CCG values for the period 2013/14 to 2018/19. The maximum to minimum range widened significantly.

Reasons for the degree of variation observed are differences in:

- availability of the service
- prevalence of risk factors and related conditions, such as obesity
- symptom recognition and appropriate referral in primary care

In localities with large sleep centres, which take many tertiary referrals, the rates of testing for sleep-related conditions tend to be higher, as they often provide limited cardiopulmonary studies for their local population but also more complex investigations, such as full polysomnography to diagnose and manage more neurological sleep problems and sleep disordered breathing that fails to respond to simple treatments.

The Steier tool, produced an overall risk map for OSA that could be used to predict relative prevalence estimates in the UK.[2] They found not only significant regional variation in predicted prevalence estimates, but also a significant mismatch between areas identified as having a high predicted prevalence estimate and the distribution of existing sleep centres.

Options for action

Commissioners together with service providers need:

- to review referral and delivery models for sleep services
- to refine understanding of expected and observed prevalence of related conditions
- to assess the demand and available capacity for local sleep services
- review services in light of the forthcoming NICE guidelines

Accreditation of sleep laboratories is to be encouraged via the IQIPS scheme, recognising that additional support is required to achieve this.

Resources

Department of Health (2009) Transforming respiratory and sleep diagnostic services to deliver 18 weeks - a good practice guide [Accessed 29 July 2019]

National Institute for Health and Care Excellence (2008) Continuous positive airway pressure for the treatment of obstructive sleep apnoea/hypopnoea syndrome (NICE technology appraisal [TA139]) [Accessed 17 April 2019]

National Institute for Health and Care Excellence (2015) Obstructive sleep apnoea syndrome (NICE clinical knowledge summaries) [Accessed 17 April 2019]

National Institute of Health and Care Excellence Obstructive sleep apnoea/hypopnoea syndrome and obesity hypoventilation syndrome in over 16s (In development [GID-NG10098]) [Accessed 29 July 2019]

United Kingdom Accreditation Service (UKAS) Improving Quality in Physiological Services (IQIPS) [Accessed 17 April 2019]

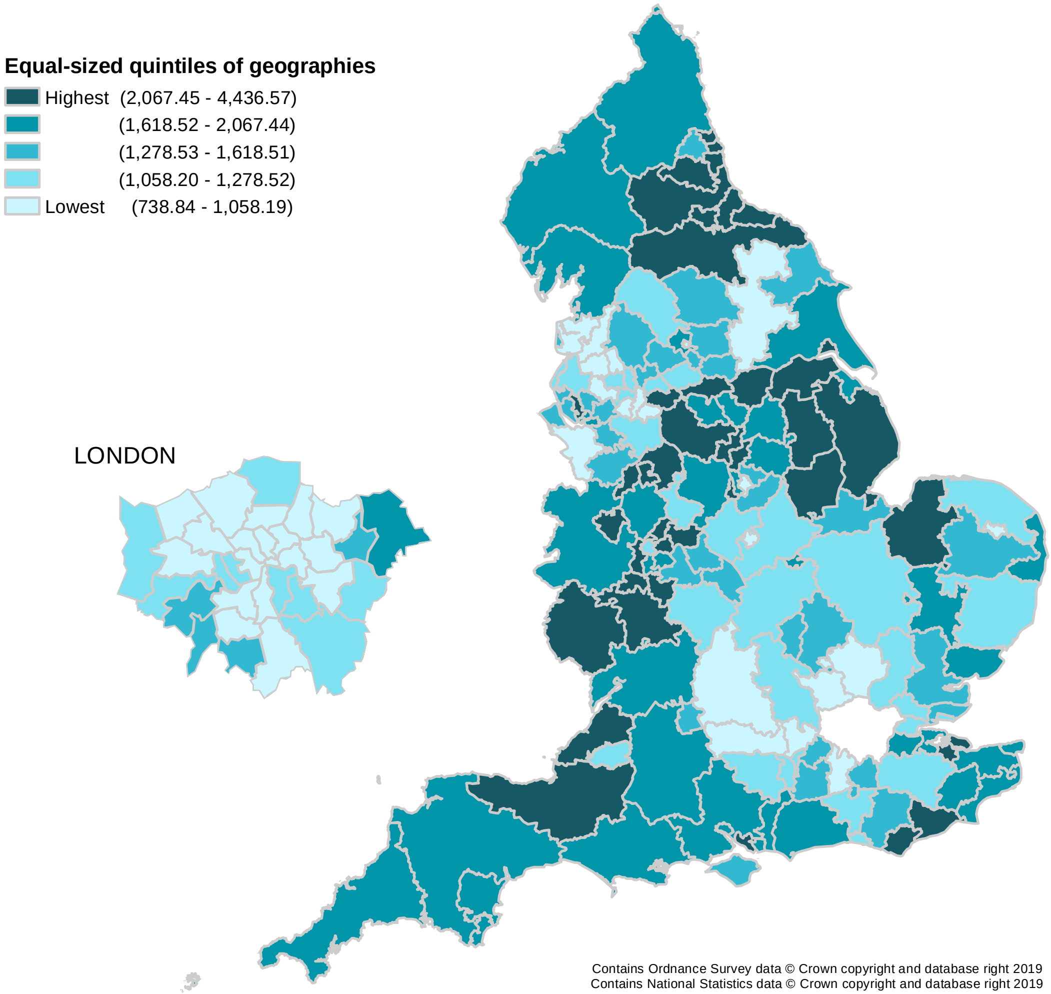
[1] National Institute for Health and Care Excellence (2008) Continuous positive airway pressure for the treatment of obstructive sleep apnoea/hypopnoea syndrome (NICE technology appraisal [TA139]) [Accessed 17 April 2019]
[2] Steier J, Martin A, Harris J and others (2013) Predicted relative prevalence estimates for obstructive sleep apnoea and the associated healthcare provision across the UK Thorax 69:390-392 doi: 10.1136/thoraxjnl-2013-203887 [Accessed 17 April 2019]
[3] National Institute of Health and Care Excellence Obstructive sleep apnoea/hypopnoea syndrome and obesity hypoventilation syndrome in over 16s (In development [GID-NG10098]) [Accessed 29 July 2019]

Health service provision - Oxygen therapy

Map 25: Variation in total expenditure on home oxygen therapy per population by CCG (2017/18)

Spend (£) per 1,000 patients

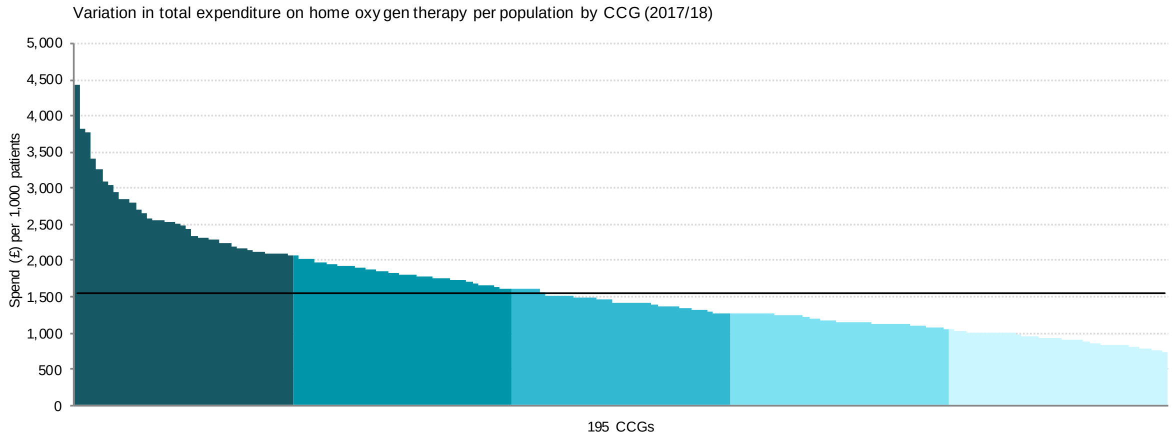
Optimum value: Requires local interpretation

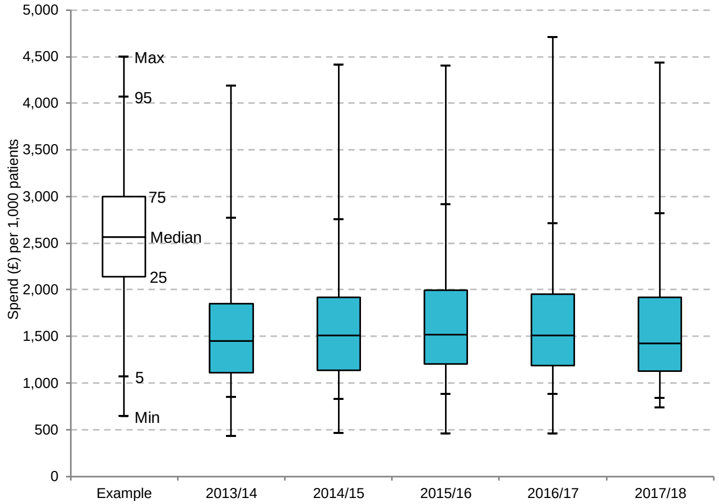


Context

Home oxygen therapy is provided to around 85,000 people in England, costing approximately £110 million per year.[1] The majority of patients prescribed home oxygen have COPD or other long-term respiratory conditions such as interstitial lung disease, chest wall deformity and pulmonary hypertension. About 4% are children. Oxygen therapy is an effective treatment for some people with cardiac or neurological conditions, pre-term babies and for end of life care.[1] Where indicated, long-term home oxygen therapy can improve survival in COPD, but it is often prescribed without appropriate clinical assessment or specialist follow-up, in which case the patient derives no clinical benefit and may come to harm. Oxygen is a treatment for low blood oxygen levels (hypoxia); it is not effective for breathlessness in the absence of hypoxia.

Internal estimates from the Department of Health and Social Care (DHSC) suggest that between 24% and 43% of home oxygen prescribed is not used and, conversely, 20% of COPD patients that could benefit do not receive it.[1] Often home oxygen is initiated by hospital doctors after an acute admission, although national guidelines advise against this.





	Example	2013/14	2014/15	2015/16	2016/17	2017/18	
Max-Min (Range)		£3,760	£3,949	£3,941	£4,259	£3,698	No significant change
95th-5th percentile		£1,922	£1,918	£2,031	£1,825	£1,979	No significant change
75th-25th percentile		£736	£781	£787	£761	£797	No significant change
Median		£1,449	£1,510	£1,518	£1,509	£1,426	No significant change

Up to 30% of COPD patients prescribed long term oxygen therapy in this setting no longer need it after 3 months,[2] but many patients do not receive appropriate follow-up, resulting in oxygen equipment remaining in place despite not being required or used.

Up to 40% of COPD patients admitted to hospital are current smokers.[3] Provision of home oxygen therapy to current smokers is not recommended due to the risk to themselves and others, and because these patients are unlikely to derive the intended mortality benefit. These patients are a clinical priority for treatment of their tobacco dependence as well as specialist respiratory assessment and follow up.

Home oxygen contracts and payment are based on provision as well as usage; costs are incurred even when oxygen is not used but also when the most cost-effective home oxygen prescription is not in place. Both of these issues can be addressed by commissioned Home Oxygen Assessment and Review Services (HOSARs).

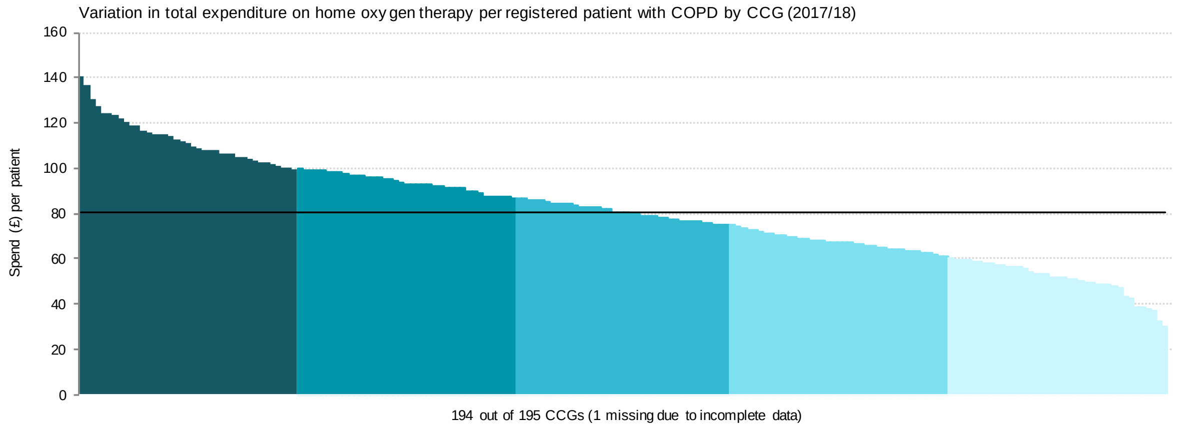
Although expenditure is high, many CCGs do not commission integrated HOSARs to undertake quality-assured clinical assessment, review and follow-up of patients' long-term home oxygen patients, thereby decreasing the quality of care and increasing the likelihood of harm and waste.

Magnitude of variation

Map 25: Variation in total expenditure on home oxygen therapy per population by CCG (2017/18)

The map and column chart display the latest period (2017/18), during which CCG values ranged from £739 to

Figure 25.1: **Total expenditure on home oxygen therapy per registered patient with COPD by CCG (2017/18)**



£4,437, which is a 6.0-fold difference between CCGs. The England value for 2017/18 was £1,539. The box plot shows the distribution of CCG values for the period 2013/14 to 2017/18.

There was no significant change in any of the 3 variation measures between 2013/14 and 2017/18. Some variation will be due to differences in population composition and disease prevalence. When adjusted for COPD prevalence, there is a 4.7-fold difference between CCGs (Figure 25.1).

Reasons for unwarranted variation include provision of oxygen for people who do not need it or who are not using it, and failure to identify all patients who would benefit from it. The degree of variation observed shows there is considerable scope for increasing the value of home oxygen therapy by improving the quality of care and reducing waste.

Options for action

The most recent Department of Health and Social Care (DHSC) internal analysis revealed that savings of up to 30% in the first year (equivalent to £45 million nationally or £300,000 per PCT) could be achieved through setting up a home oxygen service with structured clinical assessment, and regular review of requirements to ensure patients receive home oxygen only after appropriate assessment.[1] It is important that these services work within an integrated chronic respiratory disease pathway, i.e. operate across hospital and community settings.

To increase the value from home oxygen therapy, commissioners and providers should consider the following interventions:

Undertake regular pulse oximetry in all patients at risk of chronic hypoxia managed in primary or specialist care to determine oxygen saturation. These patients include those with long term respiratory, cardiac or neurological disease.

Undertake regular exhaled carbon monoxide (CO) readings in all patients at risk of chronic hypoxia managed in primary or specialist care as part of an evidence-based assessment of tobacco dependence, and offer specialist referral and pharmacotherapy.

Consider long term home oxygen therapy only in patients with oxygen saturation of less than 92% on air who are clinically stable and optimised.

Refer patients with oxygen saturation of less than 92% to a HOSAR for structured assessment and follow up.

Home oxygen therapy only to be prescribed by specialists, after a structured assessment, including exhaled CO monitoring, treatment of tobacco dependence, risk assessment, and patient and carer education.

Review patients treated with home oxygen by the HOSAR at appropriate guideline-based intervals.

Ensure commissioned HOSAR have a remit to cover all patient groups, not just COPD, including other long-term respiratory conditions such as interstitial lung disease, chest wall deformity, pulmonary hypertension, sleep disorders, sickle cell disease, neuromuscular disease, cluster headaches and palliative care.

Resources

British Thoracic Society (2015) Guidelines for Home Oxygen Use in Adults [Accessed 30 July 2019]

British Thoracic Society (2017) Home Oxygen Quality Standards [Accessed 30 July 2019]

NHS Medical Directorate (2012) COPD Commissioning Toolkit A resource for commissioners [Accessed 30 July 2019]

NHS Primary Care Commissioning (2011) Home Oxygen Service – Assessment and Review. Good practice guide [Accessed 30 July 2019]

National Institute for Health and Care Excellence (2016) Chronic obstructive pulmonary disease in adults (NICE quality standard [QS10]) [Accessed 30 July 2019]

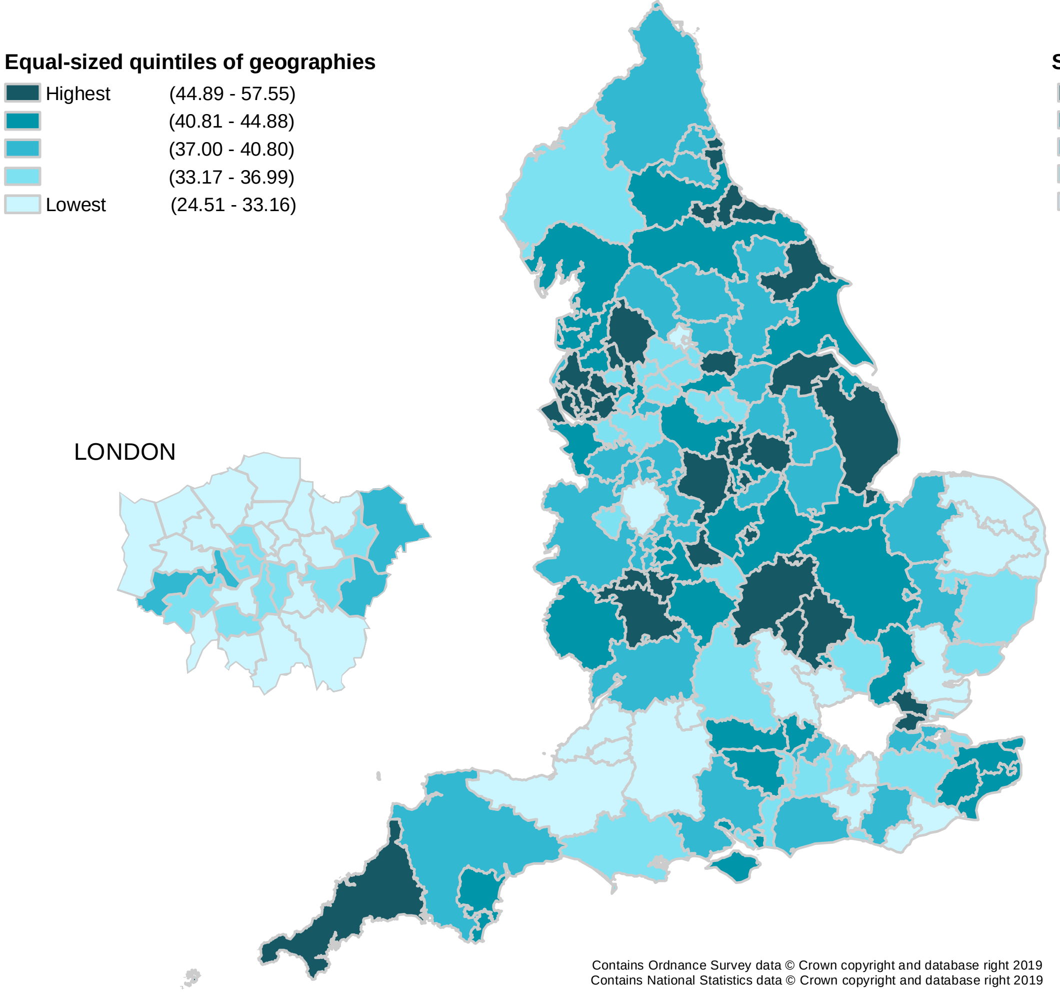
NHS Improvement – Lung (2011) Improving Home Oxygen Services: Emerging Learning from the National Improvement Projects [Accessed 30 July 2019]

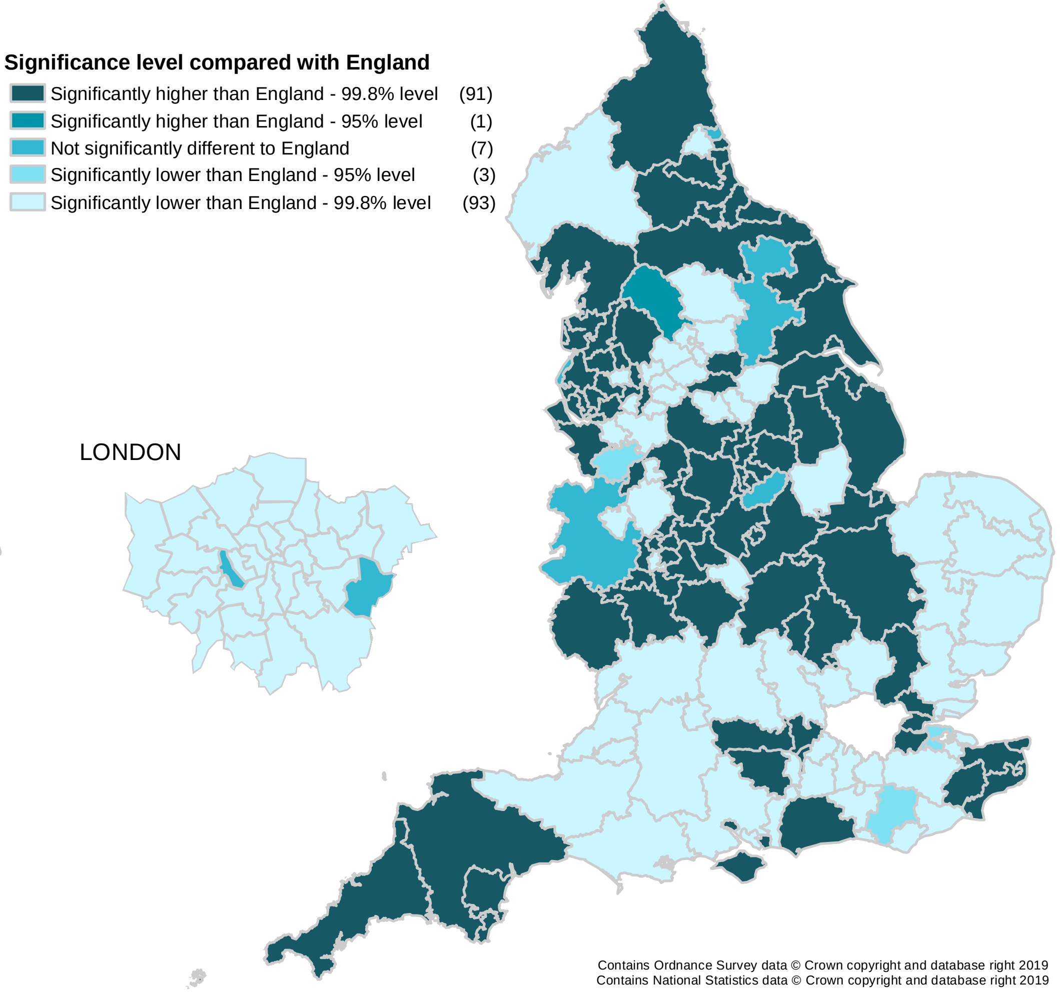
[1] NHS Primary Care Commissioning (2011) Home Oxygen Service – Assessment and Review. Good practice guide [Accessed 30 July 2019]
[2] Hardinge M, Annandale J, Bourne S, et al. British Thoracic Society guidelines for home oxygen use in adults: accredited by NICE. Thorax 2015;70:i1-i43. [Accessed 30 August 2019]
[3] Jiménez-Ruiz CA, Andreas S, Lewis KE, et al. Statement on smoking cessation in COPD and other pulmonary diseases and in smokers with comorbidities who find it difficult to quit. European Respiratory Society 2014; 46: 61-79 [Accessed 30 August 2019]

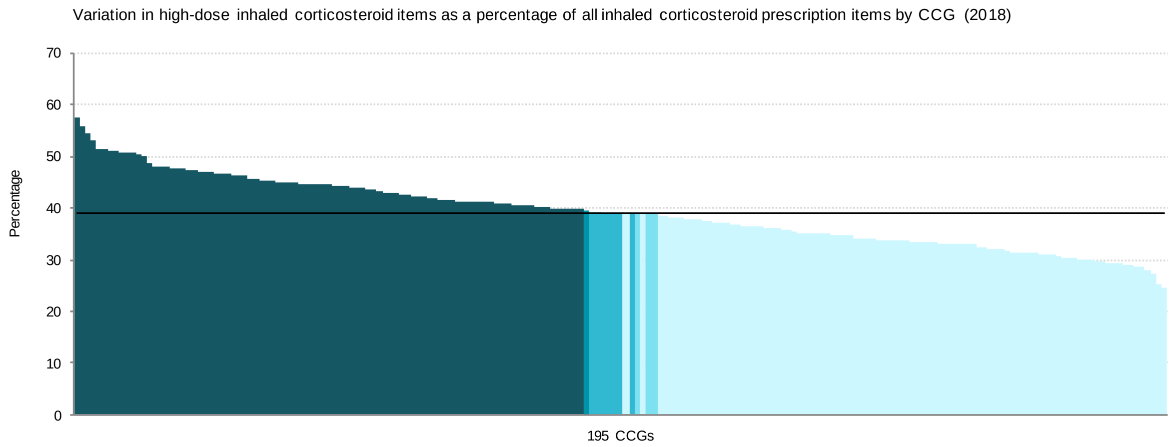
Health Service Provision – High-dose inhaled corticosteroid prescriptions

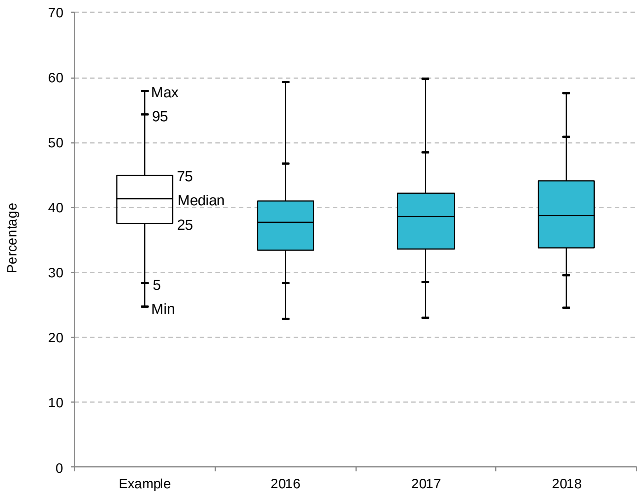
Map 26: Variation in high-dose inhaled corticosteroid items as a percentage of all inhaled corticosteroid prescription items by CCG (2018)

Optimum value: Low









	Example	2016	2017	2018	
Max-Min (Range)		36.5	36.9	33.0	No significant change
95th-5th percentile		18.5	19.9	21.3	WIDENING Significant
75th-25th percentile		7.7	8.6	10.4	No significant change
Median		37.8	38.5	38.8	No significant change

Context

Inhaled corticosteroids (ICS) are commonly prescribed for patients with asthma or COPD, often in high dosage. High dose ICS, ≥2000micrograms beclomethasone dipropionate (BDP) equivalent per day,[1] is often prescribed in combination with a long acting beta agonist. The risk of systemic side effects is greater with higher doses. High dose ICS is associated with clinically detectable adrenal suppression, increased risk of non-fatal pneumonia (in patients with COPD), type II diabetes, glaucoma and cataracts, and may increase the risk of fractures in patients already at risk of osteoporotic fractures.

Although the use of high dose ICS is recommended in clinical asthma guidelines, there is limited evidence that increasing the dose of inhaled steroids beyond 800 micrograms BDP equivalent/day is effective in improving asthma control (Grade D evidence).[2] It may be appropriate to use high dose ICS long-term in a small number of patients, but often patients can be ‘stepped-down’ again if clinically stable for a long period or not improving on high dose therapy. However, the dose of ICS is often stepped up without checking adherence or inhaler technique. National guidelines state that the patient should be maintained on the lowest effective dose of ICS possible and that adherence and inhaler technique should be reviewed regularly.

Clinical trials of combination therapy in COPD show that moderate doses of ICS (around 800 microgram BDP equivalent per day) are equally effective as high dose ICS in reducing exacerbation frequency in those who have 2 or more exacerbations a year, with improvements in quality of life.

This indicates that the use of high dose ICS for the management of COPD increases the risk of side effects (especially non-fatal pneumonia) with no additional clinical benefit.

Magnitude of variation

Map 26: Variation in high-dose inhaled corticosteroid items as a percentage of all inhaled corticosteroid prescription items by CCG (2018)

The maps and column chart display the latest period (2018), during which CCG values ranged from 24.5% to 57.6%, which is a 2.3-fold difference between CCGs. The England value for 2018 was 39.1%.

The box plot shows the distribution of CCG values for the period 2016 to 2018. The 95th to 5th percentile gap widened significantly.

Average values at CCG level mask the much greater degree of variation among practices within CCGs. There are several potential reasons for this variation:

- a large proportion of patients do not use their inhalers correctly thereby reducing effectiveness. Clinicians often respond to treatment failure by increasing the dose rather than correcting inhaler technique
- adherence to medications including inhalers is generally poor. Clinicians may respond to treatment failure by increasing the dose rather than checking adherence
- patients have inhaler doses increased to the maximum during exacerbations to achieve symptom control but doses are not reduced once patients are stable
- there is a lack of awareness that high dose ICS are not necessary to treat COPD and will only benefit a small proportion of asthmatic patients. However, the current treatment guidelines do not stress this point[3]
- there is some unlicensed use of high-potency aerosol combinations in COPD possibly due to lack of familiarity with guideline recommendations among some clinicians[4]

Options for action

The need for high dose ICS in both patients with asthma and COPD should be reviewed regularly by clinicians with a specialist interest in medicines optimisation for respiratory disease.

Patients with COPD who do not exacerbate may be able to have the ICS completely withdrawn, and patients on high dose ICS who have had a history of frequent exacerbations may be able to have the dose reduced to moderate dose ICS without any clinical detriment. The use of blood eosinophils may help identify patients in whom moderate doses of ICS may be effective in reducing exacerbations.

Many patients on high dose ICS for asthma may not even be taking their ICS regularly as adherence to inhaled therapy and inhaler technique is often poor. Improved adherence and technique may allow a much lower dose of ICS to be used. The use of fractional concentration of exhaled nitric oxide (FENO) to monitor the response to treatment may help identify patients in whom higher doses may be necessary if the patient is complaint with medication.

The appropriate use of lower doses of ICS will minimise harm from ICS side effects.

Resources

British Thoracic Society and Scottish Intercollegiate Guidelines Network (2019) British guideline on the management of asthma. A national clinical guideline [Accessed 2 August 2019]

National Institute of Health Care Excellence (2017) Asthma: diagnosis, monitoring and chronic asthma management (NICE guideline [NG80]) [Accessed 12 July 2019]

National Institute of Health Care Excellence (2018) Chronic obstructive pulmonary disease in over 16s: diagnosis and management (NICE guideline [NG115]) [Accessed 12 July 2019]

National Institute of Health Care Excellence (2016) Chronic obstructive pulmonary disease (NICE quality standard [QS10]) [Accessed 12 July 2019]

NHS England Guidance for Healthcare Professionals on Inhaled Corticosteroids in Adults [Accessed 12 July 2019]

NHS England Inhaled Corticosteroid Safety Information for Adults [Accessed 12 July 2019]

Primary Care Respiratory Society (2016) Getting the basics right – Inhaler technique Primary Care Respiratory Update 3(1) [Accessed 12 July 2019]

Primary Care Respiratory Society (2019) A guide to stepping down inhaled corticosteroids in COPD [Accessed 12 July 2019]

RightBreathe Pathways Inhaler prescribing information [Accessed 12 July 2019]

[1] British Thoracic Society and Scottish Intercollegiate Guidelines Network (2016) British Guideline on the Management of Asthma. A national clinical guideline Table 9 Adult doses of inhaled corticosteroids [Accessed 24 May 2019]

[2] British Thoracic Society and Scottish Intercollegiate Guidelines Network (2016) British Guideline on the Management of Asthma. A national clinical guideline Page 2 Grades of recommendation [Accessed 24 May 2019]

[3] Primary Care Respiratory Society (2019) Consensus guide to managing COPD - All that glitters is not GOLD, nor is it even NICE Primary Care Respiratory Update 17 [Accessed 14 August 2019]

[4] Primary Care Respiratory Society (2017) Respiratory Inhalers [Accessed 14 August 2019]