Chronic Obstructive Pulmonary Disease

Topic information	
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Executive summary

Introduction

Chronic obstructive pulmonary disease (COPD) describes a collection of diseases that affect the lungs. These include chronic bronchitis and emphysema. Emphysema affects the alveoli (air sacs), and chronic bronchitis affects the bronchi (airways). Some citizens with COPD will have one of these conditions, whilst others will have more than one.

COPD usually develops because of long-term damage to the lungs from breathing in harmful substances, such as cigarette smoke or chemical fumes. The most common cause of COPD is smoking tobacco (British Thoracic Society 1997). For information on smoking, see the separate smoking chapter http://jsna.nottinghamcity.gov.uk/insight/Strategic-Framework/Nottingham-JSNA/Adults/Smoking-and-Tobbaco-Control-(2015).aspx

It is estimated that three million citizens in the UK, and nearly 11,400[1] citizens in Nottingham, have COPD (Public Health England 2015). COPD is more prevalent in men than women although the prevalence in women is increasing (National Collaborating Centre for Chronic Conditions 2004).

COPD is the fifth biggest killer in the UK, causing about 25,000 deaths each year, and is a leading cause of premature mortality. In 2012, premature mortality from COPD in the UK was almost twice as high as the European average (NHS England). . There were 645 deaths in Nottingham attributed to COPD between 2010 and 2014[2]. Making COPD the 5th biggest killer in Nottingham in 2014.

COPD has considerable effect on the daily life of those with the disease principally

[1] Estimate based on 2011 modelled rates and 2013 registered population 16+

[2] This is the actual number of deaths, rather than an age-adjusted figure, so any direct comparisons with the UK average should be made with caution

due to difficulties in breathing. Airflow obstruction, or narrowing of the airways, and loss of lung elasticity give rise to such symptoms as:

- Increasing breathlessness, especially during physical activity,
- A persistent cough with phlegm and
- Frequent chest infections.

Individuals with more severe COPD can find everyday activities very difficult. They report being very anxious about becoming breathless, and consequently limiting their activity in order to avoid becoming breathless. As a result, they become less fit, and so become breathless after minimal activity. This is referred to as deconditioning.

Many citizens with COPD report poor quality of life (Dransfield et al 2011) and, for some, there is a direct link between COPD and the development of low mood and depression. International evidence suggests that more than one third of individuals with COPD experience symptoms of anxiety and depression (Panagioti 2014).

Citizens with COPD are often on substantial medication. They are more likely to take sick leave from work than those without COPD, and are also more likely to be admitted to hospital and to retire prematurely because of ill-health. Thus COPD is costly to individuals and society. More than £800 million is spent each year in the NHS on the treatment of COPD, and it costs the UK economy £2.7 billion a year in lost productivity (Department of Health 2010).

Unmet need and gaps

1. In 2013/14, there were an estimated 11,373 citizens with COPD in Nottingham, 49% of who were recorded as having COPD on the Quality Outcomes Framework (QOF) register. This data suggests that there are more than 5,800 citizens in Nottingham with COPD who have not been diagnosed. More citizens with COPD need to be identified so they can receive the care they need to manage their condition.

2. Admission rates for COPD have not reduced since the introduction of a community respiratory service in 2012 yet reducing admissions is one of the main aims of the service. Some citizens have multiple admissions for COPD each year.

3. 71% of citizens with COPD are only admitted to hospital once. It is unclear whether the admissions could have been avoided with more effective management of exacerbations in the community.

4. Stopping smoking is the key intervention for minimising severity of COPD yet many citizens with COPD continue to smoke.

5. Pulmonary rehabilitation programmes are a crucial part of COPD management. Yet in Nottingham it is unclear who is targeted for participation in the programme, at what stage of COPD, and how effective the programme

is. It is also unclear whether there is sufficient capacity to support all citizens with COPD to attend, and if appropriate, re-attend following hospitalisation for an acute exacerbation.

6. Many citizens with COPD report that their condition is not well managed and limits their daily living, specifically, when they have an exacerbation of COPD. It is unclear whether citizens who feel less able to manage their condition are more likely to be admitted to hospital, particularly, for a short length of stay. Action should be taken to increase the proportion of citizens with COPD who feel their condition is well-managed.

7. Tailored exercise programmes can support those with COPD to stay active and thus reduce the likelihood of deconditioning. In Nottingham, *Active for Life*, an exercise programme led by Healthy Change, is adapted to meet the needs of citizens with COPD. However, citizens with COPD are less likely to complete the Nottingham *Active for Life* programme than those without COPD.

8. Influenza (flu) and pneumococcal vaccination are particularly important for citizens with COPD as these infections can be more serious in this group. Whilst the uptake of influenza vaccination in Nottingham is good the proportion of citizens with COPD having pneumococcal vaccination is lower than the England average.

9. Evidence suggests that many exacerbations of COPD, including those necessitating admission to hospital, are linked to anxiety. Currently, no anxiety management programmes are commissioned specifically aimed at citizens with COPD.

Mental health problems are more common in citizens with long-term conditions such as COPD and they are more likely to have poorer clinical outcomes and a significantly lower quality of life than people with a physical health problem alone. Citizens who have COPD and a mental health problem may experience barriers in accessing services that meet both their physical and mental health needs.

Recommendations for consideration by commissioners

1. More citizens with COPD need to be identified in order that they can receive the care they need. This can be achieved by:

- Further workforce development, including with GPs, to ensure that the signs and symptoms of COPD are recognised.
- Smoking cessation advisers participating in COPD case-finding. Specifically, advisers could be trained to conduct spirometry on a defined group of smokers who are most likely to have developed COPD.
- Raising public awareness of COPD, including potential signs and symptoms, so those who feel they may have COPD seek support and advice from their GP.

2. Further work should be undertaken to understand why COPD admissions are not reducing and target activity towards those individuals who have frequent, and/or short length of stay, admissions.

3. 71% of citizens with COPD were only admitted once. It is unclear whether these admissions could have been avoided with more effective management of COPD exacerbations in the community. Further work should be undertaken to explore the reason for admission and whether these citizens were also users of the Integrated Respiratory Service.

4. Evidence suggests that strategies to increase the proportion of citizens with COPD who stop smoking can include:

- Exploring an opt-out referral mechanism to stop smoking support for all citizens who receive a COPD diagnosis. Thus everyone who receives a COPD diagnosis will be referred to a stop smoking service (New Leaf) unless they specifically request not to be referred.
- Tailoring stop smoking sessions to meet the specific needs of individuals with COPD.
- Reviewing the activity of stop smoking advisors on secondary care wards to ensure those with COPD are targeted for stop smoking support.

5. Conduct a health equity audit and review of the commissioned pulmonary rehabilitation programme, in the context of the respiratory pathway, to understand:
    - Who is targeted for participation,
    - At what stage of COPD,
    - Whether there is sufficient capacity for all citizens with COPD to attend, and if appropriate, re-attend following hospitalisation for an acute exacerbation,
    - How effective the programme is.

6. Increasing the proportion of citizens with COPD who believe that their condition is well-managed can be achieved by:

- Commissioning, and regularly reviewing, respiratory services including nurse led community respiratory teams and pulmonary rehabilitation programmes.
- GP practices working with local community pharmacies to ensure that citizens with COPD are targeted for Medicines Use Reviews (MURs) as evidence suggests that those attending MURs report improved COPD management.
- Increasing the use of COPD care pathways, such as map of medicine, to support diagnosis and effective treatment of COPD.
- Ensuring inhaler technique, important in controlling the symptoms of COPD, is built into existing COPD pathways.
- Implementing, and reviewing, the use of self-management plans for COPD.
- Responding to ‘patient voice’. Currently citizens are not asked if they feel their COPD is well-managed but adding this question to service feedback questionnaires would inform service performance reviews and could enable individual intervention.

7. Programme coordinators should consider surveying citizens with COPD who participate in *Active for Life* to understand barriers to completion.

8. Increasing the proportion of citizens with COPD receiving annual influenza and pneumococcal vaccinations can be achieved by:

    - Developing initiatives to encourage citizens with COPD to have PPV vaccination.
    - Sharing the learning from GP practices with high uptake rates.
    - Working with service providers, such as Nottingham University Hospitals Trust, to raise awareness of the importance of PPV vaccination and, where appropriate, offering vaccination during outpatient visits and in-patient stays.

9. Commissioners should consider commissioning anxiety management services through IAPT (Increasing Access to Psychological Therapy) providers. An integrated care model, whereby IAPT interventions are delivered within the long-term conditions treatment setting, could improve both access and uptake.

10. In order to improve outcomes for those with COPD and mental health problems:

- Local work on parity of esteem should continue encouraging services to effectively meet the physical and mental health needs of service users.
- Commissioners should consider reviewing the existing IAPT services to ensure they are aligned to the needs of those with long-term conditions.
- Give consideration to whether stop smoking support should be tailored to meet the specific needs of those with COPD and mental health problems.

What do we know?

1) Who is at risk and why?

Chronic obstructive pulmonary disease (COPD) describes a collection of diseases that affect the lungs. These include chronic bronchitis and emphysema[3]. Emphysema affects the alveoli (air sacs), and chronic bronchitis affects the bronchi (airways). Some citizens with COPD will have one of these conditions, whilst others will have more than one.

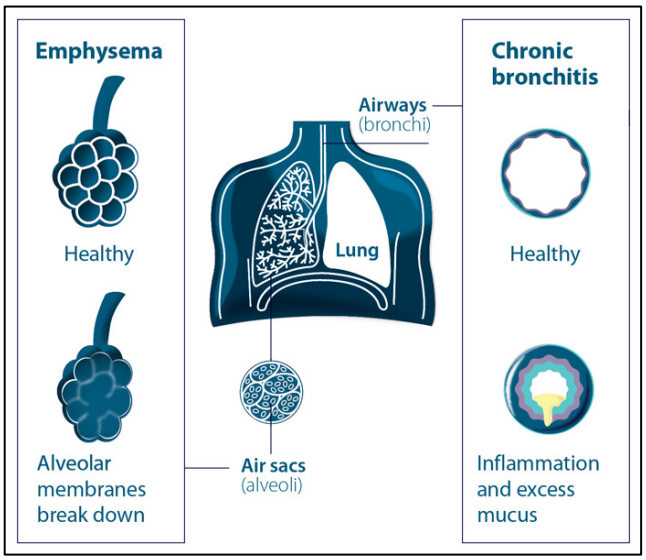


Figure 1: Diagram showing how the lungs are affected by COPD *(British Lung Foundation 2014)*

COPD usually develops because of long-term damage to the lungs from breathing in harmful substances, such as cigarette smoke or chemical fumes. The most common cause of COPD is smoking tobacco (British Thoracic Foundation 1997). Passive smoking i.e. environmental tobacco smoke can also cause lung damage.

The likelihood of developing COPD increases with the amount someone smokes and the length of time they have been a smoker. The risk of developing COPD is highest for citizens who smoke heavily, or for many years. More rarely, COPD is caused by fumes, dust and air pollution, or genetic disorders. Individuals, such as miners, who have experienced occupational exposure to harmful substances, and who are also smokers, are particularly likely to develop COPD.
In addition, COPD is strongly correlated with poverty, and thus is more likely to occur in areas of socio-economic deprivation due, in part, to the higher levels of smoking in deprived communities. Associated socio-economic factors, including poor diet and housing, compound both the incidence of COPD and exacerbate symptoms in those with the disease.

Approximately 80% of COPD deaths are caused by smoking (American Lung Association 2013). Female smokers are nearly 13 times as likely to die from COPD as women who have

[3] Asthma is not typically included in the definition of COPD as the causes of, and treatment for asthma and COPD, are different.

never smoked. Male smokers are nearly 12 times as likely to die from COPD as men who have never smoked (Center for Disease Control and Prevention 2014). Notably, women smokers are more likely to suffer lung damage at lower levels of smoking than men.

COPD is a long-term condition, which becomes more common with increasing age. Most citizens with COPD are aged over 40.

There is no single diagnostic test for COPD. Making a diagnosis relies on clinical judgement based on a combination of history, physical examination and confirmation of the presence of airflow obstruction using spirometry. Thus it's important that clinicians recognise the signs and symptoms of COPD and use opportunistic contacts with citizens to identify possible COPD.

Citizens with COPD are more vulnerable to infection thus it's important that they receive seasonal influenza and pneumococcal vaccination.

2) Size of the issue locally

It is estimated that nearly 11,400 citizens in Nottingham, have COPD[4], 49% of who were recorded as having COPD on the QOF register in 2013/14. This data suggests that there are more than 5,800 citizens in Nottingham with COPD who have not been diagnosed. As figure 2 illustrates there is considerable variation in undetected COPD by practice.

[4] Estimate based on 2011 modelled rates and 2013 registered population 16+

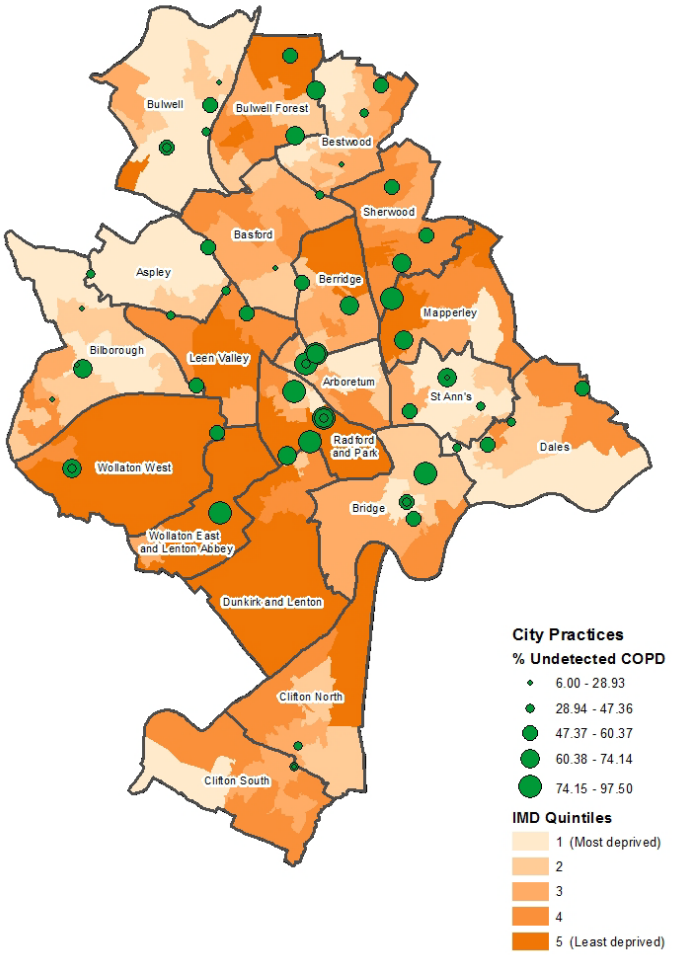


Figure 2: Undetected COPD by ward, 2013/14. Undetected COPD by practice; QoF Register 2013/14; HSCIC (Health and Social Care Information Centre) IMD LSOA 2011(Adjusted IMD 2010 scores for 2011 LSOAs), Public Health England; APHO

The most common cause of COPD is smoking tobacco. The most deprived areas of Nottingham have a smoking rate more than double the most affluent; 38% in the most deprived quintile, compared to 16% in the most affluent (Nottingham Citizens Survey, 2010-2014 pooled).

GP practices keep registers of citizens with COPD and also keep registers of citizens who smoke. The COPD register is known to under detect cases of COPD but it is possible to estimate the number of cases that would be expected at practice level and so it is possible to look at the correlation of smoking status against COPD (detected and undetected). As figure 3 illustrates there is a clear relationship at practice level.

As practice list sizes are relatively small, practices' smoking prevalence was divided into 5 quintiles to enable analysis[5]. In this analysis the correlation between smoking and COPD prevalence is very strong (R^2=99%).

[5] 5 groups of 12 or 13 practices ranked low to high smoking prevalence

A fall of 1% in smoking prevalence might be expected to reduce the number of citizens with COPD in Nottingham by around 400 persons.

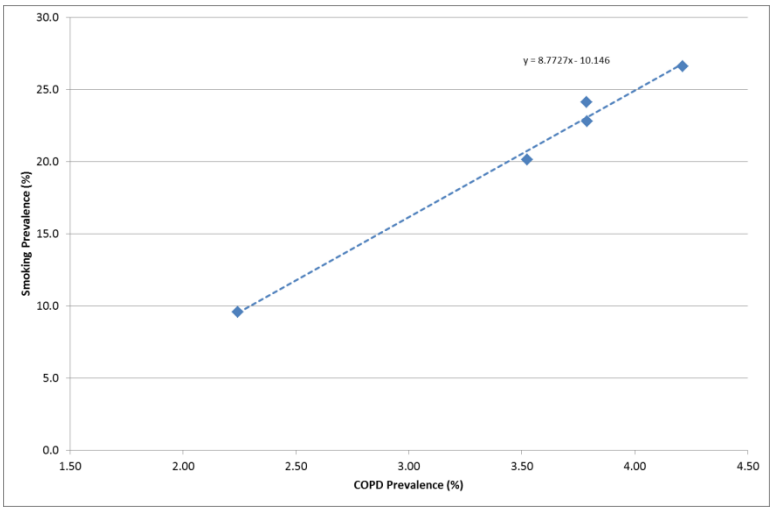


Figure 3: Relationship between smoking prevalence and COPD prevalence. Source: Smoking Prevalence QoF 13/14, Estimated COPD Prevalence PHE 2011 model applied to 13/14 list size

The actual prevalence of COPD in citizens from BME communities Nottingham is not known as ethnicity is poorly recorded in QOF, the source of the prevalence data. However, national sources suggest that some black and minority ethnic (BME) communities, such as Bangladeshi and Black Caribbean communities, are likely to have higher rates of COPD associated with higher smoking prevalence in these communities (British Lung Foundation 2015).

Local analysis of smoking by ethnicity, from the Nottingham Citizen Survey, shows that citizens of mixed heritage, White (not British) and White British have the highest smoking prevalence, with the latter two groups having a smoking prevalence statistically higher than the city average. (Smoking JSNA chapter 2015). As smokers are much more likely to develop COPD it is reasonable to assume that COPD prevalence will be higher in these groups. In addition, citizens from black and minority ethnic (BME) groups are more likely to live in deprived areas where incidence of COPD is also higher.

National and international evidence suggest that citizens from Lesbian, Gay, Bisexual and Trans (LGB&T) communities are more likely to smoke than their 'straight' counterparts thus it is reasonable to assume that there are higher rates of COPD in these communities (LGBT Foundation 2013). As few services routinely ask clients their sexual orientation it is not possible to state with any confidence whether there is a higher incidence of COPD in Nottingham's LGB&T communities.
Analysis of smoking by sexual orientation in Nottingham, taken from the Nottingham Citizen's Survey, suggests that smoking prevalence is significantly higher among gay and lesbian groups than the city average. As smokers are much more likely to develop COPD it is reasonable to assume that COPD prevalence will be higher in Nottingham's LGB&T community.

Smoking rates are significantly higher in those with poor mental wellbeing and mental health problems thus they are more likely to develop COPD. Local data (unpublished figures Nottinghamshire Healthcare Trust) suggests that 80% of inpatients and 57% of those with enduring mental illness smoke. Specific pathways and treatment models are in development for this group.

Around 130 citizens in Nottingham die due to COPD each year. In 2014, deaths in Nottingham due to COPD accounted for 6% of deaths overall, 39% of who were citizens aged under 75 years. Men contribute to more than half (56%) of the deaths from COPD in Nottingham.

In 2011-2013, the mortality rate from COPD in Nottingham, 67.6 deaths per 100,000 people, was statistically significantly higher than the England rate of 51.8 per 100,000. As figure 4 shows the mortality rate for males and females are also both statistically significantly higher than the England rate.

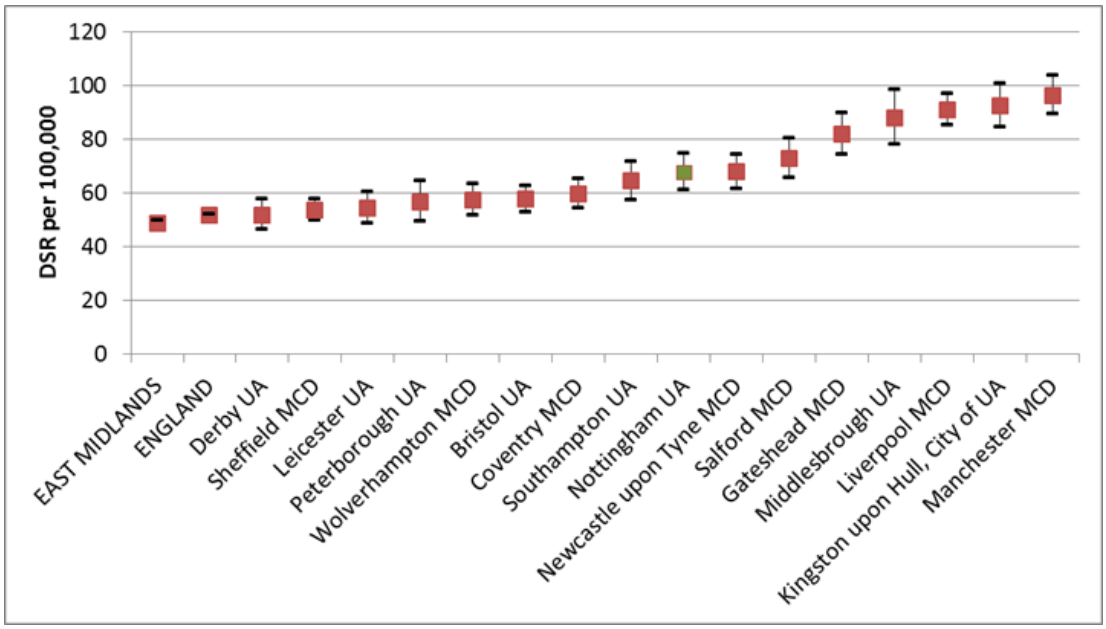


Figure 4 Mortality rate for COPD (all ages), 2011-2013 pooled, Nottingham and similar cities.
Source: Health and Social Care Information Centre. © Crown Copyright. Compendium of Population Health Indicators (indicators.ic.nhs.uk or nww.indicators.ic.nhs.uk)

In terms of the proportion of citizens dying of COPD, Nottingham compares reasonably well with its cities with similar deprivation scores and levels of smoking[6], ranking 9th out of 16 similar cities and significantly lower than Liverpool, Hull and Manchester.

Figure 5 illustrates that whilst the mortality rate for COPD in Nottingham, 2011-13, is mid-ranked when compared to similar cities it is statistically significantly higher than the East Midlands or England average. The mortality rate under 75 years for males, females and

[6] CIPFA neighbours (Chartered Institute of Public Finance and Accountancy (CIPFA) Nearest Neighbour Model

persons is statistically significantly higher than the England average. The mortality rate for males is approximately double the England average.

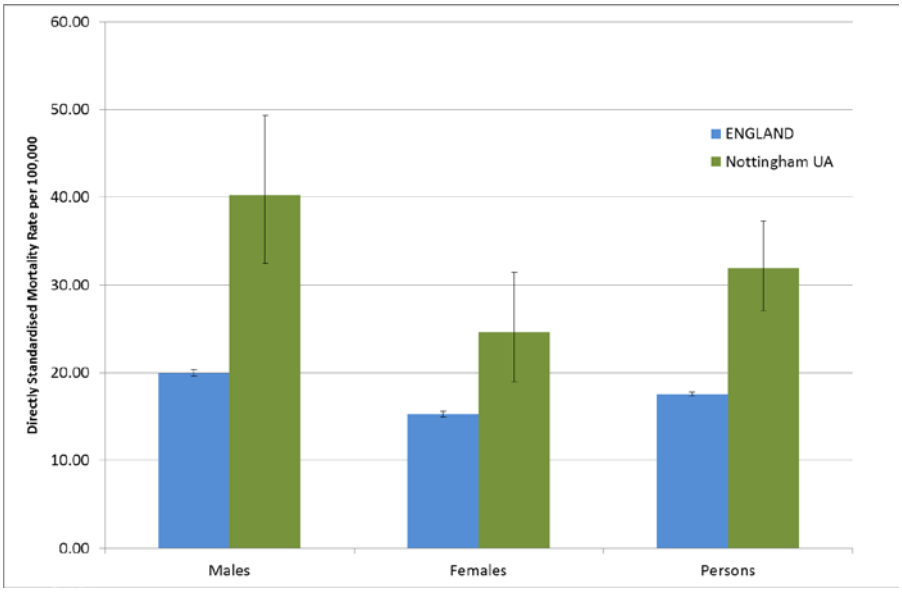


Figure 5: Mortality Rate from COPD in Males and Females, under 75 years (3 years pooled 2011-2013). Source: Health and Social Care Information Centre. © Crown Copyright. Compendium of Population Health Indicators (indicators.ic.nhs.uk or nww.indicators.ic.nhs.uk)

The crude rate of admissions to hospital for COPD in Nottingham is 2.68 per 1000 of which 2.62 are emergency admissions (InHale Profiles, PHE 2015). However, as this rate is not adjusted for age, and the likelihood of hospital admission for COPD increases with age, any direct comparisons with the England rate of 2.15 per 1000 should be made with caution.

The emergency admission rate for COPD in Nottingham, the East Midlands and England is shown in figure 6.

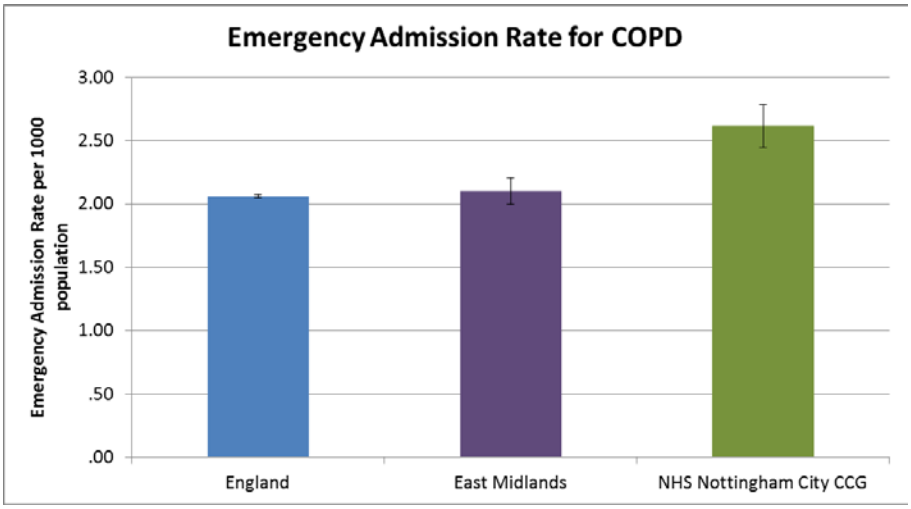


Figure 6 Emergency admissions for COPD. InHale Profiles, Public Health England 2015, http://fingertips.phe.org.uk/inhale

There are approximately 900 admissions a year[7] in Nottingham with a primary diagnosis of COPD at a cost of approximately £1.9 million a year[8]. These figures do not include admissions where COPD was not the main cause of admission and thus will underestimate the full impact of COPD on hospital admissions. Citizens with COPD are more likely, than the general population, to have multiple admissions to hospital.

962 citizens had 1667 admissions for COPD between September 2013 and August 2015. Approximately 71% of citizens were admitted once, 15% twice and 6% three times during this period. The ten highest service users were admitted 160 times between them with one citizen having 26 admissions.

An integrated respiratory service (IRS) was commissioned in 2012 which aimed to improve the quality of life of those with long-term respiratory conditions such as COPD and reduce attendance at hospital, both emergency department attendance and admissions. Figure 7 shows, whilst the referrals to IRS have increased each year there appears to have been no reduction in the rate of COPD admissions since the introduction of this service.

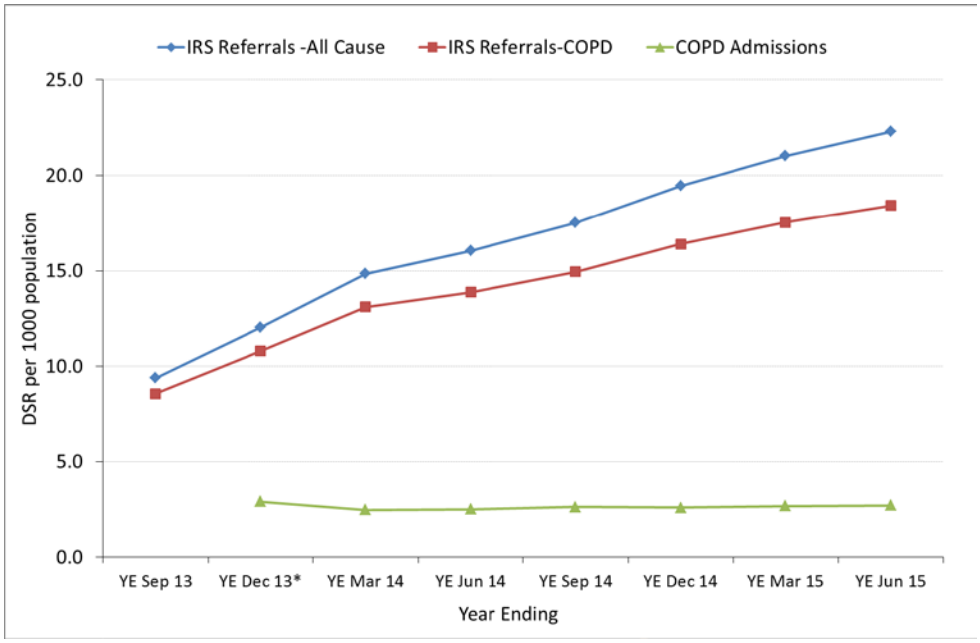


Figure 7: COPD Admission rate, by rolling average year. DSR COPD admissions value not available for December 2013, substituted March 2013. Source: IRS data – Citycare IRS service, COPD Admissions- eHealthscope.

There is a strong association between COPD and smoking thus COPD admissions are more common in areas with high prevalence rates for smoking. As figure 8 illustrates, in Nottingham City, the top 5 wards with the highest smoking prevalence had a combined prevalence of 34% and a crude COPD admission rate of 15.5 per 1000. Conversely, the 5 wards with the lowest smoking prevalence (19%) had a crude admission rate of 9.5 per 1000.

[7] Based on an average over the last 5 years

[8] Based on 12/13 admissions data and current admissions. 900 admissions per year, approximately £2100 per admission thus £1.9M per year.

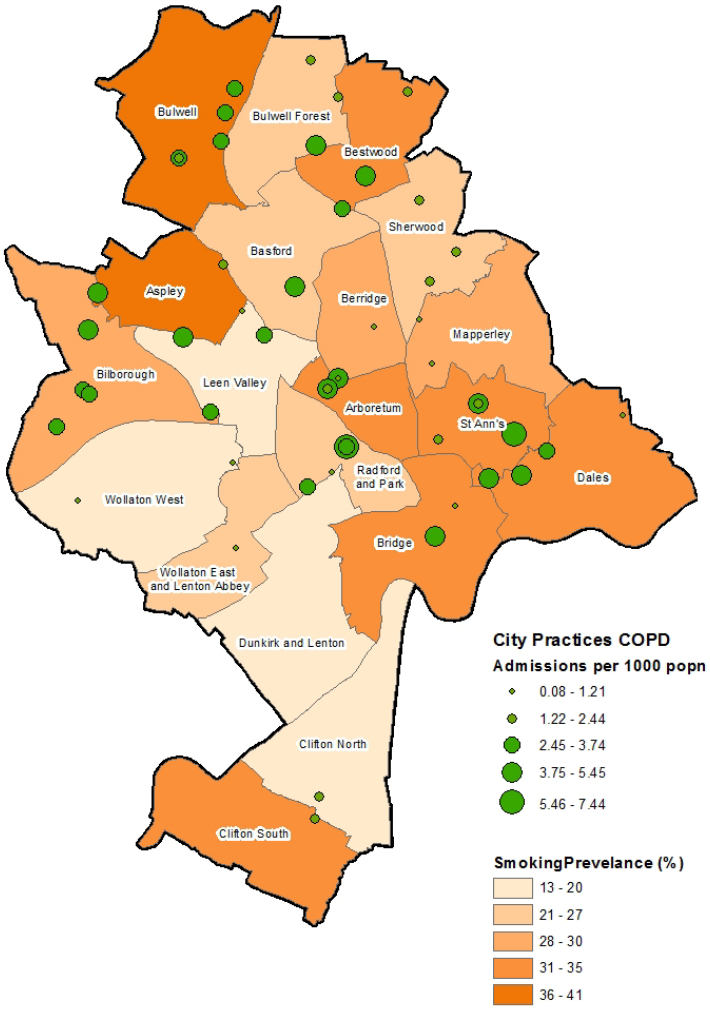


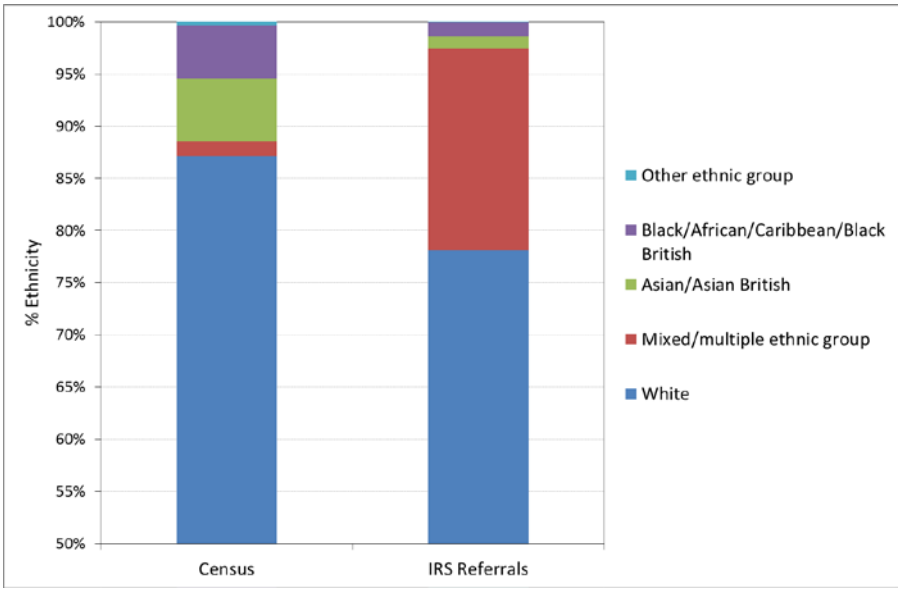
Figure 8: COPD admission rate and smoking prevalence, pooled data 2010-2014. Ward smoking Prevalence (Citizens Survey pooled data 2010-2014, Nottingham City Council). Practice COPD Admission Rates per 1000 population; August 2014-July 2015; (eHealthscope, Nottingham City CCG Information System)

Analysis of COPD admissions by ethnicity is not possible as ethnicity is not adequately recorded in hospital admissions (HES) data.

Citizens with a diagnosis of COPD, who are on a QOF register, should have an annual review of their condition by a healthcare professional. Around 89% of citizens on GP COPD registers in 2013/14 have had a review of their disease with their GP in the past 12 months (81% if exceptions are included). However, there is marked variation between practices ranging from 38% – 100% of citizens having had such a review each year (QoF, 2013/14).

Citizens who are experiencing exacerbation of their COPD can be referred by their GP or other health professional to the Integrated Respiratory Service (IRS). 97% of the IRS referrals were aged 50 or over. As figure 9 illustrates, a comparison of the ethnicity breakdown for citizens in Nottingham over 50 years at the 2011 census and those referred to the service, between 2012 and 2014, show some differences.

IRS data suggests that less white citizens, and more citizens of mixed/multiple heritage, were referred to IRS than the Nottingham average. However, 19.8% (1,050/5,316 referrals) of citizens referred had no stated ethnicity thus any interpretation should be made with caution. The reason why more citizens of mixed/multiple heritage are referred to IRS is not clear.



Note: truncated axis.

Figure 9: Comparison of ethnicity for Nottingham City population aged 50 and over, and referrals to IRS aged 50 and over (pooled 2012-2014) for citizens in which ethnic group was stated. Source: IRS data – Citycare IRS service, Ethnicity Data – ONS Census 2011.

In 2013, 131 million days' work were lost through sickness in the UK (Office for National Statistics 2014); 11 million in the East Midlands. Of these lost days an estimated 4%, 5.3 million days, were caused by respiratory disease including COPD; 440,000 days in the East Midlands.

Whilst local intelligence suggests that many citizens with COPD are regularly absent from work due to their condition it is not possible to accurately identify the number of days lost from work in Nottingham due to COPD as the reason for absence is often not recorded in this detail. Absence from work due to 'respiratory conditions' includes a broad range of illnesses in conditions including influenza, chest infections and the common cold.

Some citizens will find their COPD sufficiently debilitating that they are unable to work. Of the 14,230 Nottingham City residents aged 18-59 years receiving ESA (Employment Support Allowance) in February 2015, 1.76% (NOMIS 2015) had a respiratory disease. The proportion increases with age from 0.75% of citizens aged 18-24 years to 3.9% of citizens age 55-59 years. Figure 10 shows ESA claimants by reason and age-band.

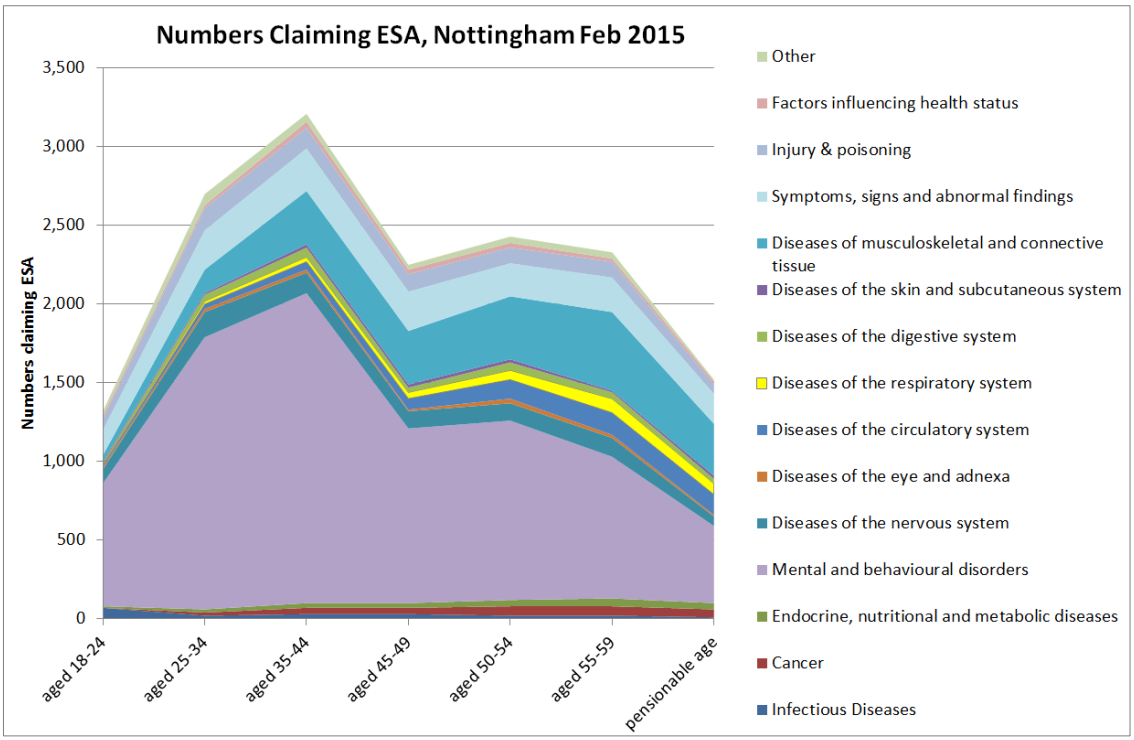


Figure 10: Proportion of ESA claimants by reason for claim and age band (February 2015), Nottingham Source: NOMIS, Official Labour Market Statistics, 2015

3) Targets and performance

Public Health Outcomes Framework (2013-2016)

- Under 75 mortality from respiratory disease[9], persons, males and females
- Under 75 mortality from respiratory disease considered preventable[10], persons, males and female

NHS Outcomes Framework (2015/16)

- Under 75 mortality from respiratory disease
- Enhancing quality of life for people with long-term conditions including ensuring people feel supported to manage their condition, reducing time spent in hospital by people with long-term conditions and patient experience of primary and secondary care

Quality Outcome Framework

- Establish and maintain a register of patients with COPD
- The percentage of patients with COPD in whom the diagnosis has been confirmed by post-bronchodilator spirometry
- The percentage of patients with COPD who have had a review, undertaken by a healthcare professional, including an assessment of breathlessness using the Medical Research Council dyspnoea scale in the preceding 12 months

[9] Includes ICD codes J00-J99: Upper respiratory infections, pneumonia, other acute and chronic infections and diseases of respiratory tract, pneumoconiosis, pulmonary oedema, abscess of lung and other diseases of the pleura. Cancer is excluded from this list.

[10] Includes ICD codes J09-J11 (Influenza) and J40-J44 (chronic lower respiratory diseases; bronchitis, emphysema, other chronic obstructive pulmonary disease)

- The percentage of patients with COPD with a record of FEV1 in the preceding 12 months
- The percentage of patients with COPD and Medical Research Council dyspnoea grade ≥3 at any time in the preceding 12 months, with a record of oxygen saturation value within the preceding 12 months
- The percentage of patients with COPD and Medical Research Council dyspnoea grade ≥3 at any time in the preceding 12 months, with a subsequent record of an offer of referral to a pulmonary rehabilitation programme within the preceding 12 months
- The percentage of patients with COPD who have had influenza immunisation in the preceding 1 September to 31 March

Nottingham City CCG Commissioning Strategy 2103-16

- 5% reduction in avoidable emergency admissions for people with long-term conditions by April 2016.
- 200 patients each year to take-up pulmonary rehabilitation and complete the 8 week programme.

4) Current activity, service provision and assets

Prevention

Primary prevention of COPD is, principally, achieved by reducing the number of citizens who smoke. QOF data[11] suggests that there are currently 174 COPD citizens in Nottingham City CCG for every 1000 smokers. So for every 1000 citizens who stopped smoking, there will up to 174 fewer citizens who develop COPD. Reducing the number of citizens who smoke is a partnership goal across Nottingham City. Stop smoking services are currently delivered by the New Leaf team.

Early identification

Increasing the proportion of citizens whose COPD is identified early should ensure that these citizens receive timely treatment, thus reducing the debilitating effect of COPD on their lives. However, estimates suggest that many citizens in Nottingham have undiagnosed and untreated COPD.

The CCG has led workforce development to address under-diagnosis of COPD including training more staff in primary care such as GPs, practice nurses and pharmacists. As a result of the training it is anticipated that spirometry will increasingly be used when COPD is suspected and thus the proportion of citizens who receive an early and accurate diagnosis of COPD will increase.

Support and treatment

Stop smoking support is embedded in all GP Practices and discussed at COPD reviews. Where smokers are identified by the Integrated Respiratory Service they are referred to the New Leaf team.

[11] based on QOF smoking register and PHE estimated COPD (Qof COPD register plus undetected COPDs)

New Leaf Advisers have been appointed to working on the secondary care wards most used by citizens with COPD, and other long-term conditions, which should increase the numbers of citizens with COPD accessing smoking cessation services. Referral to stop smoking services has been introduced as part of the COPD discharge bundle when citizens leave hospital to ensure citizens are being picked up at every part of the COPD pathway.

Tailored exercise programmes can support those with COPD to stay active and thus reduce the likelihood of deconditioning. In Nottingham, *Active for Life*, an exercise programme led by *Healthy Change,* is adapted to meet the needs of citizens with COPD. In 2013 *Active for Life* supported 79 clients with COPD, 32 (41%) of whom completed the programme/intervention. This compares to a completion rate of 70% (1379/1997) for clients without COPD. This may suggest that clients with COPD experience additional challenges in completing an *Active for Life* compared to clients without COPD.

Individuals with COPD who take positive action to improve their own health are more likely to report that they feel their COPD is well-managed. Support that enables individuals to 'self-care', including through expert patient and local support groups, can be particularly valuable. In Nottingham, *Breathe Easy* supports citizens with COPD. The Integrated Respiratory Service has nominated a champion, who is a qualified physiotherapist, to be an active member of the group.

Citizens with COPD are more vulnerable to infection thus it's important that they receive seasonal influenza (flu) and pneumococcal vaccination (PPV). 96%[12] of citizens with COPD who are on the QOF register received the influenza vaccine in 2013/14. The uptake of PPV in 'at risk' groups, which includes those with COPD, in Nottingham in 2014/15 was 59.9% compared with 64.2% in England as a whole[13] which was statistically lower than the England average. There is considerable variation between practices.

In Nottingham, specialist care for citizens with COPD is provided by the Integrated Respiratory Service (IRS). This service includes:

- Respiratory rapid response service which operates from 8am-10pm, 7 days a week. A specialist nurse, with a prescribing qualification, aims to stabilise the respiratory condition, loaning nebulisers where appropriate, review care planning and supporting discharge from hospital.
- Respiratory Education, Advice and Diagnostic Service (READS) which provided education and advice for patients, monitors respiratory conditions and leads on care planning and provides spirometry diagnosis.
- Pulmonary rehabilitation supports individuals to manage their condition and includes group exercise (to reduce the risk of deconditioning) and anxiety management. Approximately 346 citizens attend a pulmonary rehabilitation programme in 2014/15 of which approximately 5% didn't complete the programme. Around 40 people per quarter are on the waiting for the programme.

In addition, 500 citizens are registered with the Home Oxygen Assessment Review Service.

[12] 81% if exceptions included in the denominator

[13] Includes all citizens 6 months – 64 years at risk and citizens age 65 and over

Anxiety management
Citizens with COPD are more likely to be identified as having anxiety and depression. Symptoms of depression and anxiety in these symptoms can lead to worse health outcomes including impaired health-related quality of life and increased use of health care services with associated costs.

Nottingham City CCG has commissioned training for the Psychological Wellbeing Practitioners on long-term conditions including COPD. The new training will include how cognitive behavioural therapy (CBT) can support citizens to identify coping responses in the face of physical symptoms. The IAPT tariff has been adapted to increase remuneration for providers working with citizens with long-term conditions (LTC). Nonetheless there remains some degree of disconnect between physical/LTC services and mental health services.

End-of-life.
Local intelligence suggests that clinicians don't recognise when citizens with COPD may be approaching an end-of-life phase and thus citizens are unable to access end-of-life services. An increase in hospital admissions, 4 or more in a year, may be a useful indicator of end-of-life in citizens with COPD.

5) Evidence of what works

Reducing smoking prevalence
An estimated 80% of those with COPD are current or ex-smokers. Reducing smoking prevalence would, over time, reduce the number of citizens with COPD with corresponding reductions in drug costs, emergency department attendance and admissions to hospital. The Nottingham Tobacco Alliance has an important role in supporting smoke-free spaces and promoting an understanding of the damage of second-hand smoke.
NICE guidance (2010) states that a smoking history, including pack years, should be taken for all smokers who have COPD and offered NRT as part of planned stop smoking support.

Increasing timely and accurate diagnosis
Increasing diagnosis of COPD, thus reducing the numbers with COPD who are not diagnosed, will enable effective care and treatment. Diagnosis will enable access to 'good' clinical care including care planning, and regular condition reviews and, where appropriate, pulmonary rehabilitation.
NICE guidance (2010) highlights a checklist of symptoms that should alert practitioners to suspect COPD, particularly in smokers, and arrange a spirometry as part of diagnosis.

Pulmonary rehabilitation – Pulmonary rehabilitation is a multidisciplinary programme of care for patients with chronic respiratory conditions, such as COPD, that is individually tailored and designed to increase participant's physical health and confidence in managing their condition. It aims to increases lung capacity and core muscle strength and enable participants to develop skills in managing the anxiety associated with the condition.
NICE guidance (2010) suggests that pulmonary rehabilitation should be made available to all citizens with COPD, who fit entry criteria, including those who have had a recent hospitalisation for an acute exacerbation.

Vaccination
Citizens with COPD should be offered pneumococcal and annual influenza vaccination as these infections can be more serious in this group.

COPD care should be led by a multidisciplinary team which takes advantage of the complementary skills of different professionals including:

- Assessing citizens need for oxygen, aids for daily living and the appropriateness of delivery systems for inhaled therapy.
- Care and treatment of patients including non-invasive ventilation, pulmonary rehabilitation, hospital-at-home/early discharge schemes and palliative care.
- Advising patients on self-management strategies.
- Identifying and monitoring patients at high risk of exacerbations and undertaking activities which aim to avoid emergency admissions
- Advising patients on exercise and, where indicated, maintaining a healthy weight.
- Advice and training for other health professionals.

Management of anxiety and depression
More than one third of individuals with chronic obstructive pulmonary disease (COPD) experience symptoms of depression and anxiety which can lead to worse health outcomes, including impaired health-related quality of life, increased use of health-care services and increased mortality risk. Cognitive behavioural therapy (CBT) can be effective in managing depression in citizens with COPD particularly when embedded in general COPD care pathways.

NICE guidance: CG91 (2009) provides guidance on the recognition, management and treatment of depression in adults with chronic physical health problems.

Commissioning Groups, in their role as commissioners of healthcare services, are well placed to provide strategic guidance on respiratory health to their member practices. This includes taking a targeted approach to groups with higher prevalence and poorer outcomes, including those from a Black and Minority Ethnic (BME) background.

Respiratory networks encourage best practice in respiratory health, working across primary and secondary healthcare services. In Nottingham, the CCG long-term conditions (LTC) commissioners including the GP Executive Lead for LTC are members of the Strategic Health Science Network.

Third-sector partners such as the British Lung Foundation, offer support and advice on self-management to those with COPD. In Nottingham, *Breathe Easy* supports citizens with COPD.

Healthy Workplaces
The Health and Safety Executive can contribute to reducing COPD in their role of supporting a safer working environment, with particular reference to reducing hazards that increase the risk of individuals developing COPD.

Local businesses, which provide occupational health services, can support those with COPD to continue working, and remain healthy at work. For example businesses can support flexible working which will enable employees to attend medical appointments and/or make 'reasonable adjustments' in the workplace. In addition, businesses who offer 'health MOTs' may recognise symptoms of COPD in employees who have not yet been diagnosed.

The All Party Parliamentary Group (2014) enquiry into respiratory deaths recommends effective treatment interventions to reduce mortality from COPD including:

- Non-invasive ventilation
- Home oxygen
- Controlled oxygen dosing to minimise oxygen toxicity
- Pulmonary rehabilitation programmes

6) What is on the horizon?

Projected service use and outcomes in 3-5 years and 5-10 years

The prevalence of COPD is England is expected to rise from 1.8% in 2005 to 3.1% in 2020 (APHO 2008).

Primary prevention of COPD is, primarily, achieved by reducing the number of citizens who smoke. QOF data[14] suggests that there are currently 174 COPD citizens in Nottingham City CCG for every 1000 smokers. So for every 1000 citizens who stopped smoking, there will be 174 fewer citizens who develop COPD.

Increased diagnosis of COPD is likely. Whilst addressing the identified under-diagnosis of COPD is important in ensuring a more systematic approach to disease management, it will lead to an increased demand on community services over the next 3-10 years. Conversely, it may lead to a decrease in unplanned admissions as active management of COPD effectively controls symptoms of the disease.

Increased understanding of the physical health needs of those with mental health problems may lead to an increase in the diagnosis of COPD in this cohort particularly as smoking prevalence is significantly higher in citizens with mental health problems. Smoking cessation support may require tailoring to meet this group's specific needs.

7) Local Views

The CCG hosts regular consultation events on conditions such as COPD which are attended by citizens and clinicians. This information is used to inform commissioning intentions. In addition, there is a service user representative on the long-term conditions steering group.

[14] based on qof smoking register and PHE estimated COPD (Qof COPD register plus undetected COPDs)

What does this tell us?

8) Unmet needs and service gaps

1. In 2013/14, there were an estimated 11,373 citizens with COPD in Nottingham, 49% of who were recorded as having COPD on the Quality Outcomes Framework (QOF) register. This data suggests that there are more than 5,800 citizens in Nottingham with COPD who have not been diagnosed. More citizens with COPD need to be identified so they can receive the care they need to manage their condition.

2. Admission rates for COPD have not reduced since the introduction of a community respiratory service in 2012 yet reducing admissions is one of the main aims of the service. Some citizens have multiple admissions for COPD each year.

3. 71% of citizens with COPD are only admitted to hospital once. It is unclear whether the admissions could have been avoided with more effective management of exacerbations in the community.

4. Stopping smoking is the key intervention for minimising severity of COPD yet many citizens with COPD continue to smoke.

5. Pulmonary rehabilitation programmes are a crucial part of COPD management. Yet in Nottingham it is unclear who is targeted for participation in the programme, at what stage of COPD, and how effective the programme is. It is also unclear whether there is sufficient capacity to support all citizens with COPD to attend, and if appropriate, re-attend following hospitalisation for an acute exacerbation.

6. Many citizens with COPD report that their condition is not well managed and limits their daily living, specifically, when they have an exacerbation of COPD. It is unclear whether citizens who feel less able to manage their condition are more likely to be admitted to hospital, particularly, for a short length of stay. Action should be taken to increase the proportion of citizens with COPD who feel their condition is well-managed.

7. Tailored exercise programmes can support those with COPD to stay active and thus reduce the likelihood of deconditioning. In Nottingham, *Active for Life*, an exercise programme led by Healthy Change, is adapted to meet the needs of citizens with COPD. However, citizens with COPD are less likely to complete the Nottingham *Active for Life* programme than those without COPD.

8. Influenza (flu) and pneumococcal vaccination are particularly important for citizens with COPD as these infections can be more serious in this group. Whilst the uptake of influenza vaccination in Nottingham is good the proportion of citizens with COPD having pneumococcal vaccination is lower than the England average.

9. Evidence suggests that many exacerbations of COPD, including those necessitating admission to hospital, are linked to anxiety. Currently, no anxiety management programmes are commissioned specifically aimed at citizens with COPD.

10. Mental health problems are more common in citizens with long-term conditions such as COPD and they are more likely to have poorer clinical outcomes and a significantly lower quality of life than people with a physical health problem alone. Citizens who have COPD and a mental health problem may experience barriers in accessing services that meet both their physical and mental health needs.

9) Knowledge gaps

Local knowledge gaps

In Nottingham, it is unclear:

- Why many citizens with COPD remain underdiagnosed, particularly, given CCG activity to increase diagnosis rates.
- Why many citizens with COPD continue to smoke despite receiving a range of interventions to support them to stop smoking.
- Why commissioning of the Integrated Respiratory Service has not reduced admissions for COPD.
- At what stage of COPD a citizen is most likely to benefit from attending a pulmonary rehabilitation programme.
- What anxiety management programmes would work best for citizens with COPD.
- How citizens with COPD feel their care could be improved as no recent consultation has taken place.

Gaps in national/international evidence

NICE propose that further research should be undertaken to consider whether:

- Pulmonary rehabilitation during hospital admission for exacerbation and/or in the early recovery period improves quality of life and reduces hospitalisations and exacerbations.
- Triple therapy improves COPD outcomes when compared with single or double therapy.
- Mucolytic drug therapy prevents exacerbations in COPD when compared to other therapies.

A comprehensive review of the literature suggests that further research is also needed in the following areas:

- The components of pulmonary rehabilitation programmes that are most likely to be successful.
- The most effective strategies to increase physical activity in citizens with COPD including whether use of telehealth leads to an increase in physical activity levels in citizens with COPD.
- The types of interventions that are most effective in improving medication adherence.
- Which COPD case-finding strategies would be most successful including in citizens presenting with lower respiratory tract symptoms.
- The most effective approaches for treating depression and anxiety in citizens with COPD. Future research to evaluate the effectiveness of integrated care approaches

for the management of depression and anxiety in COPD is warranted. Specifically, what reduces anxiety in COPD during an exacerbation.

- What elements constitute the most effective chronic care management in citizens with COPD.

What should we do next?

10) Recommendations for consideration by commissioners

1. More citizens with COPD need to be identified in order that they can receive the care they need. This can be achieved by:

- Further workforce development, including with GPs, to ensure that the signs and symptoms of COPD are recognised.
- Smoking cessation advisers participating in COPD case-finding. Specifically, advisers could be trained to conduct spirometry on a defined group of smokers who are most likely to have developed COPD.
- Raising public awareness of COPD, including potential signs and symptoms, so those who feel they may have COPD seek support and advice from their GP.

2. Further work should be undertaken to understand why COPD admissions are not reducing and target activity towards those individuals who have frequent, and/or short length of stay, admissions.

3. 71% of citizens with COPD were only admitted once. It is unclear whether these admissions could have been avoided with more effective management of COPD exacerbations in the community. Further work should be undertaken to explore the reason for admission and whether these citizens were also users of the Integrated Respiratory Service.

4. Evidence suggests that strategies to increase the proportion of citizens with COPD who stop smoking can include:

- Exploring an opt-out referral mechanism to stop smoking support for all citizens who receive a COPD diagnosis. Thus everyone who receives a COPD diagnosis will be referred to a stop smoking service (New Leaf) unless they specifically request not to be referred.
- Tailoring stop smoking sessions to meet the specific needs of individuals with COPD.
- Reviewing the activity of stop smoking advisors on secondary care wards to ensure those with COPD are targeted for stop smoking support.

5. Conduct a health equity audit and review of the commissioned pulmonary rehabilitation programme, in the context of the respiratory pathway, to understand:
    - Who is targeted for participation,
    - At what stage of COPD,
    - Whether there is sufficient capacity for all citizens with COPD to attend, and if appropriate, re-attend following hospitalisation for an acute exacerbation,
    - How effective the programme is.

6. Increasing the proportion of citizens with COPD who believe that their condition is well-managed can be achieved by:

- Commissioning, and regularly reviewing, respiratory services including nurse led community respiratory teams and pulmonary rehabilitation programmes.
- GP practices working with local community pharmacies to ensure that citizens with COPD are targeted for Medicines Use Reviews (MURs) as evidence suggests that those attending MURs report improved COPD management.

- Increasing the use of COPD care pathways, such as map of medicine, to support diagnosis and effective treatment of COPD.
- Ensuring inhaler technique, important in controlling the symptoms of COPD, is built into existing COPD pathways.
- Implementing, and reviewing, the use of self-management plans for COPD.
- Responding to 'patient voice'. Currently citizens are not asked if they feel their COPD is well-managed but adding this question to service feedback questionnaires would inform service performance reviews and could enable individual intervention.

7. Programme coordinators should consider surveying citizens with COPD who participate in *Active for Life* to understand barriers to completion.

8. Increasing the proportion of citizens with COPD receiving annual influenza and pneumococcal vaccinations can be achieved by:

    - Developing initiatives to encourage citizens with COPD to have PPV vaccination.
    - Sharing the learning from GP practices with high uptake rates.
    - Working with service providers, such as Nottingham University Hospitals Trust, to raise awareness of the importance of PPV vaccination and, where appropriate, offering vaccination during outpatient visits and in-patient stays.

9. Commissioners should consider commissioning anxiety management services through IAPT (Increasing Access to Psychological Therapy) providers. An integrated care model, whereby IAPT interventions are delivered within the long-term conditions treatment setting, could improve both access and uptake.

10. In order to improve outcomes for those with COPD and mental health problems:

- Local work on parity of esteem should continue encouraging services to effectively meet the physical and mental health needs of service users.
- Commissioners should consider reviewing the existing IAPT services to ensure they are aligned to the needs of those with long-term conditions.

Give consideration to whether stop smoking support should be tailored to meet the specific needs of those with COPD and mental health problems.

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References

ALL PARTY PARLEMENTORY GROUP ON RESPORATORY HEALTH (2014), 'Report on inquiry into respiratory deaths', June, pp. 1-41.

AMERICAN LUNG ASSOCIATION (2013) *How Serious is COPD?,* [Online], Available: http://www.lung.org/lung-health-and-diseases/lung-disease-lookup/copd/learn-about-copd/how-serious-is-copd.html. [July 13th 2015].

APHO (2008), *PHE East of England Knowledge and Intelligence Services,* [Online], Available: http://www.apho.org.uk/

BRITISH LUNG FOUNDATION (2014) *What is COPD?,* [Online], Available: https://www.blf.org.uk/support-for-you/copd/what-is-it [June 30th 2015].

BRITISH LUNG FOUNDATION (2015) *Working with BME communities in Tower Hamlets,* [Online], Available: https://www.blf.org.uk/health-care-professionals/commissioners-and-service-planners/community-support/bme-communities. [August 20th 2015].

BRITISH THORATIC SOCIETY, 1997. 'Guidelines on the Management of COPD'. *Thorax 53(5).*

CENTRE FOR DISEASE CONTROLL AND PREVENTION (2014), 'The Health Consequences of Smoking: 50 Years of Progress: A Report of the Surgeon General, pp. 1-1081.

DEPARTMENT OF HEALTH (2010) *Facts about COPD*, [Online], Available: http://webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/Healthcare/Longtermconditions/COPD/DH_113006 [September 5th 2015].

DRANSFIELD, M,T., et al (2011) *Disease severity and symptoms among patients receiving monotherapy for COPD*, [Online], Available: http://www.ncbi.nlm.nih.gov/pubmed/20886200 [September 14th 2015].

HEALTH AND SOCIAL CARE INFORMATION CENTRE (2013), *Quality and Outcomes Framework (QOF) - 2013-14,* [Online], Available: http://www.hscic.gov.uk/qof. [June 15th 2015].

LGBT FOUNDATION (2013), *The Lesbian, Gay, Bisexual and TransPublic Health Outcomes Framework Companion Document,* [Online], Available: http://lgbt.foundation/policy-research/the-lgbt-public-health-outcomes-framework-companion-document/ [17th of June 2015].

McCLEAN, S., et al (2014) 'Estimates of Chronic Obstructive Pulmonary Disease in term of prevalence, mortality, and costs for England and Scotland for 2011 and 2030', *European Respiratory Journal, September, pp. 903-1936.*

NATIONAL COLLABORATING CENTRE FOR CHRONIC CONDITIONS (2004), 'Chronic Obstructive Pulmonary Disease. National Clinical Guidline', *Thorax 59(1),* pp.232.

NHS ENGLAND [2014] *Five Year Foreward View - Respiratory disease*, [Online], Available: https://www.england.nhs.uk/ourwork/futurenhs/deliver-forward-view/sop/red-prem-mort/rd/ [August 21st 2015].

NICE (2009), *Depression in adults with chronic physical health problem: recognition and management - NICE guidelines [CG91],* [Online], Available: http://www.nice.org.uk/guidance/CG91/chapter/1-Guidance [August 7th 2015].

NICE (2010) *Chronic obstructive pulmonary disease in over 16s: diagnosis and management*, [Online], Available: https://www.nice.org.uk/guidance/cg101 [July 24th 2015].

NOMIS (2015) *Official Labour Market Statistics,* [Online], Available: https://www.nomisweb.co.uk/ [September 10th 2015],

NOTTINGHAM INSIGHT (2015), *Nottingham City JSNA – Smoking and Tobacco Control,* [Online], Available: http://jsna.nottinghamcity.gov.uk/insight/Strategic-Framework/Nottingham-JSNA/Behavioural-factors/Smoking-and-Tobacco-Control-(2015).aspx [12th July 2015].

OFFICE FOR NATIONAL STATISTICS (2014) *Sickness Absence in the Labour Market: 2014,* [Online], Available: http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-351500. [July 10th 2015].

PANAGIOTI, M., et al (2014), 'Overview of the prevalence, Impact, And management of depression and anxiety in chronic obstructive pulmonary disease' , *International Journal of Chronic Obstructive Pulmonary Disease,* Volume 3, January, pp. 1289-1306.

PUBLIC HEALTH ENGLAND (2016) *Respiratory Profiles for South Tees*, [Online], Available: http://www.nepho.org.uk/respiratory/index.php?view=00M [June 3rd 2015].

PUBLIC HEALTH ENLGAND (2015) *Inhale - INteractive Health Atlas of Lung conditions in England*, [Online], Available: http://fingertips.phe.org.uk/profile/inhale [August 3rd 2015].