

Respiratory Disease – COPD and Asthma

Introduction

Diseases of the respiratory system include disorders of the upper respiratory tract, lung, pleural cavity, bronchial tubes, trachea, and of the nerves and muscles of breathing. Respiratory diseases range from a mild common cold to life-threatening conditions such as bacterial pneumonia or pulmonary embolism. One in seven people in the UK are affected by some form of chronic lung disease, most commonly chronic obstructive pulmonary disease (COPD) or asthma¹.

Chronic Obstructive Pulmonary Disease (COPD)

COPD is characterised by limitation of airflow in and out of the lungs and includes emphysema and chronic bronchitis. The most common cause of COPD is cigarette smoking. It is a progressive condition developing after around 20 years of smoking or breathing in other damaging particles or gases. COPD is generally irreversible; however, lung function can partly recover if the patient stops smoking.¹

Asthma

Asthma affects all age groups but often starts in childhood. It is characterized by recurrent attacks of breathlessness and wheezing, which vary in severity and frequency from person to person. This condition is due to inflammation of the air passages in the lungs and affects the sensitivity of the nerve endings in the airways, so they become easily irritated. In an attack, the lining of the passages swell, causing the airways to narrow and reducing the flow of air in and out of the lungs¹.

Who's at risk and why?

Many risk factors for chronic respiratory diseases have been identified and can be controlled or treated to prevent the onset of disease. Among those **modifiable factors**, smoking tobacco is a major contributor to respiratory disease, particularly to COPD.

There are several indoor air pollutants which are associated with asthma and COPD, including second-hand tobacco smoke, indoor allergens, nitrogen oxide, formaldehyde, volatile organic compounds, indoor-generated particulate matter and carbon monoxide. These pollutants can affect the respiratory system and can cause or exacerbate asthma, acute respiratory diseases or COPD. Occupational dusts, chemicals and fumes are a factor for many people with COPD. Some pollutants, such as radon, second-hand tobacco smoke and volatile organic compounds, also pose a significant cancer risk. Viral or bacterial infections, such as pulmonary tuberculosis, also increase the risk of COPD. Unhealthy diet and physical inactivity also contribute to the development of respiratory disease, as well as to cardiovascular ill-health.

Advancing age, genetic predisposition or low socio-economic status are the main **non-modifiable** factors in the development of many respiratory conditions.

The level of need in the population

Prevalence

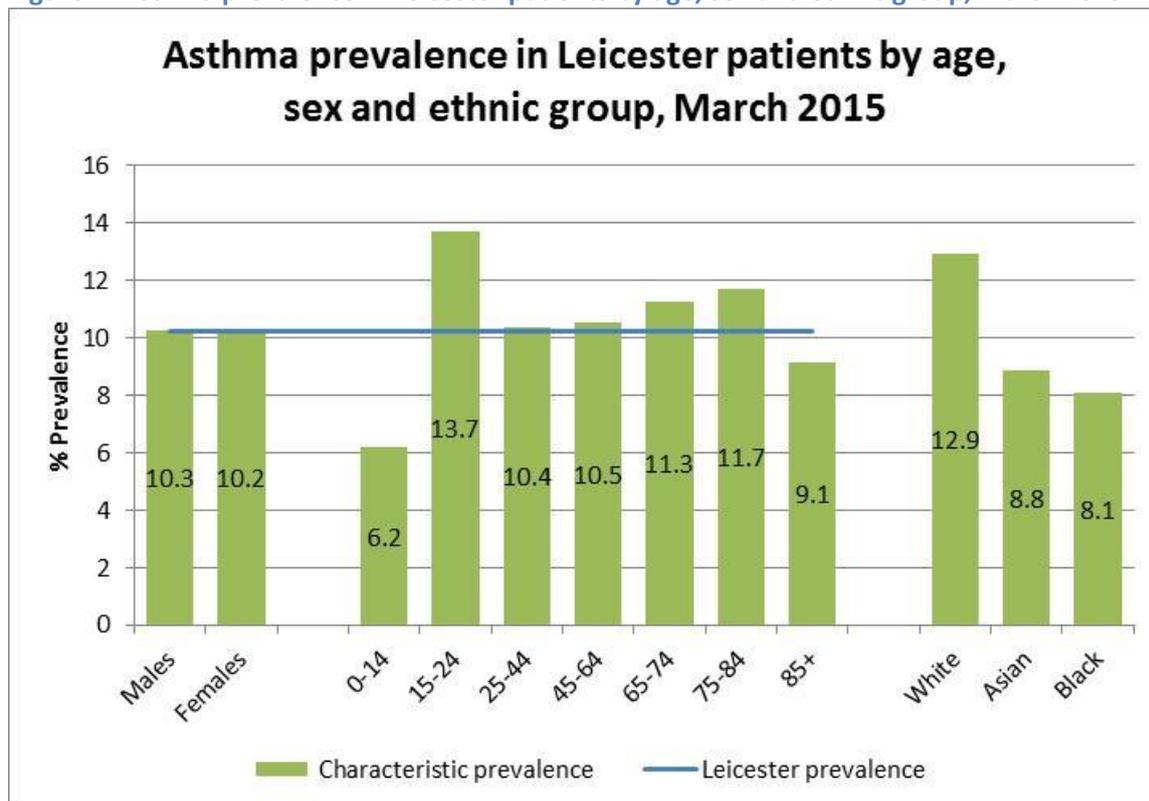
Asthma:

In March 2015, there were 19,770 patients with asthma recorded on GP registers in Leicester; which is equivalent to a recorded prevalence of 5.2%, slightly below the England average of 6.0%².

The recorded asthma prevalence is higher in younger adults (it is highest in 15-24 year olds at around

14%). For 25-64 year olds around 10.5% suffer from asthma, increasing to nearly 12% in 65-74 year olds and falling to 9% in the over 85s.

Figure 1: Asthma prevalence in Leicester patients by age, sex and ethnic group, March 2015



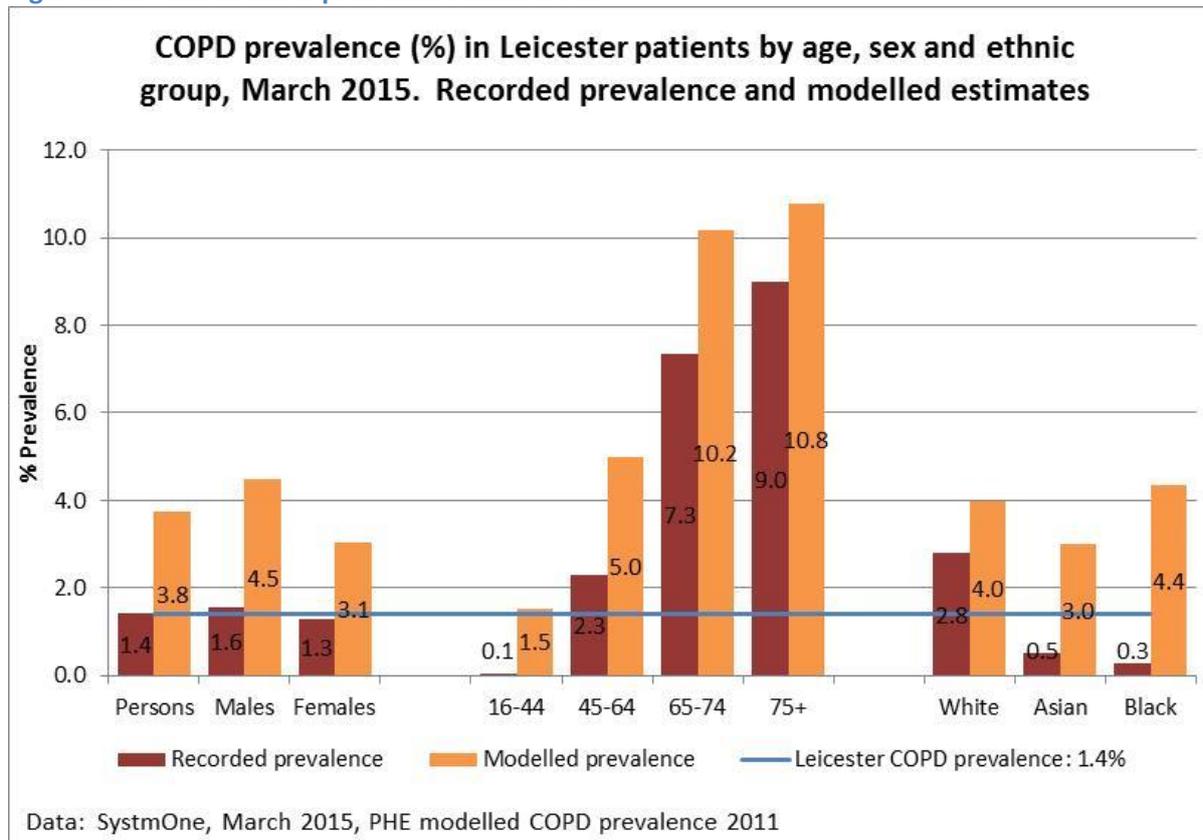
Data: SystmOne, March 2015

COPD:

There were 5,473 patients recorded on GP registers with COPD in March 2015. This is equivalent to a recorded prevalence of 1.4%, which is below the national average of 1.8%. However, estimates³ modelled on the national prevalence figures and applied to the Leicester population suggest that the actual prevalence of COPD in Leicester could be as high as 3.8%, higher in males (4.5%) than females (3%), Black and White ethnic groups, and in over 65s (over 10%)

Figure 2 shows the recorded prevalence from GP registers compared with the modelled estimates. Recorded prevalence of COPD in Leicester is lower than estimated in under 45 year olds; in 45-64 year olds around 2.3% of the population have COPD, increasing to over 7% in 65-74 year olds and 9% in over 75s. COPD is higher in men than women, and higher in White and Black ethnic groups.

Figure 2: Modelled COPD prevalence in Leicester



Source: APHO Prevalence Models, 2011

Note: Modelled estimates of 'White' include Mixed and Other ethnic groups

COPD prevalence estimates³ indicate that the majority of cases are found among people aged over 40, and prevalence increases steeply with age, with the highest rates found in those over 75. This age-related increase in prevalence is due to life-long, cumulative exposure to tobacco smoke and other risk factors.

Mortality

Deaths from respiratory diseases account for over 13% of all mortality in Leicester (2014), which is similar to the national rate⁴.

Influenza and pneumonia account for 40% of all respiratory deaths (125 deaths in 2014) and COPD accounts for 35% of all respiratory deaths (109 deaths in 2014). There are relatively few deaths attributed to asthma (10 in 2014), the majority of such deaths are observed among the elderly (over 70 year old).

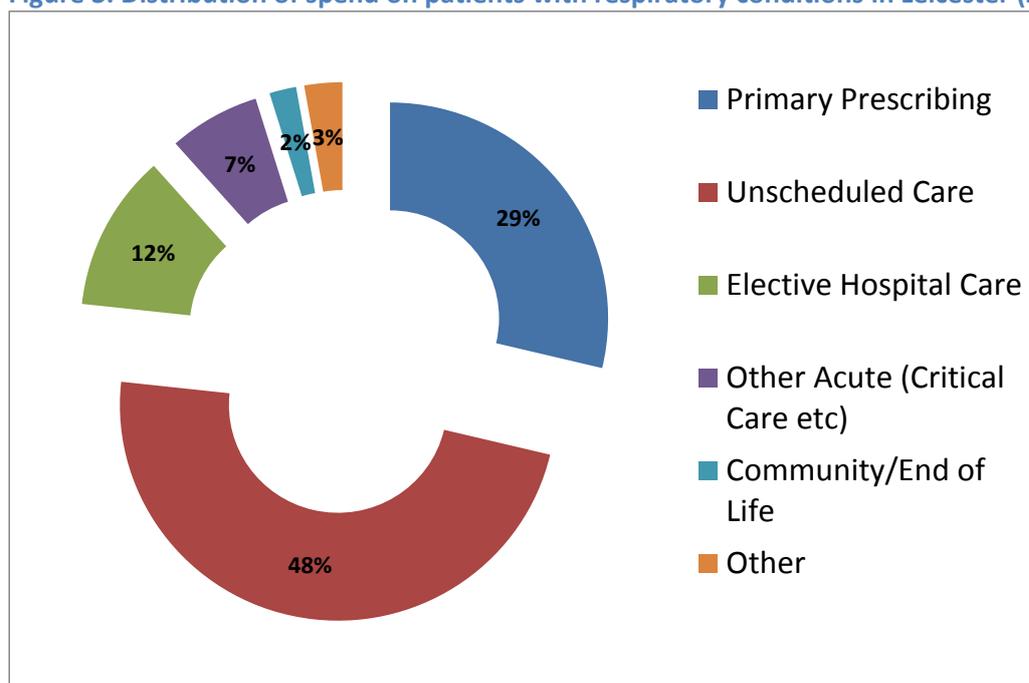
There has been a reduction in mortality from COPD in Leicester in the past few years and although previously higher than nationally, they are now similar to the national rate. However, there is a gender gap in mortality with rates significantly higher in Leicester males.

Hospital admissions

Hospitalisation is the principal contributor to the cost of care for patients with respiratory conditions in Leicester⁵ (Figure 3), although the overall local 'spend per head of population' (average expenditure on care for COPD patients) is lower than the national average (£64 vs. £71)⁶.

Risk of hospitalisation is higher with increasing age, and among white population, when compared to other ethnic groups.

Figure 3. Distribution of spend on patients with respiratory conditions in Leicester (2013/14)



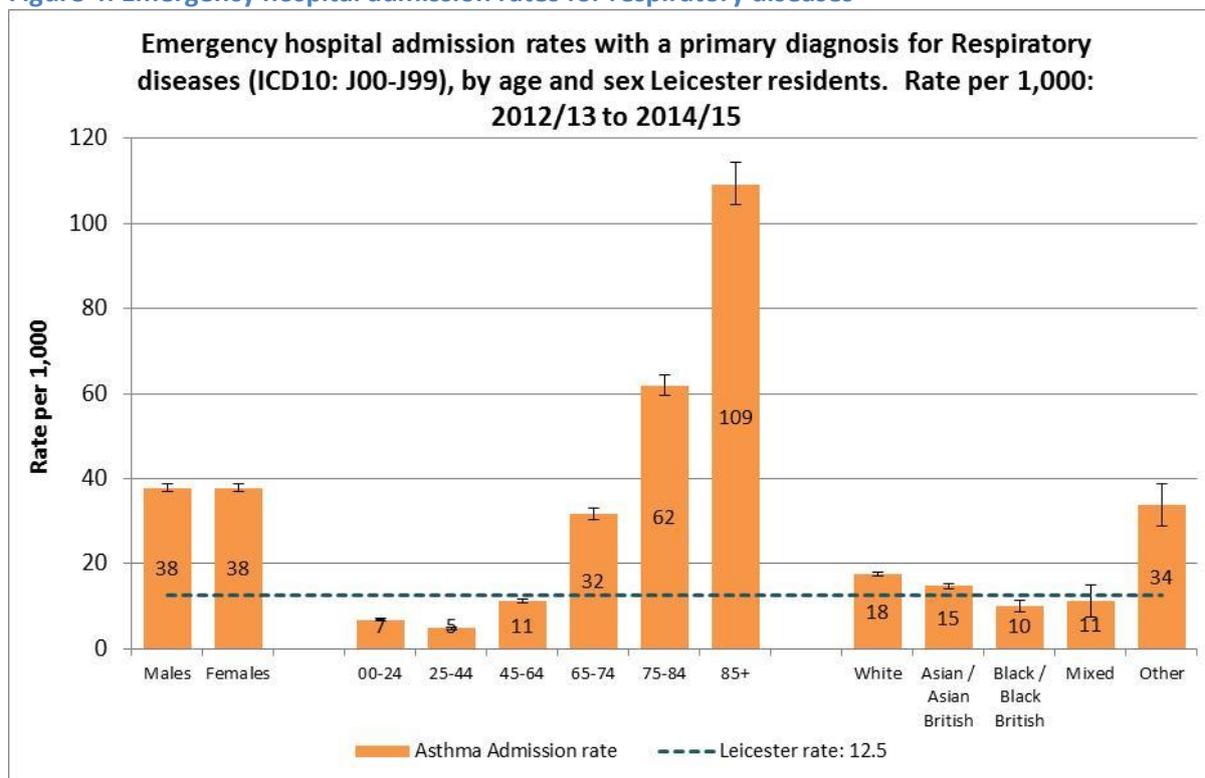
Source: NHS England Programme Budgeting

Local data for 2014/15⁷ show around 14% of all emergency hospital admissions are for respiratory diseases, equivalent to around 4,700 admissions (Figure 4). Emergency hospitalisation is the highest contributor to the total cost of health care for respiratory conditions in Leicester - 35% of all expenditure in 2013/14, although this is largely in line with the national average. All emergency (unscheduled) care constitutes as much as 48% of spend on respiratory conditions locally.

In people under the age of 65, there are around 1,800 admissions (based on data for 2014/15) with 80% of them unplanned (emergency) and due to a variety of conditions, such as influenza, pneumonia (18%), asthma (16%) or COPD (13%).

In older age groups (65 years and over), rates of hospitalisation are much higher, with around 2,500 admissions every year (2014/15) and a much higher (97%) proportion of emergency hospitalisation, mainly for pneumonia (40%), other lower respiratory infections (22%) and COPD (20%).

Figure 4: Emergency hospital admission rates for respiratory diseases



Data: SUS data, 2012/13 to 2014/15

Note: Crude rates are shown for age and sex and age-standardised rates are shown for ethnic groups

Current services in relation to need

Prevention

By far the highest risk factor associated with developing and exacerbating respiratory illness is smoking tobacco. Therefore, there is a shared priority with the current range of services aimed at reducing smoking levels in the city.

Leicester City Council provides the Stop Smoking Service for its population, helping just over 2,000 people to quit in 2014/15¹.

Ascertainment

The diagnosis of respiratory disease is principally, but not exclusively, made in primary care. General Practice works to identify COPD and asthma in line with the national Quality and Outcomes Framework⁸ and NICE guidance^{9 10}. The confirmation of a COPD diagnosis is made by spirometry delivered either by accredited practices or through referral to an acute unit at University Hospitals of Leicester (Glenfield site).

Management

Management of COPD is delivered across the health community, including primary and secondary care providers.

¹ See the full Tobacco section of this Adult's JSNA for more information.

Primary Care

Patients with respiratory conditions, primarily asthma and COPD, are mostly managed in the primary

care setting, with some specialist support delivered by Leicestershire Partnership Trust (LPT). Under the Quality and Outcomes Framework (QOF), such patients, from the time of diagnosis, are on live disease registers and undergo an annual review, including an assessment of their smoking status.

Between 2013 and 2015, the Leicester City CCG implemented a number of programmes, aiming to improve respiratory disease outcomes in primary care. These resulted in the identification of a number of previously undiagnosed COPD patients, accreditation for a number of additional practices to provide spirometry to enable early diagnosis, and, development of a telehealth scheme, which reduced the number of COPD exacerbations and admissions.

Specialist Nursing

The respiratory nurse specialist service is delivered by the Leicestershire Partnership NHS Trust. Specialist respiratory nurses work alongside GPs and practice nurses to promote best practice in the management of COPD, see housebound patients in their homes and provide respiratory clinics in community hospitals. The service includes a comprehensive assessment of a patient's respiratory problem and aims to optimise the treatment, patient education and support to family and carers to improve the management of patient's condition.

Acute Care

Specialised respiratory services for Leicester patients are provided by the University Hospitals of Leicester NHS Trust¹¹ (Respiratory Specialties, Clinical Immunology and Allergy Business Unit). The inpatient part of the service is based at Glenfield Hospital, however clinic sessions are held throughout the city. The Unit has close links with thoracic surgery and general medicine. The service has been spearheading admission avoidance strategies including piloting ambulatory care for patients with suspected pulmonary emboli (blockage in the arteries which carry blood from the heart to the lungs, causing shortness of breath, chest pain or coughing) and pleural disease (diseases affecting area surrounding the lung, often causing breathing problems).

Leicester patients have access locally to a full range of diagnostic investigations including respiratory physiology laboratory, range of bronchoscopic techniques, computed tomography (CT), magnetic resonance imaging (MRI), as well as intensive care facilities and palliative care.

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

Based on the diagnosed prevalence of diseases in Leicester GP practices (March 2014), and population growth projections (mid-2012 population projections), it is estimated that the number of people diagnosed with asthma could rise to over 18,000 and the number of COPD patients could be over 5,000 by 2025 (Table 1).

Table 1: Asthma and COPD prevalence projections, 2015 to 2025

Disease prevalence projections	2015	2020	2025
Asthma projections based on 5.2%	17,560	18,054	18,507
COPD projections based on 1.4%	4,795	4,930	5,054

Source: ONS population projections, QOF disease prevalence

Unmet needs and service gaps

Evidence suggests that a large proportion of COPD cases are preventable, principally through reducing exposure to smoking and adequate treatment of asthma, thus preventing the onset of irreversible changes. Even after the onset of the disease, smoking cessation has significant potential to halt disease progression and improve patients' quality of life, thus reducing the overall disease burden.

Prevalence modelling seems to suggest that the rates of COPD detection in Leicester are relatively low. Early detection and treatment can slow disease progression and reduce the level of disability in patients. Therefore, every effort should be made to enable patients to recognise early symptoms and seek medical help. Within primary care, consistent efforts need to be made to identify patients at risk, targeting populations most likely to be affected. However, on-going attempts in Leicester to identify potentially undiagnosed patients have met with only limited success.

Although the main risk factors for developing COPD, such as smoking or age, are well established, individuals respond to them in different ways, with level of exposure to tobacco smoke not always linked directly to the level of morbidity or age of onset.

Recommendations for consideration by commissioners

It is recommended that commissioners:

- Promote a wider understanding of links between risk factors, particularly smoking, and the development of COPD, such that they may be better understood by the public, in line with the joined-up efforts to reduce tobacco smoking.
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Key contacts

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References

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- ³ PHE Prevalence Models
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- ⁵ NHS England Programme Budgeting (<https://www.england.nhs.uk/resources/resources-for-ccgs/prog-budgeting/>)
- ⁶ Public Health England: Spend and Outcome Tool (SPOT) 2016
- ⁷ Secondary Uses Service data 2013/14 (GEM CSU)
- ⁸ <http://www.nhsemployers.org/your-workforce/primary-care-contacts/general-medical-services/quality-and-outcomes-framework>
- ⁹ COPD : <https://www.nice.org.uk/guidance/cg101>
- ¹⁰ ASTHMA : <https://www.nice.org.uk/guidance/qs25>
- ¹¹ <https://www.nhs.uk/Services/hospitals/Services/Service/DefaultView.aspx?id=92902>