



**British
Lung
Foundation**



The fight for breath

The impact
of lung disease
in the UK

www.blf.org.uk/statistics

About the British Lung Foundation

One person in five in the UK is affected by lung disease, with millions more at risk. The British Lung Foundation (BLF) is the UK's lung charity and we are here for every one of them, whatever their condition. Lung disease can be frightening and debilitating. We offer hope and support at every step so that no one has to face it alone.

This year marks the BLF's 30th anniversary. Since our inception, the BLF has been the only organisation advocating on behalf of people affected by any lung disease. Every year we help well over a million people across the country through our patient support services, including our Breathe Easy support groups, health information leaflets and patient support packs, information on our website and our dedicated helpline. We fund vital research, so that new cures and treatments can help save and improve lives. We provide support and guidance to local health services, and campaign to improve policy and raise political awareness of the challenge of lung disease.

For the past three decades the BLF has been leading the fight against lung disease. Thirty years from now we want to be able to look back on 2015 as the pivotal moment when we started to land the knockout blows. This research is the start of that process.



Summary

Patients affected by respiratory disease in the UK have been neglected and disadvantaged. Dramatic improvements are needed in respiratory policy, research and services, to ensure the greatest chances of recovery, maximise quality of life and avoid premature deaths.

This British Lung Foundation-funded research confirms that lung disease is in need of the same prioritisation that has produced improvements in outcomes for the other two of the 'big three' disease areas: non-respiratory cancer and cardiovascular disease.

Increased awareness-raising, better screening, tighter tobacco control measures, and improvements in air quality are all vital. The opportunities cannot be overstated: we can save and improve the lives of people with lung disease and future generations, reduce health inequalities, and save the NHS billions of pounds.

Tackling lung disease requires a co-ordinated effort. Politicians and policy-makers have a crucial role to play in supporting our work if we are to halt the ever-growing burden of lung disease.

We are calling for action to:

- 1** Make tackling lung disease a national priority. Ensure that the infrastructure and incentives are in place, nationally and locally, so that lung disease can benefit from the same focus as other diseases that carry a similar burden.
- 2** Increase investment in research to better understand and manage lung disease. Introduce a mandatory scheme to secure investment in mesothelioma research.
- 3** Introduce a levy on the tobacco industry. Use funds raised to invest in targeted awareness and smoking uptake prevention programmes, and local smoking cessation services.
- 4** Develop a strong, cross-governmental, solution to address the dangerous levels of air pollution across the UK.
- 5** Drive earlier diagnosis of lung disease. Roll out national breathlessness campaigns and include questions to assess respiratory health in the NHS Health Check in England.
- 6** Ensure that best practice clinical guidelines and standards on lung disease are adopted across the NHS, supported by appropriate incentives.

Key facts:

- One person dies from lung disease every five minutes in the UK. It is the third biggest killer.
- Approximately one in five (over 12 million) people in the UK have been diagnosed with lung disease; compared with 7 million with cardiovascular disease and 2.5 million with cancer.
- About 10,000 people are newly diagnosed with a lung disease every week.
- Lung disease is responsible for nearly 700,000 hospital admissions and over 6 million bed-days in the UK each year.

Overview

Lung disease is one of the UK's biggest killers. It places a huge burden on UK health and welfare services.

Good data is vital for the evaluation of new treatments, care models and public health initiatives. Innovations such as the National Cancer Intelligence Network, which collates, analyses and shares data on cancer care across the UK, have been vital in improving cancer outcomes. No such coordinated approach exists for respiratory disease.

The British Lung Foundation has funded a two-and-a-half year epidemiological research project into lung disease prevalence, incidence and mortality, and variations between region, gender, ethnicity and socio-economic group. The research also looked at the impact of lung disease on the NHS, in terms of hospital admissions and inpatient bed-days. This research is known as the Respiratory Health of the Nation project.

The results of this research are an invaluable resource for researchers, policy-makers, healthcare providers and professionals. The main findings will be published on the British Lung Foundation website www.blf.org.uk/statistics

The research project team was led by David Strachan, Professor of Epidemiology and Director of the Population Health Research Institute at St George's, University of London. Other significant contributors to this work include: Ms Ramyani Gupta and Ms Elizabeth Limb (St George's); Professor Richard Hubbard, Dr Jack Gibson and Dr Laila Tata (University of Nottingham); Professor Aziz Sheikh (University of Edinburgh); and Professor Peter Burney, Professor Deborah Jarvis, Professor Paul Cullinan, Dr Anna Hansell, Dr Ioannis Bakolis and Dr Rebecca Ghosh (Imperial College London).

Research findings: the overall burden of lung disease

Alongside cardiovascular disease and cancer, lung disease is one of the UK's big three killers. Accounting for one in five of all deaths across the UK, it kills more than 114,000 people a year – equivalent to one person every five minutes. This death toll has remained broadly the same over the last decade, in stark contrast to cardiovascular disease, for which efforts to tackle the disease have seen mortality fall by over 20%.

More than 550,000 new diagnoses of lung disease are made each year. Equivalent to over 10,000 a week, this is nearly 80% higher than the number of people diagnosed with all non-respiratory cancers combined. Although overall prevalence is difficult to estimate, it is likely that well over 12 million people are living with respiratory disease in the UK, compared to around seven million people living with cardiovascular disease, and 2.5 million with cancer. The true prevalence of respiratory disease may be even higher due to the number of undiagnosed cases. It has been estimated that up to two thirds of chronic obstructive pulmonary disease (COPD) cases and 85% of obstructive sleep apnoea (OSA) cases remain undiagnosed.

The UK has among the highest death rates from COPD and lung cancer in the world. Of 99 countries studied, only 11 had higher death rates for COPD and 14 for lung cancer. More people per head of population die from COPD in the UK than in all other European countries except Denmark and Hungary. For acute lower respiratory tract infections and pneumonia, the UK also fares worse in terms of death rates than 75% of international comparators.

Impact on NHS resources

Lung disease is responsible for nearly 700,000 hospital admissions and over 6.1 million bed-days in the UK each year. These figures are broadly equivalent to those seen for cardiovascular disease and for non-respiratory cancer.

The greatest number of respiratory admissions and bed-days were seen in pneumonia, with COPD and acute lower respiratory infections (which includes conditions such as acute bronchitis) following closely behind.

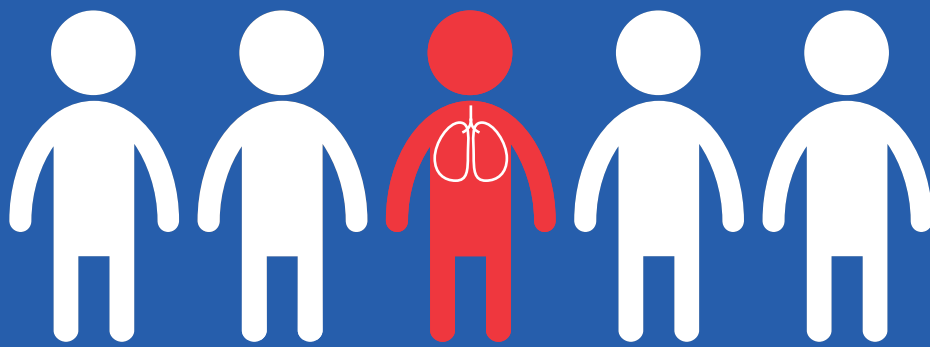
Given that the majority of lung disease is managed within primary care and community settings, these figures illustrate only a small part of the burden that lung disease imposes on health resources. The impact on the welfare budget occasioned by lung disease, and the wider impact on the economy due to issues such as lost working capacity, were not looked at here.

Individual lung diseases

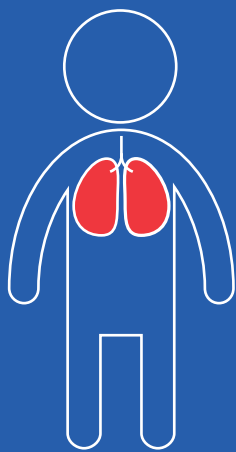
Amongst individual respiratory conditions, lung cancer (with 35,000 deaths every year), COPD (30,000 deaths) and pneumonia (29,000 deaths) are among the UK's top six causes of death. Each individually kills close to twice as many people each year as any non-respiratory cancer. Lung cancer claims the most lives and has the worst five-year survival rate of the 10 most common cancers.

While the number of people dying from lung cancer has declined slightly over recent years, recorded deaths for COPD have increased. Recorded mortalities from certain rarer lung diseases have increased at an even faster rate. The deadly asbestos-related cancer mesothelioma now kills around 2,500 a year – over a third more than at the turn of the 21st century. Deaths from pulmonary fibrosis (including idiopathic pulmonary fibrosis, or IPF) have increased nearly seven-fold over the last four decades. It now kills around 5,300 a year, more than much better-known conditions such as leukaemia. Although deaths from asthma, the most common lung disease, are relatively rare at around 1,200 a year, this is still much too high for what is a controllable disease.

The **IMPACT** of lung disease in the UK



Lung disease is responsible for **1 in 5 deaths** in the UK



550,000

New diagnoses made each year

Over half a million new diagnoses of respiratory disease are made each year – around 1 every minute

Every 5 minutes
someone dies of
a lung disease



12

million people
**RESPIRATORY
DISEASE**

7

million people
**CARDIOVASCULAR
DISEASE**

2.5

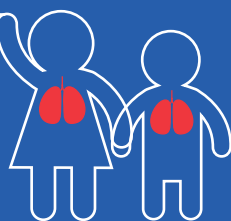
million people
CANCER

Over 12 million people in the UK have been diagnosed with lung disease

Compared with around 7 million people with cardiovascular disease and 2.5 million with cancer

11%

Total deaths for children under 15 years



Lung disease accounts for 11% of the total deaths for children under 15 years (262 children die from lung disease – 5 children a week)

700,000



hospital admissions are made each year

Lung disease accounts for over 6 million bed-days and 8% of total hospital admissions

Lung disease at different ages

In common with the two other 'big three' disease areas, cardiovascular disease and cancer, respiratory disease is more common in older age. This is reflected in the share of total mortality, hospital admissions and bed usage attributable to lung disease, which is higher for adults aged 65 and over than for younger adults and children.

Nevertheless, around 262 children under 15 (11% of total deaths in this age group) die from respiratory diseases each year – similar to the death toll from cancer, and double that of cardiovascular disease. Respiratory disease is responsible for around 9% of all child hospital admissions – around nine times higher than

for non-respiratory cancers and over 21 times higher than cardiovascular disease. Bed usage for respiratory disease (12% of all bed-days) is around six times higher than for non-respiratory cancer and over 18 times higher than for cardiovascular disease. We will publish further research on the full impact of lung disease on child health in 2016.

Regional and socio-economic variation

The researchers analysed the data by factors such as gender, age, and ethnicity. The most notable of these analyses concerned regional and socio-economic variation. This showed that the likelihood of developing, and dying from, a lung disease varies significantly depending on where in the UK you live, and the degree of social deprivation you live with.

Regional variation

The greatest number of people living with respiratory disease are in the North West and South West of England, with overall mortality highest in the North West, North East and Scotland. However, as a large share of the total disease prevalence is due to asthma, and most of the mortality is due to lung cancer, COPD and pneumonia, understanding regional variation is best achieved by looking at the individual diseases.

For COPD, both prevalence and mortality are highest in the North East, followed by the North West and then Scotland. For lung cancer, incidence and prevalence are highest in the North East, followed by Scotland

and then the North West, while mortality was highest in Scotland, followed by the North East and then the North West.

A number of factors contribute to these three regions being worst affected by deaths from lung disease. These include rates of occupational exposure to fumes, dusts and other harmful particles which have an impact on, for instance, the asbestos-related cancer mesothelioma which is greater around the ship-building heartlands of the North East and Scotland.

Smoking is the leading cause of both lung cancer and COPD, and an exacerbating factor in all other lung diseases. It is particularly notable that mortality rates from both COPD and lung cancer in the North East and Scotland are due to historically higher smoking rates in these areas. Lung cancer mortality in Scotland is 31% higher than the national average for men, but 46% higher for women. In the North East, COPD mortality is 17% higher than the national average for men, but 40% higher for women. This relates to the proportion of women who took up smoking in the 1960s and 70s. Although smoking rates among women were historically lower than in men, the

regional variations in smoking uptake by women were more pronounced than among men.

Smoking rates are still highest in the North of England and Scotland – up to 21% higher than the average for England in the North East and 15% higher in Scotland. More targeted efforts will be needed to ensure that these regional health inequalities are not allowed to continue.

As with mortality, the most interesting variations in hospital admissions are those for the individual diseases. For asthma, the greatest risk of emergency admission is seen for males in the North West, which is 40% higher compared with the rest of the country. For COPD this variation is even greater, with women at a 60% higher risk of emergency admission than those in the rest of the country. Northern Ireland has the highest rates of emergency admission for bronchiectasis and pulmonary fibrosis, and Scotland fares worst for lung cancer (with women at double the risk compared with the rest of the UK).

Both individual patients and local health economies could gain significantly if the performance of the best were matched by all providers. All opportunities to reduce regional variation must be harnessed to ensure that patients have access to the best services, treatments, and opportunities for prevention and accurate diagnosis, regardless of where they live.

Socio-economic status and lung disease

Total lung disease incidence, prevalence and mortality are generally higher in lower socio-economic groups (as measured by the Townsend index, which uses a range of factors to divide the population into quintiles ranked by degrees of deprivation). However, while the correlation is slight for a number of lung diseases, it is very pronounced in others.

The most pronounced correlation between levels of social deprivation and rates of disease occurs for lung cancer and COPD. COPD is around two-and-a-half times more common in the most deprived fifth of the population than in the least deprived. A diagnosis of lung cancer is nearly twice as likely in the lowest quintile compared with the highest quintile. In 2013, asthma incidence was 37% higher in the most deprived quintile of the population compared with the least deprived.

The most significant factor in this variation is smoking, which has historically been, and continues to be, higher in more deprived groups. However, other factors also play a part. For example, research has also found that exposure to diesel vehicle emissions (a confirmed cause of lung cancer and a factor in exacerbations of COPD and asthma) is higher in areas of higher social deprivation. Air pollution continues to be a factor in lung health inequalities today.

Fighting lung disease in the 21st century: what needs to change?

This research makes the strongest case for nearly a decade for why lung disease in the UK must be given the priority it deserves. The same attention and investment that improved outcomes in cardiovascular disease and non-respiratory cancers must be applied to lung disease.

Increased investment in research:

Lung disease receives a fraction of the UK's research spend. In 2013 the Medical Research Council spent just 2.5% of its budget on respiratory disease, while according to the National Cancer Research Institute, only £14 million of the £500 million invested in cancer research in the UK went to lung cancer – despite it being by far the biggest cancer killer. Similarly, pulmonary fibrosis, including IPF, kills more people each year than leukaemia, yet receives less than 2% of leukaemia's research investment. Mesothelioma kills as many people each year as conditions such as myeloma and malignant melanoma, but receives a tiny fraction of the funding for research into those diseases.

Investment in lung disease research will save money in the long term by building a healthier, more economically productive population. More importantly, it will save lives. The scheme proposed to fund mesothelioma research through a small levy on the insurance industry shows that increasing research funding need not even impose an increased burden on the public purse. That scheme was rejected by the UK parliament in January 2014 in favour of a voluntary insurer contribution. However, with only two of the 150 insurers active in the market having made such a contribution in the past 18 months, it is time to revisit statutory options.

Investment is also needed to collate, analyse and disseminate data on lung disease epidemiology, outcomes and care models. As is happening in other areas, such as cancer, more should be made of the UK's unique data collection capacity.

Tackling tobacco:

A considerable proportion of lung disease, including over 80% of its two biggest killers (lung cancer and COPD), is tobacco-related. Advances have been made recently. Smoking rates, and smoking-related hospital admissions, have fallen since the introduction of the ban on smoking in public places, and forthcoming laws relating to standardised tobacco packaging and smoking in cars carrying children, will continue this progress. However, nearly one in five adults continues to smoke, with rates significantly higher among more deprived communities and parts of the country such as North East England. A sustained, systematic and targeted approach to tobacco control is needed. A levy should be introduced on the still hugely profitable tobacco industry, with the funds raised invested in targeted awareness and smoking uptake prevention programmes, as well as in local smoking cessation services.

Tackling air pollution:

Outdoor air pollution also has significant impact on respiratory health, increasing the risk of lung cancer and impairing lung development in children. Air pollution is linked to worsening symptoms, exacerbations, increased hospital admissions and premature mortality for people with many lung diseases.

An ambitious cross-departmental strategy is needed to tackle air pollution. Real world testing of buses and taxis should be conducted to help local authorities cut local pollution levels. Tax incentives aimed at reducing greenhouse emissions, which had the unintended negative consequence of increasing diesel emissions (the most harmful to health), should be counteracted. Local authorities should be required to monitor and publish up-to-date and accessible data on the five key pollutants harmful to health, including PM2.5 particulate matter, which is one of the most harmful emissions.

Initiatives such as low-emission zones should be considered for our major cities, as should greater investment in promoting walking and cycling.

In order to protect children, pollution assessment should be a mandatory material consideration in planning applications for new schools. Advice and support should be given to schools and local authorities to help minimise child exposure to air pollution. Local air pollution assessments should also be included in school inspection reports.

More accurate and earlier diagnosis:

All too often lung disease is misdiagnosed or diagnosed late. This wastes NHS resources and means that opportunities to control symptoms, slow progression and save lives are missed. It has been estimated that up to two-thirds of COPD cases are undiagnosed. A study at the turn of the decade showed that, of those diagnosed, 85% had sought medical help for their symptoms up to five years, and 40% for up to 14 years, before they were finally diagnosed.

Better public awareness of the symptoms of lung disease is crucial. Following success at several pilot sites, Public Health England should now roll out a national breathlessness campaign as a matter of priority. The Be Clear on Cancer awareness campaign, which led to an extra 700 people being diagnosed with lung cancer, including 400 diagnosed at an early stage, must be continued. Trials of lung cancer screening are showing great promise. As nearly 40% of lung cancer patients are currently diagnosed in accident and emergency departments, and around two-thirds of lung cancer patients are diagnosed at a late stage when curative treatment is virtually impossible, a targeted screening programme must be rolled out as soon as possible. Late presentation and diagnosis is one of the main reasons UK lung cancer survival lags so shamefully behind that in Europe and the US.

Lung disease should also be included in the NHS Health Check. Despite carrying a greater or similar burden to other diseases included in the check, lung health is currently excluded. No respiratory expert currently sits on the Health Check committee. Including questions on levels of breathlessness and cough could significantly improve diagnosis rates.

Healthcare professionals also need support to spot lung disease earlier. NHS England estimates that poorly performed diagnostic tests for COPD are costing the NHS £29 million a year in inappropriate treatment. Staff should be trained in the accurate use of spirometry, and active case finding for COPD patients should be widely employed by GPs.

An evidence-based approach to service improvement:

More people are living with lung disease in the UK than with cancer or cardiovascular disease. The need for a consistent and evidence-based approach to services and treatments is therefore essential.

Pulmonary rehabilitation, self-care support, training on inhaler technique and appropriate access to oxygen therapy have been shown to improve outcomes for people with lung disease, for relatively little additional cost. However, despite national guidance setting out best practice, the quality and ease of access to these services varies greatly.

Pulmonary rehabilitation and smoking cessation are some of the highest value interventions for COPD. Audit data has revealed that only 58% of current smokers had evidence of smoking cessation advice being given during a hospital admission with COPD and only 38% of units were able to provide pulmonary rehabilitation services within four weeks of hospital discharge.

It has been calculated that if all CCGs in England were to achieve the outcomes of their best performing peers, around 7,800 deaths from COPD alone would be prevented each year. Similarly, the rates of surgery for lung cancer – one of the best options for a cure for the disease – vary unacceptably around the country: more than a two-fold variation exists across England.

The evidence and best practice examples exist – sharing these effectively could make significant inroads into reducing the impact that lung disease has on the health of the nation.

To see the research findings, visit www.blf.org.uk/statistics



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We fund vital research, so that new treatments and cures can help save lives.

We are the British Lung Foundation.
Leading the fight against lung disease.



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