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Smoking and respiratory disease

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Introduction This factsheet provides an overview of smoking and different types of respiratory disease. It is estimated that smoking causes over 100,000 premature deaths every year in the UK.^{1 2 3 4} In England alone, smoking causes 35% (23,200) of respiratory deaths and 29% (37,700) of all cancer deaths.¹ Globally, Chronic Obstructive Pulmonary Disease (COPD), a respiratory disease caused primarily by smoking, is the fourth most common cause of death.^{5 6} The World Health Organization predicts that by 2030, COPD will have risen to the third most common cause of death and account for 8.6% of all deaths worldwide.⁷

Lung cancer Lung cancer has been the most common form of cancer in the world for a number of decades, accounting for 1.61 million new cases and 1.38 million deaths every year.⁸ Until recently, lung cancer was also the most frequently occurring cancer in the UK but it has now been overtaken by breast cancer.⁹ In 2007, 39,473 people were diagnosed with lung cancer and in 2008 35,261 died of the disease.¹⁰

Lung cancer is the cancer most commonly associated with smoking: around 90% of all lung cancers are caused by smoking, or as a result of exposure to secondhand smoke.¹¹ Because of its poor prognosis, lung cancer is still the most common cause of cancer death, responsible for around 1 in 5 of all cancer deaths every year in the UK. Fewer than ten percent of people with lung cancer will survive five years beyond diagnosis.¹²

- One in two persistent smokers will die of a smoking-related illness and of these, nearly one in four will die of lung cancer.¹³
- Current smokers are fifteen times more likely to die from lung cancer than life-long non-smokers.¹⁴
- The risk of dying from lung cancer increases with the number of cigarettes smoked per day, although duration of smoking is the strongest determinant of lung cancer in smokers.¹⁵

A longitudinal study of British doctors by Doll and Peto examined the effects of prolonged cigarette smoking and prolonged cessation on mortality from lung cancer.¹⁶ They found that people who stop smoking, even well into middle age, avoid most of their subsequent risk of lung cancer.

The risk of lung cancer, like many other cancers, increases steeply with

advancing age. The US Surgeon General reports that when smokers quit their risk of getting lung cancer decreases, and that after 10 years an ex-smoker's risk is about a third to a half that of continuing smokers.¹⁷ However, many smokers diagnosed with lung cancer continue to smoke even after treatment, with estimates ranging from 13% to 60%.¹⁸

For more information see [ASH Fact Sheet on Smoking and Cancer](#)

Chronic Obstructive Pulmonary Disease (COPD)

Chronic obstructive pulmonary (lung) disease is a progressively disabling disease characterised by airflow obstruction that interferes with normal breathing. The most common cause is smoking which accounts for approximately 80% of COPD cases.^{19 20} Other causes include exposure to occupational hazards, air pollution and secondhand smoke.²¹ The World Health Organization (WHO) estimates that around 210 million people have COPD world-wide,²² of which 80 million are moderate to severe cases.²³

The two main types of COPD are bronchitis and emphysema. People with chronic bronchitis have intermittent attacks of obstructed breathing during which their airways become inflamed and clogged with mucus. Emphysema refers to the destruction of the alveoli (air sacs) in the lungs. Alveoli are essential for the exchange of oxygen in the blood: when they break down, the lung loses its elasticity and there is less surface in the lung to absorb oxygen. The onset of the disease is very gradual and breathlessness only becomes troublesome when about half of the lung has been destroyed. The disease is not fully reversible²⁴ but smokers diagnosed with COPD can reduce the rate of lung decline if they quit smoking.²⁵

Around 900,000 people have been diagnosed with COPD in the UK.^{26 27 19} However the Department of Health estimates that the true figure is closer to 3 million people because the condition is vastly under diagnosed. COPD is also the second most common cause of emergency admission to hospital and the fifth largest cause of readmission to hospital.²⁸ The National Institute for Health and Clinical Excellence (NICE) reports that COPD accounts for 30,000 UK deaths every year, of which 85% could be attributed to smoking. This is almost double the European average.²⁹

- Around half of cigarette smokers develop some airflow obstruction and 10-20% develop clinically significant COPD.³⁰
- COPD is more common in men than women and is associated with socioeconomic deprivation.³¹
- Data from the Health Survey for England show that smokers with COPD tend to be more addicted to cigarettes but show no greater desire to stop smoking than other smokers.³²
- The findings of a retrospective cohort study of adult smokers suggest that women are particularly at risk of COPD if they start to smoke before the age of 16.³³

New evidence published in 2009 found an association between childhood exposure to secondhand smoke and the development of emphysema in adulthood. The findings suggest that the lungs may not recover completely from the effects of early-life exposure to secondhand smoke.³⁴

For further information see: [ASH Research Report. Secondhand Smoke: The Impact on Children](#)

Pneumonia Pneumonia is an acute respiratory infection and amongst the top five leading causes of death world-wide.³⁵ Both active and passive smoking are known independent risk factors for community-acquired pneumonia (CAP).^{36 37 38} The British Thoracic Society Guidelines for the Management of Pneumonia recommend that stop smoking advice is offered to all CAP patients.³⁹

- A dose-response relationship has been demonstrated with the current number of cigarettes smoked per day and pack-years of smoking in relation to invasive pneumococcal disease (the infection which causes pneumonia, bacteraemia and meningitis).⁴⁰
- Smokers have an increased risk of developing pneumonia after surgery as well as a greater chance of suffering a collapsed lung after undergoing anaesthesia and surgery.⁴¹
- Pneumonia is the leading cause of childhood death world-wide and parental smoking is a known risk factor for childhood pneumonia.⁴²

Tuberculosis Tuberculosis (TB) is an infectious disease caused by the *Mycobacterium tuberculosis* bacteria. The disease is spread by the inhalation of droplets coughed into the air by a tuberculosis patient or the inhalation of dust laden with the bacteria. Around 9,000 cases of TB are reported every year in the UK.⁴³

- Several studies have revealed a strong association between tobacco smoking and TB with the disease being more common among smokers than nonsmokers.^{44 45}
- A systematic review of studies examining the relationship between smoking and TB found that smokers have an increased risk of TB and of dying of the disease.⁴⁶
- A study in South Africa found evidence that smoking may increase the risk of TB infection⁴⁷ while the authors of a large study in India concluded that smoking is a cause of half the male TB deaths in India.⁴⁸
- A study published in 2008 found that smoking was associated with relapse after successful treatment for TB.⁴⁹

Asthma Asthma is a condition which affects the airways and is the most common chronic disease of childhood. During an asthma “attack”, the walls of the airways tighten and narrow, and the lining of the airways become inflamed and swollen.⁵⁰ Exposure to secondhand smoke is known to trigger the development of asthma and exacerbate symptoms.⁵¹ There are around five and a half million people receiving treatment for asthma in the UK.⁵²

- Parental smoking is a cause of asthma in children and the prevalence of asthma increases with the number of smokers in the home.⁵³
- Children who suffer from asthma, and whose parents smoke, are twice as likely to suffer asthma symptoms all year round compared to the children of non-smokers. Wheeze and physician-diagnosed asthma is more common in children who live with a smoker.⁵¹
- The Royal College of Physicians’ 2005 report “Going smokefree: the medical case for clean air at home, at work and in public places” concludes that a child exposed to SHS has an increased risk of developing and/or exacerbating asthma as well as reduced respiratory function (cough, wheezes).⁵⁴
- There is growing evidence that exposure to secondhand smoke is also a causal factor in adult onset asthma in non-smokers.⁵⁵

For further information see [ASH's Research Report on Asthma and Smoking](#).

Morbidity in the young

Children of smoking parents have more respiratory illnesses than those of non-smokers and children who smoke have more chest illnesses than non-smokers.

- The Royal College of Physicians' report "Passive Smoking and Children" concludes that exposure to secondhand smoke (SHS) increases the risk of lower respiratory infections, wheezing and asthma. The Report estimates that exposure to SHS is a cause of 20,500 new cases of lower respiratory tract infections and 22,000 new cases of wheeze and asthma every year.⁵⁶
- A review by the World Health Organization concluded that exposure to secondhand smoke is a cause of bronchitis, pneumonia, coughing and wheezing and asthma attacks in children.⁵⁷
- Exposure to secondhand smoke increases the risk of lower respiratory tract infections such as bronchitis, pneumonia and bronchiolitis in children.^{58 59}
- One study found that in households where both parents smoke, young children have a 72% increased risk of respiratory illnesses.⁶⁰
- A study published by the American Academy of Pediatrics in 2009 found that "secondhand tobacco smoke exposure of children and their families causes significant morbidity and mortality," citing strong evidence which supports the association of SHS exposure of children with respiratory illnesses, tonsillectomy and adenoidectomy, cough, asthma and asthma exacerbations.⁶¹

For further information see:

[ASH Research Report. Secondhand Smoke: The Impact on Children](#)
[ASH Fact Sheet on Young people and smoking](#)

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