



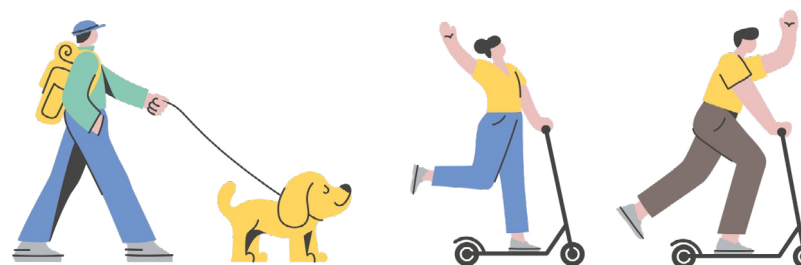
# Improving lung health in Knowsley

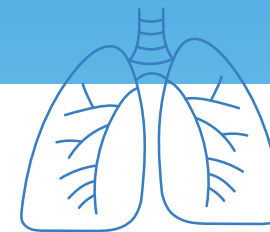
Public Health Annual Report 2023/24



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# Foreword

Respiratory disease affects one in five people and stands as the third leading cause of death in England, surpassed only by cancer and cardiovascular disease<sup>1</sup>. In Knowsley, this reality is even more pronounced due to longstanding health inequalities within our community.

My report is focused on the most pressing respiratory diseases impacting our community: chronic obstructive pulmonary disease (COPD), asthma, infectious diseases and lung cancer.

The impact of poor lung health in Knowsley is severe. For example, the rate of hospital admissions for respiratory conditions here is significantly higher than the national average. Despite a reduction in the number of people smoking, rates in Knowsley are still among the highest in the country, contributing to elevated levels of COPD and lung cancer. Furthermore, both indoor and outdoor air quality can exacerbate asthma and other respiratory conditions.

Despite these challenges, there are opportunities for change and improvement. By focusing on targeted interventions such as stop smoking programmes, improving air quality, and increasing access to healthcare services for all, we can reduce the burden of respiratory disease. The commitment to these initiatives, underpinned by national policy, provides a roadmap for addressing the inequalities that have long impacted our community's lung health.

Together, we can build a healthier future for our community (and their lungs!).



**Dr Sarah McNulty**  
Director of Public Health

**As always, my thanks go to all those who have contributed to the development and production of this report.**

Please email any comments or queries to [publichealth@knowsley.gov.uk](mailto:publichealth@knowsley.gov.uk)



# Introduction

The World Health Organisation defines respiratory diseases as “diseases that affect the air passages, including the nasal passages, the bronchi and the lungs”<sup>2</sup>. Damage, infection or inflammation to these parts, or other body parts involved in breathing can cause a range of illnesses that can severely impact quality of life and even be life-threatening.

**Common causes of respiratory disease; infections, smoking tobacco, breathing in second-hand tobacco smoke, asbestos and air pollution.**



Common respiratory diseases include asthma, chronic obstructive pulmonary disease (COPD), pulmonary fibrosis, pneumonia, and lung cancer. Asthma is characterised by chronic inflammation of the airways, leading to episodes of wheezing, shortness of breath, and coughing. Chronic obstructive pulmonary disease, often linked to long-term smoking, results in persistent shortness of breath and cough.

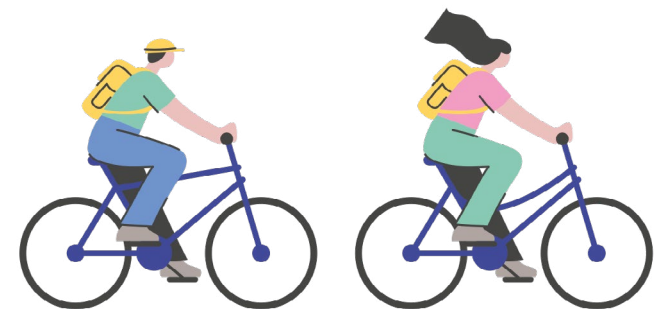
Pulmonary fibrosis involves the thickening and scarring of lung tissue, which impairs the ability to breathe efficiently. Pneumonia, an infection that inflames the air sacs in one or both lungs, can be caused by bacteria, viruses, or fungi. Lung cancer, often associated with smoking and exposure to harmful substances, remains one of the leading causes of cancer-related deaths globally.

Addressing the root causes of these diseases through public health initiatives, promoting vaccinations, reducing exposure to harmful substances, and encouraging healthy living are essential steps in reducing their impact.

Respiratory disease can have a severe impact on quality of life and can be very distressing with symptoms also leading to anxiety and depression. Respiratory disease can have an impact on the ability to work, or may affect school attendance in children, and can have consequent financial implications as well as affecting the ability to live a full life.

The economic burden of respiratory disease is substantial. Direct healthcare costs include hospital admissions, outpatient visits, medications, and long-term care. Chronic conditions such as COPD and asthma require ongoing management and frequent medical interventions leading to a financial strain on healthcare resources. Indirect costs, often more challenging to quantify, arise from lost productivity due to illness-related absenteeism, early death, and long-term disability.

**Lung conditions, including lung cancer, are estimated to cost wider society around £9.9 billion each year<sup>3</sup>.**



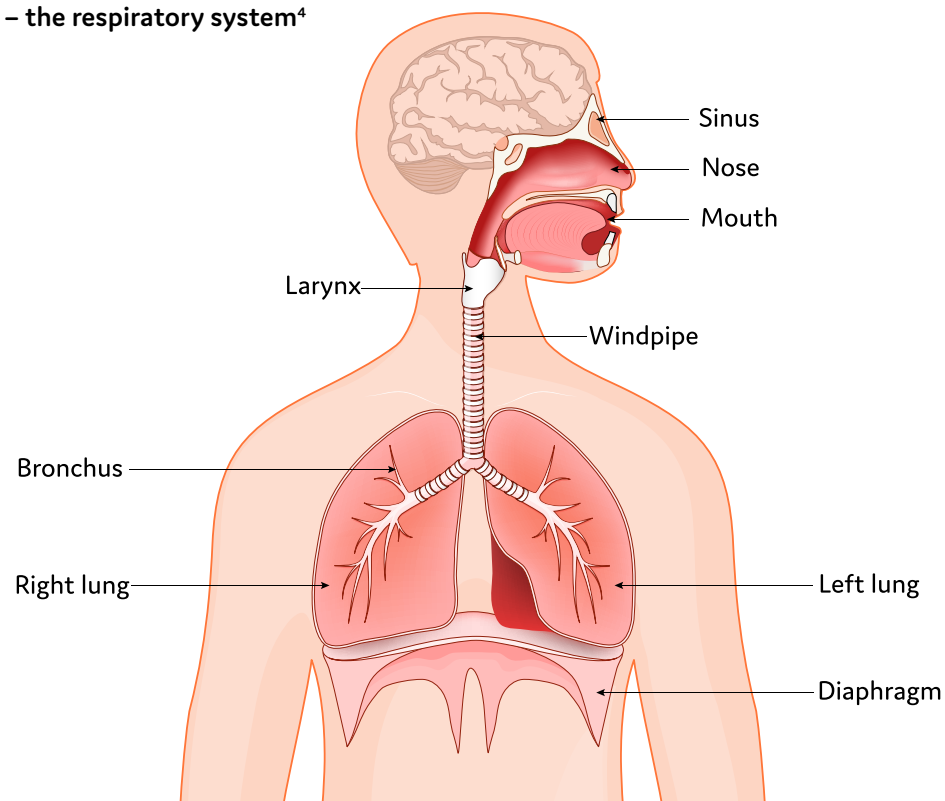


# The respiratory system

The lungs are the main organ of the respiratory system which also includes the windpipe, muscles of the chest wall and diaphragm (main muscle used for breathing), blood vessels, facial muscles and other tissues. Working together, these parts of the body make breathing possible.

When we inhale (breathe in), air enters the lungs, and oxygen from that air moves to the bloodstream and is transported around the body via the heart and circulation. At the same time, carbon dioxide, a waste gas, moves from the bloodstream to the bronchus within the lungs and is exhaled (breathed out). This process, called gas exchange, is essential to keeping us alive. How fast or slow we breathe is controlled by the brain, which senses our body's need for oxygen and also the need to get rid of carbon dioxide, for example, during physical activity.

Figure 1 – the respiratory system<sup>4</sup>



# Brief history of respiratory diseases


Respiratory diseases have long been a major cause of illness and death, with their underlying causes shifting significantly over the years. Some are non-communicable (not passed from person to person), but long-term in nature, with others being due to highly infectious viruses or bacteria.

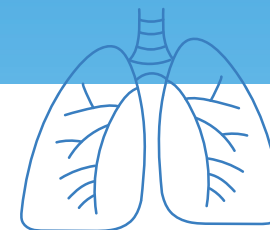
Initially, infectious diseases were the primary culprits of poor respiratory health, with tuberculosis (TB) being particularly devastating in the 1800s and into the 1900s. The spread of TB was exacerbated by overcrowding, poor sanitation, and malnutrition, conditions prevalent in industrialising cities during the 19th and early 20th centuries. Public health measures, such as the establishment of sanatoriums, an increased understanding of how TB spreads, and the development of antibiotics, eventually brought TB under control<sup>5</sup>.

As industrialisation progressed, air quality became a factor which contributed to respiratory disease. The widespread use of coal in factories and homes led to severe air pollution and frequent occurrences of smog, particularly in towns and cities. The Great Smog of London in 1952 resulted in thousands of deaths. This event spurred legislative action to improve air quality, such as the Clean Air Act of 1956<sup>6</sup>.

Pandemics have also played a substantial role in shaping the landscape of respiratory disease management. The Spanish flu pandemic of 1918-1919 was one of the deadliest in history, claiming an estimated 50 million lives worldwide. Subsequent influenza pandemics, including the Asian flu of 1957, the Hong Kong flu of 1968, and the H1N1 pandemic in 2009, continued to pose significant public health challenges, but learning from the Spanish flu epidemic meant these were managed more successfully<sup>5</sup>.

Figure 2 – timeline of protective measures<sup>5,6,7</sup>

- 
- **1854:** First sanatorium opened for TB patients
  - **1918-1919:** Spanish flu pandemic
  - **1940s-1950s:** Introduction of antibiotics for TB; recognition of the link between smoking and lung cancer
  - **1952:** Great Smog of London leads to the Clean Air Act of 1956
  - **1960s-1970s:** Public health campaigns against smoking begin – figure 3
  - **2000s:** Introduction of the Clean Air Act in many countries to combat air pollution
  - **2003:** Global response to severe acute respiratory syndrome (SARS) outbreak
  - **2007:** Smoking banned in all enclosed public places and workplaces
  - **2009:** H1N1 influenza pandemic leads to widespread vaccination campaigns
  - **2020-2022:** COVID-19 pandemic prompts global public health measures, including lockdowns, mask mandates, and mass vaccination efforts



The rise of tobacco use in the 20th century resulted in another significant shift in the causes of respiratory disease. Smoking became widespread, leading to a dramatic increase in lung cancer and COPD<sup>5</sup>.

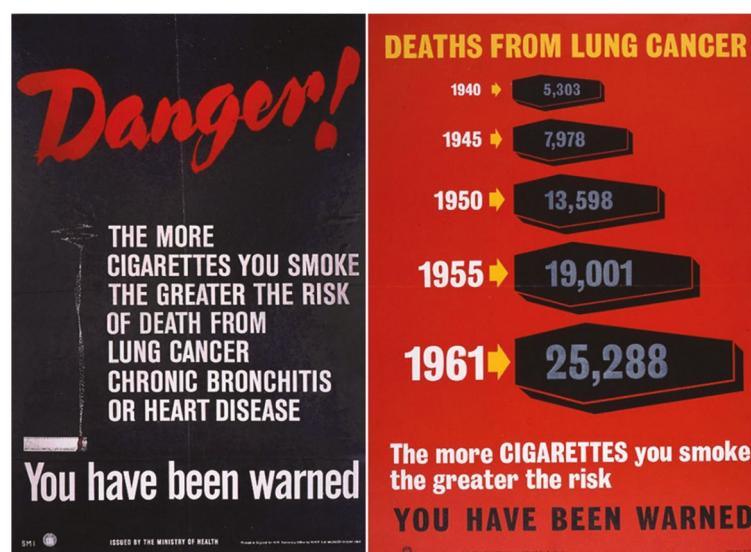
The establishment of the link between smoking and lung cancer in the 1950s was a turning point, prompting efforts to curb tobacco consumption through education and legislation (Figures 3 and 4). Smokefree legislation introduced in 2007<sup>7</sup> ensured smoking was no longer permitted in enclosed and substantially enclosed workplaces and public places. Public health campaigns and regulatory measures aimed at reducing tobacco use have made significant strides, yet the legacy of tobacco continues to affect millions of people across the world.

The 21st century has seen additional respiratory threats with the outbreaks of severe acute respiratory syndrome (SARS) in 2003, the Middle East respiratory syndrome (MERS) in 2012, and the more recent COVID-19 pandemic<sup>5</sup>. These events highlight the ongoing vulnerability of global populations to respiratory diseases and the absolute need for robust public health responses.

**Figure 3**

**Left: Anti-smoking poster from 1962 explaining the health risks and featuring the message 'You have been warned'**

**Right: Anti-smoking poster from 1962 showing increases in deaths from lung cancer since 1940<sup>8</sup>**



**Figure 4 – National stop smoking campaign poster by Health Education England, printed 1988**



# Conditions affecting the respiratory system

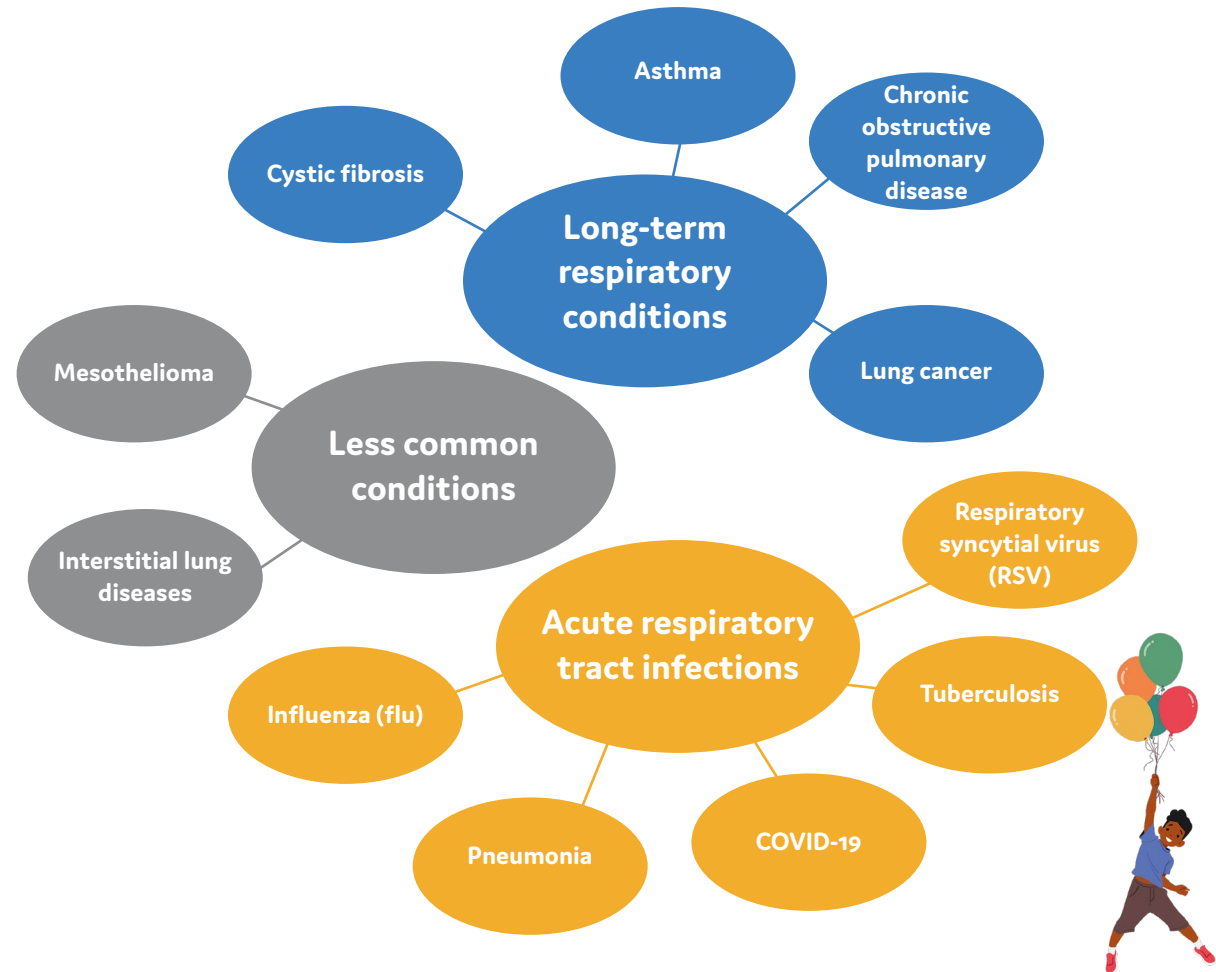
This chapter of the report gives a brief overview of some of the long-term respiratory conditions, the less common respiratory conditions and acute respiratory tract infections.

## Long-term respiratory conditions

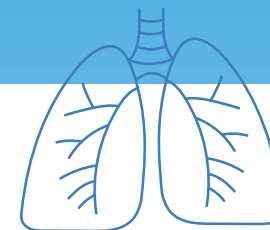
A long-term condition (or chronic illness) is defined as a disease or condition which requires ongoing treatment or management over a period of time, it can be controlled with medication or therapy but not cured<sup>10</sup>.

Having a long-term condition can have a significant negative impact on an individual's quality of life, educational and / or employment prospects, housing solutions, access to transport, financial implications and loneliness and social isolation. Many people also live with more than one long-term condition.

The World Health Organization refers to asthma and chronic obstructive pulmonary disease (COPD) being the two most common long-term respiratory diseases which affect the airways<sup>11</sup>.







## Chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease (COPD)<sup>11</sup> includes lung conditions such as emphysema (damage to the air sacs in the lungs) and chronic bronchitis (long-term inflammation of the airways). It mainly affects middle-aged or older adults who smoke or have smoked. The main symptoms include shortness of breath, frequent chest infections, persistent wheezing and a persistent chesty cough with phlegm. Many people dismiss the cough as a 'smokers cough' so do not realise they have COPD. The risk of developing COPD increases the more someone smokes and the longer they smoke.

Damage to the lungs caused by COPD is permanent, and breathing problems gradually get worse over time and can start to impact on daily life, however, treatment can help slow down the progression of the condition.

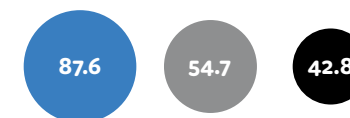


Figure 5 – COPD registrations and deaths<sup>12</sup>

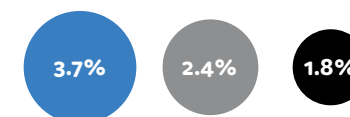
## COPD registrations and deaths

- Knowsley Sub-ICB
- North West
- England

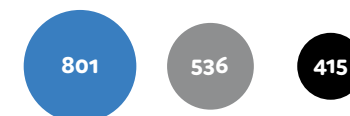
Knowsley has the second highest death rate from COPD (all ages, 2020-22) in England of upper tier local authority areas, behind only Manchester (90.2 per 100,000). Knowsley has a rate of 87.6 per 100,000 over double England (42.8) and significantly higher than North West 54.7.



In 2022/23 3.7% of the population of Knowsley have been diagnosed with COPD which equates to just over 6,000 residents. This is over double England (1.8%) and significantly higher than North West (2.4%).



Emergency hospital admissions for COPD in 2019/20 for adults in Knowsley aged 35+ were 801 per 100,000 population, almost double England (415 per 100,000 population) and significantly higher than North West (536 per 100,000 population).



## Asthma

Asthma<sup>13</sup> can affect people of all ages and usually starts in childhood. The symptoms can be well managed and controlled with treatment, with most people able to live active lives. However, some people may be more severely affected and have ongoing problems or severe asthma attacks.

Asthma is caused by swelling (inflammation) of the breathing tubes which take air in and out of the lungs causing them to temporarily narrow. Asthma is thought to be caused by a response to triggers such as allergies to dust, animals or pollen, sudden changes in weather, infections such as cold and flu, physical activity and exposure to damp or mould. Symptoms include breathlessness, wheezing, coughing and a tightness in the chest feeling.

Currently 7% of the population of Knowsley aged over six have been diagnosed with asthma. This is similar to the North West but slightly higher than England<sup>14</sup>. This is likely however to be lower than the true picture as there will be many people who are living with symptoms and do not have a diagnosis.

- Hospital admissions rates from asthma in Knowsley are higher than England for both adults and children
- Rates of asthma deaths are similar in Knowsley to that of England. Knowsley saw 11 deaths in the three-year period 2017-19

Figure 6 – asthma prevalence, hospital admissions and deaths<sup>14</sup>

## Asthma prevalence, hospital admissions and deaths

● Knowsley Sub-ICB  
 ● North West  
 ● England

Number and % of residents aged 6+ diagnosed and living with Asthma (2022/23)

7.0%

7.1%

6.5%

Hospital admissions for Asthma in Adults (aged 19+ years) – Crude rate per 100,000 population (2022/23)

111.0

84.6

72.1

Death rate from Asthma (All ages) – Directly Age Standardised Rate (DSR) per 100,000 population (2017-2019)

2.71

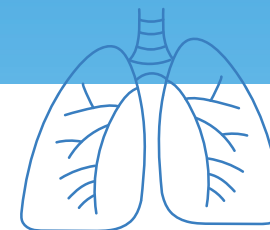
2.36

Hospital admissions for Asthma in Children (Under 19) – Crude rate per 100,000 population (2022/23) (Knowsley LA not Sub-ICB)

150.7

170.4

122.4



## Lung cancer

Knowsley has a very high rate of lung cancer<sup>15</sup> registrations (fourth highest of upper-tier local authorities in England in 2017-19) and is also high for premature lung cancer deaths (eighth highest of upper-tier local authorities in England in 2020-22)<sup>16</sup>.

Lung cancer deaths are particularly high in females in which Knowsley rank the second highest rate of premature lung cancer deaths of upper-tier local authorities in England in 2020-22.

The high rates of lung cancer in Knowsley can be attributed to present and past high levels of smoking and passive smoking. Smoking prevalence has reduced substantially over the years in Knowsley and in England, with lung cancer also seeing a gradual decline. But the impact of historical use and the continuation of smoking, especially by some population groups, remains.

Other risk factors of developing lung cancer include exposure to certain chemicals in the workplace, air pollution, exposure to radon gas.

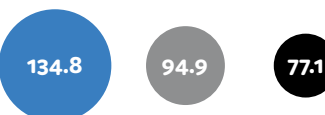
The main symptoms of lung cancer include a cough that does not go away after three weeks, a long-standing cough that gets worse, frequent chest infections, persistent breathlessness, an ache or pain when breathing or coughing and unexplained weight loss. Symptoms are not always present in the early stages of lung cancer but develop as the condition progresses which may lead to late-stage diagnosis. Therefore, recognition of symptoms and getting checked out by a GP or lung screening programme are key to successful treatment and prognosis.

Figure 7 – lung cancer registrations and deaths<sup>16</sup>

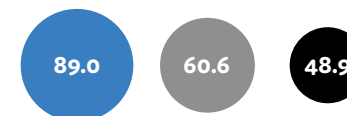
## Lung cancer registrations and deaths

- Knowsley Sub-ICB
- North West
- England

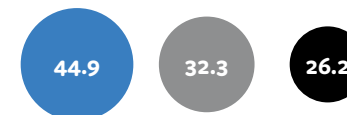
Directly Age Standardised Rate (DSR) per 100,000 population of lung cancer registrations (2017-19)



Directly Age Standardised Rate (DSR) per 100,000 population of Lung Cancer deaths (All ages) 2020-22



Directly Age Standardised Rate (DSR) per 100,000 population of Lung Under-75 Lung Cancer deaths 2020-22



## Cystic fibrosis

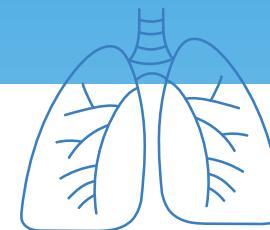
Cystic fibrosis<sup>20</sup> is a genetic condition caused by a faulty gene that causes sticky mucus to build up in the lungs and digestive system causing breathing problems and repeated chest infections and progressive lung damage. Cystic fibrosis can also affect the pancreas, liver, and intestines, and can cause digestive issues and malnutrition as the nutrients from food are not absorbed properly.

Symptoms of cystic fibrosis include persistent coughing with thick mucus, frequent chest infections, wheezing or shortness of breath, poor growth or difficulty putting on weight despite a good appetite, and bowel problems. Clubbing of the fingers and toes is also common.

Cystic fibrosis is typically diagnosed in infancy or early childhood through newborn screening and genetic testing. The severity of the disease varies, and while there is no cure, treatment has improved significantly, allowing many individuals with cystic fibrosis to live into their forties and beyond. Management includes airway clearance techniques, inhaled medicines, pancreatic enzyme supplements, and a high-calorie diet.

**In the UK, over 11,000 people have cystic fibrosis, with around 100,000 people affected worldwide<sup>21</sup>. Continued research and improved care standards are vital for enhancing the quality of life and survival rates for those living with cystic fibrosis.**





## Less common respiratory conditions

Mesothelioma and interstitial lung disease described below are just two of the less common diseases which can affect the lungs.

### Mesothelioma

Mesothelioma<sup>17</sup> is a type of cancer which mainly affects the lining of the lungs and is usually linked to asbestos exposure. Asbestos is a group of minerals made of microscopic fibres that used to be widely used in the construction industry. These tiny fibres can easily get in the lungs, where they get stuck, damaging the lungs over time. More men than women are affected.

Symptoms of mesothelioma in the lining of the lungs include, shortness of breath, chest pain, fatigue, high temperature and sweating particularly at night, a persistent cough, loss of appetite and unexplained weight loss, clubbed (swollen) fingertips.

As symptoms only become obvious some 20 years or more after exposure, the outlook

is not good with diagnosis occurring mainly in those aged over 75 when the cancer has reached an advanced stage. Treatment focuses on managing and controlling symptoms and prolonging life.

There are currently around 2,500 deaths from mesothelioma each year in the UK<sup>17</sup>. This number is expected to drop in the future because asbestos was banned in 1999, however, asbestos can still be found in older buildings today and there are regulations in place to assist with its removal and safe disposal.

**Over the last five years (2018-22) in Knowsley, where mesothelioma is the underlying cause there has been 20 deaths, an average of four deaths per year<sup>18</sup>.**

### Interstitial lung disease

Interstitial lung disease<sup>19</sup> (ILD) is a term used to describe a group of conditions that all result in inflammation and scarring (fibrosis) of lung tissue. This scarring can cause stiffness in the lungs, making it difficult to breathe and get enough oxygen into the bloodstream. The exact cause of interstitial lung diseases

is often unknown, but factors such as environmental exposures, smoking, certain medications, and autoimmune conditions can contribute to its development.

Common symptoms of interstitial lung disease include shortness of breath, especially during or after physical activity, a dry, persistent cough, fatigue, weight loss, and aching muscles and joints. In advanced stages, clubbing of the fingers and toes may occur.

Interstitial lung diseases can affect people of all ages but are more commonly diagnosed in middle-aged and older adults. The prognosis for interstitial lung diseases varies widely depending on the type and severity of the disease. Treatment typically aims to slow the progression of the disease and improve quality of life, often involving medications, oxygen therapy, pulmonary rehabilitation, and in severe cases, lung transplantation.

In the UK, around 5,000 new cases of interstitial lung diseases are diagnosed each year, and the incidence is rising<sup>19</sup>. Despite advancements in understanding and managing the disease, interstitial lung diseases remain a significant cause of long-term conditions and early death.

## Respiratory tract infections

Respiratory tract infections<sup>22</sup> (RTIs) are common infections caused mainly by viruses which can affect the sinuses, throat, airways or lungs. They are different to long-term conditions in that they often get better without treatment in a couple of weeks, but if a bacterial infection is suspected they may require treatment such as antibiotics.

Most respiratory tract infections such as coughs and colds, influenza (flu), and pneumonia are more common in the winter months. With hospital admissions for flu and pneumonia particularly high between December and February, especially in our more vulnerable residents.

Respiratory syncytial virus, which is amongst the leading causes of infant hospital admissions, has epidemics which generally start in October, and peak in December, this is discussed in more detail later on in this chapter.

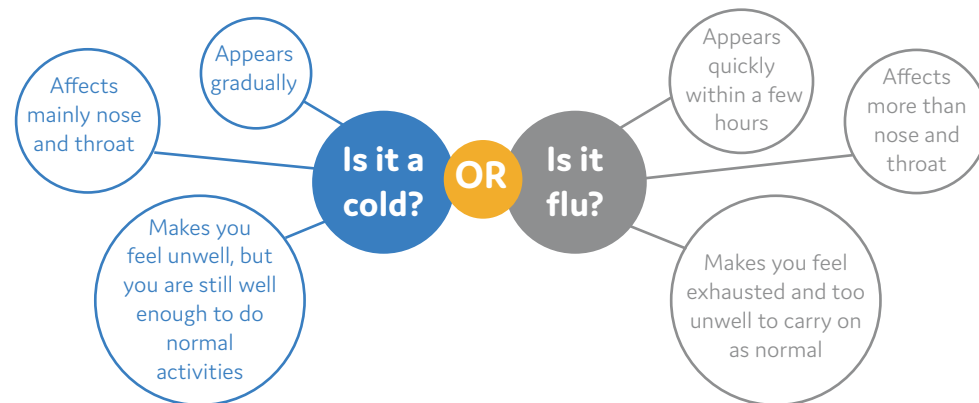
### Seasonal Flu (influenza)

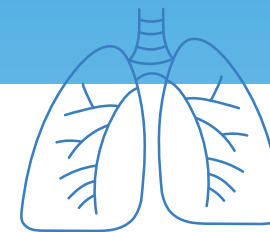
Flu<sup>23</sup> viruses most commonly circulate between October and March, anyone can get flu, however people over the aged of 65, people with long-term conditions such as asthma, diabetes or heart disease, pregnant women and children under the age of five are more likely to be at risk of a more serious flu-related complication or even death. Flu is a highly contagious virus and can easily spread between people. The infectious period is normally within the first five days of symptoms developing. The virus can live on hands and surfaces for approximately 24 hours. It is spread to others by coughs and sneezes, touching an object

or surface which has been contaminated by an infected person, or shaking the hand of an infected person and then touching your mouth, eyes or nose without washing hands first.

Symptoms include cough, sore throat, high temperature, runny or stuffy nose, muscle or body aches, headache, fatigue. In children, vomiting, diarrhoea and ear pain may also be experienced and they may be less active.

Most people are able to get better at home themselves, following rest and sleep, keeping warm, taking paracetamol or ibuprofen to lower temperature and ease aches and pains, and drinking plenty of water to prevent dehydration.



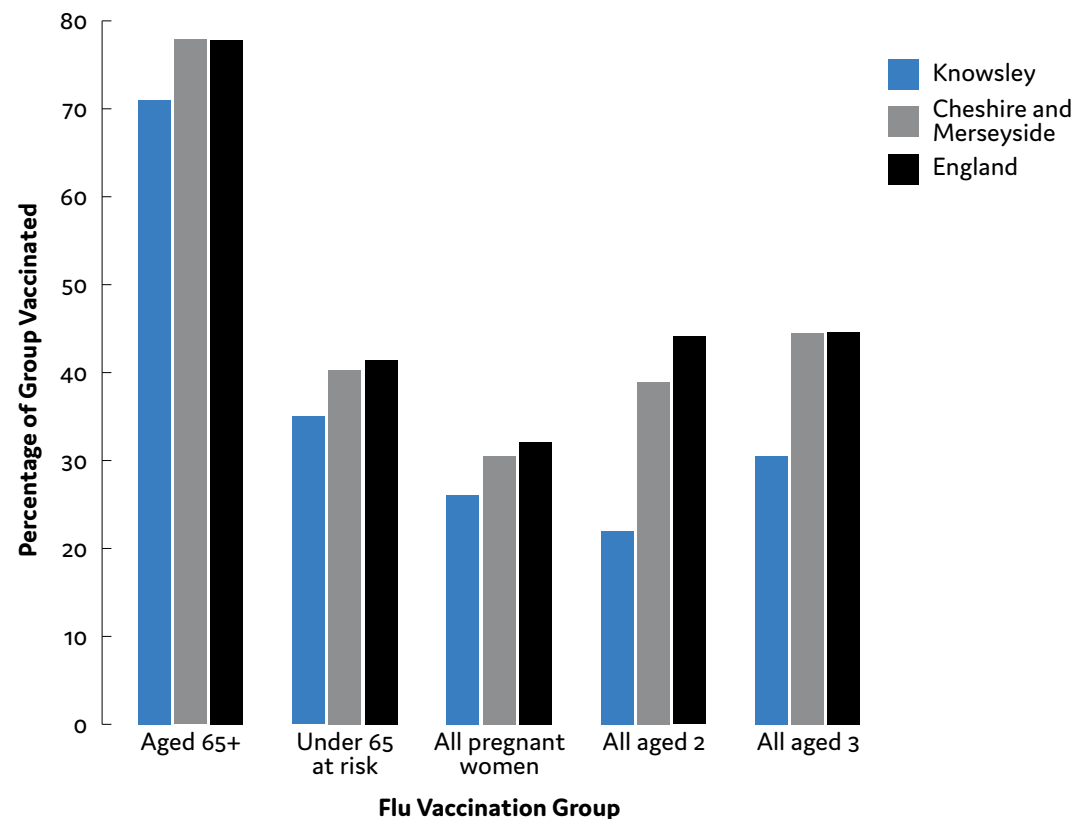


**Book your winter vaccines now**  
while it's quick and easy



Uptake of flu vaccinations are lower in Knowsley in the latest year 2023/24 than England and Cheshire and Merseyside for all main population groups as can be seen in figure 8 opposite. Knowsley has a particularly low uptake for children aged two and three years, the age two uptake in Knowsley in 2023/24 is half that of England. In recent years most population groups have seen a decline in Knowsley, the under 65 at risk group has declined by 12.1% in the last two years<sup>24</sup>.

Figure 8 – flu vaccination uptake 2023/24<sup>24</sup>



## Pneumonia

Pneumonia<sup>25</sup> is inflammation of the lungs that is mostly caused by a bacterial infection. Most people can get better within two to four weeks with a mild illness and are treated with a course of antibiotics at home. However, for others it can be life-threatening and may require hospital admission. Those most at risk include babies, adults over the age of 65, people with existing heart or lung conditions and people who smoke (due to damage to the lining of the airways caused by smoking).

Pneumonia is caught by breathing in coughs and sneezes from other people or can be transferred by touching a surface an infected person has been in contact with and then touching your mouth or nose before washing your hands.

Pneumonia can affect either one or both lungs. The air sacs in the lungs (alveoli) become filled with fluid, making it harder for oxygen to reach the blood stream, which leads to shortness of breath. Other symptoms include coughing up large amounts of phlegm, high temperature, headaches, aches and pains, sweating and shivering and generally feeling unwell. However, it should be noted that these symptoms are also seen in flu (influenza) making diagnosis difficult. The pneumonia vaccine can help prevent pneumonia and is offered to those most at risk.

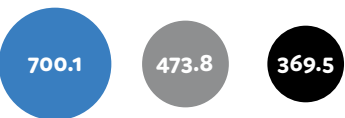
**Hospital admission rates for pneumonia in Knowsley are almost double that of the England average and are significantly higher than the North West in the latest year 2022/23**

Figure 9 – pneumonia hospital admissions and deaths<sup>26</sup>

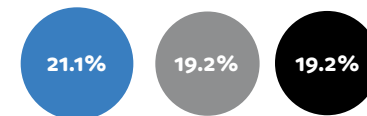
## Pneumonia deaths and hospital admissions

- Knowsley Sub-ICB
- North West
- England

Emergency hospital admissions for pneumonia Directly Age Standardised Rate (DSR) – per 100,000 population (2022/23)



% of zero and one day emergency hospital admissions for pneumonia (2022/23)

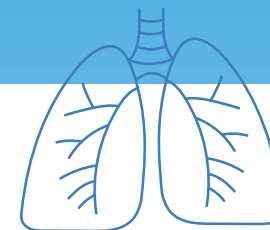


Directly Age Standardised Rate (DSR) per 100,000 population deaths from pneumonia (2020)



**Death rates from pneumonia in Knowsley are significantly higher than England in the latest reported year of 2020<sup>26</sup>**





## COVID-19

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV2), the virus which causes COVID-19<sup>27</sup>, primarily targets the lungs, where it can cause significant damage. The virus infects the cells lining the airways and alveoli (tiny air sacs in the lungs), leading to inflammation and fluid build-up. This makes it difficult for oxygen to pass from the lungs into the bloodstream, causing shortness of breath. In severe cases, the immune response can further damage lung tissue, leading to pneumonia, acute respiratory distress syndrome, or even respiratory failure, which may require intensive medical support.

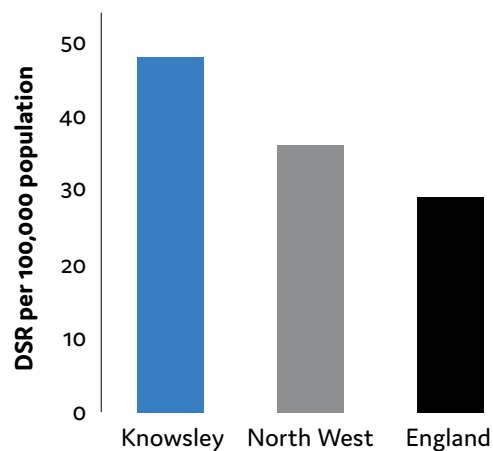
COVID-19 has been shown to damage several organs beyond the lungs. The virus can affect the heart, leading to inflammation of the heart muscle (myocarditis) and causing irregular heart rhythms. It can also impact the kidneys, sometimes leading to acute kidney injury. The liver may suffer from inflammation and damage as well. Additionally, COVID-19 can affect the brain, leading to neurological symptoms such as headaches, confusion, and even strokes. The long-term effects on these organs are still being studied.

Knowsley was hit very hard during the COVID-19 pandemic. Data from February 2023 showed that over the course of the whole pandemic Knowsley had the highest rate of COVID-19 cases in the country of upper tier

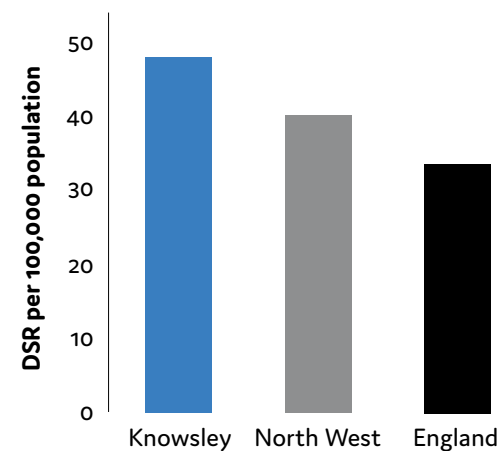
local authorities in England (38,479 per 100,000 population)<sup>28</sup>. As a result of high infection rates in Knowsley, it is likely that prevalence of Long COVID will be high.

Figure 10 – deaths from COVID-19<sup>28</sup>

**Under-75 Directly Age Standardised Rate (DSR) per 100,000 population deaths due to Covid-19 (2020-22)**



**All ages Directly Age Standardised Rate (DSR) per 100,000 population deaths due to Covid-19 (2020-22)**

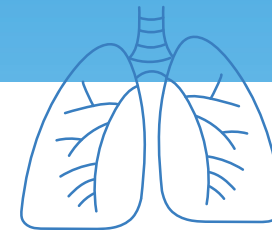


Long COVID can be a debilitating condition affecting quality of life. Anyone who previously had COVID-19 can be affected, even those who had only mild symptoms, not just those who were admitted to hospital. Generally, symptoms persisted for some 12 weeks after the initial infection, with recovery varying from person to person, and with a diverse range of symptoms presenting and changing over time and having a negative impact on quality of life. The most common being; extreme tiredness, feeling short of breath, difficulty concentrating, dizziness, heart palpitations, joint pain and muscle aches. Other symptoms include chest pain or tightness, insomnia, loss of smell, tinnitus, feeling sick, stomach aches, cough, headaches, sore throat, depression and anxiety.

Mersey Care NHS Foundation Trust has a Long COVID service<sup>29</sup> which aims to empower those living with the condition the knowledge and confidence to help manage their own symptoms and regain control of their health.

As Long COVID is a new condition various research continues. According to Office for National Statistics<sup>30</sup>, around 1.9 million people living in private households in the UK are experiencing ongoing symptoms linked to previous infection with COVID-19.





## Respiratory syncytial virus

Respiratory syncytial virus<sup>31</sup> (RSV) commonly occurs each year starting in October and reaching its peak in December. It is much more predictable virus than that of influenza which is generally much more widespread in its timing.

Respiratory syncytial virus is spread in the coughs and sneezes of an infected person and for most will cause mild symptoms. However, infants under one year old and people aged 75 and older are at a greatest risk or having more severe disease or even death.

Over 60% of children have been infected by their first birthday, this reaches to over 80% by the time they are aged two.

In babies, respiratory syncytial virus can cause symptoms similar to a common cold, such as runny nose, coughing, and sneezing. However, it can quickly progress to more severe symptoms, including wheezing, difficulty breathing, rapid breathing, and feeding difficulties. In severe cases, it may lead to bronchiolitis or pneumonia.

In older adults, respiratory syncytial virus symptoms also start like a cold with a runny nose and cough. However, it can progress to more serious conditions such as worsening of chronic lung diseases, wheezing, and even pneumonia, especially in those with weakened immune systems.

From September 2024, a vaccination will be available on the NHS for people aged 75 to 79 and pregnant women who are 28 weeks pregnant or more<sup>32</sup>.



**If you're at least 28 weeks pregnant or aged 75 to 79, you can get your free respiratory syncytial virus (RSV) vaccination**

## Tuberculosis

Tuberculosis<sup>33</sup> (TB) has been a notifiable disease in England and Wales since 1913. Tuberculosis is a bacterial infection which affects the lungs. It can be spread through the air through the release of small droplets when infected people cough, sneeze or speak and those around them breathe in the bacteria. Symptoms include a cough lasting more than three weeks, high temperature, drenching night sweats, loss of appetite and weight loss. Early identification and treatment with antibiotics are essential for good health outcomes and to reduce onward transmission, however, if left untreated it can become serious.

The awareness poster at figure 10<sup>34</sup> is dated from 1935-1939, published by the Central Council for Health Education, prior to the formation of the National Health Service. It is the equivalent of today's early intervention and prevention messaging aimed at encouraging people to speak to their GP if they have any concerns.

Latest data from 2022<sup>35</sup>, shows that 4,380 people were notified with TB in England. Most of these cases being identified in people born outside of the UK (79%), with just over half of those (46%) resident in the UK for less than six years before the disease presented. This is known as

latent TB infection, in which the infection can lie dormant in the body until development of active disease.

The risk of acquiring TB in the UK is more common in the most deprived areas, with 13.5 per 100,000 population compared to 2.6 per 100,000 population living in the least deprived areas. For example, people from disadvantaged groups such as those who are homeless, people who have been in contact with the criminal justice system, those who are drug or alcohol dependent, those with mental health conditions and those who are asylum seekers. The most common risk factor in UK born individuals was drug misuse.

Knowsley has historically had very low rates of TB incidence. The latest data for 2020-22 shows that Knowsley TB incidence is well below that of North West and England.

Figure 10 – Tuberculosis awareness poster from 1935-1939<sup>34</sup>

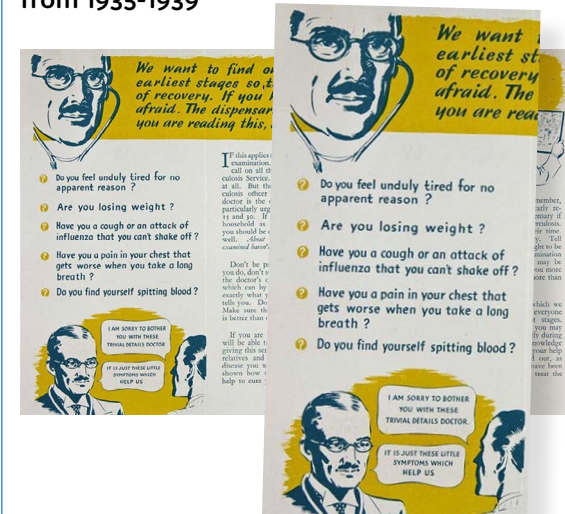
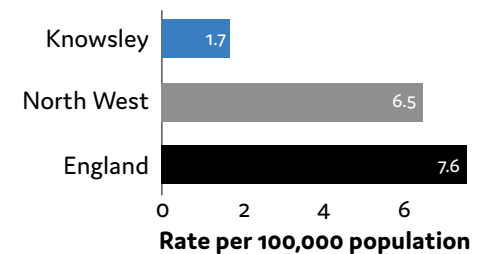
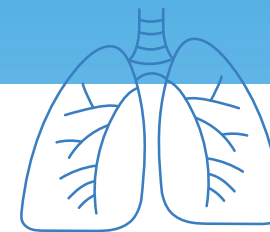


Figure 11 – Tuberculosis incidence<sup>35</sup>

TB incidence – Crude rate per 100,000 population (2020-22)





# Inequalities in respiratory health

**The previous chapter of this report discussed some of the many respiratory conditions, infections and the number of people affected by them. This next chapter of the report looks in more detail at why some people are more affected than others, the potential causes and risk factors, who is most at risk and most importantly what we are doing to support people and to prevent disease.**

In 2021, the Institute for Health Equity led by Sir Michael Marmot looked at the widening health inequalities across Cheshire and Merseyside. The report<sup>36</sup> evidenced that people living in deprived areas have a greater risk of having poor health and are likely to die earlier than those living in a more affluent area. They are also more likely to have more than one long-term condition which may develop some 10 years earlier and their health may be more severely affected. These inequalities in health are thought to be caused by an individual's exposure to multiple risk factors linked to the wider determinants of health. In relation to respiratory disease and/or infections, evidence suggests those most at risk include people:

- who are current or ex-cigarette smokers
- who live in poor quality or overcrowded housing conditions
- who have continued exposure to indoor or outdoor air pollution

- who experience difficulties in accessing healthcare such as routine vaccinations and immunisations
- who have occupational exposure to harmful pollutants through their jobs
- with severe mental illness
- with learning disabilities and
- people who are homeless

As discussed in the Smoking and Vaping Joint Strategic Needs Assessment<sup>39</sup>, it is well evidenced that smoking is more common among people who live in social housing, people with a mental health condition, people who are unemployed, people who work in routine or manual jobs and people who are dependent on drugs and/or alcohol. Therefore, someone who smokes and lives in a deprived area in poor quality housing are at an increased risk of poor health outcomes.

Health inequalities not only impact an individual's health, quality of life and years lost spent in poor health, there are also costs to society and the wider economy as discussed earlier in this report.

**Over 1.2 million people in England have a learning disability and face significant health inequalities compared with the rest of the population<sup>37</sup>. The Learning Disabilities Mortality Review Programme (2017) found that 31% of deaths in people with a learning disability were due to respiratory conditions and 18% were due to diseases of the circulatory system<sup>38</sup>. Addressing barriers to accessing healthcare and making improvements to the lives of people with learning disabilities is a key priority in the NHS Long-term Plan.**



### Smoking and mental health

There is a strong association between smoking and having poor mental health with a third of all cigarettes smoked by people living with a mental health condition<sup>42</sup>. Poor mental health being defined as ranging from having low mood, to anxiety, depression to more severe mental health illness such as bipolar or schizophrenia.

Knowsley has a very high proportion of people suffering with poor mental health. Around 1 in 5 adults (20.4%) aged 18+ has diagnosed depression, which has roughly doubled in the past ten years. The Knowsley prevalence is significantly higher than England where 13.2% of adults have depression<sup>43</sup>.

Research<sup>44</sup> suggests that as the severity of poor mental health increases so does smoking prevalence and poor physical health. People living with bipolar or schizophrenia die on average 10 to 20 years earlier than the general population. This inequality is due to high levels of tobacco and nicotine dependence, not having the desire to quit and perceptions of being able to quit and remaining smokefree. Many people believe that smoking helps them manage their poor mental health when in fact the opposite is true – stopping smoking has been proven to not only improve physical health but mental health too.

### Life expectancy in Knowsley

Life expectancy in Knowsley<sup>40</sup> is significantly lower than England for both males and females. The latest data for 2022 for Knowsley shows the average life expectancy for males is 76.6, this is 2.7 years lower than England which is 79.3. For females for the same year for Knowsley it is 80.5, this is also 2.7 years lower than England.

Deprivation affects life expectancy and there are large differences between the least and most deprived areas of the borough. In 2020-21 the male life expectancy of the most deprived 20% of Knowsley was 70.9, this is 8.9 years lower than the 20% least deprived which was 79.8. There is a similar gap for females with the most deprived 20% at 75.1, this being 8.4 years lower than the 20% least deprived which was 83.4.

**In 2016-20, the ward with the lowest male life expectancy was Northwood at 72.4, this is 7.4 years lower than that of the highest Roby at 79.8. Female life expectancy is also lowest in Northwood at 76.2, this is 8.4 years lower than the ward with the higher female life expectancy Whiston and Cronton 84.6.**

Figure 12<sup>41</sup> shows the average numbers of premature deaths per year (in under 75s) in Knowsley over the latest five-year period (2018-22).

- Respiratory disease deaths make up 12% of premature deaths, equating to an average of 82 deaths per year, the majority (50 deaths) of these were COPD deaths
- Cancer causes the highest proportion of early death equating to 237 deaths per year, around 35% of total deaths
- Lung cancer deaths are particularly high with an average of 66 deaths a year, equating to 10% of total early deaths



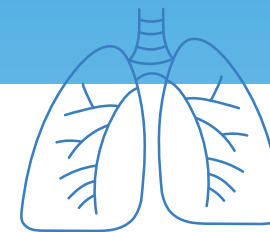
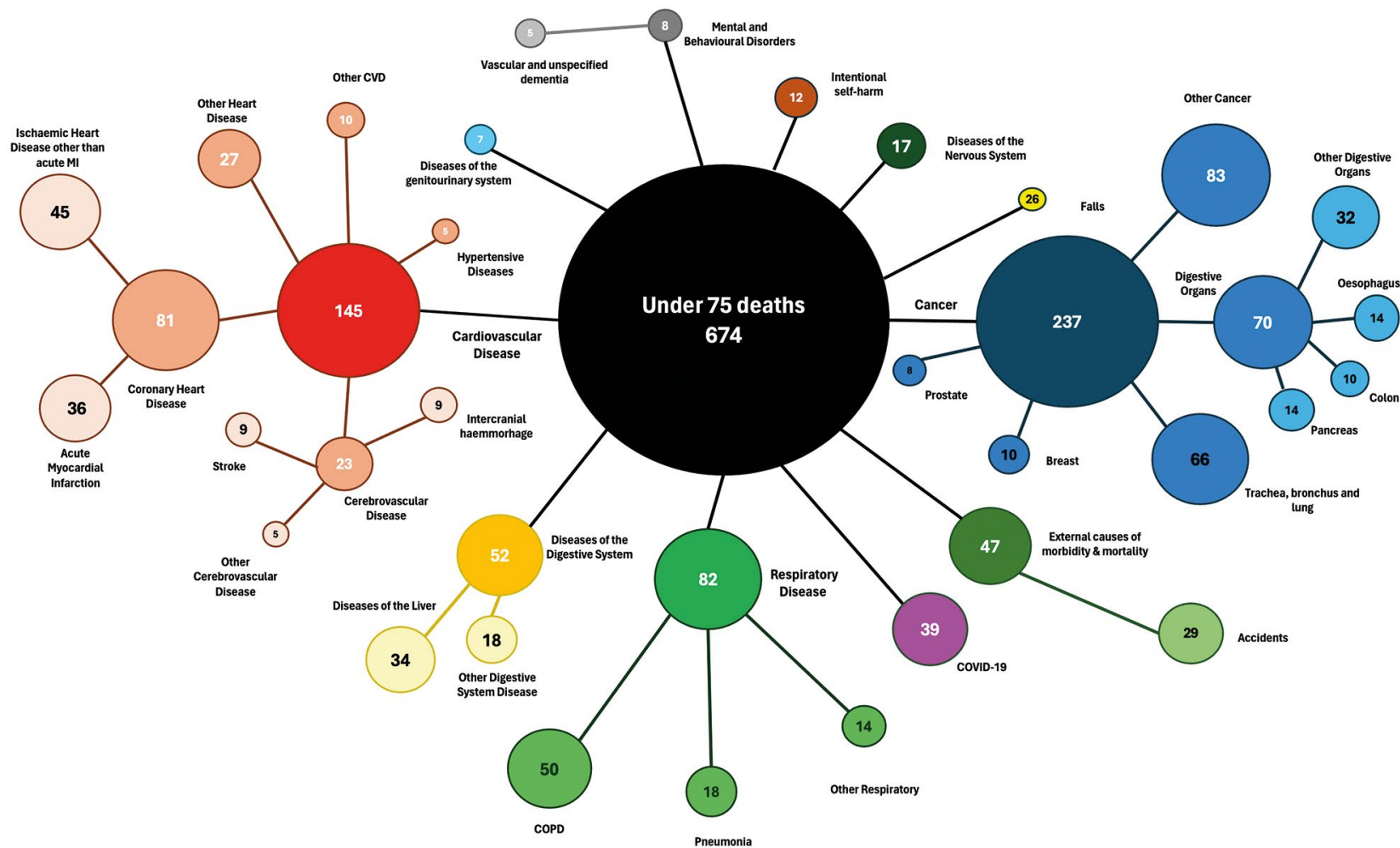


Figure 12 – average numbers of premature deaths per year (under 75s) in Knowsley over the latest five-year period (2018-22)<sup>41</sup>





The Marmot Beacon Indicators (figure 13<sup>45</sup>) demonstrates how Knowsley faces worse outcomes in life expectancy, particularly among older adults, where respiratory conditions like COPD and asthma are prevalent. High levels of unemployment and fuel poverty exacerbate these issues as living in cold, damp homes can worsen respiratory illnesses.

The indicators also show concerning trends in children's health, with high rates of children in workless households and self-harm admissions. These issues are compounded by the high levels of absolute poverty, which limits access to healthy living conditions and healthcare, and can compound existing health inequalities.

Despite these challenges, there are areas of improvement, such as increased employment and local investment, which could support better living conditions and health outcomes in the long term. However, the data indicates a need for targeted interventions to address the root causes of poor health in Knowsley, particularly through improving housing, reducing poverty, and providing better access to healthcare and education.



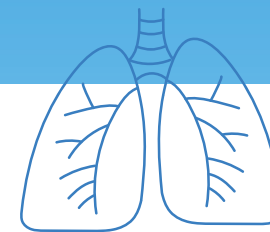
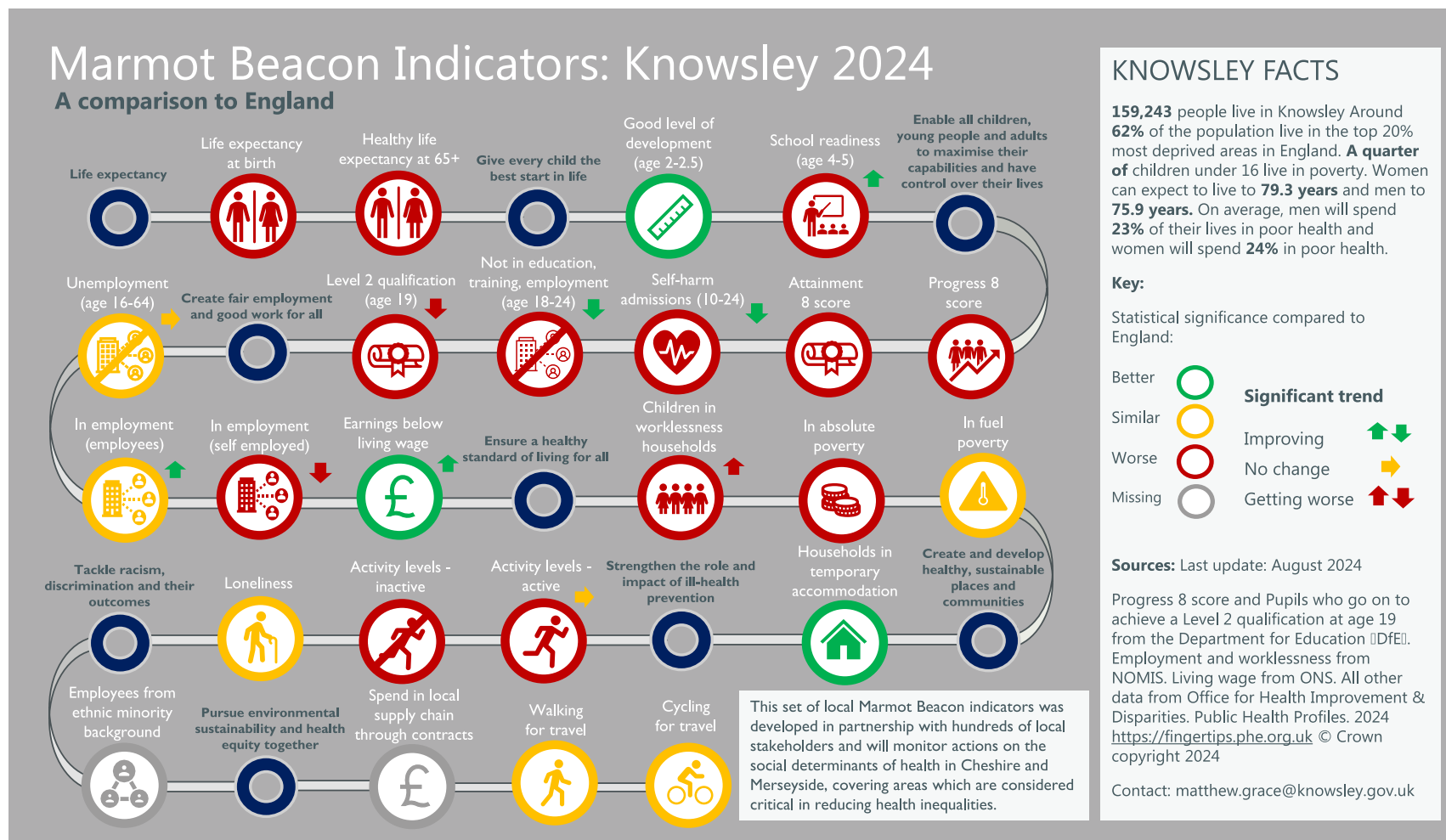


Figure 13 – Marmot Beacon Indicators for Knowsley, 2024<sup>45</sup>



## Reducing healthcare inequalities

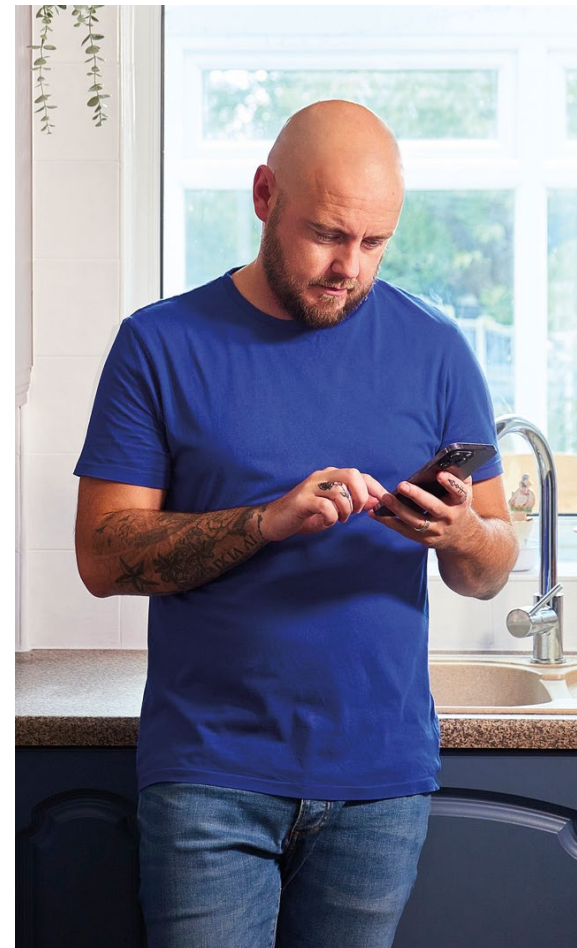
Access to healthcare is sadly not equal with many people experiencing barriers to accessing services such as being unable to afford travel costs to get there, in-accessible opening times due to shift work, lack of access to childcare, previous poor experiences to the care received and the spread of health misinformation<sup>46</sup>.

Health misinformation online spreads quickly and easily through social media and search engines. This can cause fear, mistrust, confusion, harms to health and undermine public health efforts. Often the information is false, inaccurate, or misleading and has led people to decline vaccines and reject public health measures. This could be a causal factor in increasing health inequalities in relation to the transmission of preventable respiratory infections such as COVID-19, influenza and pneumonia.

## Action to promote and improve access to healthcare

Knowsley have placed a significant focus on promoting vaccination uptake, particularly those targeting respiratory illnesses. Collaborating closely with NHS England (NHSE), the Integrated Care Board (ICB), Primary Care Networks (PCNs) and Mersey Care NHS Foundation Trust, to develop numerous programmes of work to improve vaccine uptake. This includes a combination of awareness campaigns, community outreach programmes, and streamlined vaccination services.

Local awareness raising campaigns demonstrate the importance of vaccinations and dispel common myths to help mitigate against health misinformation. Utilising a variety of media channels, and adapted NHS comms to disseminate accurate and up-to-date information about the benefits of the new RSV vaccine, seasonal flu vaccines, COVID-19 and pneumococcal vaccines. Mersey Care NHS Foundation Trust continue to circulate information and have received training in relation to promoting vaccine uptake in hard to reach groups.





Data is used to identify trends and areas with low vaccination coverage, by analysing this data, we can tailor our efforts and resources more effectively. Collaboration has also improved our community outreach programmes to target high-risk groups. Mobile vaccination clinics have been used to reach underserved areas, ensuring that all residents of our community have easy access to vaccinations. These clinics are strategically located in neighbourhoods with historically low vaccination rates, visit schools in these areas, and operate during flexible hours to accommodate various schedules. Healthcare providers are trained to engage in proactive conversations with residents about the importance of vaccinations.

Efforts are also focused on increasing vaccination uptake among people who work with vulnerable populations, particularly those in care homes. To support this effort, our health partners are exploring the possibility of offering incentives to encourage people working in vulnerable settings to get their flu vaccine. By improving vaccination rates among those who care for our most at-risk residents, we can significantly reduce the likelihood of vulnerable

people becoming ill during the winter months. This proactive approach not only protects the health of those we serve but also helps alleviate the strain on our healthcare services.



## Flu vaccination programme

The annual flu vaccination programme is set to begin in September 2024, with a focus on protecting the most at risk groups. These include older adults, pregnant women, children aged 2 and 3 years and those in clinical risk groups. The programme will also target residents in long-stay care homes, carers, close contacts of immunocompromised individuals, and frontline health and social care workers<sup>47</sup>. As with previous years, local GP practices, pharmacies, schools and the Living Well Bus will be central in delivering the vaccine to eligible individuals. Mersey Care NHS Foundation Trust will continue to promote uptake.

Despite the continuity in eligible cohorts, challenges remain in ensuring high uptake rates, particularly in groups where flu vaccination has traditionally been lower. In Knowsley, this includes clinical risk groups and pregnant women. We are encouraging providers to develop robust plans to reach these underserved populations, with co-produced communications delivered via health partners to demonstrate the importance of flu vaccination

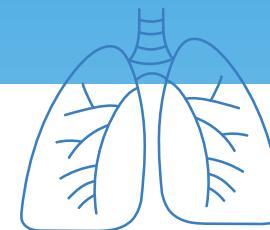
in preventing serious illness and reducing hospital admissions. Efforts will be made to align flu vaccinations with other immunisation programmes where possible, ensuring comprehensive protection against seasonal threats.

NHS England commissioned Mersey Care NHS Foundation Trust to offer vaccination to school nurseries. They also funded initiatives to Knowsley practices to send a targeted letter to all parents/carers who had not already brought their child in for vaccination. However, despite efforts vaccine uptake remains low.

Planning for the upcoming 2024/25 flu season has reflected on the previous seasons and will continue to focus on Knowsley's most at risk groups.

In October 2022, to address the low flu vaccine uptake in 2 to 3 year olds a local campaign was developed using insight from parents and carers to understand the barriers and enablers for flu vaccination uptake. The campaign used the theme 'Super Hero'. The key message behind the campaign was to 'protect your child and loved ones from flu'. A number of resources and key messages were developed and disseminated, in locations such as early years settings, primary care, libraries, foodbanks, leisure centres and soft play areas. Training for Knowsley frontline early years staff was undertaken to ensure full support was offered to families.





### COVID-19 vaccination programme

The COVID-19 vaccination programme began in December 2020 and was rapidly extended to all eligible adults<sup>48</sup>. The most vulnerable groups were vaccinated first, including older adults, healthcare workers, and those with underlying conditions. Local health services, including GP practices and pharmacies, supported vaccine delivery. Despite widespread availability, vaccine hesitancy in certain demographics posed challenges, especially in younger age groups. Evidence clearly shows that the risk of not being vaccinated is far greater than any risk associated with vaccination. Booster programmes have subsequently been run on a national footprint.

### Respiratory syncytial virus vaccination programme

From September 2024, a new respiratory syncytial virus vaccination<sup>49</sup> will be available on the NHS for people aged 75 to 79 and pregnant women who are 28 weeks pregnant or more.

This vaccine is expected to significantly reduce the incidence of severe respiratory syncytial virus related illnesses, such as bronchiolitis and pneumonia, which often lead to hospitalisation.

### Knowsley Community Respiratory Services

Knowsley's chronic obstructive pulmonary disease service<sup>50</sup> is delivered by Liverpool Heart and Chest Hospital NHS Foundation Trust. The service is available to Knowsley residents aged over 18 or those who are registered with a Knowsley GP practice.

The aim of the service is to identify undiagnosed COPD patients in the community along with managing existing patients and reducing unnecessary hospital admissions through improved diagnosis, treatment and management.

The service enables residents to receive patient centred support and treatment from a multi-disciplinary team. Consultant led clinics are run alongside diagnostic, respiratory nurse, physiotherapy and counselling services. This enables COPD patients to have access to investigations such as spirometry and receive a treatment plan at their appointment. The service also provides a home oxygen service, early supported discharge, pulmonary rehabilitation, chest physiotherapy, rapid-response team and 24-hour advice line. Overall, this enables patients to remain independent and empowered to manage their

condition with appropriate support.

Liverpool Heart and Chest Hospital NHS Foundation Trust also offer specialised stop smoking support such as nicotine replacement therapy and e-cigarettes to residents with more complex respiratory conditions who are under their care.

### Respiratory disease clinical pathway for drug and alcohol treatment services

Often, people with drug and alcohol problems do not access traditional treatment services due to perceived stigma and therefore respiratory conditions are likely to go undiagnosed. Data from the Cheshire and Merseyside Drug Related Deaths and In-treatment Mortality Annual Report 2021<sup>51</sup>, stated the most common causes of death that were not from overdose, were deaths from alcoholic liver disease followed by COPD, emphysema and respiratory failure.

To provide accessible, opportunistic support, the Northwest Drug and Alcohol Related Death Comorbidities Task and Finish Working Group developed a respiratory disease clinical pathway. The pathway enables Change Grow Live, Knowsley's drug and alcohol treatment service provider, to directly refer clients into the respiratory service to enable potential disease to be identified, diagnosed and treatment offered.



## Reducing the harm from smoking and second-hand smoke

Despite a significant decline in the number of people smoking nationally England (12.7%), North West (13.4%) in Knowsley smoking rates are still higher (14.8%)<sup>52</sup>.

As discussed earlier in this report, smoking continues to be the main driver of health inequalities with a smoker dying on average 10 years earlier than a non-smoker<sup>36</sup>. Smoking is the main cause for the development of respiratory diseases, such as chronic obstructive pulmonary disease, emphysema, and chronic bronchitis.

Smoking has a significant financial burden on both primary and secondary care NHS services, with costs arising from treating smoking related diseases. It is estimated that one in four patients occupying a hospital bed being a smoker<sup>53</sup>. There are also longer-term social care costs in addressing care needs caused by smoking related illnesses in later life.

These impacts are also felt by the family of the smoker who will be indirectly affected in many ways, financially and emotionally.

### How smoking tobacco harms the body

When a tobacco product such as a cigarette burns, it releases thousands of chemicals, irritants and toxins many of which are poisonous, and some being known to cause cancer. The tobacco smoke is inhaled deep into the lungs, depositing the harmful particles, over the years the impact of which builds up and damage occurs such as scarring or thickening of the airways and lungs. A 'smokers cough' is in fact that the cilia in the lungs have been damaged and therefore less able to clear mucus from the lungs<sup>55</sup>.



### Why do people start or continue to smoke?

There are a complex range of factors which mean people start smoking or continue to smoke<sup>56</sup>. It is recognised that most people start smoking in childhood, likely to be influenced by those around them smoking, along with environmental factors such as living in an area where lots of people smoke, living near shops where cigarettes are sold, being exposed to advertisements (before legislation came into effect) and tobacco imagery in the media and having friends who smoke. Smoking becomes normal, appears to be attractive and becomes addictive.

Tobacco products such as cigarettes or cigars contain nicotine, the substance that gets people addicted and makes it very hard for them to quit. This is because the body and brain become dependent on nicotine to feel comfortable. The brain releases the feelgood chemical dopamine which helps to reduce anxiety and stress levels. Without nicotine people begin to get withdrawal symptoms and cravings for nicotine leading to the vicious circle.

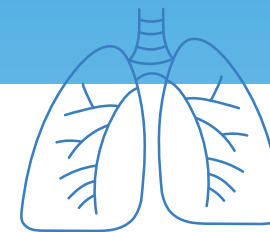


Figure 14 – economic cost of smoking tobacco in Knowsley, 2023<sup>54</sup>

Smoking costs Knowsley an estimated  
**£55.8 million**  
per year



Healthcare costs due to smoking related medical treatment via primary care or hospital admission is **£6.45 million**



Social care costs due to smoking related illnesses in later-life are estimated at **£5.22 million**



Impact on productivity losses connected to earnings and employment prospects are estimated at **£43 million**



Fire costs relating to smoking-related fires cost an estimated **£1.10 million**





### Second-hand smoke and health harms

Smokefree legislation introduced in 2007<sup>7</sup> ensured smoking was no longer permitted in enclosed and substantially enclosed workplaces and public places. It was introduced based on the strong evidence researched over decades regarding the dangerous health harms resulting from exposure to second-hand smoke<sup>56</sup>.

Second-hand smoke is made up of the smoke that has been inhaled and then exhaled by the smoker into the air, and the side-stream smoke which comes from the lit end of the cigarette. Evidence suggests 85% of smoke released into a room comes from side-stream smoke which contains higher concentrations of the toxic gases.

**Smoke can linger in the air for two to three hours after the cigarette has been put out even with a window open.**

People who are regularly exposed to second-hand smoke are at a greater risk of smoking related diseases such as lung cancer and coronary heart disease. People with existing heart or respiratory illnesses also have an increased risk of worsening conditions.

Pregnant women exposed to second hand smoke are more prone to premature birth and their baby is at greater risk of low birthweight and sudden infant death syndrome. Children are particularly vulnerable to passive smoking due to breathing more rapidly and having less developed airways, lungs, and immune systems.

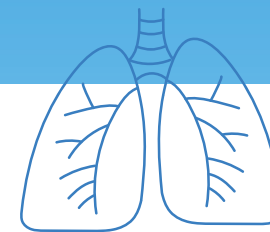
Children who live in a household where at least one person smokes are more likely to develop breathing problems such as asthma, chest infections, meningitis, ear infections and coughs. In the UK, around 2 million children are estimated to be regularly exposed to second hand smoke in the home and many more are exposed outside the home<sup>56</sup>.

#### UK deaths caused by second-hand smoke<sup>56</sup>:

**2,700 deaths in people aged 20-63 years**

**8,000 deaths in people aged 65+ years**





### Vaping and harm reduction

An e-cigarette, more commonly known as a vape, is a device which heats a liquid that typically contains nicotine, which can be inhaled as a vapour rather than smoke. They were invented in China in 2003 and were first introduced to Europe around 2005. They have become increasingly popular as an aid to stopping smoking<sup>57</sup>.

Current available evidence<sup>57</sup> suggests that in the short to medium term vaping is far less harmful than tobacco smoking. This is because vapes do not contain tobacco, produce tar or carbon monoxide which are the most damaging elements to health. However, further research is required to assess long-term effects. It is therefore intended only as an option for smokers to help them quit smoking or prevent them going back to smoking.

There is increasing concern both locally and nationally about the rising numbers of young people who are using vapes, despite sales being restricted to those over the age of 18. A 2022 survey by Action on Smoking and Health (ASH), reported that almost 16% of 11 to 17 year-olds had tried vaping compared to just over 11% in 2021<sup>58</sup>.

**National data<sup>57</sup> shows that people who use a vaping product to help them stop smoking are much more likely to be successful than those who don't (64.9% compared to 58.6%).**

### Action on harm reduction from smoking and second-hand smoke

The Khan Review published in 2022<sup>59</sup> found that without further action England would miss the 2019 Government set objective of becoming smokefree by 2030 (meaning only 5% of the population smoking). The review outlined a number of critical interventions for immediate remedy in particular for significant investment to be made in stop smoking interventions, the promotion of vaping as an aide to quitting smoking and increasing the age of sale of all tobacco products.

As this report was written we are still waiting for the detail over what will be included in the proposed Tobacco and Vapes Bill<sup>60</sup>. If it is agreed in Parliament, it will protect the future health of generations in the UK from smoking, meaning anyone born on or after 1 January 2009 will never legally be able to be sold tobacco.

The Tobacco and Vapes Bill could also introduce new powers to restrict vape flavours and packaging that is intentionally marketed at children. The powers could also allow government to change how vapes are displayed in shops, moving them out of sight of children and away from products that appeal to them.

Should this Bill be passed, working to implement and enforce the new powers will be a priority towards creating a smokefree Knowsley as identified in Knowsley's Smoking, Vaping and Tobacco Control Joint Strategic Needs Assessment (JSNA)<sup>39</sup> which was published in January 2024. A subsequent action plan has been developed using local insight and the national evidence base<sup>61</sup>. The action plan will look to reduce smoking rates and the harms associated with smoking and will be delivered through a range of task and finish groups. The Knowsley Smokefree Alliance which has a membership from a wide range of partner organisations will oversee the delivery of the action plan and provide strategic leadership. The additional stop smoking funding received from the Government in 2023 will support the delivery of the actions.



### Stop smoking support - Smokefree Knowsley

Quitting smoking can be difficult and on average it takes 30 attempts to succeed. Evidence suggests smokers are more likely to quit with professional support from a stop smoking service than using willpower alone<sup>39</sup>.

**In 2023/2024 Smokefree Knowsley received over 1,500 referrals, set 1,041 quit dates and had a 72% quit rate at four weeks.**

Smokefree Knowsley is delivered by City Health Care Partnership and is available for people who live, work or are registered with a GP in Knowsley. The service offers differing levels of specialist support to those who want to stop smoking. This may involve face to face, telephone or online support, alongside behavioural techniques, carbon monoxide monitoring and the provision of smoking cessation aids such as nicotine replacement products including vapes. The service has strong links with a variety of organisations who are able to refer into the service as well as residents being able to self-refer.

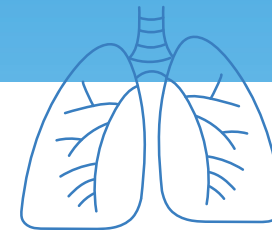
Since August 2023, Smokefree Knowsley has distributed a total of 152 vape products as part of the Government's 'Swap to Stop'<sup>62</sup> scheme with the initiative continuing to expand. In June 2024, Change Grow Live (Knowsley's Drug and Alcohol Service provider) received training from Smokefree Knowsley to enable them to distribute vape starter packs to their eligible service users who wished to quit smoking. This initiative has been very successful and continues to grow. At the time of writing, Change Grow Live has distributed 50 vape products, with 56% of clients accepting a referral to the stop smoking service for further support. Overall, 63% of 'Swap to Stop' clients have successfully quit smoking.



Smokefree Knowsley continues its dedicated prevention work with young people in the community. The service has actively collaborated with the Merseyside Youth Association and partnered with several secondary schools across the borough. Through this collaboration, they have delivered informative assemblies and participated in various events aimed at educating and raising awareness among students. These efforts are part of a broader initiative to promote a smoke-free lifestyle, equipping young people with the knowledge and resources needed to resist tobacco use and make healthier choices

Currently 23 Knowsley pharmacies are signed up to offer residents intermediate stop smoking support on a one-to-one basis with 32 pharmacies signed up to offer nicotine replacement therapy. Accessing stop smoking support in a pharmacy setting helps to reduce barriers to accessing services.

Smokefree Knowsley also provides brief intervention and referral pathway training to other professionals, which can be accessed and booked through the service.



## Success story

Gerard had been a smoker for 40 years and started smoking when he was 13. Gerard enjoyed smoking cigarettes which over time grew to 30 a day, occasionally smoking cannabis too. Gerard would smoke all day and would wake up in the middle of the night for a smoke too. Gerard had asthma and had previously been advised to quit, but this simply made him smoke more! It was when Gerard thought he had mouth cancer that he made the important call for help to quit smoking.

Gerard was assigned to Rita a Stop Smoking Adviser and admitted that he didn't think he would be able to quit smoking but would give it a go. Gerard got rid of his ashtrays and decided to paint his house to reduce the temptation to smoke. After his first week he had reduced his smoking down quite a lot and during his second week, he felt confident to set a quit date. Upon hearing the good news that he didn't have mouth cancer gave him even more of a boost to keep going.

Gerard looked forward to the weekly calls of encouragement from Rita and to chat through progress, concerns and ask questions. Gerard's family were delighted with his progress and he is now able to look after his young grandchildren more, walk his dog more too and is no longer out of breath!

Gerard has nothing but praise for the stop smoking service and has said he doesn't know how he would have coped without the weekly support from Rita.

### INTENT programme

INTENT<sup>63</sup> is an evidence based smoking prevention programme funded through the Cheshire and Merseyside Healthcare Partnership and delivered by Alder Hey Children's Hospital NHS Foundation Trust. The programme has been delivered in five Knowsley secondary schools and is aimed at reducing smoking initiation in 11 to 15 year-olds.

The programme is cost effective and reduces smoking initiation by 20%. The programme involves the provision of detailed session plans via an online portal along with a curriculum guide to support delivery of lessons by teachers. The sessions are then delivered by teachers twice yearly to those within the year 7 to 10 cohorts, with minimal resource and preparation required. The sessions equip young people with the motivations and intentions not to smoke, by supporting them to form a plan in relation to knowing what to say or do when offered a cigarette.

### Targeted lung health check programme

The targeted lung health check programme<sup>64</sup> has been operational in Knowsley since 2021. The screening programme is for people aged between 55 and 74 who smoke or have previously smoked.

The screening programme is delivered by Liverpool Heart and Chest Hospital NHS Foundation Trust in Knowsley, Liverpool, Halton, St Helens and South Sefton and is due to be rolled out to all areas of Cheshire and Merseyside in 2024/25.

Residents are invited to attend for screening which can help to identify lung cancer at an earlier stage because symptoms are not always noticed until the disease has progressed. This enables early diagnosis and helps to make treatment more successful.

During the roll out of the programme in Knowsley, 35.2% of eligible individuals took up their offer of a lung health check and 83 lung cancers were identified.



Anyone engaging with the programme as a current smoker is offered support to quit smoking from Smokefree Knowsley. In 2021/22, 63% of people referred into Knowsley's Stop Smoking Service from the Lung Health Check Programme went on to achieve a four week quit, and during 2022/23, 64% of people achieved a quit at four weeks.

The recall element of the Knowsley programme is currently underway and expected to complete early 2025.





### Local regulation and enforcement

Knowsley Trading Standards has the statutory responsibility for enforcing government legislation in relation to illicit tobacco. Trade in illicit tobacco damages legitimate businesses, is harmful to health and helps to facilitate the supply of tobacco to young people.

The service conducts pro-active and re-active enforcement engagement with retailers and suppliers of tobacco products, including vapes and liquids. This is to identify illegal, counterfeit, and underage sale and supply of tobacco, tobacco products and vapes (and alcohol) throughout the borough.

The service also provides advice to help retailers and suppliers understand their obligations associated with the supply of tobacco products and the legal frameworks within which they must operate.

**Since January 2022 Knowsley Trading standards has seized a total of 29,801 tobacco products for issues relating to non-compliant counterfeit, non-duty paid or illegal imports.**



## Environmental factors and how they impact respiratory health

As discussed earlier in this report, where we live and the environment in which we live directly affects our health<sup>36</sup>. For example, having access to green space has been known to have a positive impact on mental health and wellbeing, whilst other aspects of our environment can have a negative impact such as exposure to air pollution, extreme temperatures, occupational exposure and living in a cold and damp home.

Air pollution in the UK is estimated to cause between 28,000 and 36,000 excess deaths a year, with many of these deaths attributed to respiratory and cardiovascular diseases<sup>65</sup>. Cold weather-related respiratory illnesses lead to thousands of hospital admissions and excess winter deaths each year and hot weather and climate change are contributing to heat-related illnesses.

Most lung conditions are caused by smoking however, research suggests that occupational exposure to dust, fume, gases and vapours are also a contributory factor to someone developing a lung condition such as chronic bronchitis, emphysema, asthma

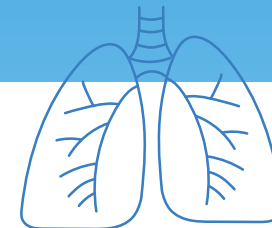
or mesothelioma in later life. However, as discussed earlier in this report, in most cases where occupational exposure has been identified as a cause, it is likely that smoking will also have been a contributing factor. This is because of the higher smoking rates of people in routine and manual occupations<sup>66</sup>.

### Extreme temperatures and the impact on respiratory health

Temperatures above 25°C are associated with severe illness and excess heat-related deaths in vulnerable people<sup>67</sup>. The higher the temperature the greater the number of deaths. High temperatures can lead to an increase in ground-level ozone, a key component of smog, which can irritate the airways and aggravate existing conditions such as asthma and chronic obstructive pulmonary disease. Heatwaves can also exacerbate respiratory problems by increasing the concentration of pollutants in the air. Dehydration and heat stress can further complicate these issues, particularly for older people or those with pre-existing health conditions.

During the winter months cold weather can have a negative effect on respiratory health, especially for those with pre-existing conditions such as asthma, chronic obstructive pulmonary disease and bronchitis. Cold air constricts airways, making it harder to breathe. The winter months also see a rise in respiratory infections such as flu, as people spend more time indoors, which can increase transmission. Fuel poverty and poor housing conditions are strongly linked to the negative impacts of cold weather and are discussed further in this report.





### Air pollution and the impact on respiratory health

The World Health Organisation<sup>68</sup> defines air pollution as **'the contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere'**.

Air pollution is the largest environmental risk to public health in the UK causing death and disability and costing the UK economy £22.6 billion every year. Air pollution can cause coughing, wheezing and shortness of breath, making asthma and COPD symptoms worse. Tiny particles called 'particulate matter,' and gases such as nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO) and sulphur dioxide (SO<sub>2</sub>) can be breathed in deeply due to their small size which cause swelling in the lungs. Longer-term effects include risk of respiratory conditions, lung cancer, stroke and cardiovascular disease<sup>69</sup>.

Most outdoor air pollution is caused by road transport, industrial processes, manufacturing and construction and farming processes. There is a strong link between air pollution and increasing health inequalities for people

who live in the more deprived areas. This is because people are likely to have existing health conditions, live in areas where they are exposed to higher levels of pollution such as from industry or live close to busy roads<sup>69</sup>.

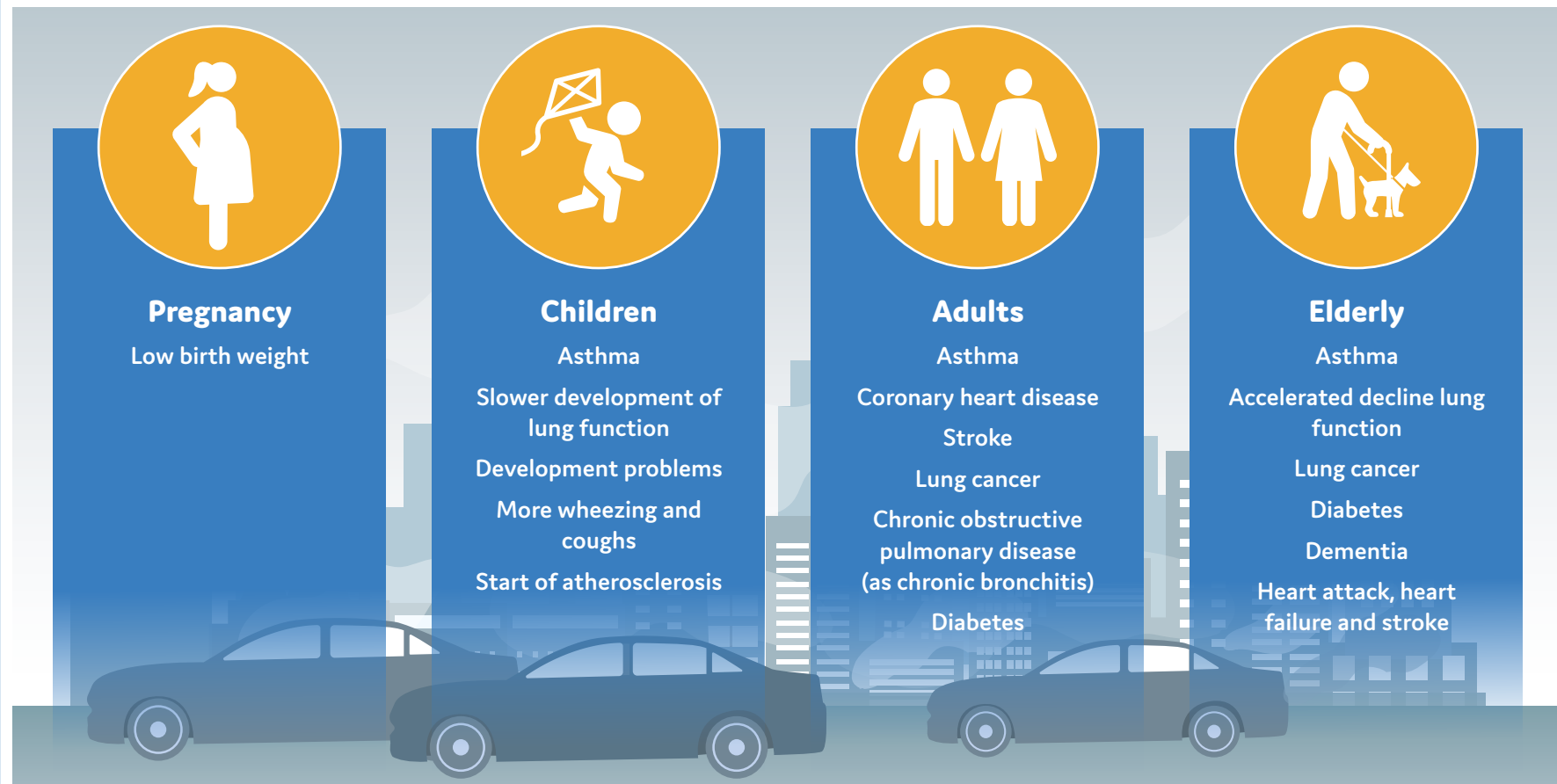
**Air pollution damages health during childhood and increases the risk of diseases later in life, yet children can do little to protect themselves<sup>70</sup>.**

**Babies, children and young people are more at risk as:**

- **Their bodies, organs and immune systems are still developing**
- **They breathe more rapidly, meaning they take in more polluted air**
- **They are closer to the ground or at face level with car exhausts and cigarettes (walking or in a pram or buggy)**



Figure 16 – how air pollution affects people throughout the life course<sup>69</sup>







Indoor air pollution is a growing public health concern, as an average person spends around 80% of their time indoors either at home, school, work or when socialising. Domestic appliances (such as boilers, heaters and ovens) using carbon-containing fuels (coal, gas, kerosene and wood), second-hand smoke, cleaning and personal care products,

building materials and household consumer products (such as some paints, laminate furniture, air fresheners) are sources of indoor air pollution. Damp and mould are other sources mainly caused by building deficiencies, inadequate ventilation or heating, and poor energy efficiency.

There is strong evidence that living in a cold and damp home can lead to poor health outcomes<sup>71</sup>. For example, prolonged exposure to damp and mould can have an adverse effect on the airways and lungs, causing serious illness and in the most severe cases, death. This was the cause of the tragic death of two-year old Awaab Ishak in December 2020 due to a severe respiratory condition caused by prolonged exposure to mould in the family home which did not have adequate ventilation. As a result of the Coroner's report into Awaab's death, guidance<sup>72</sup> was developed for housing providers in the social and private rented sectors to help them understand and how to address the risk of damp and mould in the home.



The 2023 Knowsley Public Health Annual Report<sup>73</sup> discussed how living in a cold home can exacerbate existing health conditions in particular respiratory conditions. The report went on to discuss how with rising costs of essential household expenditure such as rent or mortgage payments, food and household bills, many people are living in fuel poverty. Therefore, they are likely to spend less on adequately heating their homes in the winter months leading to excess winter deaths.

### Excess winter deaths

Excess winter mortality is defined as **'the extra numbers of deaths during the winter months in relation to the other seasons of the year'** and is thought to be a direct consequence of the cold weather<sup>74</sup>.

The Office for National Statistics method is used to calculate excess winter deaths and defines the winter period as December to March. The methodology compares winter deaths with the average number of deaths occurring in the preceding August to November and the following April to July.

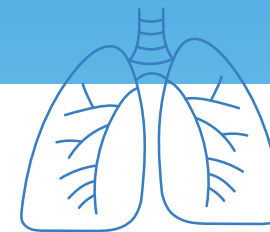
Understanding seasonal changes in temperature are important especially in winter months so that additional help can be made available for those that are most at risk of these cold conditions. Population groups such as the elderly, children and those with long-term conditions such as respiratory disease are vulnerable during this period, especially those on lower incomes and those not living in energy efficient housing.

There is also a strong relationship between cold temperatures, cardiovascular and respiratory diseases. Furthermore, mental health can also be negatively affected by fuel poverty and cold housing for any age group, although particularly children and young people. Indirect impacts of cold homes and fuel poverty include reduced educational attainment, emotional wellbeing and resilience within children; reduced dietary opportunity and choice; and an increased risk of falls, accidents and injuries in the home.

On average in Knowsley over the years 2001-02 to 2021-22, there were 40% more respiratory deaths in the winter months than in the non-winter months, an average of 29 respiratory excess winter deaths per year. The year 2017-18 was a high year for excess respiratory deaths in Knowsley when there were 74 excess winter deaths due to respiratory disease, accounting for around half of the excess winter deaths in this year<sup>75</sup>.

**The 2022/23 winter period was particularly cold at times and saw a return to the first full flu season seen since before the COVID-19 pandemic. The highest number of excess winter deaths were seen in this year in Knowsley in over 20 years, with 68% more respiratory related deaths in the winter months than there were in the non-winter months. The 55 excess winter deaths from respiratory disease related deaths accounted for 30% all excess winter deaths in this year<sup>75</sup>.**





## Action to address the environmental factors

This section of the report looks at some of the interventions which are in place to help protect and improve respiratory health.

### Extreme weather health alerts

To mitigate against and minimise the impact of extreme seasonal temperatures, Knowsley has a weather alert cascade system in place to ensure our residents are protected from the negative effects of extreme temperatures whether that be during the cold winter months or summer heatwaves.

Following guidance and heat health alerts issued by the UK Health Security Agency<sup>67</sup>, Public Health can warn and inform colleagues working in adult and children's social care services, early years settings and other external partners working with vulnerable groups to the potential impacts of weather-related events, risks to health and actions to take to minimise poor health outcomes.

## Health promoting environments

Knowsley's first Air Quality Strategy<sup>76</sup> was published in early 2024 following consultation with residents, businesses, industry and visitors to the borough. Using the insight gathered from the consultation and government guidance, four priorities and associated actions were developed which would help support the reduction in local air pollution. The consultation discovered that 75% of residents believed air quality was important.

### Knowsley Air Quality Strategy 2024-2027 – the priorities for Knowsley<sup>76</sup>

1. Supporting the reduction of domestic, commercial and industrial emissions
2. Supporting the reduction of emissions from transport
3. Raise public awareness of air quality and encourage behaviour change
4. Supporting improvements to indoor air quality

You can read more about the priorities and accompanying action plan here.

The benefits of walking, cycling and other forms of active travel are well evidenced for improving health and reducing air pollution<sup>77</sup>. Across the borough there has been the introduction of safe walking and cycling routes to encourage active travel. This provides residents and those working within the borough the opportunity to become more active, whilst at the same time reducing traffic on the roads and helping to reduce air pollution. Work is planned to explore using emission-free vehicles across the Council through a Green Fleet and Electric Vehicle and Alternative Fuels Plan<sup>78</sup>.

Industries that release substances into the atmosphere are inspected regularly to ensure compliance with regulations and across the borough there are several air quality monitoring stations which monitor passive air quality using diffusion tubes.

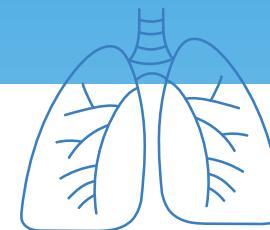
The biggest impact to improving both indoor and outdoor air quality will only happen if everyone understands what air pollution actually is and how it is created, only then and with the support of all those living and working in the borough can we make a difference.

With this in mind, Knowsley has delivered a number of awareness raising campaigns and communications activities, with further interventions planned.

The links between the built and natural environments in which people live and the impact they have on health is well established<sup>77</sup>. Through considered spatial planning we can help design healthier places for people to live and work. In Knowsley, a health in all policies approach helps to ensure that our built and natural environments are planned and developed in such a way that they are 'health promoting'. This helps to reduce air pollution, keeps people active and also has positive benefits to improving mental health.

**Trees and hedges can help to reduce air pollution by absorbing and filtering particulate matter and other pollutants through their leaves and root<sup>79</sup>.**





## Tackling Fuel Poverty

In July 2024, Knowsley was one of three unique projects in Cheshire and Merseyside to be awarded the Royal Statistical Society and the Health Foundation's Florence Nightingale Award for Excellence in Health and Care Analytics<sup>80</sup>.

Knowsley has been part of the tackling fuel poverty project, led by the Integrated Care Board and funded through NHS England's Innovation for Health Care Inequalities Programme. The aim of the project being to mitigate the impact of fuel poverty on people living with a respiratory illness with the longer-term outcomes helping to ease pressure on local services, reduce attendance at Accident and Emergency Departments and resulting unplanned hospital admissions for respiratory conditions.

Knowsley used data held on the NHS system CIPHA<sup>81</sup> to identify patients who live in the 20% most fuel poor neighbourhoods, have a diagnosis of COPD, do not live in a care home and are at high risk of admission to hospital. Using this data, staff from GP surgeries have been able to contact patients directly to offer

them a one hour, face to face appointment which looks at various aspects of a patient's health, wellbeing and environment.

This holistic approach, offers a clinical assessment such as optimising medication, improving inhaler techniques, referrals for other treatments or tests but also a conversation about things within the patient's environment which may be exacerbating their condition such as living in a cold home.

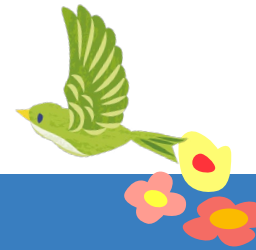
Where the patient has agreed, a referral was made to Energy Projects Plus to carry out a home assessment to check eligibility for energy efficiency works, look at income maximisation and also onward referrals for additional support such as smoking cessation and weight management.

The programme has been rolled out across Knowsley's three Primary Care Network areas and has had good results in terms of improving patient's overall health and wellbeing, efficiency of the home and income levels.

**Knowsley's Environmental health team delivered training to frontline and community workers to enable them to identify potential damp and mould issues in resident's homes. The training provided them with guidance on how they could support residents to address the issues and/or liaise with their landlord.**

**An animated video was also produced for residents called 'Mouldy Matters' which explains how to prevent condensation and have a mould-free home and was shared across the Council's social media channels and partners.**

**[You can watch the video here.](#)**



## Winter wellness grants programme

Knowsley Council's winter wellness grants programme provides grants for the borough's community, voluntary, faith and social enterprise organisations who are delivering projects which help reduce social isolation and loneliness and provide support to people in need through the winter months especially for those who may struggle with the rising cost of energy bills to heat their homes.

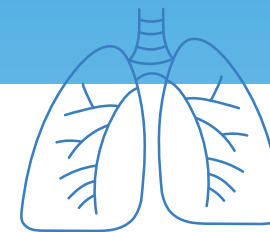
The 2023/24 grants programme enabled 41 community groups and voluntary organisations to access a total of £240,000, with each grant totalling a maximum of £6,000. Examples of activities funded include the provision of blankets, food hampers or warm winter clothing to vulnerable people, warm spaces for residents with refreshments, a warm nutritious meal and the provision of social activities, breakfast or after school clubs and evening or weekend meal provision.



Livv Housing Group's, Livv in Your Community Grant Scheme also awarded just over £50,000 of funding to 11 organisations from across the voluntary and community sector. The aim being to enable the groups to support residents over the winter months to help reduce social isolation, ease financial burden from the cost of living, improve mental health and improve aspiration and mental health in young people.

**The Warm Hub lunch days at Fairhaven have been a god send. Instead of sitting at home by myself, spending money on heating and food, I get to sit in the nice and toasty community centre, have a wonderful lunch and chat to everyone. You can't get better than lowering your heating and food bills but still staying warm and getting fed.**

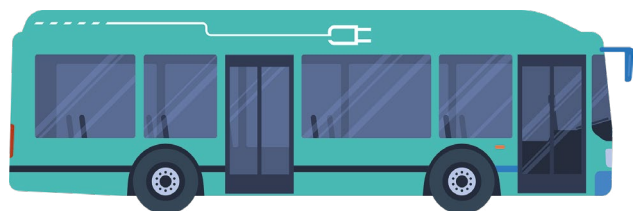
Customer attending the Warm hub lunch days at Fairhaven Community Centre, Kirkby



# Improving lung health – a call to action

We will continue to work with colleagues from across the Council and other partners to promote and improve healthy behaviours and reduce health inequalities in our communities. Through improved access to healthcare, a continued reduction in smoking levels, increased vaccination uptake and increased number of respiratory diseases diagnosed and treated at an early stage, we will make a positive difference towards early detection, prevention and improvement in lung health.

We will reach out to other areas to discover best practice and alongside our partners we will continue to work together to improve health outcomes and make Knowsley an even better place to live and work.



## We will do this through delivering the following actions:

- Develop a #loveyourlungsknowsley campaign targeted at women with the aim of encouraging behaviour change to understand and improve lung health
- Promote actions to improve air quality in the borough through the implementation of the Knowsley Council Air Quality Strategy 2024-2027 action plan. This includes increasing understanding and awareness of the health harms of poor indoor and outdoor air quality and actions that can be taken to reduce the risk of exposure
- Formation of a Knowsley Place Tobacco Alliance Partnership to jointly deliver the Smoking, Vaping and Tobacco Control Action Plan for 2024
- Engage with partners and the community to develop approaches to promote increase in the uptake of the targeted lung health checks screening programme
- Work collaboratively with partners in Knowsley and across Cheshire and Merseyside to increase vaccination rates, utilising latest NICE recommendations and best practice
- Work collaboratively with health and social care partners to increase the identification, diagnosis and treatment of respiratory-related conditions through the use of spirometry testing and accredited screening tools
- Raise awareness with the community and front-line workers of the support schemes available to improve the energy efficiency and other measures to reduce fuel poverty, including benefit maximisation
- Continue to issue extreme weather alerts (hot and cold weather) to front line staff and key organisations who support those most at risk from the negative effects of extreme temperatures

An update on recommendations from the 2022/23 report – Why the cost of living crisis is a public health issue: supporting our residents during challenging times can be found at [www.knowsley.gov.uk/publichealth](http://www.knowsley.gov.uk/publichealth)

## We can all do our bit to help improve lung health and the environment in which we live:

### Tips to help prevent damp and mould in the home:

- Cover pans when cooking
- Open windows when cooking or showering as well as switching on any extractor fans
- Close internal doors when you cook or shower
- Dry clothes outdoors where possible
- If drying clothes indoors, make sure to leave a window open
- Leave a gap between furniture and external walls
- Open bedroom windows for 5 to 10 minutes when you get up (if you can)
- Try to keep your home heated to a temperature of 18°



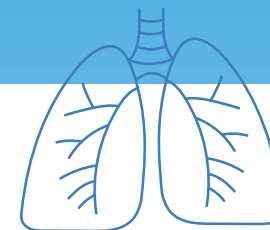
### Reduce your risk of exposure to air pollution:

- Walk, wheel or cycle when you can avoiding busy roads
- Walk, wheel or cycle on the inside of the pavement because pollution levels are lower the further you are from the traffic
- Keep your car windows closed if you're driving, especially if you're driving in slow-moving traffic
- Use public transport to reduce the number of cars on the road which contribute towards air pollution

### Love your lungs Knowsley:

- 1 Stop smoking – for self and others – switch to vapes to help you quit
- 2 Avoid secondhand smoke
- 3 Stay up to date with vaccinations
- 4 Attend any screening or health check appointments
- 5 Keep active – help make your lungs and heart stronger
- 6 Eat better – plenty of fruit and veg
- 7 Stay hydrated – water is best
- 8 Wash hands often - to help avoid infections
- 9 Do your part to improve air quality – breathe easier
- 10 Ask for help – if you're feeling unwell





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