NLCA | National Lung Cancer Audit

State of the Nation Report 2023

Results of the National Lung Cancer Audit for patients in England during 2021 and Wales during 2020-2021

Royal College of Surgeons of England

HQIP Healthcare Quality Improvement Partnership

British Thoracic Oncology Group BTOG

Society for Cardiothoracic Surgery in Great Britain and Ireland

NLCA | National Lung Cancer Audit

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Royal College of Surgeons of England

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British Thoracic Oncology Group BTOG

The British Thoracic Oncology Group (BTOG) is the multi-disciplinary group for healthcare professionals involved with thoracic malignancies throughout the UK.
Registered Charity no: 1166012

Society for Cardiothoracic Surgery in Great Britain and Ireland

The SCTS is the representative body for cardiothoracic surgery in Great Britain & Ireland.
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HQIP Healthcare Quality Improvement Partnership

The NLCA is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP). HQIP is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing, and National Voices. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies. https://www.hqip.org.uk/national-programmes

Cancer Registration in England and Wales
This work uses data that has been provided by patients and collected by the NHS as part of their care and support. For patients diagnosed in England, the data is collated, maintained and quality assured by the National Disease Registration Service (NDRS), which is part of NHS Digital. Access to the data was facilitated by the NHS Digital Data Access Request Service.
For patients diagnosed in Wales, the NLCA dataset is captured through a national system, Cancer Information System for Wales (CaNISC), after identification by hospital cancer services and uploaded via electronic MDT data collection systems to the Wales Cancer Network (WCN), Public Health Wales.

Contents

1. What is the National Lung Cancer Audit?

Welcome to the National Lung Cancer Audit (NLCA) report 2023, delivered to you by the Clinical Effectiveness Unit (CEU) within the Royal College of Surgeons of England.

The overall aim of the NCLA is to improve the quality of care for patients with lung cancer in England and Wales. This includes the experience of being diagnosed with lung cancer, having treatments including surgery for lung cancer and surviving lung cancer.

We try to do this by looking at how well lung cancer services are meeting targets about patient outcomes, set by national guidelines. Individual lung cancer centres send information about their service to us (through cancer registration databases) so we can build a picture of what is happening in real life and how this affects patients.

We can compare what we find happening in real life to the set targets and see how this affects the outcomes of the patients. We can see if lung cancer care is getting better or worse compared to previous years. This also allows us to find examples of good care and good results for patients which we can share and learn from. We also find services in need of improvement and try to understand why these problems exist and how to fix them.

A version of this document exists for doctors, surgeons, nurses and other healthcare professionals with more details and this can be found on our website.

2. What is Lung Cancer?

Lung cancer is a term used to describe an abnormal growth of cells in the lungs, this is called a tumour. These abnormal cells don't work like the other lung cells and can grow and spread quickly. Lung cancer has many different types depending on which lungs cells are abnormal.

3. Who gets Lung Cancer?

The most commonly identified and alterable risk factor for lung cancer is smoking. Long-term smoking is a consequence of nicotine addiction. However, some people who are diagnosed with lung cancer have never smoked.

Other things that that increase the risk of developing lung cancer include: second-hand smoke, exposure to some chemicals, a family history of lung cancer, cancer treatment for other types of cancer and a lowered immune system.

In England

34,478 patients were diagnosed with lung cancer in 2021

31,371 in 2020 **33,091** in 2019

74 years

Average age at diagnosis

In Wales

2,244 patients were diagnosed with lung cancer in 2021

2,067 in 2020 **2,240** in 2019

73 years

Average age at diagnosis

The number of patients diagnosed with lung cancer in England 2021 was 34,478 and 2,244 in Wales 2020-2021. The average age of lung cancer patients was 74 in England and 73 in Wales. Around 90% of the patients were current or ex-smokers and 10% had never smoked.

Insights from NLCA 2021

4. What are the symptoms of Lung Cancer?

Symptoms of lung cancer can include feeling short of breath, chest pain, a persistent cough, coughing up blood and losing weight unintentionally. Sometimes lung cancer doesn't cause any symptoms.

5. What are the types of Lung Cancer?

There are many different types of lung cancer but we can divide them into two main groups:

Non-small cell lung cancer (NSCLC)

Small cell lung cancer (SCLC)

The type of lung cancer is important because each type of lung cancer is treated in different ways.

Non-small cell lung cancer

This is the most common type of lung cancer. Our audit shows around 90% of lung cancers in England and Wales are NSCLC. NSCLC tend to be less aggressive and spread less quickly than SCLC so they tend to be more curable if caught at an earlier stage. Often treatment involves a combination of surgery, systemic therapy and radiotherapy. Systemic therapy includes chemotherapy, targeted therapies and immune therapy.

Small cell lung cancer

This is a more aggressive type of lung cancer. It tends to grow and spread quickly so chemotherapy is a more effective treatment.

Non-small cell cancer was the most common type (>90%) of lung cancer diagnoses in 2021. The number of lung cancers proven to be the more aggressive small cell lung cancer is declining, at 7% in 2021 falling from 9% in 2019 and 11% in 2014.

Insights from NLCA 2021

6. Stages of Lung Cancer

Doctors and nurses also talk about the stage of lung cancer and this describes the size and any spread of the lung cancer. It is important for deciding treatments options. The stages are from 1 to 4 with 1 being early stage and 4 being late stage.

Usually cancer is more treatable if we find it at an earlier stage.

Stage 1 means the cancer is small and in one area of the lung only (localised)
Stage 2 or 3 are larger and may have spread into surrounding areas. There may be cancer cells in the nearby glands or lymph nodes (locally advanced)
Stage 4 means the cancer has spread to another part of the body (secondary or metastatic cancer).

In England

48%

of patients presented **with stage IV disease**: **50%** in 2020 and **47%** in 2019

In Wales

50%

of patients presented **with stage IV disease**: **49%** in 2020 and **48%** in 2019

Sadly, the amount of patients diagnosed with late stage (stage 4) disease was 48% in 2021, reduced from 2020 (50%). In Wales, 50% of lung cancers are diagnosed at stage 4. Patient outcomes are usually much worse when the cancer is found at a late stage.

Insights from NLCA 2021

7. How is lung cancer diagnosed?

Doctors use many different tests and scans depending on symptoms and may vary from patient to patient. Tests can include blood tests, chest x-rays, CT scans and MRI scans. Doctors will often take a biopsy of the cancer which means taking a small amount of the abnormal cells out to test them. This can be done in a variety of ways including bronchoscopy – a telescope into the airways and lungs and percutaneous – a needle through the skin into the lungs and tumour.

An emergency presentation of lung cancer is when a patient is first diagnosed with lung cancer after going to Accident & Emergency (A&E) or Emergency Department (ED) with symptoms that require emergency care. Sometimes emergency presentations are unavoidable but patients have better outcomes if they are seen by their GP first and then referred to the lung cancer diagnosis pathway. Patients who are diagnosed from an emergency admission tend to have poorer outcomes and shorter survival.

In England

35%

of patients were diagnosed **via emergency presentation: 35%** in 2020 and 31% in 2019

In Wales

24%

of patients were diagnosed **via emergency presentation: 28%** in 2020 and 29% in 2019

In 2021, 35% of lung cancer patients in England and 24% of lung cancer patients in Wales were diagnosed during an emergency presentation to hospital.

Insights from NLCA 2021

8. How is lung cancer treated?

Lung cancer is treated in various ways depending on its size, type, stage, spread and how fit the patient is. Some treatments are intended to cure the lung cancer whilst some intend to slow the spread of the cancer and make symptoms better.

In 2021, we saw an improvement in the amount of patients in England having curative treatment for early stage non-small cell lung cancer from 73% in 2020 to 79% in 2021. This has recovered to similar levels before the pandemic. However, in Wales, only 65% of patients with early non-small cell lung cancer are having curative treatment and this is getting worse from previous years.

60% of patients in England and 60% of patients in Wales with middle stage (stage 3) lung cancer and a good fitness received curative treatments in 2021. However, there is still around 40% of these patients who didn't receive curative treatment. We hope that lung cancer centres with better results in these areas can share their good practice to ensure all lung cancer patients are offered the most appropriate treatment.

Insights from NLCA 2021

Surgery

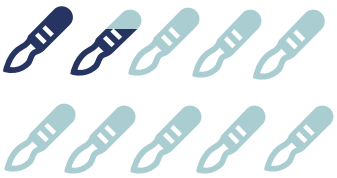
Surgery is used to remove the cancer and surrounding lymph nodes/glands. Surgery is mainly used for early stage non-small cell lung cancer.

In England

Surgery for non-small cell lung cancer (NSCLC)

17% of patients with NSCLC had surgical treatment for their cancer

≥17% ✓ Audit standard



15% in 2020
20% in 2019

In Wales

Surgery for non-small cell lung cancer (NSCLC)

13% of patients with NSCLC had surgical treatment for their cancer

≥17% ✗ Audit standard

11% in 2020
16% in 2019

In 2021 in England, 17% of patients with non-small cell lung cancer had surgery to remove their cancer. This is an improvement from the previous year when during the pandemic only 15% had surgery. Before the pandemic around 20% of patients had surgery so we are beginning to recover back to pre-pandemic levels.

However, in Wales in 2021, only 13% of non-small cell lung cancer patients had surgery which is continuing to fall from previous years.

Insights from NLCA 2021

Radiotherapy

Radiotherapy involves aiming high energy x-rays at cancer cells to kill them. Nearby cells can be affected by the radiation which leads to side effects, but cancer cells are affected the most.

Systemic therapy

(a) Chemotherapy

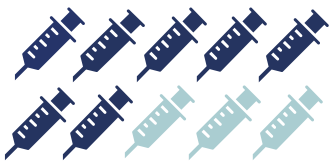
Chemotherapy targets and kills any rapidly growing cells in the body. This includes cancer cells but can also affect our immune cells, hair cells and cells that line the gut causing side effects. Normal cells are able to repair and replenish themselves while cancer cells cannot.

In England

Chemotherapy for small cell lung cancer (SCLC)

70% of patients with SCLC received treatment with chemotherapy

≥70% ✓ Audit standard



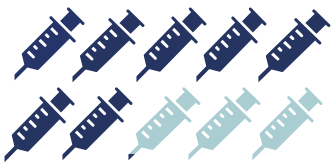
66% in 2020
69% in 2019

In Wales

Chemotherapy for small cell lung cancer (SCLC)

71% of patients with SCLC received treatment with chemotherapy

≥70% ✓ Audit standard



58% in 2020
65% in 2019

In 2021, 70% of patients in England and Wales with small cell lung cancer received chemotherapy which meets our target.

51% of patients with late stage 4 non-small cell lung cancer and good fitness had systemic therapy in 2021.

Insights from NLCA 2021

(b) Targeted Therapy

When a biopsy of a lung cancer is tested, doctors and scientists look for certain changes in the structure of the cancer cell. We call these changes mutations. Medicines have been designed to target these mutations in cancer cells. These targeted therapies therefore treat cancer cells but do not have much effect on the normal cells in the rest of the body. Not all lung cancers have these mutations so we can't use target therapies for all lung cancer patients.

(c) Immunotherapy

Immunotherapy uses the body's natural defences to fight cancer by improving the immune system's ability to recognise and then attack cancer cells. People who receive treatment using immunotherapy for NSCLC may receive either one drug or a combination of immunotherapy and chemotherapy. When later stage NSCLC cannot be treated with a targeted therapy (see above), immunotherapy or a combination of immunotherapy and chemotherapy is often the preferred initial treatment.

In England

Systemic therapy

61% of patients with NSCLC (stage 3B-4,and in good fitness) received systemic therapy

≥65%
Audit standard

55% in 2020
54% in 2019

In Wales

Systemic therapy

57% of patients with NSCLC (stage 3B-4,and in good fitness) received systemic therapy

≥65%
Audit standard

52% in 2020
54% in 2019

In England in 2021, 61% of patients with late stage non-small cell lung cancer received systemic therapy which is an improvement from 2020: 55% and 2019: 54%. Wales shows a similar picture with 57% receiving systemic therapy in 2021 improving year on year.

However, we are aiming for this to be over 65%. We have noticed a lot of differences between hospitals and cancer centres. It is important that we continue to monitor this and encourage hospitals to share good practice. One way to help is by making sure that all hospitals can properly test patients' lung cancers to guide which type of systemic therapy will be the most effective.

Insights from NLCA 2021

Supportive and Palliative Care

Supportive care involves a wide range of support for patients and families involving social support, psychological support and symptom control.

Palliative care is important if a patient's lung cancer cannot be cured and may still involve active treatments like immunotherapy to slow the cancer progression. The focus is about quality of life as well as prolonging life.

End of life care is an extremely important part of palliative care and involves care and support in the final year of life.

9. How long do patients wait for treatment?

It is recommended that the maximum time from first seeing a lung cancer doctor to starting treatment should be 49 days. The maximum interval from diagnosis to treatment should be 21 days.

Small cell lung cancer can spread quickly so it is very important that patients are diagnosed quickly and receive systemic therapy as soon as possible. The NLCA have set a target that at least 80% of patients should receive systemic therapy within 14 days of the diagnosis.

In 2021, the average time from diagnosis of late stage non-small cell lung cancer to the start of treatment (with systemic therapy) was 35 days. This does not meet the 21 day target.

In 2021, the average time from diagnosis of all small cell lung cancer to the start of treatment was 15 days. This has improved since 2019, when the average time was 28 days. However, we are not meeting the NLCA target of 14 days.

This means there are delays in lung cancer pathways which need to be improved.

Insights from NLCA 2021

10. Who is involved in patient care?

The team of specialists who deliver lung cancer care are known as a multi-disciplinary team, or MDT for short. The individual members involved in each patient's care specifically can vary depending on the individual patient's needs and circumstances. Usually, the team is made up of:

Lung cancer clinical nurse specialist (LCNS)

Respiratory physicians (chest doctors)

Oncologists (cancer doctors)

Thoracic surgeons (chest surgeons)

Radiologists (x-ray/scan doctors)

Pathologists (doctors who look at cancer biopsies under a microscope)

In England

92%

of patients* were **assessed at diagnosis by a lung cancer clinical nurse specialist**: **75%** in 2020 and **80%** in 2019

*information available for only 59% of patients so this is uncertain

In Wales

94%

of patients* were **assessed at diagnosis by a lung cancer clinical nurse specialist**: **93%** in 2020 and **90%** in 2019

In 2021, of the patients we know about, 92% had access to a lung cancer nurse specialist. This is a great improvement because during the pandemic, the number of patient who had access to a LCNS was falling. In Wales, 94% of patients had a lung cancer specialist nurse present at their diagnosis.

Insights from NLCA 2021

11. What are the outcomes for patients with lung cancer?

One of the most important outcomes to measure for cancer care is survival after diagnosis which means how long do patients live. One of the most important factors that affects outcomes is the stage of the cancer at diagnosis.

In England

Average survival

280 days

306 days in 2020
316 days in 2019

One year survival

45%

44% in 2020
41% in 2019

In Wales

Average survival

222 days

224 days in 2020
235 days in 2019

One year survival

39%

40% in 2020
42% in 2019

In England in 2021, the average survival time after lung cancer diagnosis was 280 days. The average survival time was slightly longer in 2020, which was 306 days.

The proportion of patients still alive after one year (one-year survival) was 45%. One year survival was very similar in 2020 at 44% overall.

For patients diagnosed with lung cancer in Wales during 2020, the average survival was 224 days. The average survival was similar in 2021 at 222 days. In 2020, one-year survival in Wales was 40% which was similar to one-year survival in 2021 at 39%.

Insights from NLCA 2021

12. What are the NLCA targets for improvement?

The aim of the NLCA is to improve the care of patients with lung cancer. To do this, we have selected key targets to give extra attention.

Target	Results in 2021	Results in 2020
1. Make sure that important information is recorded for patients with lung cancer including: • Performance status (how fit/well the patient is) • Stage of the cancer (early or late stage) • Basis of diagnosis • Lung cancer nurse specialist (LCNS) involvement at diagnosis • If patients smoke or not	Performance status: England: 83% Wales: 97% Stage of cancer: England: 86% Wales: 98% Basis of diagnosis: England: 90% Wales: 100% LCNS at diagnosis: England: 59% Wales: 98% Smoking status: England: 49% Wales: N/A	Performance status: England: 87% Wales: 99% Stage of cancer: England: 90% Wales: 97% Completeness of LCNS at diagnosis and smoking status were not reported in the NLCA 2021 Annual Report.
2. Aiming to cure lung cancer in patients with early stage lung cancer	England: 80% Wales: 65%	England: 73% Wales: 66%
3. Ensure at least 70% of patients with non-small cell lung cancer who are fit and well enough receive systemic therapy	England: 61% Wales: 57%	England: 55% Wales: 52%
4. Ensure patients with lung cancer are seen by a lung cancer clinical nurse specialist at diagnosis	England: 92% Wales: 94%	England: 75% Wales: 93%

13. What are the Key Findings from the NLCA Report 2022?

- The COVID-19 pandemic resulted in less patients being diagnosed with lung cancer but this is recovering in 2021. This is likely due to the pandemic causing disruption in the healthcare services rather than less patients having lung cancer.
- The number of patients diagnosed with lung cancer in 2021 is similar to the number from before the pandemic in England.
- We aimed to cure more early stage lung cancer in England in 2021 (83%) than 2020 (73%).
- In Wales in 2021, we did not aim to cure the same amount of early stage lung cancer as before the pandemic.
- In England in 2021, we treated more patients with mid-stage lung cancer with systemic therapy than in 2020 (2021: 61%; 2020: 55%).
- The COVID-19 pandemic in 2020 had an impact on lung cancer treatment in Wales with a reduction in the number of patients with lung cancer undergoing surgery or curative treatment compared with 2019. By 2021, this has not improved back to pre-pandemic levels.

14. Glossary

Audit Standard	A target set by the NLCA which we compare what Is happening in real to. For example, NLCA set a target that at least 70% of patients with SCLC should receive chemotherapy treatment.
Average	An average is a single number taken as a representative of a list of numbers.
Biopsy	Removal of a small portion of the cancer or tumour, usually from the lung but may also be from the liver, skin or other areas to look at under the microscope. It is important for making a diagnosis.
Bronchoscopy	A thin telescope with a camera is used to look inside the airways.
CT Scan	A procedure that uses a computer linked to an x-ray machine to make a series of detailed pictures of areas inside the body including the lungs.
Cancer	Cancer is a disease in which some abnormal cells grow uncontrollably and spread to other parts of the body.
Chemotherapy	Chemotherapy is a medical treatment designed to kill fast-growing cells. It is effective against cancer cells because they grow and multiply much more quickly than most cells in the body.
Curative-intent	This is used to describe treatment that aims to remove all the cancer and therefore cure the cancer disease.
Lung Cancer	An abnormal growth of abnormal cells in the lungs,
Lung Cancer Nurse Specialist (LCNS)	A nurse who has expert knowledge and experience in lung cancer. They form part of the team of healthcare professionals who provide support, information and advice during lung cancer investigations, diagnosis and treatment.
Lung Cancer Surgery	A range of operations to remove cancer from patients' lungs.
Lymph node	A small bean-shaped structure that is part of the body's immune system. They act like filters to collect germs and cancer cells. They are usually one of the first places cancer cells spread to.
Metastasis	The spread of cancer cells from the place where they first formed to another part of the body.
Multidisciplinary team (MDT)	A team of all the different health professionals who may be involved in the care of patients with cancer.
MRI (Magnetic Resonance Imaging)	A procedure that uses radio waves, magnets, and computers to make a series of detailed pictures of areas inside the body, including the lungs.
National Lung Cancer Audit (NLCA)	The NLCA assess the quality of services and care provided to individuals with lung cancer in England and Wales. This is achieved by collecting clinical information about the treatment of all patients newly diagnosed with lung cancer in England and Wales and information about their outcomes.
National Lung Health Checks	A new screening programme offered in some parts of the UK to patients aged 55-74 who have ever smoked. It is a check up to see how well the lungs are working. Some patients may then be invited for a scan of their lungs. The aim is to detect very early stage lung cancer in patients without any symptoms.
Non-Small Cell Lung Cancer (NSCLC)	This is the most common type of lung cancer. If it is caught in an early stage, they can be considered for surgery to remove the cancer tumour from the lung.
Outcomes	These are the results or consequences of lung cancer care that we measure, for example, survival after lung cancer or the proportion of patients who had surgery for their lung cancer.
Percutaneous biopsy	A way of taking a tiny sample of cancer/tumour from your body, using a special needle passed through the skin into the lungs and the tumour.

Performance Status	A measure of how well a patient is able to perform ordinary tasks and carry out daily activities.
Radiotherapy	The use of high-energy radiation from x-rays and other similar sources to kill cancer cells and shrink tumours.
Small Cell Lung Cancer (SCLC)	This is the more aggressive type of lung cancer. Usually it is treatment with chemotherapy.
Stage of Cancer	This is a way of describing the size and any spread of cancer. The stages are from 1 to 4 with 1 being early stage and 4 being late stage. Cancer at earlier stages are usually more treatable.
Systemic Therapy	A medicine given to treat cancer. This can involve chemotherapy, immunotherapy and target therapies.
Targeted Therapies	These are medicines designed to target specific structural changes that only occur within with the cancer cells and not in healthy cells. Targeted therapies can include biological therapies that target specific proteins in cancer cells and immunotherapies that help the immune system target cancer cells.
Tumour	A cluster of abnormal cells.