

Lung cancer case based learning resource

Overview of the lung cancer case based learning resource: Harold's story

This case study recounts the experience of Harold, a 75-year-old male diagnosed with lung cancer.

The case study contains five sections:

1. Reduce risk.
2. Find the condition early.
3. Have the best treatment and support during active treatment.
4. Have the best treatment and support between and after active treatment.
5. Have the best care at the end of life.

It is recommended that you complete the sections and their related activities in order. This is because each section and each activity includes information that will help you complete the sections and activities that follow.

Learning activities

At times, you will have learning activities to complete. Click on the learning activities button and a list of questions will pop up. The questions will relate to the content you've just read or the video you've just watched.

Videos

There is a video component to this case study that is presented in four parts. You can watch the video clips when prompted throughout this case study or at any time by clicking on the video icon in the right-side menu. Learning activities throughout the case study will discuss the video and ask questions about it.

Resource links

Resource links are included throughout the case study. These links lead to interesting articles or websites, and are designed to encourage you to explore other available resources.

PDF of lung cancer module

You can download a PDF version of the lung cancer module

Suggested citation:

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Aim of the lung cancer case based learning resource

This case study aims to facilitate the development of competencies that reflect the role of the Specialist Cancer Nurse (SCN) in preventing and managing disease and treatment related care for a person at risk of or diagnosed with lung cancer.

Rationale

In 2013, 11,174 Australians were diagnosed with lung cancer (6,627 males and 4,548 females).⁶⁷ In 2014, lung cancer was the leading cause of cancer-related deaths for both men and women.⁶⁷ The disease has one of the lowest five-year survival rates of all cancers, at 14.3% and accounts for about one in five deaths from cancer.⁵

In 2014, there were 8,251 deaths from lung cancer in Australia (4,947 males and 3,304 females).⁶ The ten-year survival rate for lung cancer is only 9%.⁸

There are many points along the cancer journey when SCNs can improve outcomes for people at risk or affected by lung cancer. These include:

Section 1: Reduce risk

Between 1982 and 2011, the age-standardised incidence rate of lung cancer in males fell by 34% but rose by 42% in females.⁵ It is hypothesised that the differing pattern of lung cancer incidence is due to historical gender patterns of tobacco smoking.⁶

Tobacco smoking, a modifiable behaviour, is the most significant risk factor in the development of lung cancer. About 90% of lung cancer in men, and 65% in women, is attributed to smoking.⁷ Passive smoking— where someone is exposed to the chemicals in tobacco smoke, without actually smoking— can also cause lung cancer.^{7, 8}

Section 2: Find the condition early

While lung cancer has a high mortality rate, better prognosis is associated with early diagnosis.

Many people who are diagnosed late with incidental CXR findings have experienced persistent lung or other symptoms.⁹

Section 3: Have the best treatment and support during active treatment

There are many treatment options for lung cancer, including surgery, antineoplastic agents, drugs targeting oncogenic mutations, radiotherapy, brachytherapy, radiofrequency ablation, and laser therapy. The management approach depends on the type and stage of disease and individual patient factors. To achieve optimal outcomes, a multidisciplinary approach with support from specialist and primary care providers is required to ensure best practice treatments that improve survival rates and quality of life.

Management of the person with lung cancer requires a multifaceted approach. Symptom control and management of psychosocial issues are an important focus of care.

Section 4: Have the best treatment and support between and after active treatment

Depending on the type and stage of disease, people with lung cancer can be at a high risk of disease progression. People with lung cancer also often experience a range of symptoms, such as dyspnoea, pain, and nutritional deficits, which require nursing intervention.

People who experience longer term effects from cancer treatments will also need nursing intervention.

Section 5: Have the best care at the end of life

As lung cancer is associated with poor survival outcomes and significant morbidity, referral to palliative care can be appropriate at any stage of disease.³ Early referral of individuals with metastatic non-small cell lung cancer to palliative care has been associated with improved quality of life and mood, less aggressive care at end of life and extended survival.¹⁰

People with advanced lung cancer are likely to have supportive care needs across all domains of health that require nursing intervention. As well as ensuring optimal symptom management and psychosocial support, the SCN plays a key role in the coordination of care to ensure the person's wishes and needs are respected.

Section 1: Reduce risk

Objectives

On completion of this section, you should be able to:

1. Interpret key epidemiological trends in age-specific incidence, mortality and survival from lung cancer.
2. Explain current evidence regarding risk factors associated with the development of lung cancer.
3. Discuss the historical development of tobacco control programs in Australia, and their effectiveness in reducing the uptake of smoking and the rates of lung cancer.
4. Explain the SCN's role in tobacco control activities.

Lung cancer in Australia

- In 2013, 11,174 Australians were diagnosed with lung cancer (6,627 males and 4,548 females).⁶⁷
- In 2013, the age-standardised incidence rate was 43 cases per 100,000 persons (55 for males and 33 for females).⁶⁷
- In 2011, the average age of first diagnosis of lung cancer was 71.5 years for men and 71.5 years for women.⁵
- In 2014, lung cancer was the leading cause of cancer-related deaths for both men and women.⁶⁷
- In 2014, there were 8,251 deaths from lung cancer in Australia (4,947 males and 3,304 females).⁶⁷
- The disease has one of the lowest five-year survival rates of all cancers, at 14.3% and accounts for about one in five deaths from cancer.⁵
- At the end of 2012, there were 6,951 people living who had been diagnosed with lung cancer that year, 15,924 people who had been diagnosed with lung cancer in the previous 5 years (from 2008 to 2012) and 25,381 people who had been diagnosed with lung cancer in the previous 31 years (from 1982 to 2012).⁶⁷

The incidence of men diagnosed with lung cancer has significantly decreased over the last thirty years while the incidence of women diagnosed with lung cancer has increased.⁵ Some of this is due to changes in patterns of smoking over time.⁶ In 1945, approximately 72% of Australian men smoked; this percentage fell in 2007 to 18%. For women in the same time period, the percentages did fall (from 26% to 15.2%), but at a much lower rate.¹¹ In 2005, lung cancer deaths overtook the number of deaths from breast cancer in women in Australia.¹²

There was an increase in five-year relative survival for lung cancer from 8.4% for the period 1982-1986 to 14.3% for 2007-2011.⁵ Five-year relative survival from lung cancer diagnosed between 2007-2011 was 12.5% for males and 17.1% for females.⁵

From 2003-2007 lung cancer incidence and mortality rates were higher for Indigenous than for non-Indigenous Australians. Lung cancer is the most common cancer diagnosed in Indigenous men, and the second most common cancer in Indigenous women.⁷ The mortality rate from lung cancer is also higher for those who live in remote areas, when compared to those who live in major cities.⁷

Learning activities

Completed	Activities
<input type="checkbox"/>	1 Access Cancer survival and prevalence in Australia: period estimates from 1982 to 2010 ¹³ , and compile information on the following: <ul style="list-style-type: none">• relative five and ten year survival rates for lung cancer• reasons for the projected differential trends between males and females in incidence of lung cancer.
<input type="checkbox"/>	2 Compare incidence and mortality rates for lung cancer to that of other cancers in males and females.

Risk factors

Lung cancer appears to arise in response to repetitive carcinogenic stimuli, inflammation and irritation.¹⁴

Key risk factors for lung cancer include:

Lifestyle factors:⁷

- Tobacco smoking
The largest single cause of lung cancer is tobacco smoking, which accounts for around 90% of lung cancers in males, and 65% of lung cancers in females^{7, 14}

Environmental factors:⁷

- Passive smoking
 - People who live with a smoker increase their risk of developing lung cancer by 20 to 30%¹⁵
- Radon exposure
 - While exposure to radon gas is a risk factor for lung cancer, at low levels it is not dangerous
- Occupational exposure
 - Inhalation of a range of industrial and chemical carcinogens including asbestos, radiation, diesel exhaust fumes and certain metals associated with specific occupations and industries can be a risk factor for lung cancer
- Air pollution
 - Outdoor air pollution may increase the risk of lung cancer
 - Indoor air pollutants which may affect lung cancer risk include asbestos and second-hand smoke

Biomedical factors:⁷

- Family history of lung cancer
 - The risk of developing lung cancer is increased if you have a parent or sibling who develops the disease, and further increased with more than one first degree relative who has developed lung cancer
- Previous lung diseases
 - Diseases such as lung fibrosis, chronic bronchitis, emphysema and pulmonary tuberculosis may be associated with an increased risk of lung cancer.
- Age
 - Increasing age is a risk factor with only 5% of all lung cancers diagnosed in people under the age of 50.⁷ In 2011, the average age of first diagnosis of lung cancer was 71.5 years for men and 70.2 years for women.⁵

Some SCNs may work in settings where their main role is primary prevention and health education. Others will work in cancer treatment settings, where there may be many opportunities for health education of the person affected by cancer or their family members. This is especially important where a cancer has modifiable risk factors, or where it may have an inherited basis.

Knowledge of ways to reduce the risk of cancer is important to ensure community members are informed about risk reduction strategies.

Learning activities

Completed	Activities
<input type="checkbox"/>	1. Access the National Cancer Prevention Policy: Tobacco control ¹⁶ , and summarise the evidence on the role of tobacco in the development of lung cancer.
<input type="checkbox"/>	2. A person who has been smoking for 20 years asks you whether quitting smoking now would reduce their risk of developing lung cancer. Discuss how you would respond.
<input type="checkbox"/>	3. A client tells you they have heard that taking beta carotene can help reduce their chance of getting lung cancer. As an SCN, discuss how you would respond.

Preventing cigarette smoking

Smoking remains the leading preventable cause of death and disease in Australia today.¹⁶ There is sufficient evidence that smoking is a risk factor for 16 cancer types: lung, oral cavity, pharynx, oesophagus, stomach, bowel, liver, pancreas, nasal cavity and paranasal sinuses, larynx, uterine, cervix, ovary, urinary bladder, kidney, ureter and bone marrow (myeloid leukaemia).¹⁶ In Australia in 2007, 17% of people aged 14 or over smoked tobacco daily- this equates to about 2.9 million people.⁸ The National Tobacco Strategy 2012-2018, aims to reduce the national adult daily smoking rate to 10% of the population by 2018, and to halve the adult daily smoking rate among Indigenous Australians by 2018, from the 2009 baseline rate.¹⁶

The Strategy outlines nine priority areas for action, through evidence-based tobacco control measures to:¹⁶

- protect tobacco control policies from tobacco industry interference
- strengthen mass media quit campaigns and reshape social norms about smoking
- continue to reduce the affordability of tobacco products
- reduce smoking rates among Indigenous Australians
- reduce smoking rates in high-prevalence groups
- eliminate remaining advertising, promotion and sponsorship of tobacco products
- consider further regulation of tobacco products and supply
- reduce exceptions to smoke-free environments
- provide greater access to cessation services.

Australia is a signatory to the [WHO Framework Convention on Tobacco Control](#)¹⁷ that has a number of tobacco control initiatives in place. Recent years have seen a number of important tobacco control measures implemented, including increases in tobacco taxes, expanding smoke-free policies to include outdoor areas, tobacco display bans at points of sale, and the use of mobile and Internet technologies for promoting smoking cessation. However, increases in the use of smokeless tobacco products and electronic nicotine delivery devices illustrate the need for policy makers and health professionals to remain responsive to changes in consumer tobacco use.¹⁸

SCNs have many opportunities to encourage people to quit smoking and to emphasise the importance of remaining abstinent.¹⁹ Evidence is accumulating to support the role of motivational interviewing in smoking cessation.²⁰

The 5 A's approach has also been recommended as an intervention framework:¹⁹

1. *Ask*: Ask and document each patient's tobacco use status at every clinic visit.
2. *Advise*: In a clear, strong, and personalised manner; urge all tobacco users to quit.
3. *Assess*: determine patient's willingness to make a quit attempt within the next 30 days.
4. *Assist*: If the patient is willing to make a quit attempt, help the patient to quit.
5. *Arrange*: Schedule follow-up contact close to patients stated quit date to reinforce success or intervene as needed if they have relapsed.

SCNs can recommend further counselling and behavioural techniques, as well as provide information about other pharmacotherapy smoking cessation aids. While tailored self-help materials may help more than standardised materials, the impact of such self-help materials is small compared to other more intensive forms of therapy.²¹ Quitline has been demonstrated to be a highly effective cessation support, and health professional referrals are an established mechanism for Quitline engagement. Referral to Quitline could be included as standard in care plans for all people who smoke.

- [Smoking Cessation Referral Form](#)

Populations for which smoking rates remain significantly higher than average include:²²

- single parents (37%)
- lone mothers 18-29 years of age (59%)

- people living with psychosis (66%)
- at-risk young people (63%)
- Aboriginal and Torres Strait Islander peoples (47%)
- People with drug disorders (73%)
- The homeless (73%)
- Intravenous drug users (90%)
- Prisoners (85%).

Smoking in these groups may be a factor in the continuing inequity in their health status, and contribute to a continuing cycle of poverty and disadvantage. It may be necessary to develop programs specifically targeting the special needs of these groups.²²

Resource link:

[Cancer survivorship factsheet – Smoking](#)

Learning activities

Completed	Activity
<input type="checkbox"/>	1 Access the National Cancer Prevention Policy: Tobacco control ¹⁶ and: <ul style="list-style-type: none"> • Describe three examples of “Effective interventions” in Australia. • Review the section outlining the policy context underpinning Australia’s tobacco control initiatives. <ul style="list-style-type: none"> ○ Outline current national strategies. ○ discuss how Australian strategies link to the WHO Framework Convention on Tobacco Control.
<input type="checkbox"/>	2 Explain key factors which influence an individual's engagement in quitting smoking.
<input type="checkbox"/>	3 Explain why self-help strategies alone may not be as effective as other therapeutic techniques in assisting people to stop smoking.
<input type="checkbox"/>	4 Describe the key principles associated with developing a health education program aimed at reducing smoking rates in the community.

Section 2: Find the condition early

Objectives

On completion of this section, you should be able to:

1. Explain the limitations of screening programs in the diagnosis of lung cancer.
2. Describe the role of various diagnostic tests for lung cancer and principles for preparing a person for these tests.
3. Discuss the role of different types of investigations in aiding the diagnosis of lung cancer.

Early detection

Most lung cancers are diagnosed late, following the onset of symptoms, reducing options for curative treatment.¹⁴ There are currently no effective population-wide screening tests for lung cancers to aid earlier diagnosis that would enhance survival outcomes.

The effectiveness of advances in medical imaging techniques which would detect lung cancers earlier, such as low dose computer tomography (a type of imaging that is more sensitive than chest radiography), are currently under investigation. The use of such technologies in population screening is unlikely to be cost effective but may play a role in screening of high risk individuals.¹⁴ One large good quality trial reported that screening current and former smokers with low-dose computed tomography was associated with significant reductions in lung cancer (20%) and all-cause (6.7%) mortality. Harms of screening included radiation exposure, over-diagnosis, and a high rate of false-positive findings.²³ A recent review of the development of lung cancer screening to date was included in Cancer Forum – [Screening for lung cancer](#).²⁴

Resource links

Being aware of their personal risk of disease may encourage patients to be monitored for the development of lung cancer.²⁵ The Memorial Sloan-Kettering Cancer Center has developed a [lung cancer prediction tool](#)²⁵ that allows long-term smokers to calculate their risk of developing lung cancer in the next ten years. The Australian Lung Foundation also has a [lung health check list](#)²⁶, designed to promote lung health awareness amongst the community.

Learning activities

Completed	Activities
<input type="checkbox"/>	1 Explain why routine CXR monitoring or sputum cytology in “at risk” individuals is not effective in improving survival rates from lung cancer.
<input type="checkbox"/>	2 Describe how low dose CT scans differ to standard CXR in screening for lung cancer.
<input type="checkbox"/>	3 As a SCN, discuss how you would respond to a person who asks whether they could have detected their lung cancer at an earlier stage.

Responding to symptoms

Symptoms of lung cancer are vague and non-specific. A delay in diagnosis can affect treatment choices and result in sub-optimal patient outcomes, including reduced functional status, quality of life and mortality for individuals with potentially curative disease.⁴ The General Practitioner (GP) is vital in the early and rapid referral of individuals with suspected lung cancer to lung cancer multidisciplinary teams. Diagnosis through a MDT has been associated with improved survival.²⁷

In 2012, Cancer Australia released a [guide for GPs on investigating symptoms of lung cancer](#).²⁷ The guide encourages urgent referral of patients with signs or symptoms of lung cancer to a specialist linked to a lung cancer MDT.⁴ Any of the following unexplained, persistent symptoms and signs lasting more than three weeks (or less than three weeks in people with known risk factors) require urgent referral for a chest X-ray:²⁷

- new or changed cough
- chest and/or shoulder pain
- shortness of breath
- hoarseness
- weight loss / loss of appetite
- unresolved chest infection
- abnormal chest signs
- finger clubbing
- cervical and / or supraclavicular lymphadenopathy
- features suggestive of metastasis from a lung cancer (e.g. in brain, bone, liver or skin)
- signs of pleural effusion.

In most cases of suspected lung cancer it will be appropriate to confirm the diagnosis and establish the pathological subtype, and to exclude other pathological conditions. Accurate histological analysis is required to ensure the appropriate staging of the disease and determine the best treatment plan.¹⁴

Investigations used to confirm diagnosis include:⁹

- chest x-ray and computed tomography scan
- sputum cytology
- fine needle biopsy and fiberoptic bronchoscopy
- fluoro-deoxy glucose (FDG) PET scan.

Learning activities

Completed	Activities
<input type="checkbox"/>	1 Describe the role of each of the following investigations in the diagnosis of lung cancer. For each test, explain nursing interventions before and after the investigation: <ul style="list-style-type: none">• sputum cytology• CT scan• fine needle biopsy• fiberoptic bronchoscopy• PET scan.
<input type="checkbox"/>	2 Describe how you would ensure referral of a person living in a rural area for appropriate investigation of a suspected lung cancer.

Section 3: Have the best treatment and support during active treatment

Objectives

On completion of this section, you should be able to:

1. Describe the environmental and inherited aspects of the aetiology and pathogenesis of lung cancer.
2. Discuss the implications of staging and histopathology of lung cancer for a person's cancer journey.
3. Discuss the key supportive care needs of people diagnosed with and undergoing treatment for lung cancer.
4. Discuss current treatment approaches for the management of different types and stages of lung cancer.
5. Analyse factors that might influence the treatment decisions of people with lung cancer.
6. Use evidence based approaches to facilitate the ability of the person affected by lung cancer to participate in decisions about their treatment and care, according to their preferences.
7. Describe the mechanisms and risk factors of common effects associated with lung cancer treatments.
8. Implement evidence based interventions to respond to disease and treatment related effects associated with lung cancer.

Principles for best practice management of lung cancer in Australia

Studies on patterns of care for lung cancer in Australia have identified variations in care related to:²⁸

- time to diagnosis
- access to active treatment
- access to re-treatment
- access to palliative care.

These variations mean optimal outcomes for lung cancer patients are not always achieved. To address these gaps, Cancer Australia has developed [Principles for best practice management of lung cancer in Australia](#)²⁹ to support an evidence-based approach to lung cancer care. These best practice principles, elements and outcomes have been developed to provide a framework to guide lung cancer care in the Australian context. The five principles address areas including:

Principle 1: Patient-centred care

The patient with lung cancer and their carer(s) are the focus of best practice lung cancer care.

Principle 2: Timely access to evidence-based pathways of care

Best practice pathways are in place to support timely diagnosis and staging of lung cancer; and appropriate treatment, supportive, follow-up and palliative care are in place.

Principle 3: Multidisciplinary care

Multidisciplinary care is the standard of care for all lung cancer patients.

Principle 4: Coordination, communication and continuity of care

All relevant health professionals, including GPs, provide coordinated delivery of care across the lung cancer continuum of care.

Principle 5: Data-driven improvements in lung cancer care

Lung cancer data are collected, monitored and reviewed regularly to support continuous improvement in the delivery of best practice lung cancer care.

Consistent with these principles, key features of an effective service delivery model for lung cancer patients include:²⁸

- involvement of a multidisciplinary team
- involvement of a medical practitioner specialising in diagnosis and treatment of lung cancer
- care coordination, including access to care coordinators
- early integration of palliative care
- adherence to guidelines / recommendations and measurement of the quality of care
- consideration of supportive care and quality of life needs
- involvement of primary and community based care.

Learning activities	
Completed	Activities
<input type="checkbox"/>	1. Access the Cancer Australia, Principles for best practice management of lung cancer in Australia ²⁹ , and review the Elements and Outcomes related to each of the five Principles. <ul style="list-style-type: none"> • In your practice setting, reflect on the extent to which these principles are applied in practice. In doing so, identify key areas where you think improvements could be made. • What contribution can you make in your practice to support implementation of these Principles.

Types and staging of lung cancer

There are two main sub-types of lung cancer. These subtypes differ in terms of their biology, therapy and prognosis:³⁰

- Non-small cell lung cancer (NSCLC) (including squamous cell carcinomas, adenocarcinomas, large cell carcinoma).
- Small cell lung cancer (SCLC).

Non-small cell lung cancer (NSCLC)

NSCLC accounts for more than 85% of all lung cancer cases.³⁰ There are two main types of NSCLC:

- **Non-squamous** cell cancers are the most common histologic type of lung cancer, tend to be peripherally located and smaller, and vary histologically from pre-invasive in-situ cancers (ground glass opacities (GGO's) – on CT scan) to solid masses with that may or may not be mucin-producing.¹⁴ Non-squamous cell cancers include adenocarcinoma, large cell carcinoma, and other cell types.³⁰
- **Squamous** cell cancers often arise in the larger and more central bronchi and tend to spread locally. These cancers tend to metastasize later and less frequently than other types.¹⁴

Accurate staging of lung cancer based on the TNM system is essential for both prognostic and therapeutic reasons.³¹ NSCLC is staged using the AJCC (7th edition) staging system for lung cancer. Within the AJCC staging, locally advanced disease is usually considered stage III and advanced disease is stage IV.³⁰ Stage grouping and descriptors of the TNM classification scheme are described elsewhere:

- [NCCN Clinical Practice Guidelines in Oncology. Non-Small Cell Lung Cancer](#). Version 3.2014. 2014³⁰
- [Non-Small Cell Lung Cancer Staging](#). 2013. Medscape³²
- [Stage Information for NSCLC](#). 2014. National Cancer Institute³³
- [American Joint Committee Lung Cancer Staging poster](#). 2009. American Joint Committee on Cancer³⁴
- [Diagnostic Imaging Pathways – Staging of Non-Small Cell Lung Cancer](#). 2012. Government of Western Australia³⁵

Good prognostic factors predictive of improved survival in individuals with NSCLC include:³⁰

- early-stage disease at diagnosis
- good performance status (ECOG 0, 1, or 2)
- no significant weight loss (not more than 5%)
- female gender.

Small cell lung cancer (SCLC)

SCLC accounts for 10-20% of all lung cancer.³⁶ It is characterised by a high growth fraction, rapid doubling time and early metastatic spread.³⁶ SCLC is nearly always seen in past or current cigarette smokers.³⁷

Staging for SCLC may involve:^{36, 37}

- history and physical examination
- CT scan (with intravenous contrast) of the chest, liver, and adrenal glands
- brain imaging using MRI (preferred) or CT scan (with intravenous contrast).

Due to the aggressive nature of SCLC, staging should not delay the onset of treatment for more than a week.³⁷

SCLC has traditionally been classified according to the extent of disease (limited or extensive) at presentation.¹⁴ Whilst these terms are still in use and have clinical relevance, recent revisions to incorporate TNM staging have demonstrated prognostic value and may improve stratification for entry into clinical trials of limited stage disease.^{36,37}

- [American Joint Committee Lung Cancer Staging poster](#). 2009. American Joint Committee on Cancer³⁴
- [Stage Information for Small Cell Lung Cancer](#). 2014. National Cancer Institute³⁸
- [NCCN Clinical Practice Guidelines in Oncology. Small Cell Lung Cancer](#). Version 2.2014. 2014. NCCN³⁷

Limited-stage SCLC	Stage I to III (T any, N any, M 0) that can be safely treated with definitive radiation therapy Excludes T3-4 due to multiple lung nodules ³⁷
Extensive-stage SCLC	Stage IV (T any, N, any, M 1a/b) or T3-4 due to multiple lung nodules or a tumour / nodal volume that does not fit in a tolerable radiation plan ³⁷

Adverse prognostic factors associated with SCLC include:³⁷

- poor performance status (ECOG 3-4).
- extensive-stage disease.
- weight loss.
- markers associated with excessive bulk of disease (such as lactate dehydrogenase (LDH)).

Factors associated with more favourable prognosis in individuals with limited-stage SCLC include:³⁷

- female gender
- age younger than 70 years
- normal LDH
- stage I disease.

In individuals with extensive-stage disease, favourable prognostic factors include:³⁷

- younger age
- good performance status
- normal creatinine level
- normal LDH
- single metastatic site.

Principles of treatment planning

Functional status is an important consideration in planning treatment for lung cancer. The risks and benefits of treatment must be discussed in the context of the patient's overall health, in order for them to make an informed decision about treatment.³⁹ The benefit of some treatments is also most evident in individuals with good initial performance status.¹⁴

A number of biomarkers and mutations have been identified with prognostic and predictive significance for NSCLC and these can aid in treatment planning.^{9, 15} For some patients, these developments enable lung cancer treatment targeted to these patient-specific biomarkers to achieve improved disease control.⁴⁰ For example, certain mutations in the epidermal growth factor receptor (EGFR) genes are a potential therapeutic target for lung cancer treatments in some patients. EGFRs have been implicated in cancer progression through their effects on cell cycle stimulation, apoptosis, angiogenesis and metastasis.⁴¹ Some advances in understanding of the role of biomarkers in the management of NSCLC are yet to have widespread clinical application.

- In Australia, activating mutations in the EGFR gene are found in approximately 10-15% of people affected by NSCLC. They are even more frequent in non-smoking Asian females with adenocarcinoma.⁴²
 - EGFR over-expression has been shown to be an adverse prognostic factor in NSCLC.⁴¹
 - Adenocarcinomas harbouring activating EGFR mutations are sensitive to targeted EGFR-TKI (tyrosine kinase inhibitor) agents such as gefitinib and erlotinib.⁴²
- Adenocarcinomas with anaplastic lymphoma kinase (ALK) or ROS1 gene rearrangements are sensitive to TKIs such as crizotinib.⁴²
- High levels of ERCC1 (excision repair cross-complementing rodent repair deficiency, complementation group 1 (includes overlapping antisense sequence)) which is associated with DNA repair, are associated with better survival when compared with low ERCC1 levels.³⁰
- KRAS (Kirsten rat sarcoma viral oncogene homolog) mutations occur in about 38% of lung adenocarcinomas in the Australian population.⁴²
 - KRAS mutations in NSCLC are associated with worse prognosis than individuals with KRAS wild type tumours (no mutation detected in the KRAS gene).^{30, 42}
 - KRAS mutations predict insensitivity to EGFR-TKI treatment.⁴²

Resource link:

[Molecular pathology in lung cancer](#) (Cancer Forum, July 2013)

Learning activities

Completed

Activities

- 1 Access the [Clinical practice guidelines for the treatment of lung cancer](#)³, and:
 - Discuss the rationale for undertaking regional lymph node assessment in surgical resections for NSCLC.
 - Discuss factors which may influence whether a person with lung

cancer may be fit for surgical treatment.

Treatment approaches for lung cancer

The [Clinical practice guidelines for the treatment of lung cancer](#)³ provide evidence based pathways, according to disease stage, for treatment of NSCLC and SCLC. Treatments for lung cancer can include surgery, antineoplastic agents, drugs targeting oncogenic mutations, radiotherapy, brachytherapy, radiofrequency ablation, and laser therapy. The management approach depends on the type and stage of disease and individual factors.

Treatment of NSCLC

Surgery

Surgery is the optimal treatment for NSCLC when the cancer is at an early stage and the person is physically able to undergo surgery.^{8,14} Early stage disease includes stage I, II and some stage IIIA (T3N0/1). The goal of surgery is complete resection of intra-thoracic disease.³¹ Surgical procedures for the treatment of lung cancer can include:³¹

- lobectomy - removal of a lobe of the lung which is generally preferred for smaller tumours. This can be performed using a video-assisted (“key-hole”) approach. Sub-lobar resection may be used in selected cases where decreased lung function makes full lobectomy difficult.^{43,44}
- pneumonectomy - removal of a whole lung which is associated with higher rates of complications.

Surgery for loco-regionally advanced lung cancer (stage III– T1-3 N2), remains controversial.³¹ Surgery may be considered as part of a multimodality treatment regimen for some individuals with N2 disease.³¹

The role of surgery for metastatic disease (stage IV) is primarily focused on the improvement of quality of life. Interventions may include:³¹

- video-assisted thoracoscopic surgery (VATS) pleurodesis for malignant pleural effusions
- permanent subcutaneous tunneled pleural drain insertion for repeated fluid drainage
- airway intervention with argon plasma coagulation, laser, mechanical debridement and stenting for the management of malignant tracheobronchial stenosis and haemoptysis
- management of solitary metastatic disease of the brain and adrenal glands, as part of a multimodality treatment regimen.

Multiple case reports and retrospective case series have reported long term survival in highly selected individuals with stage IV disease including brain, adrenal, and bone metastases with five year survival ranging from approximately 5% – 30% after resection of both primary and metastatic sites.^{3,31}

Radiotherapy

Thoracic radiotherapy is a potentially curative treatment option for stage I-III NSCLC.⁴⁵

- Individuals with stage I and II NSCLC may be considered for treatment with curative radiotherapy if they are not fit for an operation due to, for example, smoking-related comorbidities.
- For more advanced stage III disease, which is unresectable for technical reasons or because of extensive mediastinal lymph node involvement, fractionated radiotherapy in combination with concomitant cytotoxic chemotherapy is the standard of care.

Radiotherapy is also important in palliating symptoms for those who present with metastatic disease.⁴⁵ Symptoms related to intrathoracic disease which may indicate a need for radiotherapy include haemoptysis, cough, dyspnoea and superior vena caval obstruction. Common metastatic sites include bone and the brain.⁴⁵

New advances in radiotherapy techniques are being investigated:^{45, 46}

- Intensity modulated radiotherapy (IMRT) involves complex treatment planning to deliver a large number of non-uniform radiotherapy beams to converge on the tumour with the aim of limiting doses to adjacent critical structures.
- 4D CT, which takes into account tumour motion as a result of breathing, is very important in treatment planning of highly mobile cancers.
- Image guided radiotherapy (IGRT) combines linear accelerator function with CT scanning capability to verify the position of the tumour at the time of treatment, so that positional adjustments can be made if there has been any displacement of the cancer between treatments.
- Stereotactic ablative radiotherapy (SABR) provides precise treatment, in one to five very large doses. This approach appears to be safe for smaller peripheral tumours.

Antineoplastic Agents

Agents used for treating NSCLC include cisplatin, carboplatin, gemcitabine, paclitaxel, vinorelbine and pemetrexed, although this last drug is only of value in patients with non-squamous histology. Treatment is usually given as a combination of one of the platinum drugs and another agent.^{30, 47}

Antineoplastic agents may be used in early stage disease, after complete resection, as adjuvant treatment to reduce the rate of recurrence at metastatic sites. It is sometimes given before surgery in patients with known involvement of hilar or mediastinal lymph nodes.⁴⁷

Agents are used concomitantly with radiotherapy in patients with stage III NSCLC. In this role it increases the likelihood of controlling the cancer at the primary site and lymph nodes, but does not affect the rate of metastasis. Patients who have good performance status (WHO 1,2) and completely resected stage III non-small cell lung cancer should be offered adjuvant cisplatin-based therapy.³

The most important role of antineoplastic agents is in the treatment of stage IV disease, in individuals' without targetable mutations, to increase survival and improve quality of life. It is most effective in those with a performance status of ECOG 0 or 1.³

Biological and molecular targeted therapies

A range of biological and molecular targeted therapies are currently under investigation.⁴⁸ Clinical trials have demonstrated that inhibitors of the tyrosine kinase domain of EGFR (erlotinib, gefitinib) can result in some improvements in treatment of advanced NSCLC associated with activating EGFR mutation. A monoclonal antibody against EGFR (cetuximab) may also have benefit in association with chemotherapy.⁴¹ Inhibiting angiogenesis (or tumour blood supply growth) also appears a promising approach, although the results of trials have not been conclusive, and serious toxicity has been observed, particularly in patients with squamous cell carcinoma.⁴¹

Developments in the use of biological and molecular targeted therapies are under investigation, and new treatments for lung cancer are emerging rapidly.⁴⁸ Recent trials have demonstrated that inhibitors of the tyrosine kinase domain of EGFR (erlotinib, gefitinib) can result in some improvements in treatment of advanced NSCLC, and a monoclonal antibody against EGFR (cetuximab) also appears to have benefit.⁴¹ Inhibiting angiogenesis (or tumour blood supply growth) also appears a promising approach.⁴¹

Treatment of SCLC

In limited stage SCLC, the goal of treatment is cure using antineoplastic agents plus thoracic radiotherapy.³⁷

- Surgery may be appropriate for the very small number of individuals (2-5%) who present with stage I disease.³⁶
- Concurrent therapy and thoracic irradiation remains the standard of care for higher stage (II or III) limited disease.³⁶

Key practice points in the management of limited stage SCLC include:

- it is advisable to use a platinum drug plus etoposide for four cycles in individuals with limited stage small cell lung cancer³
- it is advisable to use three-weekly platinum and etoposide therapy during concurrent chemoradiotherapy for limited stage small cell lung cancer³
- chest irradiation is optimally commenced early during the course of antineoplastic agents³
- prophylactic cranial irradiation is recommended in those with complete response to treatment. It has been associated with lowered risk of brain metastases and longer survival³⁶
- five year survival for individuals with limited disease is around 20%, but for those with extensive disease, nearly all will relapse despite initial response to therapy. Second line treatment options include Topotecan or CAV (cyclophosphamide / doxorubicin / vincristine)
- clinical trial enrolment, if available and appropriate, should be considered for all individuals.³⁶

In extensive-stage SCLC, the goal of treatment is palliation of symptoms and prolonging of survival with antineoplastic agents and radiation therapy.³⁷ Treatment recommendations include:

- the platinum etoposide regimen is recommended as the first-line therapy for individuals with extensive stage small cell lung cancer³
- CAV is recommended as second-line therapy in individuals with extensive stage small cell lung cancer who have responsive disease (i.e. relapse > three months post first-line therapy with antineoplastic agents)³
- there is some evidence that prophylactic brain irradiation, and possibly thoracic radiotherapy improve survival in individuals with extensive disease who have responded to antineoplastic agents^{49, 50}
- there is insufficient evidence at present to definitively recommend thoracic radiotherapy as part of the initial management of extensive stage small cell lung cancer³
- palliative radiation therapy may be used for painful bony metastases, established brain metastases, and other symptomatic complications in individuals who have relapsed after antineoplastic agents.³⁶

Resource link

The [July 2013 Cancer Forum](#) (Vol 37 Issue No 2) focused on current practice and recent developments in lung cancer drug therapy, surgery, radiotherapy and ongoing developments in molecular pathology.

Papers include:

- [Surgery for non-small cell lung cancer](#)
- [Radiotherapy in lung cancer](#)
- [EGFR targeted therapy and resistance](#)
- [Other novel molecular targets in non-small cell lung cancer: it's not all about EGFR](#)
- [Small cell lung cancer update](#)

Learning activities

Completed	Activities
<input type="checkbox"/>	<p>1 Access the Clinical practice guidelines for the treatment of lung cancer³ and:</p> <ul style="list-style-type: none">• Outline the optimal management options for NSCLC and SCLC according to stage of disease.• Distinguish the recommended management for people with SCLC who have limited disease from people who have extensive disease.• Identify the indications for use of radiotherapy in people with SCLC.
<input type="checkbox"/>	<p>2 Access the Clinical practice guidelines for the treatment of lung cancer³ and discuss the role of targeted therapies in the treatment of NSCLC.</p>
<input type="checkbox"/>	<p>3 Describe the potential complications from thoracic surgery for NSCLC, and for each identify components of nursing assessment to detect these complications</p>
<input type="checkbox"/>	<p>4 Explain the pre- and post-operative nursing care for a person undergoing surgical resection for NSCLC relating to the following:</p> <ul style="list-style-type: none">• promoting pulmonary function• promoting comfort• managing chest tube drainage systems• providing psychological support.
<input type="checkbox"/>	<p>5 Identify potential effects of a regimen of cisplatin and etoposide in the management of a person with limited SCLC.</p>

Supportive care needs during treatment

Stigma and nihilism

Perceptions of stigma have been consistently described by individuals and carers affected by lung cancer. It is an issue experienced by both smokers and non-smokers.^{51,52}

“After being diagnosed with lung cancer, the first question you always get is ‘So, you were a smoker?’” (Patient).⁴⁰

High levels of psychological need in people affected by lung cancer have been associated with stigma. Significant levels of distress, anxiety and depression were reported. Greater feelings of shame, distress, isolation and discrimination significantly related to poorer QOL and psychological outcomes. Females and younger patients had higher levels of shame.^{51,40}

The poor prognosis associated with lung cancer can also create a sense of nihilism. It has been proposed that therapeutic nihilism – when treatments are considered to be of no value – may influence patterns of care in lung cancer, including the treatment options offered by health providers.⁵¹ Stigma and nihilism has also been associated with delays in seeking treatment for lung cancer.⁵¹

Increasing community awareness and understanding of the negative impact that stigma can have on people with lung cancer is important to ensure that all people with lung cancer receive the treatment and support that they need.^{51,40} Positive messages about the early detection and treatment of lung cancer are recommended.⁴⁰ Education about coping with any self-blame or stigma needs to be incorporated in care for this group.⁵³

Click on the link below to view the following audio-resource found on YouTube:

- [Impact of stigma and nihilism on people with lung cancer](#)

Psychosocial experiences

People affected by lung cancer commonly report psychological distress.¹⁴ Studies report common psychological problems seen in the NSCLC population include depression, anxiety, fatigue, pain and disruption to quality of life.³ Psychological interventions can assist in improving psychological well-being and coping with physical symptoms of disease and treatment. Combinations of cognitive behavior therapy, psycho-education, relaxation, supportive and unstructured therapies appear to be the most beneficial in this group.³ For people with advanced lung cancer, consideration of emotional, social and spiritual concerns is important, including preparation for progression of the disease and death. For further information, refer to [Clinical Practice Guidelines for the Psychosocial Care of Adult with Cancer: a summary guide for health professionals](#).⁵⁴

Treatment related effects

Due to the nature, location, and natural history of tumours of the lung, people with lung cancers experience a range of disease and treatment-related effects that require active management. These effects are often exacerbated by the presence of underlying chronic lung disease.

Lung cancer treatment related effects can include:

- post-operative complications associated with surgery for lung cancer including pain, infection, haemorrhage, pneumothorax and/or mediastinal shift⁵⁵
- biological and cytotoxic chemotherapy effects, such as nausea and vomiting, mucositis, diarrhoea, constipation, and fatigue. Anti-EGFR therapy commonly causes a distinctive

papulopustular rash. It occurs typically within weeks of treatment onset and some fluctuation of rash severity is commonly seen. It can be localised with very few symptoms or it can be generalised and associated with severe itch or tenderness. Prophylactic and reactive management strategies have been outlined in the [Clinical Guidelines](#)³

- effects of radiotherapy, which may be local and directly related to the treatment field and adjacent structures such as skin reactions and oesophagitis and systemic, such as fatigue. Oesophagitis can have considerable impact on an individual's quality of life and lead to poor nutrition. Radiation pneumonitis occurs post-treatment to up to six months later. The introduction of new treatment approaches has changed the toxicity profile. For example, stereotactic ablative radiotherapy (SABR) is occasionally associated with chest wall pain and rib fractures.⁴⁵

Within a supportive care framework, the SCN initiates appropriate preventative care to lessen the severity of these symptoms and effects of treatment, along with provision of support and management of effects.

Resource links

EdCaN Supportive Care Learning resource

[eviQ Radiation Oncology Nursing Home Page](#)

Management of radiation induced side effects

Management of radiation induced oesophageal injury

Management of radiation induced nausea and vomiting

Management of radiation induced skin reactions

Clinical procedures

Administration of IV contrast for radiotherapy CT scan

Management of IV contrast extravasation in radiotherapy patients

Management of pacemakers and implantable CardioDefibrillators (ICDs) in patients receiving radiation therapy

Clinical assessments

Radiation Oncology – Initial patient assessment form

Radiation-induced skin reaction assessment scale (RISRAS)

Skin Toxicity Assessment Tool (STAT) radiation oncology

Radiation Therapy Patient Education Checklist

Patient information sheets

Case Study: Meet Harold

Case study: meet Harold

Harold is a 75-year-old-male who has stage III Non-small cell lung cancer. He is receiving treatment which includes concurrent administration of platinum based therapy and thoracic radiotherapy.

Watch Harold's first video and then work through the learning activities. Use your notebook at the top of the screen to answer the learning activity questions and record your thoughts.

Harold's story 1: Meet Harold



Learning activities

Completed	Activities
<input type="checkbox"/>	1 Discuss the factors that would have been taken into account when determining a treatment plan for Harold.
<input type="checkbox"/>	2 Consider Harold's comments – "Stupid me... too many gaspers over too many years". How may this affect his experience of lung cancer and its treatment?
<input type="checkbox"/>	3 Reflect upon communication strategies which you could use when interacting with people affected by lung cancer to reduce the potential impact of stigma and nihilism.
<input type="checkbox"/>	4 Discuss the advice you would give to Harold to manage the following symptoms. Provide an evidence based rationale for your response. <ul style="list-style-type: none">• Metallic taste following treatment.• Fatigue
<input type="checkbox"/>	5 Harold wonders whether all the treatment is worth it. Outline how you would respond.
<input type="checkbox"/>	6 Describe in detail a plan for providing emotional, social, and practical assistance to Harold and his son during Harold's treatment.

Section 4: Have the best treatment and support between and after active treatment

Objectives

On completion of this section, you should be able to:

1. Explain the recommended follow up regimen following treatment for lung cancer.
2. Describe the short and longer term supportive care needs of people following completion treatment for lung cancer.
3. Identify the current management options for recurrence and metastatic lung cancer.

Symptom management

Effective symptom management is essential for supporting people with lung cancer.¹⁴ All members of the multidisciplinary team can implement preventative interventions to lessen the severity of effects of lung cancer and its treatments. Physical symptoms commonly reported by people with lung cancer, especially those with advanced disease include:¹⁴

- dyspnoea
- pain
- anorexia
- fatigue
- cough
- haemoptysis
- insomnia.

Current [Australian guidelines](#)³ provide an evidence based update to the management of the common symptoms experienced by the person with lung cancer, including pain, dyspnoea, constipation, cough and haemoptysis.

Dyspnoea

Dyspnoea has been reported in 70-75% of people with lung cancer.¹⁴ Dyspnoea can impose numerous restrictions on a person's functioning in and out of their home, as well as contribute to causing a number of negative emotional responses like fear and panic.¹⁴

Dyspnoea is usually caused by a number of factors. Where possible, reversible physical causes should be treated, for example by:¹⁴

- managing any existing pleural effusion
- managing any underlying lung disease, eg. Chronic obstructive pulmonary disease
- managing bronchial obstruction
- correcting anaemia
- treating any underlying infection
- adequately controlling pain.

Pain

In a review of 32 studies which included lung cancer patients from diverse populations, the prevalence of pain experienced was 47% (range 6-100%).⁵⁶ This reflects the range of experiences of patients throughout the treatment trajectory such as outpatients (range 8-85%) and palliative care services (range 63-88%).⁵⁶ For individuals with advanced lung cancer, it is estimated that 90% of patients will experience pain.⁵⁷ These findings reinforce the need to screen patients for pain at all stages of management.

Commonly the experience of pain in lung cancer patients relates to:

- Pain due to progression of primary or metastatic disease⁵⁷
 - Most frequent causes of pain include bone metastases, compression of neural structures, pleural and visceral involvement
 - Chest and lumbar spine most common sites of pain localization
 - 38% of patients have two or more anatomically distinct pains.
- Neuropathy⁵⁷
 - Peripheral neuropathy is most common during and after treatment with vinca alkaloids, cisplatin and paclitaxel.

- Postoperative thoracic pain⁵⁸
 - Post-thoracotomy pain syndrome occurs at least two months post-thoracotomy
 - Affects approximately 50% of patients
 - Commonly caused by trauma to the intercostal nerves during surgery leading to neuropathic and non-neuropathic pain.

Learning activities	
Completed	Activities
<input type="checkbox"/>	<p>1 Critically discuss the evidence base for use of the following interventions in the management of dyspnoea associated with lung cancer:</p> <ul style="list-style-type: none"> • cognitive behavioural therapy • breathing re-training • opioids • oxygen therapy.
<input type="checkbox"/>	<p>2 Discuss the advice you would give a person with lung cancer who has the following symptoms, providing evidence based rationale for your response:</p> <ul style="list-style-type: none"> • cough • haemoptysis • oesophagitis.

Follow up care

Treatment for lung cancer and the effects of the disease and its treatments can continue for an extended period of time. Care is provided by many health professionals across multiple specialist and primary care settings. Coordination of ongoing care is required to achieve optimal outcomes for the person with lung cancer.

Strategies to deliver coordinated, multidisciplinary care include:²⁸

- joint case conferences
- clinical networks
- multidisciplinary clinics.

In specialist settings, lung cancer coordinators or lung cancer nurse specialists play an important role in areas including:²⁸

- providing a continuous point of contact for patients and their families
- offering medical guidance
- provision of social and emotional support
- coordination of care
- assessment of patients' needs and coping skills
- education in ways to identify and cope with symptoms.

Primary care professionals have a significant role in lung cancer care at all stages, in particular in early detection, follow up from treatment, and palliative care where required. Some studies indicate:²⁸

- GPs are often 'cut off' from cancer care during the treatment phase, but become involved again in later aspects of care
- most patients would like their GP to be more involved in lung cancer care
- most GPs would like to be more involved in cancer care.

After lung cancer treatment, priorities include monitoring the status of the disease (including detection of metastatic disease) and managing the individual's supportive care needs. Follow up of patients with lung cancer can vary depending on the intent of the initial treatment.⁵⁹ For people with early stage disease treated with curative intent, follow up to detect and manage disease and treatment related effects should occur three to six months after treatment. Six-monthly clinical assessments for two years with an annual check thereafter should follow the initial follow up.^{37,59}

Smoking cessation should be encouraged at follow up appointments in a positive and supportive way. Benefits include reduced risk of second primary tumours. A large number of smokers diagnosed with lung cancer continue to smoke.⁵³ Smoking status should continue to be assessed at every follow-up visit, and referral for cessation advice given as appropriate.¹⁵ Smoking cessation for lung cancer patients can yield both immediate and long-term benefits, including decreased postoperative complications, increased efficacy of antineoplastic agents, increased survival time, and improvements in quality of life.⁵³

Case study

Harold's story 2: Harold returns home post treatment



Learning activities

Completed

Activities

- 3 Discuss specific issues you would raise with Harold and/or John regarding possible symptoms and future care.
- 4 Discuss strategies for promoting continuity of care between the treating facility and Harold's primary care providers.
- 5 Harold comments that he might live to be 100. Discuss how to maintain hope in people with advancing disease.
- 6 Harold has his affairs in order. Outline the information you would provide to an individual who would like to prepare a will. This resource on the [CareSearch](#) website may assist.

Disease recurrence

Treatment for recurrence of disease will depend on the location and extent of the recurrence (loco-regional or distant metastases), and on previous management.⁵⁹ Management approaches may include:
45, 59

- surgery - bronchoscopy, stents, laser therapy, pleurodesis
- radiotherapy - localised symptomatic recurrences, palliation of symptoms, including intrathoracic disease (haemoptysis, cough, dyspnea and superior vena caval obstruction) and for metastatic sites such as bone and brain
- drug therapy (standard for most individuals).

Malignant pleural effusion is a common occurrence for individuals with metastatic cancer. Symptoms may include dyspnea and cough. Management options include recurrent needle drainage by long term catheter, pleurodesis via instilling of sclerosant either by bedside (blind or ultrasound guided) insertion of chest tube or at video-assisted thorascopic surgery (VATS), and pleurectomy by VATS or an open approach. [A summary of the optimal management of malignant pleural effusions](#) has been developed in the Clinical practice guidelines for the treatment of lung cancer.³

Learning activities	
Completed	Activities
<input type="checkbox"/>	1 As an SCN in a cancer treatment facility caring for a person who has completed first line chemotherapy for treatment for early stage NSCLC: <ul style="list-style-type: none">• identify potential supportive care needs for the person at discharge• develop a discharge plan to address these supportive care needs.
<input type="checkbox"/>	2 Discuss how you would respond to a person who asks you whether there are any more treatments if their lung cancer returns.

Section 5: Have the best care at the end of life

Objectives

On completion of this section, you should be able to:

1. Undertake a comprehensive assessment to guide management of the person with advanced lung cancer.
2. Implement evidence based nursing interventions relevant to the needs and preferences of the person with advanced lung cancer.
3. Describe the clinical signs and symptoms which may indicate palliative care emergencies associated with lung cancer.
4. Explain barriers to the provision of comprehensive home-based palliative care for people with lung cancer at end of life.

Transition to palliative care

The unique and complex physical, psychological, social and spiritual challenges associated with advancing lung cancer means that early referral to palliative care can achieve better outcomes in terms of quality of life and survival and less unnecessary treatment and aggressive end of life care.^{10, 28}

Palliative care provides a holistic, person centred approach to care that actively focuses on promoting quality of life in accordance with the person's goals and preferences for care. Choice of place of care may be particularly important to some people, and ensuring that a person's wishes are met in this regard can help to provide them with 'a good death'.⁶⁰

Specialist palliative care services work in partnership with the oncology team and primary care providers to develop, implement and evaluate specific care plans related to a person's palliative care needs. The GP is often well placed to coordinate palliative care.

Timing for referral to palliative care is dependent on a number of factors, including prognosis, the complexity of the person's needs, as well as their readiness and willingness for referral. While introducing palliative care can be distressing, it is important to introduce the concept early. For example, evidence based guidelines suggest that patients with stage IV inoperable NSCLC should be referred to palliative care at the time of diagnosis of metastatic disease.³

There are some general communication strategies that may help facilitate discussion about palliative care. These include:⁶¹

- prepare for the discussion, where possible (confirm diagnosis and results, consider privacy and timing, negotiate attendees)
- relate to the person
- elicit patient and caregiver preferences
- provide information tailored to the individual needs of both patients and their families
- acknowledge emotions and concerns
- foster realistic hope
- encourage questions
- document outcomes of discussions.

Palliative Care Australia has standards that describe the dimensions and elements of quality of care for all Australians ([Standards for providing quality palliative care for all Australians](#)⁶²). They define standards for health care professionals in generalist or primary care settings and for specialist care. The standards are, therefore, relevant for all health care professionals, not just specialist palliative care services. CareSearch is a comprehensive online resource that brings together evidence-based and quality information for many groups within the palliative care community

Learning activities

Completed	Activities
<input type="checkbox"/>	1 Discuss what is meant by the phrase 'a good death'. You may find a resource like the NCCN Guidelines on Palliative Care ⁶⁰ useful in this activity.
<input type="checkbox"/>	2 Access the PCC4U website . ⁶³ <ul style="list-style-type: none">• Read and complete Activity four in Module one. This activity is designed to create an awareness of common needs and preferences for people with a life-limiting illness, like Harold.• Read and complete Activities three and five in Module four. These activities are designed to help you to consider some of the communication skills that will help the SCN to discuss goals and preferences of people who are dying.

Common supportive care needs during the palliative phase

Some common supportive care needs during the palliative phase may be related to the following areas:

- Disease progression and its effects.
- Financial concerns.

Disease progression and its effects

Understanding the pathophysiology of lung cancer and the likely pattern of metastatic spread in those whose disease progresses enables health professionals to be aware of potential complications and symptoms associated with advanced lung cancer.

For people with progressive lung cancer, a range of specific complications can arise, including:¹⁴

- pleural effusion
- pericardial effusion
- unilateral vocal cord paralysis
- hypercalcaemia
- spinal cord compression
- superior vena cava obstruction.

Some of these complications are life threatening, and require early identification and management. Rapid recognition and response is critical to minimise morbidity and long-term adverse sequelae.

Malignant pleural effusion is a common problem for individuals with metastatic cancer. Symptoms may include dyspnoea and cough. Management options include recurrent needle drainage by long term catheter, pleurodesis via instilling of sclerosant either by bedside insertion of chest tube or at video-assisted thorascopic surgery (VATS), and pleurectomy by VATS or an open approach. A summary of the [optimal management of malignant pleural effusions has been developed](#) in the Clinical practice guidelines for the treatment of lung cancer.³

Effective symptom management is essential for supporting people with advanced lung cancer.¹⁴ People with advanced lung cancer may often experience more symptoms than people with other cancers like breast or colon cancer.¹⁴ High levels of physical symptoms for those with advanced lung cancer often results in persistent emotional distress, and thus negatively affects a person's quality of life.¹⁴

Physical symptoms most commonly reported by people with advanced lung cancer include:¹⁴

- dyspnoea
- pain
- anorexia
- fatigue
- cough
- haemoptysis
- insomnia.

Current [Australian guidelines](#)³ provide an evidence based update to the management of the common symptoms of pain, dyspnoea, constipation, cough and haemoptysis.

Dyspnoea has been reported in roughly 70-75% of people with lung cancer.¹⁴ Dyspnoea can impose numerous restrictions on a person's functioning in and out of their home, as well as contribute to causing a number of negative emotional responses like fear and panic.¹⁴

Dyspnoea in a person with advanced lung cancer is usually caused by a number of factors. Where possible, reversible physical causes should be treated, for example by:¹⁴

- managing any existing pleural effusion
- managing bronchial obstruction
- correcting anaemia
- treating any underlying infection
- adequately controlling pain.

Progression of disease is also accompanied by significant psychological, social and spiritual challenges. Key end of life issues which need to be explored include:⁵⁵

- individual grief and coping
- social issues and the ability of the patient to maintain normal activities
- existential and spiritual issues as the patient confronts their own mortality and the meaning of life
- concerns about the impact on family and caregivers
- impact of clinical issues affecting psychosocial adjustment such as anxiety and depression, body image and sexuality and coping with physical symptoms.

Each person with advanced lung cancer will have unique concerns and goals, as do their caregivers and friends. It is important to consider management in the context of the person's unique situation, and to ensure their wishes are acknowledged.⁶⁴ Psychological interventions can assist in improving psychological well-being and coping with physical symptoms of disease and treatment. Combinations of cognitive behavior therapy, psycho-education, relaxation, supportive and unstructured therapies appear to be the most beneficial in this group of patients.³

Case study

Harold's son John talks about his father's re-admission to hospital.

Harold's story 3: John's story



Learning activities

Completed

Activities

1 Describe the pathophysiology of the following potential complications:

- spinal cord compression
- hypercalcaemia
- pericardial effusion
- pleural effusion.

2 Identify investigations and subsequent management required for diagnosis and management of the complications listed above.

5 Explain the potential causes of Harold's confused state.

6 You note Harold's corrected serum calcium is high. State the normal values for serum calcium and discuss the implications of high serum calcium.

7 Discuss non-pharmacological strategies the SCN can use to manage Harold's acute confused state

8 Given Harold's confused state, discuss how you would facilitate decision making about Harold's care.

9 Harold's son John requests further information about wills and his responsibilities as a medical power of attorney. Explain how you would respond. Refer to the [CareSearch](#) website when considering your response.

Case study

Harold's pain improves after radiotherapy and treatment of his hypercalcaemia. After a two-week admission to the regional hospital he is discharged home with John.

Harold's story 4: Supportive care



Learning activities

Completed

Activities

For these learning activities, you may access:

- NCCN Guidelines on [Adult cancer pain](#)⁶⁵ (this is a free resource, but you must register and log in to access it)
- [Clinical practice guidelines for the treatment of lung cancer](#)³

1

Harold is experiencing pain and dyspnoea:

- describe the pathophysiological basis of these symptoms in end-stage disease
- discuss the evidence based nursing interventions to prevent, detect early and manage these symptoms.

2

As the community nurse going to visit Harold at home for the first time, provide an outline of your initial assessment.

3

Outline how you would talk with John about his capacity to manage his father's care at home while responding to the demands of the farm.

4

Describe the role other members of the multidisciplinary team play in Harold's care at this time.

5

Describe how you would go about obtaining permission from your organisation to allow a loved pet to visit under special circumstances (such as in the case of a dying person).

Financial concerns

Financial issues may be a concern for people with lung cancer.⁶⁶ In addition, a number of people may be involved in providing support to people with lung cancer, in either a formal or informal manner.¹⁴ For people like Harold and John, financial concerns may include the cost of supplemental oxygen and various medications, as well as travel to and from hospital for treatment. Many people from rural and remote areas may need to travel a long distance to receive treatment, and this may result in substantial financial burdens.⁶⁶

Many health services have social workers who are available to provide advice on where to seek financial assistance.

Resource links

People receiving treatment for cancer may be unaware of the financial assistance available to them.⁶⁶ Access the following sites for further information on financial assistance:

- Centrelink has a range of payments that may be paid for [people living with illness, injury or disability](#). They also have a range of financial assistance and services for those [caring for someone with an illness or disability](#).
- Some states subsidise the cost of travel for people who are required to travel over 100km to receive specialist medical treatment. For instance, South Australia has the [Patient Assistance Transport Scheme](#) (PATS) and Queensland has the [Patient Travel Subsidy Scheme](#) (PTSS).
- The Cancer Voices SA website has information on [financial issues](#).
- Veterans and war widows who develop cancer may receive [financial assistance](#) from the Department of Veterans Affairs for services, equipment and medications.
- Some state-based cancer organisations provide limited financial assistance; their contact details can be accessed via the [Cancer Council Australia website](#).

Learning activities

Completed	Activities
<input type="checkbox"/>	1. Discuss the challenges Harold faces as a person living in a rural community and who requires end of life care at home.
<input type="checkbox"/>	2. Access Centrelink's " Caring for someone with an illness or disability " resource and outline the eligibility requirements for receiving a carer payment.

References

1. Australian Institute of Health and Welfare and Australasian Association of Cancer Registries. *Cancer in Australia: an overview, 2010*. 2010; Available from: <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129542353>.
2. AIHW & AACR. *Cancer in Australia: an overview 2012*. 2012; Available from: <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129542353>.
3. Cancer Council Australia Lung Cancer Guidelines Working Party. *Clinical practice guidelines for the treatment of lung cancer*. 30 January 2014; Available from: http://wiki.cancer.org.au/australia/Guidelines:Lung_cancer.
4. Cancer Australia. *Best practice approaches to lung cancer care - Final report*. 2013; Available from: <http://canceraustralia.gov.au/publications-and-resources/cancer-australia-publications/best-practice-approaches-management-lung-cancer-australia>.
5. Australian Institute of Health and Welfare. *Cancer in Australia: an overview 2014*. 2014; Available from: <http://www.aihw.gov.au/publication-detail/?id=60129550047>.
6. Australian Institute of Health and Welfare. *Australia's health 2014*. 2014; Available from: <http://www.aihw.gov.au/publication-detail/?id=60129547205>.
7. Cancer Australia. *Report to the nation- Lung cancer 2011*. 2011.
8. Australian Institute of Health and Welfare (AIHW) and Cancer Australia. *Lung cancer in Australia: an overview*. 2011.
9. Australian Government and National Health and Medical Research Council. *Assessment and management of lung cancer: evidence-based guidelines. A guide for general practitioners, edition one*. 2005; Available from: www.cancer.org.au/File/HealthProfessionals/Clinical%20Guidelines/lungguidelinesforGPs.pdf.
10. Temel, J.S., et al., *Early Palliative Care for Patients with Metastatic Non-Small-Cell Lung Cancer*. *New England Journal of Medicine*, 2010. **363**(8): p. 733-742.
11. Cancer Council New South Wales. *Smoking in Australia: statistics*. 17.03.2011; Available from: <http://www.cancercouncil.com.au/79096/cancer-prevention/smoking-reduce-risks/tobacco-statistics/how-many-people-smoke-in-nsw/>.
12. Australian Institute of Health and Welfare, Cancer Australia, and Australasian Association of Cancer Registries. *Cancer in Australia: an overview, 2008*. 2008 [cited Cancer Series no. 46 Cat. no. CAN 42].
13. Australian Institute of Health and Welfare. *Cancer survival and prevalence in Australia: period estimates from 1982 to 2010*. 2012; Available from: <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737422721>.
14. National Health and Medical Research Council. *Clinical practice guidelines for the prevention, diagnosis, and management of lung cancer*. 2004; Available from: https://www.nhmrc.gov.au/files_nhmrc/publications/attachments/cp97.pdf.
15. National Comprehensive Cancer Network (NCCN). *NCCN Clinical Practice Guidelines in Oncology: non-small cell lung cancer, version 3 2011*. 2011 17.03.2011; Available from: www.nccn.org/professionals/physician_gls/pdf/nscl.pdf.
16. Cancer Council Australia. *National Cancer Prevention Policy*. 2013; Available from: http://wiki.cancer.org.au/prevention/National_Cancer_Prevention_Policy.
17. World Health Organisation (WHO). *WHO Framework Convention on Tobacco Control (FCTC) home page*. 2011 04.08.2011; Available from: <http://www.who.int/fctc/en/>.
18. World Health Organisation (WHO). *Global progress report on the implementation of the WHO framework convention on tobacco control*. 2014 15.03.2016; Available from: <http://www.who.int/fctc/reporting/2014globalprogressreport.pdf?ua=1>
19. de Moor, J.S., K. Elder, and K.M. Emmons, *Smoking Prevention and Cessation Interventions for Cancer Survivors*. *Seminars in Oncology Nursing*, 2008. **24**(3): p. 180-192.

20. Hall, K., T. Gibbie, and D.I. Lubman *Motivational interviewing techniques. Facilitating behaviour change in the general practice setting.* Australian Family Physician, 2012. **41**, 660-667.
21. Joanna Briggs Institute. *Smoking cessation interventions and strategies.* 2008 12.05.2009; Available from: <http://connect.jbiconnectplus.org/viewsourcefile.aspx?0=464>.
22. Cancer Council Australia. *Position Statement: Tobacco related disparities.* 2013; Available from: http://wiki.cancer.org.au/prevention/Position_statement_-_Tobacco_related_disparities.
23. Humphrey, L.L., et al., *Screening for Lung Cancer With Low-Dose Computed Tomography: A Systematic Review to Update the U.S. Preventive Services Task Force Recommendation.* Annals of Internal Medicine, 2013. **159**(6): p. 411-420.
24. Marshall, H.M. and K.M. Fong, *Screening for lung cancer.* Cancer Forum, 2013. **37**(2).
25. Memorial Sloan-Kettering Cancer Center. *Lung cancer risk assessment tool.* 2003 17.03.2011; Available from: <http://www.mskcc.org/mskcc/html/12463.cfm>.
26. The Australian Lung Foundation. *Lung health check list.* 2011 May 2015; Available from: <http://lungfoundation.com.au/patient-area/checklist/>.
27. Cancer Australia. *Investigating symptoms of lung cancer: a guide for GPs.* 2012; Available from: <http://canceraustralia.gov.au/publications-and-resources/cancer-australia-publications/investigating-symptoms-lung-cancer-guide-gps>.
28. Cancer Australia. *Best practice approaches to lung cancer care - A review of the literature.* 2013; Available from: https://canceraustralia.gov.au/sites/default/files/publications/lclr_best_practice_approaches_to_the_management_of_lung_cancer_in_australia_a_review_of_the_literature_52d607caba2fa.pdf.
29. Cancer Australia. *Principles for best practice management of lung cancer in Australia.* 2014; Available from: <http://canceraustralia.gov.au/publications-and-resources/cancer-australia-publications/principles-best-practice-management-lung-cancer-australia>.
30. National Comprehensive Cancer Network. *NCCN Clinical Practice Guidelines in Oncology. Non-Small Cell Lung Cancer. Version 3.2014.* 2014; Available from: http://www.nccn.org/professionals/physician_gls/pdf/nscl.pdf.
31. Vrtik, M. and N.Z. Alam, *Surgery for non-small cell lung cancer.* Cancer Forum, 2013. **37**(2).
32. Stevenson, M.M. *Non-small cell lung cancer staging.* 2013; Available from: <http://emedicine.medscape.com/article/2007813-overview>.
33. National Cancer Institute. *Stage Information for NSCLC.* 2014 July 2014; Available from: <http://www.cancer.gov/cancertopics/pdq/treatment/non-small-cell-lung/healthprofessional/page3>.
34. American Joint Committee on Cancer. *Lung cancer staging 7th edition.* 2009 May 2015; Available from: <https://cancerstaging.org/references-tools/quickreferences/Pages/default.aspx>.
35. Government of Western Australia Department of Health. *Diagnostic imaging pathways-staging of non-small cell lung cancer.* 2015 May 2015; Available from: <http://www.imagingpathways.health.wa.gov.au/index.php/imaging-pathways/cancer-staging/non-small-cell-lung-cancer>.
36. Ferraro, D. and M. Millward, *Small cell lung cancer update.* Cancer Forum, 2013. **37**(2).
37. National Comprehensive Cancer Network. *NCCN Clinical Practice Guidelines in Oncology. Small Cell Lung Cancer. Version 2.2014.* 2014; Available from: http://www.nccn.org/professionals/physician_gls/pdf/sclc.pdf.
38. National Cancer Institute. *Stage Information for Small Cell Lung Cancer.* 2014 July 2014; Available from: <http://www.cancer.gov/cancertopics/pdq/treatment/small-cell-lung/healthprofessional/page3>.

39. British Thoracic Society and The Society for Cardiothoracic Surgery in Great Britain and Ireland. *Guidelines on the radical management of patients with lung cancer*. 2010 May 2015; Available from: <https://btscts-guidelines-on-the-radical-management-of-patients-with-lung-cancer>.
40. Bankhead, C. AACR: biomarkers predict best lung cancer therapy. Medpage Today 2010 17.03.2011; Available from: www.medpagetoday.com/MeetingCoverage/AACR/19616.
41. White, S. and N. Pavlakis, *Evolution of biological therapies in the management of non-small cell lung cancer*. Cancer Forum, 2008. **32**(3): p. 147-150.
42. Cooper, W.A. and S.A. O'Toole, *Molecular pathology in lung cancer*. Cancer Forum, 2013. **37**(2).
43. De Giacomo, T., et al., *Sub-lobar lung resection of peripheral T1N0M0 NSCLC does not affect local recurrence rate*. Scand J Surg, 2009. **98**(4): p. 225-228.
44. Hamatake, D., et al., *Surgical outcomes of lung cancer measuring less than 1 cm in diameter*. Interactive CardioVascular and Thoracic Surgery, 2012. **15**(5): p. 854-858.
45. Vinod, S.K. and D.L. Ball, *Radiotherapy in lung cancer*. Cancer Forum, 2013. **37**(2).
46. Liao, Z.X., et al., *Influence of Technologic Advances on Outcomes in Patients With Unresectable, Locally Advanced Non-Small-Cell Lung Cancer Receiving Concomitant Chemoradiotherapy*. International Journal of Radiation Oncology* Biology* Physics, 2010. **76**(3): p. 775-781.
47. Ball, D., *Personal communication*. 2014.
48. Azvolinsky, A. *Targeted lung cancer drug, Crizotinib, shows promise in typically unresponsive non-small cell lung cancer*. 2011 cited 2011 17.03.2011; Available from: <http://www.cancernetwork.com/lung-cancer/targeted-lung-cancer-drug-crizotinib-shows-promise-typically-unresponsive-nonsmall-cell-lung-cancer>.
49. van Meerbeeck, J.P. and D. Ball, *Small-cell lung cancer: local therapy for a systemic disease?* The Lancet, 14 September 2014.
50. Slotman, B., et al., *Prophylactic Cranial Irradiation in Extensive Small-Cell Lung Cancer*. New England Journal of Medicine, 2007. **357**(7): p. 664-672.
51. Cancer Australia. *Stigma and nihilism and the lung cancer diagnosis*. 2013 2 May 2013; Available from: <http://canceraustralia.gov.au/affected-cancer/cancer-types/lung-cancer/stigma-and-nihilism-and-lung-cancer-diagnosis>.
52. Chambers, S., et al. *Stigma and nihilism in lung cancer within the Australian context*. in *Clinical Oncological Society of Australia Annual Scientific Meeting*. 2013. Adelaide.
53. Cataldo, J.K., S. Dubey, and J.J. Prochaska, *Smoking cessation: an integral part of lung cancer treatment*. Oncology, 2010. **78**(5-6): p. 289-301.
54. National Breast Cancer Centre and National Cancer Control Initiative. *Clinical practice guidelines for the psychosocial care of adults with cancer. A summary guide for health professionals*. 2005 August 2014; Available from: <http://canceraustralia.gov.au/publications-and-resources/cancer-australia-publications/clinical-practice-guidelines-psychosocial-care-adults-cancer-summary-guide-health-professionals>.
55. Flannery, M., *Nursing management of the client with lung cancer*, in *Core curriculum for oncology nursing, 4th Edition*, J. Itano and K. Taoka, Editors. 2005, Elsevier: St Louis.
56. Potter, J. and I.J. Higginson, *Pain experienced by lung cancer patients: a review of prevalence, causes and pathophysiology*. Lung Cancer, 2004. **43**(3): p. 247-257.
57. Mercadante, S. and V. Vitrano, *Pain in patients with lung cancer : Pathophysiology and treatment*. Lung Cancer 2010. **68**: p. 10-15.
58. Hopkins, K.G. and M. Rosenzweig, *Post-Thoracotomy Pain Syndrom: Assessment and Intervention*. Clinical Journal of Oncology Nursing, 2012. **16**(4): p. 365-370.
59. Victorian Government Department of Human Services. *Lung tumour stream: non-small cell lung cancer*. 2006.

60. National Comprehensive Cancer Network (NCCN). *NCCN Clinical Practice Guidelines in Oncology: palliative care, version 2.2011* 2011 11.05.11; Available from: http://www.nccn.org/professionals/physician_gls/pdf/palliative.pdf.
61. Clayton, J.M., et al., *Clinical practice guidelines for communicating prognosis and end-of-life issues with adults in the advanced stages of a life-limiting illness and their caregivers*. MJA, 2007. **186**(12): p. S77-S108.
62. Palliative Care Australia. *Standards for providing quality palliative care for all Australians*. 2005 20.04.2011; Available from: https://www.health.qld.gov.au/cpcrc/pdf/standards_palliative_care.pdf.
63. Palliative Care Curriculum for Undergraduates (PCC4U) Project Team and with funding from the Australian Government Department of Health and Ageing. *Palliative care. A learning resource for students (electronic resource)*. 2010 11.05.2011; Available from: <http://www.pcc4u.org/>
64. Palliative Care Expert Group. *Therapeutic guidelines: palliative care. Version 3*. 2010; Available from: <http://www.tg.org.au/?sectionid=47>.
65. National Comprehensive Cancer Network (NCCN). *NCCN Clinical Practice Guidelines in Oncology: Adult cancer pain*. 2011 03.08.2011; Available from: http://www.nccn.org/professionals/physician_gls/pdf/pain.pdf.
66. National Breast Cancer Centre and National Cancer Control Initiative, *Clinical practice guidelines for the psychosocial care of adults with cancer*. 2003, National Breast Cancer Centre: Camperdown, NSW.
67. Cancer Australia. Lung Cancer Statistics. 2017. Available from: <https://lung-cancer.canceraustralia.gov.au/statistics>