Clinical Oncology Society of Australia

SMOKING CESSATION IN CANCER PATIENTS

EMBEDDING SMOKING CESSATION CARE IN AUSTRALIAN ONCOLOGY HEALTH SERVICES

About COSA

The Clinical Oncology Society of Australia (COSA) is Australia's peak multidisciplinary society for health professionals working in cancer research, treatment, rehabilitation and palliative care. COSA is recognised as an activist organisation whose views are valued in all aspects of cancer care. We are allied with, and provide high-level clinical advice to Cancer Council Australia.

The overarching mission of COSA is to improve the care of Australians affected by cancer. In order to improve cancer care and control in Australia COSA seeks to (as defined in the Constitution; approved 14 November 2017):

- Promote excellence in the multidisciplinary care and research relating to cancer – from prevention, diagnosis and treatment to follow-up, palliation and survivorship
- Encourage multidisciplinary collaboration of all professionals involved in cancer care and research
- Foster and promote cancer research
- Support the professional development and educational needs of cancer health professionals in the furtherance of the above objects

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Clinical Oncology Society of Australia
President: Associate Professor Nick Pavlakis
Chief Executive Officer: Marie Malica

Please direct any enquiries or comments on this publication to:
Chief Executive Officer
Clinical Oncology Society of Australia
GPO Box 4708
Sydney NSW 2001
Tel: (02) 8063 4100
Email: cosa@cancer.org.au

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Contents

COSA's Position

- All people with cancer who smoke should have access to **best practice smoking cessation care** at all stages of the cancer care continuum
- Oncology health services should aim to embed a smoking cessation **brief advice** model of care and may consider developing policies, procedures, clinical guidelines and referral pathways to operationalise the appropriate model
- The provision of individualised and comprehensive smoking cessation care in clinical practice requires a **collaborative approach** and all members of the oncology multidisciplinary team (MDT) should have an agreed role and be able to deliver smoking cessation brief advice
- It is essential that there are clear referral pathways to smoking cessation behavioural intervention services in every oncology health service, such as Quitline, or where possible a trained **smoking cessation specialist** within the service. The general practitioner (GP) is also a vital partner in providing smoking cessation care to cancer patients, which includes the delivery of brief advice and providing ongoing follow up.

Executive Summary

Quitting smoking has clear benefits for all cancer patients with regards to survival, cancer recurrence, treatment and quality of life.

Information concerning the manner in which smoking cessation care might be provided and implemented by oncology MDTs within the different State-based Australian healthcare system is scant.

Best practice smoking cessation care is to have a health professional deliver brief advice, which promotes quitting and encourages the use of, and links patients to, a combination of:

(i) Pharmacotherapy (combination nicotine replacement therapy (NRT) or other smoking cessation pharmacotherapy); and

(ii) Multi-session behavioural intervention (such as that offered through Quitline).

Brief advice is not the same as a behavioural intervention. Oncology clinicians are not expected to deliver multi-session behavioural interventions themselves, unless they have the desire to do so and have undergone necessary additional training.

The AAH (ask, advise, help) three-step brief advice model of care for smoking cessation can be used by all oncology clinicians. It has been endorsed by the national Tobacco Issues Committee of Cancer Council Australia.

Where practicable, smoking cessation care should be implemented from the initial patient visit and offered at all stages of the cancer care continuum, presumed to be mediated in most instances through an MDT.

Oncology clinicians need to be sensitive to the stigma attached to a cancer diagnosis in smokers, especially when the cancer is associated with smoking. It is important to address smoking cessation in a non-judgemental way and provide information on the individualised benefits of quitting linked to cancer treatment and prognosis.

Recommended approaches for embedding smoking cessation care into clinical practice include roles for oncology clinicians (all members of the MDT), GPs, smoking cessation specialists and Quitline services.

A collaborative approach in clinical practice is needed to aid the provision of comprehensive smoking cessation care, tailored to patients with cancer. Each member of the oncology MDT should have a role in supporting smokers to quit.

It is important that all oncology clinicians, including oncologists, are able to deliver smoking cessation brief advice. This needn't be time consuming and serves to connect patients with specialist services such as Quitline that offer multi-session behavioural intervention, which is more time intensive.

There is a definite role for appropriately trained smoking cessation specialists in oncology MDTs and this should be explored, recognising that funding is required for training and to deliver ongoing cessation care in the tertiary setting.

Having agreed roles for various members of the MDT is critical to the integration of smoking cessation care into any oncology health service. The term 'care' is used here as encompassing all facets of best practice - pharmacotherapy AND multi-session behavioural intervention (such as through Quitline). However, those roles need not be rigidly defined a priori (i.e. may vary for different services, depending on local processes and care pathways between clinics). Several example models are described.

Implementation efforts are required in order to achieve routine delivery of smoking cessation care in oncology settings. Oncology health services may consider developing policies, procedures, clinical guidelines and referral pathways to operationalise the brief advice model.

Recording data related to smoking status and delivery of smoking cessation care in medical record systems is essential and should be incorporated into existing processes. To standardise clinical practice, when and by whom the data items are recorded needs to be clearly identified locally. Medical record systems should have the functionality to support the provision of smoking cessation care.

Introduction

Preamble

Smoking tobacco almost triples the risk of death among Australians.[1] About 21,000 deaths are attributed to smoking each year.[2] The main causes of death from smoking are from cancer (8,000 per year; 16 different cancer types, the majority due to lung cancer), heart disease and stroke (5,000 per year) and respiratory disease (4,000 per year).[3] Continuation of smoking after a cancer diagnosis (which itself significantly increases the risk of death with a five-year relative mortality of 30%)[4] has similar adverse effects, regardless of tumour type. These risks from smoking are expected to continue after a cancer diagnosis.

With increasing cancer survival rates, the evidence for the impact of continued smoking following a cancer diagnosis has been accumulating. Research has consistently demonstrated the negative impact of smoking on treatment outcomes for all cancer patients, with a higher likelihood of recurrence and lower survival rates.[5-8] Smoking adversely affects the outcomes of all types of cancer treatment, no matter what tumour type is involved. Cancer patients who continue to smoke are at an increased risk of treatment toxicity and complications, medication side effects, hospitalisation and morbidity.[9] Fortunately, there is strong evidence to suggest that quitting markedly reduces a cancer patient's risk of death by comparison to someone who continues to smoke.

The importance of smoking cessation in cancer patients is highlighted in some international guidelines, for example the National Comprehensive Cancer Network (NCCN).[10] The American Society of Clinical Oncology (ASCO) has produced a practical guide to help clinicians assess and treat nicotine dependence as part of routine clinical practice.[11] However, not all professional oncological societies give such explicit guidance. The Royal Australian College of General Practitioners (RACGP) national smoking cessation guide does not address this particular population.[12]

Background

In 2017, the Cancer Institute NSW convened a national one-day symposium on smoking cessation in cancer patients. The symposium included discussion on how smoking cessation might be addressed in the context of cancer patient management as overseen by a MDT. There was consensus concerning the benefits of smoking cessation to cancer patients. However, there was a lack of consensus as to how this goal might be achieved in the context of MDT operations.

Smoking cessation in cancer patients cannot be optimally achieved by simply stating fundamental principles. The manner in which smoking cessation care might be implemented within oncology MDTs, including potential roles for various members of the clinical team, and with reference to authority, professional expertise and funding in Australia, needs to be evaluated.

The overarching mission of COSA is to improve the care of Australians affected by cancer. In order to achieve this, COSA seeks to promote excellence in multidisciplinary care and encourage multidisciplinary collaboration of all professionals involved. Not surprisingly therefore, COSA Council committed to the development of a paper on Smoking Cessation

in Cancer Patients. In July 2018, COSA established a multidisciplinary Working Group to develop this paper in consultation and collaboration with key stakeholders.

Objective

The objective of this paper is to delineate how smoking cessation care may be provided and implemented by oncology MDTs within the Australian healthcare system, duly recognising State-based differences.

It aims to be a practical, evidence-based resource for oncology health services and health professionals working with cancer patients. From diagnosis to palliative care, smoking cessation is an achievable and realistic goal for cancer patients who smoke.

With quitting conferring significant health, financial and psychosocial benefits, as outlined in the section 'Benefits of Smoking Cessation to Cancer Patients', all health professionals who care for cancer patients should be prepared to address smoking and to offer or facilitate the provision of best practice smoking cessation care – a combination of pharmacotherapy and multi-session behavioural intervention. These evidence-based interventions are described in the section on 'Smoking Cessation in a Cancer Patient Context'.

Despite common misconceptions expressed by health professionals, cancer patients are motivated to quit, and this motivation can increase following a cancer diagnosis.[13] Particular considerations around encouraging cancer patients who smoke to quit are described in 'Patient Considerations'.

Health professionals working with patients across the entire cancer care continuum, and the services they work for, should aim to systematically embed smoking cessation care as part of routine care. Detail is provided around this in the section 'Implementation in Oncology Care'.

In this context, smoking and tobacco dependence treatment should be regarded as important clinical issues, particularly given the chronic relapsing nature of nicotine addiction. Quitting should be a goal throughout a patient's cancer journey; at diagnosis, through treatment and into survivorship or end of life care. Health professionals and oncology health services have a duty of care to provide best practice smoking cessation care. Not doing so will only serve to disadvantage this already vulnerable patient group.

Benefits of Smoking Cessation to Cancer Patients

Survival and Mortality

Survival following a cancer diagnosis continues to improve thanks to therapeutic advances and earlier diagnosis. Improved survival means that smoking cessation care in cancer patients has become more relevant than ever. An estimated 1.1 million Australians are living with or beyond cancer today. By 2040, it is estimated there will be 45,000 lung cancer survivors, 230,000 colorectal and 359,000 breast cancer survivors.[14]

Smoking doubles, or almost triples the risk of death among western populations such as Australia and continuation of smoking after a cancer diagnosis also doubles the risk of death in an already at-risk population.[15] These effects are likely to be additive or multiplicative as each risk operates independently. Analogously, these risks are expected to 'carry on' at all stages after a cancer diagnosis, from initial treatment through to palliative care.

The Surgeon General's report on smoking summarises these adverse events in terms of overall mortality, poorer survival, occurrence of a second primary cancer, toxicity associated with chemotherapy and synergistic reactions with radiation therapy (Table 1).[15] The report found Level 1 Evidence (**sufficient** to infer a causal relationship) supporting a relationship between smoking and increased all-cause mortality, cancer-specific mortality and second primary cancer and Level 2 Evidence (**suggestive but not sufficient** to infer a causal relationship) between smoking and risk of recurrence, poorer response to treatment and increased treatment-related toxicity.[15]

Table 1: Summary of Surgeon General's report on adverse effects associated with smoking in cancer patients[15]

Effect among smokers compared to non-smokers	*Number of studies*	*Number showing statistically significant results*
Overall mortality	159	139
Shorter survival (SS)	62	26 (48 showing SS)
Risk of second primary cancer	26	Uniform increases in all studies (some limited sample size)
Chemotherapy associated toxicity	82	77
Synergistic reaction with radiation therapy	51	42

The evidence regarding the benefits of quitting smoking after a cancer diagnosis is evolving. In 2013, ASCO highlighted in a policy statement update significant benefits associated with smoking cessation after a cancer diagnosis.[16] This was further emphasised by the Surgeon General's report, which noted that smoking cessation care is likely to have substantial benefits for cancer patient survival, with the risk of dying possibly "lowered by 30-40% by quitting smoking at the time of diagnosis"[15] and that "for some cancer diagnoses, the benefit of smoking cessation may be equal to, or even exceed, the value of state-of-the-art cancer therapies".[17] A more recent review by the World Health Organization (WHO)[9] found consistent results with the Surgeon General's report.

For the purposes of this paper, attention is given to recent studies which document the impact on cancer patient survival or differential mortality in recent quitters versus those who continue to smoke.

*Recent quitters are smokers who quit **around or after** the time of their cancer diagnosis*

Overall Effects of Quitting

Evidence indicates an overall gain in survival of between 12-18 months. In a modelling study using data from a US cohort of cancer patients, eight-year survival of people who quit smoking after a cancer diagnosis was 49% versus 43% among those who continued to smoke (i.e. a 12% relative improvement, and an absolute benefit of 6%).[18] This amounts to about 18-month survival gain. Similar results were shown in Japan among a cohort of 30,658 cancer patients followed for ten years. Median survival for recent quitters was 8.25 years compared with 7.18 years in current smokers, about a one-year gain in median survival.[19] There is no commentary at what stage of cancer progression (from early treatment to palliative care) these patients chose to quit smoking, but clearly the earlier quitting smoking occurs in the treatment pathway the better the outcomes are likely to be.

Smoking Related Cancers

Survival may vary by cancer type. Among 757 lung cancer patients, mortality was 18% significantly lower (HR=0.82) in recent quitters compared with those who continued smoking, showing an 11-month improvement in median survival[20] in line with previous observations.[21] Other studies have shown improvements in overall survival in patients with lung cancer who quit smoking compared to those who continued to smoke[6,22] while one study did not find any differences in survival among 2,465 lung cancer patients.[23]

No significant differences in survival were observed among patients with upper digestive tract cancers or bladder cancer. While a positive (but not significant) prognosis among bladder cancer patients has been shown,[24] the numbers who quit were too low to draw proper inferences.

Cancers Weakly Associated with Smoking

Breast and colorectal cancers have been recently shown to be causally associated with smoking, but the relative risks are small when compared to, for example lung and head and neck cancer. In a study of 20,691 women with breast cancer, those who quit smoking after diagnosis had lower mortality from all-cause mortality, but the difference was not significant (HR=0.91).[25] Compared to women who continue to smoke after diagnosis, recent quitters had lower but not significant mortality from breast cancer (HR, 0.67) but significant

reductions in mortality from respiratory cancer* (HR, 0.39).

For colorectal cancer, a meta-analysis showed that in 12,414 colorectal cancer patients, smoking cessation was associated with improved overall survival compared with current smoking (HR = 0.78).[26] However, there were no survival benefits in a recent cohort of 3,110 colorectal cancer patients.[23]

Other Cancers

Significant survival gains have been demonstrated in people with multiple primary cancers who recently quit (11.55 years) compared with in those who continued to smoke (6.1 years).[27]

Cancer Recurrence

Cancer patients who continue to smoke are at a higher risk of recurrence. The Surgeon General's report on smoking found a higher risk of cancer recurrence among current smokers in 42 out of 51 studies.[15]

Similar outcomes have been found in reviews relating to lung[28] and urothelial[29] cancer patients. Most notable is a study that showed an increased risk of second lung cancer in lung cancer patients (21 fold in those who smoked and were irradiated); the risk of all second cancers in those lung cancer patients who continued to smoke and received radiation therapy or chemotherapy was 3.5 fold higher than expected when compared to background cancer rates.[30]

The risk of recurrence in recent quitters has not been studied extensively. However, the few studies that specifically measure an effect in recent quitters show an improvement in recurrence rates in patients who quit after their cancer diagnosis compared to those who continue to smoke.

Among 321 patents with non-small cell lung cancer, recent quitters had half the relative risk of disease-free survival (= 0.5, 95% CI = 0.3-1.0, P = 0.052).[21] In 153 patients with laryngeal cancer, recurrence rates were 28.7% in patients who quit smoking after diagnosis compared to 55.3% in those who continued smoking.[31]

The effects of quitting for recurrence in urothelial cancer patients is less studied. Some weak effects of recurrence in relation to smoking status among patients with transitional cell bladder cancer has been shown, where risk of recurrence compared to ex-smokers in recent quitters (n=51) and continuing smokers (n=108) was 1.18 and 1.46 respectively.[32] However in contrast to Rink et al.[33], no effect on recurrence was found due to smoking status among 293 patients with upper tract urothelial carcinoma[34] or 210 patients with bladder cancer (only 14% quit smoking at diagnosis).[24]

Much of the literature has focused on head and neck, lung, laryngeal and bladder cancer (all smoking related cancers where the expectation of a second (smoking related) primary would be higher),[35] as well as prostate[36,37] and colorectal cancer[38] (weakly associated with smoking, where the expectation of a recurrence would be lower). In studies of prostate and colorectal cancers recent quitters were not defined.

Confounding by indication (sick people quit smoking hence dilute outcomes) may account for some of the negative results observed in the literature, or small sample sizes. However, ex-smokers do experience lower recurrence

*Including neoplasms of the nasopharynx, larynx, trachea, bronchus, lung, pleura and intrathoracic organs

rates and given the emerging literature, it is highly likely that the effect would be noted among recent quitters although many studies are limited by sample size and issues of classification of a recent quitter. Further work is needed to define an intentional recent quitter and separate these from those who stop smoking because of their poor trajectory of disease outcome.

Cancer Treatment

Surgery

Cancer patients are often required to undergo surgical procedures as part of their treatment program. Smoking has been linked to a greater risk of complications following surgery for cancer. Complications include delayed wound healing, infections, reintubation and respiratory failure, all of which can increase recovery time and length of hospital stay.[39-44] These complications result from the carbon monoxide (CO) and nicotine being inhaled which causes increased heart rate, blood pressure and a higher demand for oxygen by the body's cells.[40] Nicotine absorbed from tobacco smoke also causes vasoconstriction of blood vessels reducing the blood flow to certain areas of the body which impairs wound healing.[40,41]

Smokers are four times more likely to suffer postoperative complications than non-smokers.[40] A study looking at the impact of smoking on perioperative outcomes in 16 major cancer and non-cancer procedures found that current smokers compared with non-smokers had significantly higher odds (14.9% vs 12.5%) of complications after oncological procedures and cardiovascular procedures resulting in further surgery and readmission.[43] The incidence of wound necrosis following mastectomy or reconstructive surgery post mastectomy was shown to be up to four times higher among smokers than non-smokers.[44] A study of complications following radical prostatectomy and found that current smokers had a higher rate of total complications compared to non-smokers (5.6% vs 4.6%).[39] Such postoperative complications can result in delayed recovery, further surgical procedures or ICU admission, which can lead to increased length of hospital stay or readmission.

A period of four to eight weeks of smoking abstinence prior to surgery significantly reduces the risk of perioperative complications.[40,41,43] Interventions such as nicotine replacement therapy (NRT) and behavioural interventions (such as through Quitline) prior to surgery should be incorporated into clinical practice in order to help patients quit smoking, which will in turn reduce the risk of complications.[39,41,43,45] See section on 'Smoking Cessation in a Cancer Patient Context' for further detail on evidence-based interventions.

Chemotherapy

Tobacco smoke contains over 7000 chemicals.[46] Incomplete combustion of tobacco leads to the formation of polycyclic aromatic hydrocarbons (PAHs). PAHs are important, not only because they are potent carcinogens, but also because they can affect drug metabolism. Cytochrome P450 (CYP) enzyme subfamilies CYP1A1 and CYP1A2 and the uridine diphosphate-glucuronosyl-transferase family (UGT) are important pathways in drug metabolism that can be induced by PAHs. Despite strong theoretical and pharmacokinetic support for these interactions there is a paucity of high-quality data to estimate the clinical impact of such interactions on important patient outcomes. However, this should not deter clinicians from encouraging smoking cessation in all patients.

Specific examples of pharmacokinetic interactions include:

- **Irinotecan:** widely used in the treatment of solid tumours. It is a prodrug and undergoes complex metabolism to the active metabolite (SN-38) which is then inactivated by glucuronidation. Plasma concentrations of irinotecan and SN-38 are 40% lower in smokers compared with non-smokers.[47]
- **Erlotinib:** an epidermal growth factor receptor tyrosine kinase inhibitor used to treat non-small cell lung cancer. It is primarily metabolised by CYP3A4/A5 and to a lesser extent CYP1A2 and CYP1A1. CYP induction increases erlotinib clearance. Erlotinib plasma concentrations are approximately 50% lower in smokers compared to non-smokers.[48,49] The phase III CurrentS study recruited current smokers with stage IIIB/IV NSCLC who had failed first-line therapy. Although it found no benefit of higher dose erlotinib (300 mg vs 150 mg), only 4/313 (1.3%) participants had documented EGFR mutations and approximately 80% of the population did not have EGFR mutation testing performed.[50] The drug information sheet advises that the impact of smoking on erlotinib efficacy is "not known" and that smokers should be advised to quit smoking prior to starting treatment.[51] If the patient quits during treatment, the dose of erlotinib may need to be reduced.[52]
- **Crizotinib:** an orally available small-molecule tyrosine kinase inhibitor, can be associated with drug-induced interstitial lung disease (ILD). In a Japanese post-marketing surveillance study of patients with ALK-positive NSCLC, drug-induced ILD occurred in 5.77% of patients. Smoking history, along with older age, poorer performance status, previous ILD, and comorbid pleural effusion were statistically significant risk factors for ILD.[53]

Radiation Therapy

Smoking increases the risk of radiation therapy (RT) associated treatment complications, for example:

- Major bladder, rectal, or small intestine complications in patients receiving RT as part of treatment for stage I or II cervical cancer.[54]
- More long-term large intestine and anal-sphincter region symptoms in smokers after RT for prostate cancer.[55]
- Increased risk of lung cancer and heart disease in breast cancer survivors who received RT: a meta-analysis of 40,000 individuals in breast cancer radiotherapy RCTs estimated the absolute risk of lung cancer in long-term continuing smokers ≥ ten years after RT was approximately 4% and cardiac mortality was approximately 1%; for non-smokers the risk was 0.3% for each of these outcomes.[56]
- Higher risk of local skin reactions: smoking is an independent risk factor for severe skin reactions due to adjuvant RT for breast cancer.[57,58]

Smoking may reduce RT treatment response, for example:

- Current smokers with prostate cancer are at increased risk of biochemical recurrence, distant metastasis, and prostate cancer-related mortality after definitive RT to the prostate.[59]

*Detailed discussions on the **biological** and **clinical** effects of smoking in cancer patients are available in the Surgeon General's report (Chapter 6),[15] NCCN guidelines[10] and reviews by Warren et al.[60] and O'Malley et al.[61]*

Quality of Life

Cancer patients who quit smoking or have never smoked have been shown to have better quality of life (QOL) than those who continue to smoke after diagnosis. QOL is defined by the Centers for Disease Control and Prevention as "an individual's or group's perceived physical and mental health over time".[62] It is measured by assessing a person's mental and physical symptoms such as depression, fatigue and pain and how these impact a person's ability to carry out their normal daily activities.[63]

Studies have shown that patients who have never smoked or who quit smoking around the time of diagnosis have better overall QOL and reduced symptom burden than patients who continue to smoke.[64-66] For instance, a study of lung cancer patients found overall QOL and severity of symptoms was better in non-smokers compared to smokers.[67] However, this study only looked at patients at one point in time during their treatment, did not conduct follow up studies, and did not differentiate non-smokers between those who have never smoked and recent quitters.

A study of 947 cancer patients including a six month follow up found that non-smokers and those patients who quit smoking during treatment had decreased levels of depression, fatigue, sleep problems, skin problems and better concentration levels than those who continued to smoke.[66] The study also found that smokers had higher levels of severe side effects during treatment compared to non-smokers. Similarly, in a study of 134 head and neck cancer patients, those who quit smoking within six months prior or immediately after surgical treatment had lower levels of fatigue and depressive symptoms.[64]

Notably, when patients with lung cancer were divided into three groups overall QOL scores increased from 64 to 73 in patients who quit smoking one year before diagnosis, increased from 62 to 69 in those who quit smoking within one year of diagnosis, and decreased from 69 to 62 in patients that continued to smoke over a four-year period post diagnosis.[65]

Other benefits of quitting exist alongside the health benefits described above. An individual who smokes 20 cigarettes a day, for example, can save over $9,000 per year.[68] This may be particularly pertinent to cancer patients and their families facing financial stress due to loss of income and/or treatment costs.

Conclusion and Recommendations

The evidence regarding the benefits of quitting smoking after a cancer diagnosis is accumulating and despite a greater amount of literature on smoking related cancers these benefits are relevant to all cancer diagnoses.

While further refinements of the evidence are needed, the overall effects of quitting smoking are already on par with other medical interventions. Put in context, a ~5% gain in five-year overall survival in all cancers noted by Sitas et al.[18] is in the same order of magnitude as the benefits of radiation therapy in Australia (showing a 3% absolute benefit in five-year overall survival (and 10% benefit in local control)).[69]

Having said that there is a dearth of randomised trials on the effect of quitting on cancer outcomes even for cancers associated with smoking.[70] In a review of publications since 2000 (some listed above)[71] only one study reported overall mortality among cancer patients actively enrolled in a smoking cessation program after their cancer diagnosis; recent quitting significantly reduced overall mortality by 44%.

Some cancer patients may be reluctant to quit smoking hence more efforts are required than simple interventions. This was noted by van Osch et al. with the numbers of patients with bladder cancer being too small to draw proper inferences,[24] and in a review of trials on smoking cessation in head and neck cancer patients.[72] Further, some patients quit smoking because they are too ill to carry on. While this may be associated with positive outcomes by comparison to continuing smoking, the epidemiological effect of this (reverse causation, confounding by indication bias) has the effect of attenuating benefits among patients who quit on their own accord (or from a cessation program).

Smoking status should be assessed carefully in clinical practice (preferable by both patient interview and biomarker studies - plasma cotinine or CO) because of misreporting, and in the case of biomarker studies, because patients may be taking oral nicotine, patches or e-cigarettes to assist them with quitting. Some smokers may quit after intensive surgery, but then start again once they are feeling better. A clearer definition of recent quitter is required, taking into account smoking status six to 12 months after initial treatment is complete.

Aside from the benefits of quitting smoking relating to cancer treatment effectiveness, cancer outcomes and decreased risk of recurrence, the health benefits of quitting are well established and should be considered as part of routine care for cancer patients. The literature clearly shows that the benefits in survival and mortality in relation to smoking cessation are cumulative over time.[73] It stands to reason that some clinical studies on smoking cessation with short periods of follow-up are unlikely to discern an effect. Smoking causes death due to cancer in about 40% of cases. The other 60% are made up of heart disease, stroke, COPD, infectious lung disease and other smoking related causes of death. Cancer patients who smoke are certainly not immunised against these other diseases.

Smoking Cessation in a Cancer Patient Context

Best Practice Smoking Cessation Care

Best practice smoking cessation care is to have a health professional deliver brief advice, which promotes quitting and encourages the use of, and links patients to, a combination of:[10,74,75]

(i) Pharmacotherapy (combination NRT or other smoking cessation pharmaco-therapy); **and**
(ii) Multi-session behavioural intervention (such as that offered through Quitline)

Most of the evidence for best practice smoking cessation care is drawn from general population studies, rather than those in cancer patients. However, it is reasonable to conclude that there is no need for an entirely different approach to smoking cessation in this particular population. The combination of behavioural intervention and pharmaco-therapy remains best practice in the oncology setting, and is endorsed internationally by the NCCN.[10]

Evidence indicates that smoking cessation care is not currently being implemented as part of routine clinical practice for cancer patients in Australia.[76] As recommended by the RACGP[12] and other smoking cessation guidelines,[10] it should be the responsibility of all health professionals to assist cancer patients who smoke to access best practice smoking cessation care, and to motivate patients to make and sustain a quit attempt by providing smoking cessation brief advice. This should be offered at all stages of the cancer care continuum, including palliative and end-of-life care (where NRT can be utilised to alleviate and prevent nicotine withdrawal symptoms including irritability and restlessness), and in all oncology settings.[10]

Research has shown that brief advice alone can increase the likelihood of quitting. But combining brief advice with referral to behavioural intervention and pharmaco-therapy provision gives patients the best chance of success.[74,77] Oncology health services should aim to embed a smoking cessation brief advice model of care, as a vehicle by which health professionals can communicate this information, sign post to relevant services, improve motivation and increase the rates of successful quitting in cancer patients.[74,78]

The AAH model has been endorsed by the national Tobacco Issues Committee of Cancer Council Australia and is included in the revised RACGP smoking cessation guidelines. The model overcomes several barriers identified by oncology clinicians in providing smoking cessation care (see section 'Implementation in Oncology Care'). Brief advice can be delivered simply, quickly and effectively in as little as three minutes.

Brief advice is **not** the same as a behavioural intervention, such as that delivered by highly trained smoking cessation specialists at Quitline. Behavioural interventions take place over multiple sessions and utilise a range of behaviour change techniques including motivational interviewing, cognitive behavioural therapy, psychoeducation and skills building. Oncology clinicians are not expected to deliver multi-session behavioural interventions themselves, unless they have the

desire to do so and have undergone necessary additional training.

The AAH Model

Quit, in conjunction with health professionals, has adapted a three-step brief advice model of care for smoking cessation that can be used by all health professionals in all settings, including oncology. Also known as the AAH model it has the following components:

- ***Ask** all patients about smoking status and document this in their medical record*
- ***Advise** all patients about the best way to quit, and why this is important tailored to the patient's clinical situation where possible*
- ***Help** by offering opt-out cessation support to **all** patients who smoke and providing cessation support to those who want to quit (pharmacotherapy plus multi-session behavioural intervention - referral to Quitline or other smoking cessation service)*

Pharmacotherapy

Nicotine Replacement Therapy

NRT products are safe and effective in supporting cancer patients who smoke to quit, both during the active treatment phase and beyond. Success rates increase when NRT is used in conjunction with behavioural intervention (for example, as delivered by Quitline over the phone). There is evidence NRT can increase rates of quitting by 50-60%.[79] NRT can also be used to effectively manage nicotine withdrawal, which is of relevance to patients in hospital and other smokefree settings.

The aim of NRT is to temporarily replace some of the nicotine from cigarettes to reduce the motivation to smoke and reduce nicotine withdrawal symptoms, thus easing the transition from cigarette smoking to complete abstinence. In Australia, NRT is available in several forms: transdermal patches and faster-acting oral forms of NRT including a mouth spray, lozenge, gum and inhalator. Combination NRT is most effective in supporting a quit attempt, which involves the use of a transdermal patch to provide a continuous supply of nicotine and a faster-acting product to manage cravings and breakthrough nicotine withdrawals during the cessation process.[80]

Patients and clinicians can be reassured that NRT is safe and effective, and blood nicotine levels from NRT are significantly lower than levels reached from smoking tobacco.[10,81] NRT has the added benefit of reduced exposure to harmful chemicals in tobacco smoke. There is insufficient evidence that nicotine delivered through NRT causes/augments cancer in humans.

Availability of NRT Products

NRT has proven safety and efficacy data, and as such all forms of NRT in Australia are unscheduled and can be purchased from a variety of locations including supermarkets and other retail outlets. Some forms of NRT (patches, gum and lozenges) are also listed currently on the Pharmaceutical Benefits Scheme (PBS), thus can be purchased at a reduced cost with a prescription.[82] These are currently available as monotherapy only, which means while combination therapy is best practice only one of the products can be purchased on the PBS within a 12-month period. Patches and other forms of NRT are further subsidised for Aboriginal and Torres Strait Islander communities under the Close the Gap (CTG) Scheme.

The PBS sets the following criteria for patients to receive the subsidy for included NRT: "must be undergoing concurrent counselling for smoking cessation through a comprehensive support and counselling program or is about to enter such a program at the time PBS-subsidised treatment is initiated."

A 'comprehensive support and counselling program' may include telephone-based multi-session behavioural interventions (such as that provided by Quitlines) or face-to-face behavioural intervention by an appropriately trained and skilled smoking cessation practitioner.

Other Pharmacotherapies

Currently in Australia there are two other Therapeutic Goods Administration (TGA) approved medications for smoking cessation – varenicline and bupropion. Both medications can be used by cancer patients; however, bupropion is contraindicated in patients at risk of seizures and therefore should be used with caution in patients with brain metastases where seizure risk is high. In patients with underlying depression, nortriptyline can also be used as an option and recommended as a second line agent for smoking cessation as per RACGP guidelines.[12]

People are often anxious about the side effects from smoking cessation pharmacotherapies. Side effects of all medications can be managed and carry minimal risk compared to risks of continued smoking. Consult a pharmacist and other health professional such as psychologist and dietitian for managing side effects from smoking cessation and/or pharmacotherapies.

Varenicline

Varenicline is a partial agonist of nicotinic receptors. It blocks nicotine binding to these receptors, preventing the pleasurable effects of smoking, while its partial agonist activity reduces symptoms of nicotine withdrawal.[83] Generally shown to be more effective than bupropion or single agent NRT, a 2016 Cochrane review found varenicline increased the odds of cessation 2-3 times compared with placebo in the general population.[84] Varenicline is one of the preferred options especially in patients who are unable to use NRT; however, one in 23 patients taking varenicline will discontinue the therapy due to experiencing adverse effects[85] with nausea; a common side effect that may need to be managed in patients receiving chemotherapy. Advising to take varenicline with the first mouthful of food may help reduce nausea; if nausea is intolerable consider reducing the dose to 1 mg once daily.[83] There is some evidence that using varenicline with NRT improves its effectiveness[83,86] and may be considered for more heavily dependent smokers. Using a faster-acting product is particularly helpful when strong cigarette craving occurs. However, only one smoking cessation pharmacotherapy can be accessed on the PBS at any one time.

Bupropion

Bupropion is non-nicotine based and while its actual mode of action is unknown it may be effective due to its inhibition of neuronal uptake of dopamine and noradrenaline. A 2014 Cochrane review involving 44 trials comparing bupropion (as the only smoking cessation pharmacotherapy) to placebo found that bupropion significantly increased the likelihood of long-term abstinence from smoking in the general population.[87] It doubles the chance of quitting compared with placebo in academic and primary care settings.[83] Bupropion is contraindicated if there is history

of seizures and should be used cautiously when there is an increased risk of seizures due to a condition or liver impairment (reduction of dose recommended).[83]

Effective Use of Pharmacotherapy

Evidence indicates that all forms of smoking cessation pharmacotherapy are too often used incorrectly – both in terms of duration of use and correct application of products[88,89] due to fear of side effects and myths. Incorrect use of medications is more likely to cause topical and gastrointestinal side effects and therefore lead to premature discontinuation, resulting in the perception that they are ineffective. Supporting patients with correct use of products and linking them to behavioural intervention and follow-up is crucial.

Assessment of level of nicotine dependence, using a clinically validated tool such as the Heaviness of Smoking Index (HSI) and Fagerstrom Test, will ensure predictability of nicotine withdrawal and guide effective management strategies. Considerations may need to be made regarding a patient's suitability for some NRT products.[90] For example, use of the lozenge for patients experiencing dry mouth, or inability to chew gum due to false teeth.

Pharmacotherapies should be continued during brief lapses or slip-ups.

Consult a pharmacist or refer to the RACGP guidelines[12] for information and advice on the best combination of NRT products to use relevant to a patient's level of nicotine dependence and their ability to use the products. Dose adjustments may be required for other medications when smoking is reduced or ceased (see section 'Drug Interactions with Smoking').

Multi-Session Behavioural Intervention

Behavioural interventions utilise a range of approaches to increase and maintain motivation and confidence of a person to quit smoking. This includes, but is not limited to cognitive behavioural therapy, motivational interviewing, practical problem-solving and skill development to identify triggers and manage cravings, and adherence to optimal pharmacotherapy use. Behavioural interventions should be delivered over multiple sessions and need to consider a patient's level of nicotine dependence, previous quit attempts, motivations to quit, and social and emotional triggers, to develop a tailored quit plan.

Unless oncology clinicians have undergone specific additional training in motivational interviewing and behaviour change techniques and have time to provide high intensity[†] behavioural interventions, smokers should be referred to Quitline or a specialist face-to-face service. This recommendation is based on evidence that 'specialist practitioners' (whereby smoking cessation is part of their everyday role) have a higher success rate in supporting quitting than 'community practitioners' (where smoking cessation may only be a small component of their role).[91]

Quitlines

Quitlines provide behavioural intervention over multiple sessions via telephone. These interventions are personalised to the patient and use a range of behaviour change techniques. Referrals to Quitline can be made reactively, whereby a patient can initiate the

[†]180 minutes of counselling (30mins over 6 weeks)

call to Quitline themselves, or proactively, by which the Quitline initiates the contact, after referral from a health professional. Proactive referrals to Quitline can increase the proportion of smokers enrolling in treatment up to 13 times, compared to a recommendation that the patient call the Quitline themselves.[92]

Evidence clearly demonstrates the effectiveness of Quitlines in smoking cessation (independent of pharmacotherapy) and that a referral to these services can increase the chance of a successful quit attempt. A study that compared referral to Quitline to in-practice smoking cessation management by a GP (consisting of assessment of quit readiness and pharmacotherapy as required) found that patients referred to Quitline were almost twice as likely to be abstinent at three months compared to in-practice management.[93]

A 2013 Cochrane review of telephone counselling for smoking cessation pooled the results of 77 controlled trials and included nearly 85,000 participants.[77] A sub-analysis of 12 studies found that proactive telephone counselling involving multiple sessions, compared to a single call, resulted in a higher likelihood of a successful quit.

Face-to-Face Behavioural Intervention

Evidence for face-to-face behavioural intervention for smoking cessation is strong, and is drawn from several Cochrane reviews.[94] These collectively demonstrate that this type of behavioural intervention can effectively increase quit rates (independent of pharmacotherapy), through a range of behaviour change techniques as mentioned above.

A 2017 Cochrane review assessed the impact of individual face-to-face counselling (conducted by smoking cessation specialists) on quit attempts. Twenty-two trials compared individual face-to-face counselling with a minimal behavioural intervention, and found smokers receiving the face-to-face were more likely to achieve abstinence at six months after counselling commenced.[95]

A recent Cochrane review investigated the impact of group behaviour therapy programs on smoking cessation. Thirteen studies compared a group program with a self-help program and found a significant increase in cessation in both settings. There was no evidence that group counselling was more effective than individual counselling.[96]

Carbon Monoxide Monitors

Use of CO monitors should be explored as a tool for oncology clinicians to assist patients in understanding the physiological effects of smoking, as a screening tool, and to motivate and sustain quitting.

CO gas is produced when cigarettes burn or combust. The gas crosses the pulmonary alveolar-blood capillary membrane, binding to haemoglobin in red blood cells, creating carboxyhemoglobin (COHb). High levels of COHb can cause significant harm; even slightly higher than normal levels of COHb causes blood thickening and increased risk of blood clots.

CO monitors record and display expired breath CO levels in an easy low-cost way, with patients required to breath into a small device. Expired breath CO correlates well with the percentage of blood COHb, therefore CO monitors have been used to validate self-reported smoking abstinence. CO monitors are very easy to administer and are increasingly being used as a motivational tool as a person is able to see (via the CO reading display) decreasing CO levels as a quit attempt is sustained, thereby providing direct feedback to the person about benefits of

becoming smokefree.[97] Breath CO monitoring also provides biochemical verification of self-reported abstinence from smoking; the only drawback is that breath CO levels primarily relate to smoking behaviour in last 48-72 hours.

Embedding Smoking Cessation Care into Routine Clinical Practice

Embedding smoking cessation care into routine clinical practice requires a systematic approach. While individual practice change is necessary, whereby all oncology clinicians are able to deliver brief advice for smoking cessation, it is not sufficient.

In order to operationalise the smoking cessation brief advice, in accordance with the AAH model of care outlined above, oncology health services should consider implementation of smokefree policies and clinical guidelines and pathways, referral pathways to Quitline and other smoking cessation services, and means of data collection (to record smoking status and whether or not brief advice has been delivered).

A good example of this is Queensland Health's Smoking Cessation Clinical Pathway.[98] This is a peer reviewed[99] document that identifies and addresses smoking cessation in inpatients who smoke, including arranging pharmacotherapy and referral to behavioural interventions. This pathway has been successfully implemented across Queensland and adapted by clinicians in other Australian states. For example, in Victoria some health services have adopted clinical pathways that align with the AAH three-step brief advice model of care. The AAH model has been endorsed for national adoption by the national Tobacco Issues Committee of Cancer Council Australia and is included in the revised RACGP smoking cessation guidelines.

The Queensland Health Pathway is just one example of how to provide structured brief advice to motivate a quit attempt. Patients are interviewed by any member of the MDT about their smoking status and assessed for nicotine dependence. All patients identified as current smokers are advised to quit with support and are provided with education about the risks of tobacco smoking and the benefits of quitting. Smokers are encouraged to use NRT during their hospital stay to achieve abstinence and to prevent cravings and withdrawals.[100]

Important Considerations

Timing

A cancer diagnosis, even one that is not directly linked to smoking, is an opportune time to commence smoking cessation care with improved quit rates and abstinence.[101] Smoking cessation care should also be implemented from the initial patient visit to maximise the opportunity for patients to quit smoking prior to cancer treatment. However, ongoing education is key to quitting smoking and patients should be provided with support and access to smoking cessation care throughout their entire cancer treatment and beyond (see below).[102]

Nicotine Withdrawal Management and Transition to Outpatient Care

For oncology inpatients, the acute management of nicotine dependence and to prevent nicotine withdrawal should be a component of routine clinical practice, regardless of a patient's current level of motivation to make a quit attempt. As nicotine withdrawal can be easily predicted, prevented and managed, no patient need experience the uncomfortable and distressing symptoms of

the condition, which can include irritability, anxiety, depressed mood and insomnia.[103]

The first step in managing nicotine dependence and preventing withdrawal is to assess level of nicotine dependence, using a clinically validated tool, such as the HSI[12,90,104] which consists of two questions:

- How many cigarettes do you smoke in a day?
- How soon upon waking do you smoke your first cigarette?

Based on the HSI score, appropriate levels of NRT should be prescribed (in most cases, patients will require a patch plus faster-acting oral therapies) and recorded on medicine charts. Staff, such as oncology nurses, need to be trained on effective use of NRT products to ensure the patient receives most benefit from these medications.

Many hospitals have implemented nurse and pharmacist-initiated NRT programs and NRT prescribing protocols, to address nicotine withdrawal in patients, and could be considered as part of a comprehensive approach to smoking cessation.[105,106]

Opportunities should exist for smoking cessation care to be provided on an ongoing basis to cancer patients, upon discharge from inpatient care and during follow-up care in an outpatient clinic and in the primary care setting, to facilitate ongoing scripts for pharmacotherapy and referral to Quitline or other smoking cessation services. Evidence suggests that this continuity of care is important, with a Cochrane review finding that high intensity behavioural interventions that continue on discharge from hospital are effective in promoting smoking cessation.[107]

Drug Interactions with Smoking

Tobacco smoke interferes with many medications, through either pharmacokinetic or pharmacodynamic mechanisms. Most pharmacokinetic interactions are as a result of induction of CYP enzymes (primarily CYP1A2). It is the PAHs in tobacco smoke that induce the CYP metabolism of certain medications, rather than nicotine. There are a number of clinically significant interactions, including with alcohol, caffeine, warfarin, fluvoxamine, haloperidol, clozapine and olanzapine, and intake/doses of these may need to be reduced upon stopping smoking.[108-110] Efficacy and side effects of other medications and chemotherapy drugs (see section 'Benefits of Smoking Cessation to Cancer Patients') that are primarily metabolised by CYP1A2 may also be affected.

Pharmacodynamic interaction of tobacco smoke with opioids and benzodiazepines is also noted resulting in decreased analgesic effect, sedation and drowsiness in smokers, hence requiring higher doses and putting them at increased risk of side effects and likelihood of addiction. For example, fentanyl is a potent synthetic opioid often used in cancer patients and plasma concentrations are 28% lower in smokers.[111] This is thought to be caused by central nervous system stimulation by nicotine. This should be particularly considered when similar doses of opioids and benzodiazepines may cause more CNS depression in a smoker who has reduced smoking substantially. In smokers, insulin absorption may be decreased secondary to peripheral vasoconstriction; smoking may cause release of endogenous substances that antagonise the effects of insulin. Smokers may require higher dosages of insulin and other hypoglycaemic agents.[112]

Smoking Cessation Care and Priority Populations

There are sub-population groups where smoking prevalence is much higher including Aboriginal and Torres Strait Islander communities, people with mental illness and/or alcohol and other drug dependencies, people with lower levels of education and people experiencing socioeconomic disadvantage. Higher rates of tobacco use contribute directly to physical, financial and social disadvantage.

It is important to note that patients from priority populations are motivated to quit smoking[113-115] and should be offered smoking cessation care that meets best practice as outlined previously. Due to higher levels of nicotine addiction and withdrawal, more intensive and sustained care is likely to be required. Some state Quitlines offer tailored protocols for many of these priority populations as well as a dedicated Aboriginal Quitline and translator services. The Victorian Quitline also offers 'mood symptom monitoring' for people with mental illness, to help clients identify any change in mood subsequent to quitting smoking and distinguish these symptoms from withdrawal.

Best practice smoking cessation care also applies to other notable populations such as adolescents and young adults (AYAS), culturally and linguistically diverse (CALD) people, people identifying as LGBTQI+ and those living in rural and remote communities. The approach should be tailored to the individual patient circumstances.

Use of Varenicline and Bupropion in Patients with Mental Illness

The EAGLES study (double-blind, randomised, placebo-controlled clinical trial) did not show a significant increase in the neuropsychiatric events attributable to varenicline or bupropion relative to NRT patch or placebo in patients with a history of psychiatric disorders.[116] Based on these findings, varenicline or bupropion may be an option for cancer patients with psychiatric disorders that are stable and treated or who have had previous psychiatric conditions. Patients should be advised to stop varenicline and seek medical advice as soon as possible if they experience any unusual change in mood, thinking and behaviours.

Use of E-cigarettes and Heat Not Burn Devices

E-cigarettes or electronic nicotine delivery systems (ENDS) are not approved by the TGA as a smoking cessation device and are therefore not recommended for use. Furthermore, there is insufficient evidence regarding safety or efficacy of the use of these devices, and as a smoking cessation aid, both in the general population and in cancer patients.[10] Instead evidence-based smoking cessation care should be offered, involving the combination of pharmacotherapy and behavioural intervention.

The TGA notes that "unlike NRT products, which have been rigorously assessed for efficacy and safety and, therefore, approved by the TGA for use as aids in withdrawal from smoking, no assessment of electronic cigarettes has been undertaken and, therefore, the quality and safety of electronic cigarettes is not known. The Australian Government is concerned about the use of electronic cigarettes in Australia. The impact of wide-scale use of these devices on tobacco use is not known, and the outcome in the community could be harmful."

Smoking Cessation Care and Nicotine Withdrawal Management in Palliative Care

Palliative care is a holistic approach to care and becomes the key focus when treatment to prolong life becomes ineffective, inappropriate or undesired. It refers not only to the provision of end of life care but is increasingly relevant for patients earlier in the continuum of care pathway, including at the point of diagnosis.[117] Management of nicotine dependence and prevention of withdrawal symptoms are likely to be most relevant to cancer patients receiving end of life care, whereas for patients with longer prognoses, smoking cessation can still be an achievable and relevant goal.

It is important to note that there is a paucity of evidence for best practice nicotine withdrawal and smoking cessation care in palliative care patients. Much of the evidence is drawn from case studies, although these are still somewhat useful in illuminating key considerations.[118,119]

Smoking Cessation Care

The offer and provision of best practice smoking cessation care should not be excluded from palliative care patients, particularly those who may have several months or years of life remaining and where the benefits of quitting can still be experienced. These include physical benefits, for example airway function and respiratory symptoms can improve within a few months, and there is a decline in the risk of heart disease and stroke within one to two years.[120]

Management of Nicotine Withdrawal

Symptoms at end-of-life can include restlessness, irritability and anxiety. These align with symptoms of nicotine withdrawal, alongside other symptoms including depressed mood and difficulty concentrating. There is obvious overlap, and it is logical that for cancer patients who smoke and are nearing end of life, appropriate management of nicotine withdrawal may help to alleviate some of these distressing symptoms.[121] This is particularly relevant for bed-bound patients who may no longer be physically able to purchase and smoke tobacco and become involuntarily abstinent. Therefore, the management of nicotine dependence with adequate and timely NRT should be incorporated as part of the holistic care provided to cancer patients at end of life. The benefits to those caring for or spending time with their family is reduced exposure to second-hand smoke.

Conclusion and Recommendations

Smoking cessation care should be provided at all stages of the cancer care continuum, including palliative care. It is the responsibility of all oncology clinicians to assist patients who smoke to access best practice smoking cessation care and motivate them to make and sustain a quit attempt.

The AAH three-step brief advice model of care that systematically identifies smokers and offers and provides best practice smoking cessation care (pharmacotherapy in combination with multi-session behavioural intervention) is vital. Oncology health services may consider developing policies, procedures, clinical guidelines and referral pathways to operationalise this model, especially given current plans for its adoption nationwide in both oncology and general health service settings.

Unless oncology clinicians have undergone specific additional training in motivational interviewing and behaviour change techniques and have time to provide high intensity behavioural interventions, patients who smoke should be referred to Quitline or a specialist face-to-face smoking cessation service to receive this.

NRT products and other pharmacotherapies are safe and effective in supporting cancer patients to quit smoking. E-cigarettes or ENDS are not approved by the TGA (at the time of writing) as a smoking cessation device and are not recommended for use.

Cancer patients should be provided smoking cessation care on an ongoing basis, upon discharge from inpatient settings and during follow-up care in outpatient clinics. This follow-up care needs to be documented in patient medical records and in discharge letters to GPs for ongoing care. Priority populations, in which smoking rates are higher, may require more intensive and sustained care than the general patient population.

Patient Considerations

A cancer diagnosis can provide both a motivating factor and a barrier to quitting smoking. Because motivation and interest in quitting increase after diagnosis, this opens a window of opportunity for oncology clinicians to intervene and assist in the quitting process.[122] Conversely, stress experienced following cancer diagnosis can reduce confidence levels in smoking cessation and abstinence.[123]

It is well documented that there is stigma and blame attached to some cancers, especially those closely related to smoking. Although cancers of the lung and head and neck are more commonly associated with smoking, there is evidence to suggest that smoking contributes to mortality rates for many other cancers.[124] Quit rates are reported to be higher for patients with cancers related to smoking.[125]

Stigma associated with disease depends on whether the patient is held responsible.[123] Stigma can lead to guilt, nihilism and non-compliance with treatment. The belief that one caused one's own cancer is correlated to higher levels of guilt, shame, anxiety and depression.[124]

A cancer diagnosis therefore offers the chance of a teachable moment. However educational interventions should be addressed with care and sensitivity so as not to add to stigma.[10]

A non-judgemental approach whilst raising the issue of smoking and offering best practice smoking cessation care is key for oncology clinicians trying to engage patients to address their smoking. Patients express a preference for a personalised, non-judgemental approach when participating in smoking cessation programs.[123] About half of current smokers will make multiple (three or more) attempts to quit smoking.[126] It is important to communicate this point to patients who may feel discouraged if their quit attempt fails. Acknowledging previous quit attempts and the potential for relapse is vital.

A qualitative study looking at barriers and facilitators to smoking cessation in a cancer context[123] identified three key themes to explain why cancer patients continue to smoke. These included the stress experienced following diagnosis, a desire to maintain personal control and a lack of coherence around smoking, cancer and health.

Stress experienced following diagnosis

The period following cancer diagnosis can be extremely stressful and smoking can act as a coping mechanism. For some patients, even the thought of quitting smoking aroused a stress response which led to anticipation that cessation would be difficult to deal with, and some patients with palliative disease felt it was "too late" or that they had smoked too long for it to make a difference.[123]

Desire to maintain personal control

Following diagnosis, patients who felt pressured to quit smoking by relatives resisted and resented this and emphasised that a decision to quit should be theirs alone, thus the desire to exercise personal control and choice about their smoking behaviours.[123]

Lack of coherence between smoking, cancer and health

Patient uncertainty about the risks and consequences of continuing to smoke after cancer diagnosis was identified. Patients made

links to smoking being a cause for cancer but not to the benefits of quitting to recovery and future health.[123]

Other studies have found similar results, with the thought of quitting reported to be just another stressor at the time of diagnosis and patients believing that smoking only 'causes' cancer and stopping after diagnosis has no benefit.[127,128]

This supports the need to thoroughly inform all cancer patients about the benefits of smoking cessation on survival, cancer recurrence, treatment and QOL, not just those with cancers related to smoking

Other barriers to quitting smoking may include an unwillingness or lack of motivation to quit, enjoyment, habit, addiction and lack of support or access to quit resources.[129]

In smokers with cancer, there is a high incidence of depression, anxiety and stress, all of which are common causes for smoking relapse. It may be optimal to enrol patients in behavioural intervention programs with specific interventions designed to ameliorate these barriers and other cancer-related relapse challenges.[10]

A review of a London regional cancer smoking cessation program highlighted low referral acceptance by patients; this was attributed to challenges in referring and counselling patients, limited access to NRT and minimal follow up.[130] This highlights the need for a robust, structured and system supported smoking cessation behavioural intervention program to be in place; Quitlines, for example, meet these criteria.

Conclusion and Recommendation

From a patient perspective, evidence points to addressing smoking cessation in a non-judgemental way and including information on the benefits of quitting smoking linked to their cancer treatment and prognosis. Oncology clinicians need to be sensitive to the stigma associated with a cancer diagnosis in smokers, especially in those groups where there is a strong association between smoking and the cancer diagnosed. Oncology health services must ensure there are robust referral pathways in place to Quitline and smoking cessation services to allow for the ongoing multi-session behavioural intervention, incorporating counselling and support, required for success.

Implementation of Smoking Cessation in Oncology Care

Despite evidence supporting the benefits of quitting smoking after a cancer diagnosis and the existence of effective cessation tools (advice, counselling and pharmacotherapy), only a minority of cancer patients who smoke report receiving such evidence-based cessation care.[131] Providing cessation support beyond simply telling patients to quit has a much greater likelihood of producing successful quitting. Similarly, few oncology staff and administrators report that smoking cessation care is routinely provided to patients who are known to smoke.[132] The low rates of cessation care found in Australian oncology centres are in accord with those reported in the US.[133] Recommended approaches for embedding smoking cessation care into clinical practice include roles for oncology clinicians (all members of the MDT), GPs, smoking cessation specialists and Quitline services.[134] The wider healthcare system within which these approaches are embedded is also important to consider.[135]

The Role of Oncology Clinicians (Including Nursing and Allied Health)

In the clinical oncology setting medical, radiation and thoracic oncologists report that smoking cessation is an important element of patient care.[76,133,136] Although it is well documented that quitting can improve efficacy of cancer treatment and overall survival,[10,134] most oncologists do not actively provide smoking cessation care.[133,137] Studies indicate that oncologists routinely record smoking history, but there is a paucity of: direct recommendation to quit, provision of education regarding the importance and benefit of quitting, referral to smoking cessation behavioural intervention programs, and review of current smoking in follow-up consultations.[10,76,134] Given the chronic relapsing nature of nicotine addiction,[138,139] repeated assessment of smoking status and repeated offers of assistance to quit smoking are considered important. As the central healthcare providers for patients with cancer, it is essential that oncologists are actively engaged with implementation strategies.

*A **collaborative approach** in clinical practice is needed to aid the provision of comprehensive smoking cessation care, tailored to patients with cancer.[10,76]*

Each member of the oncology MDT (medical, nursing, allied health) should have a role in supporting smokers to quit.[76,137]

It is important that all oncology clinicians, including oncologists, are able to deliver smoking cessation brief advice. This needn't be time consuming and acknowledges that specialist services such as Quitline can offer multi-session behavioural intervention, which is more time intensive. It is not an expectation that oncology clinicians provide this, unless they have undergone the necessary additional training and have the desire to do so.

Smoking cessation care should be a standard component of cancer treatment.[76,137] Oncology clinicians should ask every patient if they smoke, advise about the best way to quit and

why this is important, and offer referral to behavioural intervention services (e.g. Quitline) and pharmacotherapy. This follows the three-step brief advice model of care outlined in the section on "Smoking Cessation in a Cancer Patient Context".

Data suggests that there is suboptimal implementation of smoking cessation care in the clinical oncology setting, with less than 30% of oncology health services providing cessation advice and support to smokers.[76,140] Failing to advise smokers to quit and subsequently offering help might actually cause harm. Research from the UK Stop Smoking Services found that smokers advised to quit by a GP, but not offered help, resulted in that patient being less likely to quit.[141] Thus, the offer of help in any discussion about smoking is crucial.

Barriers to Smoking Cessation Care in Clinical Practice

Perceived barriers to the provision of smoking cessation care by the oncology MDT (including nursing and allied health staff) have been identified as: nihilism about practitioners' ability to persuade patients to quit, patient resistance or emotive reaction, and a lack of time, training and resources.[10,128,133,134,137,140,142] Subsequent to these barriers, is the opinion of oncologists that smoking cessation should not be managed by them, and should instead be managed by other health workers, with "only 4% of oncologists preferring to manage cessation care themselves".[76] The most preferred options among Australian oncologists for the provision of smoking cessation care are: referral to the patients' GP, and the use of other health workers within the institution.[76]

Further training in cessation interventions such as brief advice, and development of dedicated resources to improve clinician skills, confidence and knowledge, are needed to increase smoking cessation care within oncology health services.[133,134] Systematic changes need to focus on incorporating assessment of smoking status and smoking cessation care into routine clinical practice.[133,140] Adequate training enables, and increases the likelihood of, the successful provision of smoking cessation care by members of the oncology MDT.[137]

Conclusion and Recommendations

Brief advice, delivered non-judgmentally and with information about the individualised benefits of quitting and formulation of an agreed plan with the patient (including referrals and support strategies), should be implemented from the initial patient visit.[10,76,140] The standard of care for all cancer patients who smoke should include assessment of smoking status and referral to effective smoking cessation care.[133] This should be followed-up by engagement with adequately resourced, accessible health professionals who understand both cancer treatment and smoking cessation. Ongoing follow-up on the patient's progress by the oncologist provides continuity and may aid in the prevention of relapse.[76,133]

The Role of Primary Care

Systematic review data indicate that brief advice from a GP significantly increases the odds of successful quitting at six months among smokers in the general population, and that more intensive advice is marginally more effective than brief advice.[143] Accordingly, the RACGP guidelines on smoking cessation state that "all health professionals should systematically identify smokers, assess their smoking status and offer them advice and cessation treatment at every opportunity" and that "where a client presents with a problem caused or exacerbated by smoking, it is of vital

importance for health professionals to raise the issue of smoking cessation".[12] Furthermore, the RACGP guidelines note the critical importance of offering smoking cessation care to people with smoking-related diseases such as heart disease and cancer. The role of GPs in providing ongoing smoking cessation care is also important given the chronic relapsing nature of smoking behaviour, even after cancer diagnosis.[144]

An Australian study found that approximately two-thirds of medical and radiation oncologists preferred to refer their patients to a GP for the provision of smoking cessation care rather than provide such care themselves.[76] There is no published Australian data regarding GP perspectives or patient preferences regarding who should provide smoking cessation care post cancer diagnosis.

There are very few trials examining the effectiveness of GP-based smoking cessation care for people diagnosed with cancer.[145] There are no studies that compare GP-based cessation care for cancer patients against other approaches such as oncology-based cessation care or community support services such as Quitlines. A case-control study of US smokers undergoing lung screening found a significant association between increased quitting and having a primary care provider assist the patient to quit or arrange cessation follow-up; while less intensive actions (ask, advise and assess) were not associated with quitting.[146] It was noted that rates of 'assist and arrange' follow-up were relatively low.[146] A UK study of GP activities regarding smoking cessation care compared patients with cancer to patients with coronary heart disease and found that cancer patients were significantly less likely to have their GPs update smoking status, advise quitting, or prescribe cessation medication; and they were less likely to have quit smoking.[147]

GP involvement can also occur via the oncology MDT whereby the smoking status of patients is noted at the MDT meeting and GPs are involved via a letter requesting follow-up smoking cessation care as a priority. Such letters need to include both diagnostic and treatment-related information to assist the GP to judge whether it is appropriate to prescribe pharmacotherapy as part of smoking cessation care. However, a challenge of this is approach is that it places the onus on the patient and the GP to prioritise action on smoking cessation care in isolation from the many other medical appointments that may be occurring during the diagnostic and treatment planning period.

Conclusion and Recommendations

GPs are a preferred source of cessation support in the view of oncologists and are known to be effective in encouraging quitting among the general population of smokers. Although there are insufficient data to make a clear recommendation on the role of the GP in smoking cessation care, it is important to acknowledge the crucial role of GPs in follow-up and ongoing management for cancer patients. Given the chronic, relapsing nature of smoking, GPs are likely to have an important role in facilitating long-term quitting success.

The Role of Smoking Cessation Specialists (Including Quitline Counsellors)

The National Tobacco Strategy 2012-18 outlined a comprehensive approach to tobacco control in Australia and identified that the success of individual quit attempts can be greatly increased by the use of a variety of smoking cessation aids including brief advice, resulting in the referral to more intensive counselling, which may be provided face-to-face individually, in groups, or by telephone.[148] Best practice in smoking cessation care requires a health professional to deliver brief

advice, which refers patients to, and encourages the use of, more intensive, proactive support such as Quitlines or smoking cessation specialists for face-to-face behavioural intervention.[12] A US study demonstrated the feasibility of oncology-specific cessation support involving: screening of all patients on smoking status; an opt-out bedside consult with a smoking cessation specialist; follow-up by automated telephone calls to assess smoking status and 'warm transfer' to Quitline.[149]

In Australia, Quitline services are available in all states and territories. Quitline is staffed by qualified counsellors who specialise in motivational interviewing and offer encouragement, support, and practical advice consisting of problem solving and skills training. A Cochrane review of telephone counselling for smoking cessation concluded that in the general population, proactive telephone counselling, such as that provided by Quitline, is effective[143] and can be further enhanced with call-back counselling.[150] A study that compared Quitlines to internet-based cessation services and self-help resources, found Quitlines to be more effective in achieving abstinence for the general population of smokers.[151,152]

Behavioural intervention is also available from other counselling sources, such as drug and alcohol counsellors. Such counsellors have a robust understanding of addiction theories and expertise in behaviour change management, motivational interviewing and relapse prevention. In addition, nurses across different patient groups and healthcare settings, and who have undergone additional training, can assist with smoking cessation. A review of 58 clinical trials in which nurses delivered smoking cessation interventions concluded that behavioural intervention to motivate and sustain quitting can lead to a moderate increase in patients achieving prolonged abstinence.[153]

However, there are multiple barriers with these interventions in oncology settings, including negative patient and clinician attitudes toward smoking cessation and lack of knowledge regarding tobacco treatment.[154] International surveys of oncology clinicians confirm that only a minority routinely offer or refer patients to smoking cessation care. There is little research exploring the reason for this, or how patients feel about smoking cessation in the context of a cancer diagnosis.[128] Most postgraduate training programs incorporate the 5As approach, stage of change, motivational interviewing and pharmacotherapies. Training in smoking cessation can increase the capacity of treating clinicians and oncology health services to provide brief advice, support quit attempts, and refer to specialist services.[155]

Finally, it has been demonstrated that proactive referral to a specialist service, such as Quitline, leads to higher rates of utilisation than the simple provision of advice to call a service.[156] Given that Quitlines can also provide more intense interventions through call-back programs, there is a greater likelihood of achieving successful cessation. Furthermore, Quitlines can address some of the common barriers to implementing interventions experienced by oncology clinicians, including time constraints and lack of knowledge regarding smoking cessation treatments.

Conclusion and Recommendations

Health professionals often underutilise opportunities to provide smoking cessation brief advice to smokers. All smokers attempting to quit should be offered follow-up and proactive referral to accessible, skilled cessation specialists, such as through Quitline.

Integration of Smoking Cessation Care in the Context of MDT Operations

Identification of smokers and integration of smoking cessation care in the context of MDT operations provides an opportunity to address quitting smoking with patients at the point of cancer diagnosis, as deemed critical.[157] There are no published studies providing models for oncology MDTs regarding how to integrate smoking cessation care into practice. In the US, it has been suggested that optimising delivery of smoking cessation care in multidisciplinary practice requires:[136]

(i) Making quitting a priority clinical goal;
(ii) Using the services of dedicated cessation programs and trained specialists;
(iii) Tailoring cessation interventions to the patient's cancer treatment plan;
(iv) Ensuring adequate use of pharmaco-therapy;
(v) Using state-of-the-art behavioural cessation strategies; and
(vi) Ensuring effective communication among all providers to integrate evidence-based cessation support into the standard clinical care for all cancer patients who smoke at diagnosis.

One avenue for integration may be the early identification of patient smoking status at MDT meetings, and subsequent referral for smoking cessation care. All members of the oncology MDT should be able to deliver brief advice and, ideally, ongoing smoking cessation care should be provided by a member of the MDT who has undergone the necessary additional training and has the capacity to provide ongoing support and follow up of patient care. Otherwise, specialist services should be utilised such as Quitline for multi-session behavioural intervention.

In Queensland, the model is currently being implemented within the Head and Neck and Thoracic Malignancy MDTs with cancer care coordinator clinical nurses, clinical nurse consultants and oncology and respiratory nurse practitioners playing a core role in the provision of smoking cessation care. In these MDT settings, the referral process and data collection methods for smoking cessation can be generated electronically through MOSAIQ® (medical oncology information and management system) and the Cancer Alliance Queensland QOOL databases.

This model, and methods of communication between all members of the MDT and the patient's GP, enables a consistent, sustainable pathway of smoking cessation care. Early intervention through adequately trained health professionals is imperative for implementation of recommended smoking cessation care including the use of combination NRT, other prescribed medications, and additional referral pathways into specialist services such as Quitline and other appropriately trained health professionals quipped with the skills to deliver face-to-face behavioural intervention. Input from specialised nursing staff is imperative as it provides the patient with a consistent point of contact and support person.

Ongoing input from any health professional can include measuring CO levels at baseline with continuing monitoring and recording for compliance and/or relapse to occur during and post treatment. Provision of smoking cessation care should occur when smoking status is identified during initial assessment and could occur in conjunction with discussion of treatment-relevant modifiable health behaviours such as physical activity. This support should be provided routinely and occur both during treatment and at follow-up appointments. At the point of discharge from

the acute setting (i.e. transition of patient care back to the primary care setting) the patient should be offered additional avenues of community support as required. This continuity of care across the tertiary, primary care and community setting by the oncology MDT reinforces the quit message and recognises that smoking should be managed as a relapsing chronic condition.[157]

Conclusion and Recommendations

There are few Australian examples of policies and procedures specific to smoking cessation in the oncology setting and the integration of smoking cessation care in the context of MDT operations as detailed above could be used to redress this situation. There is a definite role for appropriately trained smoking cessation specialists in oncology MDTs where there will be repeated opportunities to provide follow-up support and reinforce smoking cessation strategies with all patients who smoke. However, this role requires the oncology health service to fund training and some additional recognised time for health professionals to deliver ongoing cessation care in the tertiary setting.

The Role of Cancer Councils

Cancer Council is Australia's peak independent cancer authority, working across every area of every cancer, from research to prevention and support. State and national Cancer Councils invest strategically in research, essential support services, deliver information and education to the community and advocate to government regarding legislation and policy change. Reducing smoking-related death and illness is a priority of Cancer Council Australia and its Tobacco Issues Committee has developed several position statements to achieve this policy goal. Some of these are aimed at helping individuals to reduce smoking-related health risk and others support Cancer Council Australia's key tobacco-related advocacy priorities.

Given Cancer Councils' commitment to tobacco control and Quitline's objective to provide timely information and support to assist smokers to make a quit attempt and stay quit, Cancer Councils are well placed to operate the Quitline. This is the case in all states except New South Wales and Queensland, where Quitline is delivered by government (Queensland) or commercial (New South Wales) services.

Delivering Quitline services within Cancer Council provides a unique opportunity for integration and a holistic approach to both smoking cessation and care of people diagnosed with cancer. Cancer Council Victoria is exploring the potential to strengthen referral pathways between the Quitline service and 13 11 20 information and support service to ensure cancer patients who smoke receive high quality integrated cessation and psychosocial support. Cancer Council 13 11 20 is a free, confidential telephone information and support service run by Cancer Councils in each state and territory. Trained staff are available to answer questions about cancer and offer emotional and practical support to people living with cancer, their families and friends, the general public and healthcare professionals. When the services are co-located there is a comprehensive understanding of services available, which facilitates timely and efficient access to both cancer-related and smoking cessation information, and providers coordinated support to better meet patient needs.

Meeting the Financial Cost: Priorities and Options

Smoking cessation behavioural intervention, as delivered by Quitline, is available in all states

and has been shown to be highly cost-effective.[158] The option for integration of cessation and psychosocial support within a Quitline is potentially available in those states where the state Quitline is embedded with the state Cancer Council. The availability of specialist cessation support beyond Quitline poses some questions around how it can be financed. A recent economic evaluation modelled the costs attributable to first-line cancer treatment failure associated with continued smoking in the US system.[159] The attributable cost was $2.1 million per 1,000 total patients, or $10,678 per patient who continued to smoke. While the costs in the Australian system would vary from the US data, the evaluation nonetheless suggests that providing evidence-based smoking cessation care within an oncology health service is likely to be a cost-effective option.

Within oncology health services, anecdotally there appears to be a lack of recognition of the need for smoking cessation expertise and activity as part of the roles and time of oncology clinicians. That is, there appear to be few (if any) models of ongoing training and funding for specialised smoking cessation care within oncology health services, which allow patients to receive support that is integrated into their wider care.

The cost to provide such a level of smoking cessation care would require (i) training of approximately three days for at least two staff members, and (ii) two to eight hours counselling per smoker over three to 12 months using a combination of face-to-face and telephone support.

Such a model is in operation in some cancer centres in the US. Some additional equipment such as a smokerlyser may also be useful. Such costs represent a relatively small addition to the costs of anti-cancer therapies. Modifications to existing funding models could be made to accommodate the delivery of such care. For example, in Queensland Health Quality Improvement payments which covered inpatient smoking cessation care were extended to cover mental health; and could be further extended to cover outpatients such as people receiving chemotherapy or radiation therapy.

Providing specialist face-to-face behavioural intervention in primary care may also be needed. While GPs are not generally smoking cessation specialists, it would be possible to support their work via chronic disease management plans by involving registered psychologists in private practice who are appropriately trained. However, the current low numbers of registered smoking cessation specialists, session limits on General Practice Management Plans, waiting times and the out-of-pocket gap cost need to be addressed for such a model to be a timely, equitable and effective solution to meeting the needs of smokers diagnosed with cancer.

It should also be noted that even once funding is addressed, the process of integrating smoking cessation care into routine clinical practice represents an implementation challenge. An important aspect of efficient care pathways rests on electronic and streamlined recording of:

- Assessment of smoking status;
- Monitoring;
- Cessation care delivered; and
- Referrals.

Electronic recording has been shown to be an important element of practice change.[160] Some jurisdictions in Australia have made such improvements. In addition to improvements in

electronic records, the implementation science literature demonstrates that significant resources are required to deliver changes to mindsets and practices. A non-randomised study of smoking cessation care implementation at oncology centres in Ontario, Canada reported that the key factors appearing to influence successful implementation were senior-level commitment, infrastructure support, performance metrics and ongoing education of healthcare providers.[161] Detailed issues related to senior-level leadership have not been addressed in this paper but are relevant to successful implementation.

In addition, given the importance of pharmacotherapy to smoking cessation success, it is important to address the provision of products such as NRT in the oncology setting. Currently NRT is available to inpatients in most states, and in Queensland eligible patients may also get free NRT via the state Quitline.

Potential Models for Clinical Roles

Beyond the need for administrative and clinical champions for change,[161] having agreed roles for various members of the MDT is critical to the integration of smoking cessation care into any oncology health service. However, the limited available data suggests that those roles need not be rigidly defined a priori. Rather, as long as the essential elements of smoking cessation care is delivered for all patients and the messaging is consistent for patients over time; then the agreed roles of various clinicians may vary for different services, depending on local processes and care pathways.

For example, a distributed model may involve the oncologists describing the importance and relevance of quitting and prompting a referral to Quitline, while nursing staff facilitate NRT provision and cancer care coordinators monitor progress and facilitate re-referral to Quitline as needed. A model centred around a smoking cessation specialist (e.g. cancer nurse who has completed additional training) might involve referral of all smokers to that specialist for the provision of the entirety of the cessation care. Other models might involve the inclusion of members of the drug and alcohol team or psycho-oncology team. A variety of other models might be needed, depending on the circumstances of the individual clinic or service.

Conclusion and Recommendations for Implementation

Given the chronic, relapsing nature of nicotine dependence, it is important that cancer patients who smoke receive multiple offers of evidence-based support to quit. Best practice smoking cessation care in the oncology setting should always include both pharmacotherapy and behavioural intervention (such as referral to Quitline). Various models for the provision of smoking cessation care are likely to be appropriate, and the model should be tailored to the setting. The following recommendations are made based on limited evidence:

Recommendation 1

Implementation efforts are required in order to achieve routine delivery of smoking cessation care in oncology settings.

Recommendation 2

Oncology health services must identify workable models which ensure patients who smoke receive brief advice, resulting in referral for pharmacotherapy and behavioural intervention. Agreed roles for various members of the clinical team is critical, but need not be rigidly defined a priori (i.e. may vary for different services, depending on local processes and care pathways between clinics).

Key functions of oncology clinicians have been identified as:

(i) Oncologists to emphasise the individualised benefits of quitting with patients; endorse or facilitate the provision of best practice smoking cessation care and monitor the success of quit attempts in a supportive and positive manner

(ii) Nursing and allied health staff to facilitate the provision of best practice smoking cessation care (e.g. referral to Quitline) and monitor the success of quit attempts in a supportive and positive manner

Recommendation 3

The possibility of having a member of the oncology MDT qualified as smoking cessation specialist should be explored, with a view to making face-to-face behavioural intervention available in the oncology setting as a prelude or adjunct to Quitline behavioural intervention.

Recommendation 4

GPs are likely to be an important source of smoking cessation care but should not be the sole form of support for cancer patients. Further research is needed to identify how best to involve GPs. At a minimum, GPs should be advised of the benefits of quitting smoking for their patient, informed that the patient may need assistance to quit and referral to behavioural intervention (e.g. Quitline), and provided with information regarding the appropriateness of NRT and other pharmacotherapies according to the treatment plan (if known).

Recommendation 5

Smoking cessation care should be included in MDT discussions, including assessment and proposed actions.

Recommendation 6

Opportunities for greater integration between support services and smoking cessation services (e.g. via Cancer Councils) should be explored.

Data Management

The recording of data related to smoking status and delivery of smoking cessation care in medical record systems is essential to the provision of high quality care,[9] but also to monitor clinical practice and provide an accountability mechanism to ensure that smoking cessation care is routinely provided to patients as part of optimal oncology care. The provision of smoking cessation care and collection of associated data should be incorporated into existing processes, for example routine patient admission assessments for oncology services.

The National Health Data Dictionary provides national data standards for the health sector. The most relevant data set for oncology medical record systems that includes smoking status fields is the best practice Data Set Specification for Lung cancer, available on the METeOR (Australian Institute of Health and Welfare (AIHW) Metadata Online Registry).[162] Medical record systems should include data fields for tobacco use and smoking cessation care, based on this data set specification. The specification includes a number of fields to record smoking behaviour including (tobacco smoking status, number of cigarettes smoked, tobacco product smoked, smoking duration, quit and start age). Any new data items required to be collected, such as the delivery of brief advice, the provision or prescription of pharmacotherapies including NRT, and a measure for referral to behavioural intervention services should be developed through the same standard process and formally submitted.

Utilisation of these data items and associated metadata stored and maintained within the AIHW METeOR will enable the provision of accurate information on state, territory and national trends, health service utilisation and improved health outcomes.

To standardise clinical practice, when and by whom the data items are recorded needs to be clearly identified locally. The clinical roles providing smoking cessation care may vary for different services, depending on local processes and care pathways, but smoking cessation care should be implemented from the initial patient visit to maximise the opportunity for patients to quit smoking prior to cancer treatment.

Medical record systems should have functionality to support the provision of smoking cessation care, including:[160,163,164]

- Prompts for clinicians to provide smoking cessation brief advice;
- Functionality to send referrals to behavioural intervention services such as Quitline; and
- Ability to include information on smoking status and cessation care offered in discharge letters to a patient's GP.[154,156,157]

Smoking-related data items should be included in local required minimum data sets and routinely made available for oncology health service reporting. The extracted information should be associated to each episode of care and be incorporated into cancer data holdings in a way that enables a visualisation of smoking status and provision of smoking cessation care as a key component of a patient's cancer care pathway.

Resources

National guidelines and other resources

- RACGP guideline "Supporting smoking cessation: a guide for health professionals"[12] and associated treatment algorithm

  Available via www.racgp.org.au

- Queensland Health "Smoking cessation clinical pathway"[98]

  Available via www.health.qld.gov.au

- "Smoking Cessation Framework for NSW Health Services"

  Available via www.cancer.nsw.gov.au

- AIHW Metadata Online Registry "Lung cancer (clinical) National best practice data set (NBDS)"[162]

  Available via meteor.aihw.gov.au

- eviQ Rapid learning "Smoking cessation"

  Available via www.eviq.org.au

- Quit online training and resources for health professionals (including online videos demonstrating brief advice conversations with patients)

  Available via www.quit.org.au

Priority population resources

- Tackling Indigenous Smoking "Resources to Support Activities" website

  Accessed via tacklingsmoking.org.au

International resources

- WHO fact sheet "WHO tobacco knowledge summaries: tobacco and cancer treatment outcome"[9]

  Available via www.who.int

- NCCN guidelines "Clinical Practice Guidelines in Oncology: Smoking Cessation"[10]

  Available via www.nccn.org

- New Zealand guidelines "Helping people to stop smoking"

  Available from www.health.govt.nz

- ASCO "Tobacco Cessation Tools and Resources" website

  Accessed via www.asco.org

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COSA Smoking Cessation Working Group Members

Prof Bernard Stewart AM – Chair
School of Women's & Children's Health
University of New South Wales

Ms Caitlin Broderick
Thoracic Cancer Nurse Coordinator
WA Cancer and Palliative Care Network

Ms Cassandra Dickens
Clinical Nurse Consultant, Cancer Care Coordinator / Thoracic Malignancies
Sunshine Coast University Hospital

Ms Deepali Gupta
Senior Pharmacist and Tobacco Treatment Specialist
QEII and Princess Alexandra Hospital
Metro South Health Service QLD

Ms Gemma Hearnshaw
Portfolio Manager, Tobacco Control and Smoking Cessation
Cancer Institute NSW

Ms Jenny Hanlon
Registered Nurse
Royal Brisbane Women's Hospital

Dr Jasmine Just
Clinical Communications and Advocacy Coordinator
Quit Victoria

Ms Amelia Lewis
Cancer Care Coordinator
Townsville Hospital and Health Service

Dr Henry Marshall
Thoracic Physician
The Prince Charles Hospital

Ms Kirsten Mooney
Thoracic Cancer Nurse Coordinator
WA Cancer and Palliative Care Network

Prof Christine Paul
Co-Deputy Director
Hunter Cancer Research Alliance
University of Newcastle

Ms Ingrid Plueckhahn
Tobacco Treatment Specialist Nurse
Peter MacCallum Cancer Centre

Ms Nicky Roberts
Clinical Nurse Consultant, Dual Diagnosis Coordinator
Cairns and Hinterland Hospital and Health Service, Mental Health and ATODS

Ms Amanda Robertson
Support Services Coordinator
Cancer Council SA

A/Prof Freddy Sitas
Director
Centre for Primary Health Care and Equity
University of New South Wales

Ms Rachel Whiffen
Manager, Communities and Programs
Quit Victoria

COSA Smoking Cessation Development and Support Team

Dr Hayley Griffin – Writer and Editor
Project Manager
Clinical Oncology Society of Australia

AUTHORISED BY

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