

Tobacco Cessation After Cancer Diagnosis

A fundamental component of cancer care

International Agency for Research on Cancer



IARC Evidence Summary Brief No. 8

Introduction

Tobacco smoking remains responsible for one quarter of cancer deaths worldwide. Although it is well established that tobacco cessation prevents cancer, a common misconception persists that when individuals are diagnosed with cancer, the damage has already been done and quitting smoking no longer provides meaningful benefits. As a result, many patients who smoke at the time of cancer diagnosis continue to smoke throughout their cancer care journey.

Evidence that has emerged during the past decade suggests that quitting smoking after a cancer diagnosis can improve survival. However, most studies relied on existing medical

records to assess smoking status, typically at a single time point at diagnosis or treatment. These studies

generally did not capture the timing of cessation or changes in smoking behaviour over time. Furthermore,

Key evidence messages

- Smoking cessation after cancer diagnosis, compared with continued smoking, reduces the risk of death and cancer progression by up to 55%.
- Patients who quit smoking after a cancer diagnosis have approximately 2 years longer progression-free survival time than those who continue to smoke.
- All patients with cancer, even those with advanced cancer and heavy smoking histories, gain significant survival benefits from quitting smoking after diagnosis.
- The survival benefits of smoking cessation extend across a wide range of cancer types, including those strongly linked to tobacco use, such as lung cancer, and cancers less commonly perceived to be tobacco-related, such as kidney cancer.

Call to action



Governments should allocate sustainable funding for the stepwise implementation of tobacco dependence treatment in cancer care settings, and ensure access to free or subsidized tobacco cessation pharmacotherapy.



Health-care leaders should include tobacco dependence treatment in national oncology guidelines and quality standards, and embed cessation training in residency and continuing education for the oncology workforce.



Cancer care providers should assess tobacco use among all patients with cancer at every clinical contact, and advise and assist with tobacco cessation regardless of the cancer type or stage.



Cancer patient organizations should raise awareness among patients, their families, and advocates about the importance of smoking cessation for improving treatment outcomes and reducing the risk of cancer progression and recurrence.



“It is never too late to stop smoking. Even after a diagnosis of advanced cancer, cessation can yield meaningful clinical benefits.”

– Dr Mahdi Sheikh,
Early Detection, Prevention, and Infections Branch, IARC

it remained unknown whether any benefits of tobacco cessation after diagnosis could differ between patients with early-stage versus advanced cancer, between patients with lighter versus heavier smoking histories, or across cancer types.

IARC, in collaboration with the N.N. Blokhin National Medical Research Center of Oncology in Moscow, Russian Federation, conducted the first epidemiological studies in which patients diagnosed with lung cancer or kidney cancer who actively smoked at diagnosis were recruited and actively followed up for more than a decade, with annual assessments of changes in smoking behaviour, treatments, and cancer outcomes.

Survival benefits of smoking cessation after lung cancer diagnosis

In a 15-year collaborative study between IARC and the N.N. Blokhin National Medical Research Center of Oncology, 517 patients with newly diagnosed stage IA–IIIA non-small cell lung cancer who actively smoked at diagnosis were recruited at two sites in Moscow, Russian Federation, and followed up annually for an average of 7 years to record any changes in their smoking behaviour and disease status. During the follow-up period, 220 patients (42%) quit smoking. Most (80%) of these patients quit smoking within the first 3 months after diagnosis and did not relapse before the end of the follow-up time.

Patients who quit smoking lived an average of 22 months longer overall and also had significantly longer progression-free survival time than those who continued smoking. Overall survival at 5 years after diagnosis was substantially higher among patients who quit smoking (60.6%) than among those who continued smoking (48.6%). Similarly, progression-free survival at 5 years after diagnosis was markedly higher among patients who quit smoking (54.4%) than among those who continued smoking (43.8%). After accounting for differences

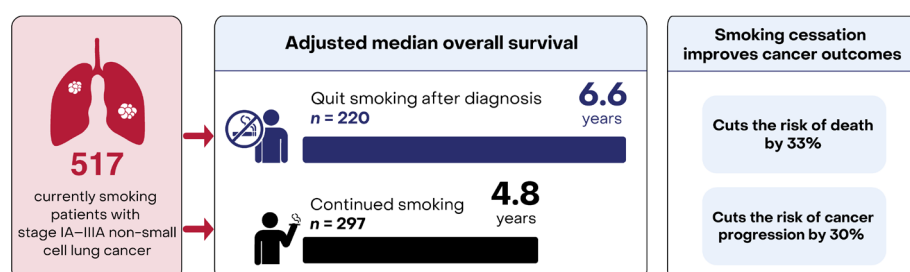


Fig. 1 Median overall survival time and risk of death and cancer progression among patients with lung cancer who quit smoking after diagnosis versus those who continued smoking.

in the timing of when patients quit, tumour stage, and the treatments received, the researchers found that patients who quit smoking had a 33% lower risk of death from any cause (see Figure 1), a 25% lower risk of cancer-specific death, and a 30% lower risk of cancer progression than those who continued smoking.

The protective effects of smoking cessation were evident among all patient subgroups, including patients with earlier-stage (32% lower risk of death) and later-stage (37% lower risk of death) tumours and patients with lighter (41%

lower risk of death) and heavier (25% lower risk of death) smoking histories.

Survival benefits of smoking cessation after kidney cancer diagnosis

In another study, 212 patients with newly diagnosed renal cell carcinoma who reported actively smoking at diagnosis were recruited from the urological department of the N.N. Blokhin National Medical Research Center of Oncology and followed up annually for an average of 8 years to record any changes in their smoking behaviour and disease status. During



Smoking cessation makes a big difference

50%

lower risk of death
after quitting

55%

lower risk of cancer
progression after quitting

Fig. 2 Death rates at 3 years and 5 years after diagnosis and risk of death and cancer progression among patients with kidney cancer who quit smoking after diagnosis versus those who continued smoking.

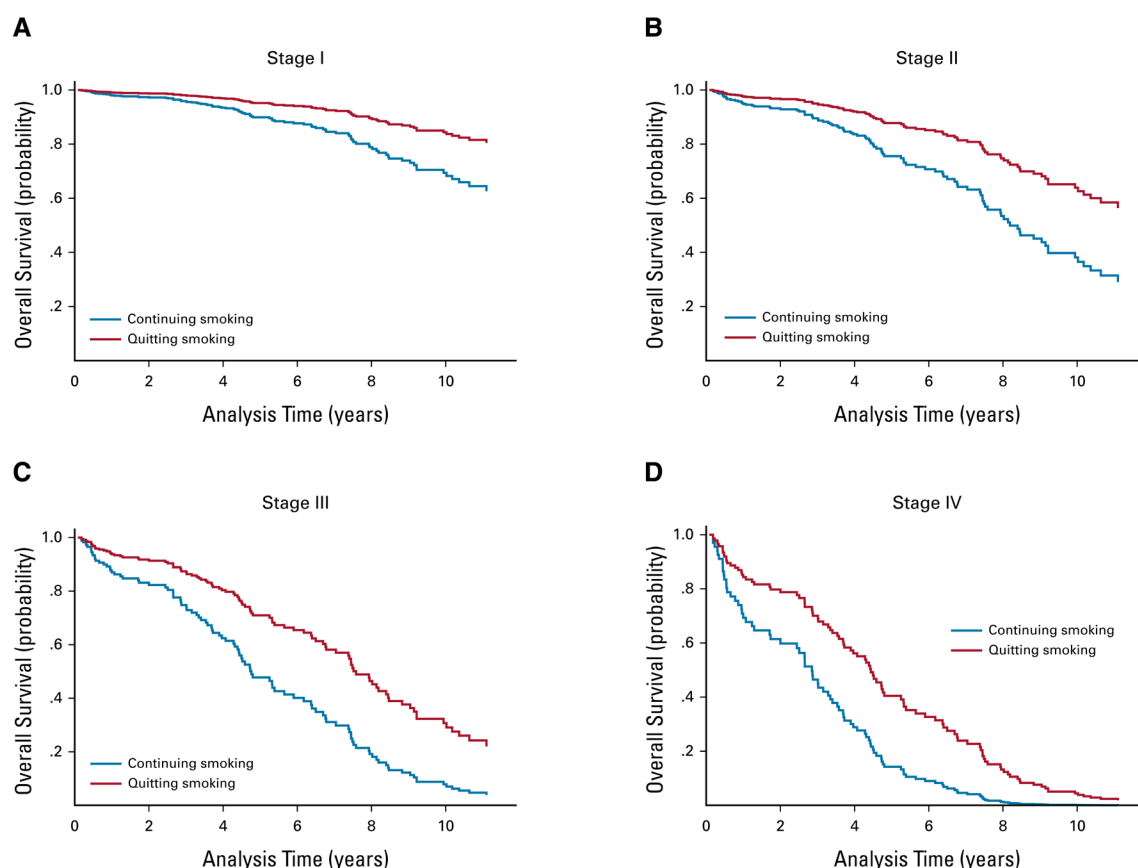


Fig. 3 Overall survival probabilities among patients with kidney cancer who quit smoking after diagnosis versus those who continued smoking across patient subgroups diagnosed with (A) stage I, (B) stage II, (C) stage III, and (D) stage IV kidney cancer.

the follow-up period, 84 patients (40%) quit smoking, mostly within the first 3 months after diagnosis.

Death rates were substantially lower among patients who quit smoking after diagnosis than among those who continued smoking: 6% versus 24% at 3 years after diagnosis, and 15% versus 40% at 5 years after diagnosis. After accounting for differences in the patient characteristics, the timing of when patients quit, tumour features, and the treatments received, the researchers found that smoking cessation was associated with a 50% lower risk of overall death (see Figure 2), a 46% lower risk of cancer-specific death, and a 55% lower risk of cancer progression compared with continued smoking.

All patient subgroups regardless of stage at diagnosis, from stage I to stage IV disease, gained substantial survival benefits when they stopped smoking (see Figure 3).

Economic benefits of embedding smoking cessation in cancer care

In a lifetime cost-effectiveness analysis from the perspective of the United Kingdom National Health Service (NHS), offering smoking cessation at cancer diagnosis was highly cost-effective, with incremental cost-effectiveness ratios (ICERs) per quality-adjusted life year (QALY) ranging from £2606 for lung cancer to £5495 for head and neck cancers. All estimates fall well below the willingness-to-pay threshold

of £20 000 per QALY that is generally considered acceptable to spend to generate one extra year of healthy life; this indicates strong economic value.

Compared with referral alone, integrating cessation support directly into cancer care generated positive net monetary benefits, ranging from £1543 per patient with lung cancer to £5362 per patient with kidney cancer. Systematic integration of smoking cessation services across NHS cancer care was estimated to generate annual savings of approximately £88 million. These findings demonstrate that embedding smoking cessation in oncology pathways not only improves health outcomes but also represents a highly efficient use of health-care resources.

“Every patient with cancer who smokes deserves proactive cessation support. The evidence is clear; now health systems must act on it.”

– Professor Matthew Evison,
Manchester University NHS Foundation Trust,
United Kingdom



Implications for policy

- Mandate tobacco dependence treatment as a core component of cancer care within national plans, guidelines, and quality standards.
- Invest in scaling up cessation services in oncology by allocating sustainable funding, including dedicated budgets for delivery, workforce development, and system integration.
- Promote delivery of cessation interventions within cancer care settings through national programmes, including pre-operative pathways for cancer surgery, rather than reliance on external referral systems.
- Ensure universal provision of services delivered proportionately, with depth and intensity matched to the level of need, so that greater support is directed towards the people with the heaviest burden.
- Provide free or subsidized tobacco cessation pharmacotherapy and counselling to all patients with cancer, reducing financial and geographical barriers to equitable access.
- Require training in tobacco dependence treatment across oncology disciplines, and support continuing professional development to strengthen workforce capacity.
- Establish indicators and reporting systems to track uptake, quality, and outcomes of cessation support in cancer care, ensuring accountability and continuous monitoring.
- Address cancer-specific barriers to tobacco dependence treatment by providing tailored psychosocial support, including support to address stress, guilt, and fear.
- Promote awareness and support campaigns directed at patients with cancer and caregivers to correct misconceptions and emphasize the benefits of quitting after cancer diagnosis.

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The responsibility for the primary data lies entirely with the corresponding authors of the primary peer-reviewed publications.



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