Guideline Resource Unit
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Surveillance for Early-Stage Non-Small Cell Lung Cancer

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Cancer Care Alberta

Clinical Practice Guideline LU-013 – Version 1
www.ahs.ca/guru

Background

Lung cancer is the overall leading cause of cancer mortality in Canadian men and women. By the end of 2024, almost 21,000 Canadians are expected to die of lung cancer. In addition, more Canadian men and women will die from lung cancer as compared to prostate, breast, and colorectal cancers combined.[1] Smoking remains the most important risk factor for lung cancer. According to the 2022 Canadian Tobacco and Nicotine Survey, 10.9% of Canadians and 12.0% of Albertans are current smokers; in addition, in 2022, 8.2% of Canadians reported daily smoking and 2.7% reported occasional smoking.[2]

Patients with localized non-small cell lung cancer (NSCLC) are treated with intent to cure; after completing treatment, the optimal surveillance of these patients for cancer recurrence is critical.[3, 4] Surveillance after treatment with curative intent is only useful if detection of a recurrence, locally or distant, or detection of a metachronous primary will result in potentially life-prolonging or preferable curative therapy.[3] Curative therapy after a local recurrence is often not possible, resulting in 5-year survival rates of only approximately 15%.[3-5]

Guideline Question

What are the appropriate post-treatment surveillance recommendations for patients who received curative treatment for stage I, II and III NSCLC?

Search Strategy

The PubMed database was searched for relevant studies, guidelines and consensus documents published up to December 2023. The specific search strategy and evidence tables are available upon request. Online resources from oncology-based health organizations and guideline developers were also systematically searched, and relevant guidelines from the following organizations were considered in the development of our recommendations: American Society of Clinical Oncology (ASCO)[3], Cancer Care Ontario (CCO)[5] and the National Comprehensive Cancer Network (NCCN).[6]

Target Population

The following surveillance recommendations apply to adult cancer patients who received curative treatment for stage I, II and III NSCLC.

Recommendations

1. Surveillance imaging every 6 months for 2 years and then annually for 5 years should be conducted for detection of recurrent NSCLC.

Early-stage lung cancer is unique compared with other malignancies where even after curative-intent resection, recurrence is common, occurring in 20% to 50% of patients within 5 years. A recent retrospective cohort study by Heiden *et al.* suggested that high-frequency surveillance does not

improve outcomes in surgically treated stage I NSCLC. They performed the study on 6171 patients and found that high-frequency surveillance was not associated with longer recurrence-free survival (adjusted HR=0.93, 95% CI 0.83-1.04, P=0.22) or overall survival (adjusted HR=1.04, 95% CI 0.96-1.12, P =0.35).[7]

Another study by McMurry *et al.* investigated the association between intensity of surveillance and survival following surgical resection for NSCLC. This retrospective study randomly selected patients who were diagnosed with stage I to III NSCLC and underwent surgical resection. A total of 4,463 patients were included and grouped into three surveillance groups based on time from surgery to first surveillance using CT scan (3-, 6-month and annual). Approximately 11.0% of these patients developed a new second cancer and 23.8% developed a recurrence during the follow-up period with no difference in these rates between the surveillance groups (P=0.49). In this cohort, more frequent surveillance was not associated with longer risk-adjusted overall survival. The authors also concluded that more frequent surveillance after lung cancer surgery is not associated with improvement in survival.[8]

2. CT scan is the optimal imaging modality for surveillance.

3. Routine brain surveillance imaging is not recommended for NSCLC.

CT imaging is more sensitive than conventional chest radiography for detecting tumour recurrence. However, the use of CT for lung surveillance is still debatable. Several retrospective studies have suggested a survival advantage to more frequent imaging while others have shown no benefit.

A systematic review of 5 studies by Srikantharajah *et al.* that evaluated the impact of chest CT surveillance in patients who had undergone surgical resection for NSCLC reported conflicting results: while 3 studies demonstrated a benefit of using chest CT, the other 2 studies did not show any benefit.[9] When compared to CT alone, ^{18}F-FDG PET/CT has similar sensitivity and specificity in detecting recurrence but it is still not recommended for patients; increasing cost and radiation exposure without proven superiority as surveillance are the most critical facts for the discouragement.[10]

4. Smoking cessation should be offered as this leads to superior outcomes. For more information, refer to the clinical practice guideline on Tobacco Screening and Treatment for Adult Cancer Patients.

References

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Development and Revision History

This guideline was reviewed and endorsed by the Alberta Provincial Lung Tumour Team. Members include radiation oncologists, medical oncologists, surgeons, nurses, pathologists, and pharmacists. Evidence was selected and reviewed by a working group comprised of members from the Alberta Provincial Lung Tumour Team, external participants identified by the Working Group Lead, and a methodologist from the Guideline Resource Unit. A detailed description of the methodology followed during the guideline development process can be found in the Guideline Resource Unit Handbook.

This guideline was originally developed in 2024.

Levels of Evidence

I	Evidence from at least one large randomized, controlled trial of good methodological quality (low potential for bias) or meta-analyses of well-conducted randomized trials without heterogeneity
II	Small randomized trials or large randomized trials with a suspicion of bias (lower methodological quality) or meta-analyses of such trials or of trials with demonstrated heterogeneity
III	Prospective cohort studies
IV	Retrospective cohort studies or case-control studies
V	Studies without control group, case reports, expert opinion

Strength of Recommendations

A	Strong evidence for efficacy with a substantial clinical benefit; strongly recommended
B	Strong or moderate evidence for efficacy but with a limited clinical benefit; generally recommended
C	Insufficient evidence for efficacy or benefit does not outweigh the risk or the disadvantages (adverse events, costs, etc.); optional
D	Moderate evidence against efficacy or for adverse outcome; generally not recommended
E	Strong evidence against efficacy or for adverse outcome; never recommended

Maintenance

A formal review of the guideline will be conducted in 2028. If critical new evidence is brought forward before that time, however, the guideline working group members will revise and update the document accordingly.

Abbreviations

CI, confidence interval; CT, computed tomography; FDG PET/CT, fluorodeoxyglucose positron emission tomography/computed tomography; HR, hazard ratio; MRI, magnetic resonance imaging; NSCLC, non–small-cell lung cancer

Disclaimer

The recommendations contained in this guideline are a consensus of the Alberta Provincial Lung Tumour Team and are a synthesis of currently accepted approaches to management, derived from a review of relevant scientific literature. Clinicians applying these guidelines should, in consultation with the patient, use independent medical judgment in the context of individual clinical circumstances to direct care.

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All cancer drugs described in the guidelines are funded in accordance with the Outpatient Cancer Drug Benefit Program, at no charge, to eligible residents of Alberta, unless otherwise explicitly stated. For a complete list of funded drugs, specific indications, and approved prescribers, please refer to the *Outpatient Cancer Drug Benefit Program Master List*.

Conflict of Interest Statements

Dr. Doreen Ezeife reports receiving honoraria from Astra Zeneca, Pfizer, Bristol Myers Squibb, Novartis, and Roche.

Dr. Vishal Navani reports receiving consulting fees from Novotech Pty, Pfizer, Sanofi, Astra Zeneca, EMD Serono, Oncology Education, Sanofi, Janssen, Roche, MSD, Bristol Myers Squibb, and Takeda, and speaking fees from Ipsen, Astra Zeneca, MSD, and Bristol Myers Squibb. Dr. Navani reports receiving research support from Astra Zeneca (Inst) and Janssen (Inst), and travel support from EMD Serono, Pfizer, and Sanofi.

Ritu Sharma has nothing to disclose.

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