Screening for Lung Cancer – Clinician Summary

POPULATION

These recommendations apply to adults aged 18 years and older who are not suspected of having lung cancer. These recommendations do not apply to individuals who have a history of lung cancer, or suspected lung cancer.

BURDEN OF ILLNESS

Lung cancer is the most common cause of cancer-related deaths and the most commonly diagnosed cancer among Canadians – an estimated 26,600 Canadians were diagnosed and 20,900 died from lung cancer in 2015(2). In Canada, the incidence of lung cancer is currently higher in men than women (although this gap is beginning to narrow) and more than 85% of cases are related to smoking tobacco. Approximately 44% of Canadians (12.6 million) are current or former smokers (3). Those with a history of heavy smoking are at the greatest risk for lung cancer.

RECOMMENDATIONS

Low dose computed tomography (LDCT)

- For adults aged 55-74 years with at least a 30 pack-year* smoking history who currently smoke or quit less than 15 years ago, we recommend annual screening with LDCT up to three consecutive times. Screening should ONLY be carried out in health care settings with expertise in early diagnosis and treatment of lung cancer. Weak recommendation; low quality evidence.

*pack-year defined as the (average number of cigarette packs smoked daily) x (number of years smoking)

- For all other adults, regardless of age, smoking history or other risk factors, we recommend not screening for lung cancer with LDCT. Strong recommendation; very low quality evidence.

Chest x-ray (CXR)

- We recommend that chest x-ray not be used to screen for lung cancer, with or without sputum cytology. Strong recommendation; low quality evidence.

BASIS OF RECOMMENDATIONS

- The recommendation to screen the high-risk population places a relatively high value on a small benefit for reduced lung cancer mortality and the known poor prognosis of untreated lung cancer; but a relatively lower value on the risk of side effects, overdiagnosis, and the lack of data comparing LDCT to no screening.

- People who are not at high risk for lung cancer would be expected to have a lower absolute benefit of screening than high risk patients, but would still be susceptible to some of the harms association with screening (e.g., false positives, consequences from invasive follow-up tests, and overdiagnosis).
- The recommendation that chest x-ray not be used to screen for lung cancer is strong, since available evidence suggests no benefit of screening with CXR on lung cancer specific or all-cause mortality; but suggests that there are established harms of screening (e.g., overdiagnosis, false positives, and complications from follow-up testing).

CONSIDERATIONS FOR IMPLEMENTATION

A weak recommendation means that most eligible people would want to be screened for lung cancer, but many may appropriately choose not to be screened. Primary care providers should discuss the potential harms and benefits of screening with patients at high risk for developing lung cancer based on age and smoking history. Providers should also consider overall health status when discussing this issue with patients, since reasonable life expectancy and suitability for treatment of lung cancer (if identified) is required in order to benefit from screening.

Since the accuracy of detection and quality of follow-up investigations and management are critical to obtaining more benefit than harm, screening for lung cancer with LDCT should only be considered in settings that can deliver comprehensive care similar to or better than that offered in the NLST trial (e.g., centres with qualified radiologists and radiologic technologists, with examinations and diagnostic follow-up guidelines aligned with the NLST study protocol, and with expertise in the early diagnosis and management of lung cancer). Incorporation of nodule risk calculators may also decrease risk of overdiagnosis and false positive rates. Implementation of these recommendations in settings without the expertise may decrease the benefit-harm ratio, potentially increasing the harms. The CTFPHC recognizes that LDCT scans and such expertise are not currently accessible in certain regions in Canada (e.g., rural and remote areas), and this is a consideration that policy makers will need to address.

It is possible that longer or more intensive screening might yield additional benefits, but this is speculative, since there is no RCT data to support such a recommendation. While ongoing screening (i.e., more than three screens) might further reduce mortality rates, it might also lead to more false positives and invasive follow up testing, potentially disrupting the balance between the benefits and harms demonstrated in the NLST study.