Lung Cancer Diagnosis Pathway Map
Version 2019.05

Disclaimer
The pathway map is intended to be used for informational purposes only. The pathway map is not intended to constitute or be a substitute for medical advice and should not be relied upon in any such regard. Further, all pathway maps are subject to clinical judgment and actual practice patterns may not follow the proposed steps set out in the pathway map. In the situation where the reader is not a healthcare provider, the reader should always consult a healthcare provider if he/she has any questions regarding the information set out in the pathway map. The information in the pathway map does not create a physician-patient relationship between Cancer Care Ontario (CCO) and the reader.
**Target Population**
Patients who present with signs or symptoms suspicious of lung cancer.

**Pathway Map Considerations**
- Primary care providers play an important role in the cancer journey and should be informed of relevant tests and consultations. Ongoing care with a primary care provider is assumed to be part of the pathway. For more information see Person-Centered Care Guideline and EBS #19-2 Provider-Patient Communication.
- Throughout the pathway, a shared decision-making model should be implemented to enable and encourage patients to play an active role in the management of their care. For more information see Person-Centered Care Guideline and EBS #19-2 Provider-Patient Communication.
- Hyperlinks are used throughout the pathway to provide information about relevant CCO tools, resources and guidance documents.
- The term ‘health care provider’, used throughout the pathway, includes primary care providers and specialists, nurse practitioners, and emergency physicians.
- For more information on the Diagnostic Assessment Program (DAP) refer to the Organizational Standards for DAPs.
- Psychosocial oncology (PSO) is the interprofessional specialty concerned with understanding and treating the social, psychological, emotional, spiritual and functional needs and quality-of-life impact that cancer has on patients and their families. Psychosocial care should be considered an integral and standardized part of cancer care for patients and their families at all stages of the illness trajectory. For more information, visit EBS #19-3.
- Counseling and treatment for smoking cessation should be initiated early on in the pathway and continued by care providers throughout the pathway as necessary. Program Training & Consultation Centre – Hospital Based Resources

*Note: EBS #19-2 and EBS #19-3 is older than 3 years and is currently listed as ‘For Education and Information Purposes’. This means that the recommendations will no longer be maintained but may still be useful for academic or other information purposes.

**Pathway Map Disclaimer**
This pathway map is a resource that provides an overview of the treatment that an individual in the Ontario cancer system may receive.

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Screen for psychosocial needs, and assessment and management of symptoms. Click here for more information about symptom assessment and management tools

Consider the introduction of palliative care, early and across the cancer journey Click here for more information about palliative care

1 Refer to the American College of Chest Physicians Clinical Practice Guideline, Chest, 132, 149-160 for features of a standardized evaluation for systematic metastases and a list of paraneoplastic syndromes associated with lung cancer.

2 The following factors have been shown to increase the risk of lung cancer: current or previous smoking of tobacco in through cigarettes, cigars, dry pipe or water pipe (bong, vaping), second hand exposure to tobacco smoke, lung Diseases (chronic obstructive pulmonary disease, asthma, pulmonary fibrosis), previous exposure to asbestos or other known carcinogens, occupational exposure to: dust or other microscopic particles, diesel engine emissions, or chlorinated solvents, personal or family history of cancer (especially lung, head & neck), infections (HPV 16/18 of the respiratory tract, previous pneumonia, HIV), other illnesses or health issues (silicosis, tuberculosis, lupus, rheumatoid arthritis, systemic sclerosis, diabetes, periodontal disease, blood lipid levels, increased abdominal obesity), occupations (miners, painters, iron and steel workers, bricklayers, welders), environmental (in-home burning of coal and/or biomass, unventilated cooking over high heat, air pollution, low socioeconomic status, high caffeine intake)

3 These patients should be accepted by the lung DAP if the lung DAP can facilitate a diagnosis within one week.

4 An abnormal chest x-ray or an abnormal CT scan of chest suspicious of lung cancer is required with each DAP referral. A CT scan of the chest is not required for acceptance of a lung DAP referral if the chest x-ray is abnormal but a CT scan chest is required prior to assessment at a lung DAP. Patient history should be mandatory as part of the referral and include, at a minimum: comorbidities, medications, allergies major health issues and symptoms that prompted the DAP referral.
Lung Cancer Diagnosis Pathway Map

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4 An abnormal chest x-ray or an abnormal CT scan of chest suspicious of lung cancer is required with each DAP referral. A CT scan of the chest is not required for acceptance of a lung DAP referral if the chest x-ray is abnormal but a CT scan chest is required prior to assessment at a lung DAP. Patient history should be mandatory as part of the referral and include, at a minimum: comorbidities, medications, allergies major health issues and symptoms that prompted the DAP referral.
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- Negative and low level of clinical suspicion
  - Follow-up by family physician, specialist or pulmonary nodule clinic
  - Change in result
    - Stable
      - Negative for cancer
        - Proceed to Page 7
      - Positive for cancer
        - Proceed to Page 7
      - Other diagnostic testing
        - Repeat biopsy of other diagnostic testing As appropriate
        - Negative for cancer
          - Proceed to Page 7
        - Positive for cancer
          - Proceed to Page 7

- Negative for cancer
  - Change in result
    - Stable for 3-5 years
      - Negative for cancer
        - Proceed to Page 7
      - Positive for cancer
        - Proceed to Page 7

- Core biopsy
  - Positive for cancer
    - Thoracic Surgery For diagnostic purposes
      - Cell block should be obtained
        - And/or
        - Pathology
  - Negative for cancer
    - Proceed to Page 7
  - Fine Needle Biopsy
    - Negative for cancer
      - Proceed to Page 7
    - Other diagnostic testing
      - Repeat biopsy of other diagnostic testing As appropriate
      - Negative for cancer
        - Proceed to Page 7
      - Positive for cancer
        - Proceed to Page 7

- Positive for cancer or suspicious
  - PET/CT scan (If not previously done)
    - PET Scan Ontario
      - Results
        - Negative but high level of clinical suspicion
          - Thoracic Surgery For diagnostic purposes
            - Cell block should be obtained
              - And/or
              - Pathology
            - Change in result
              - Stable
                - Negative for cancer
                  - Proceed to Page 7
                - Positive for cancer
                  - Proceed to Page 7
              - Other diagnostic testing
                - Repeat biopsy of other diagnostic testing As appropriate
                - Negative for cancer
                  - Proceed to Page 7
                - Positive for cancer
                  - Proceed to Page 7

- Needle biopsy not possible
  - Core biopsy
    - Positive for cancer
      - Thoracic Surgery For diagnostic purposes
        - Cell block should be obtained
          - And/or
          - Pathology
    - Negative for cancer
      - Proceed to Page 7
  - Fine Needle Biopsy
    - Negative for cancer
      - Proceed to Page 7
    - Other diagnostic testing
      - Repeat biopsy of other diagnostic testing As appropriate
      - Negative for cancer
        - Proceed to Page 7
      - Positive for cancer
        - Proceed to Page 7

- New or growing solitary peripheral mass or suspicious pulmonary nodule(s) without mediastinal or hilar lymphadenopathy
  - May be performed by surgeon or respirologist
    - Bronchoscopy
      - If there is CT evidence of hilar and/or mediastinal lymphadenopathy
        - mediastinoscopy EBS #17-6
          - Endobronchial ultrasound EBS #17-6
            - Intervventional Radiology
              - Cell block should be obtained
                - And/or
                - Pathology
              - Change in result
                - Stable
                  - Negative for cancer
                    - Proceed to Page 7
                  - Positive for cancer
                    - Proceed to Page 7
                - Other diagnostic testing
                  - Repeat biopsy of other diagnostic testing As appropriate
                  - Negative for cancer
                    - Proceed to Page 7
                  - Positive for cancer
                    - Proceed to Page 7
  - Bronchoscopy
    - Cell block should be obtained
      - And/or
      - Pathology
    - Change in result
      - Stable
        - Negative for cancer
          - Proceed to Page 7
        - Positive for cancer
          - Proceed to Page 7
    - Other diagnostic testing
      - Repeat biopsy of other diagnostic testing As appropriate
      - Negative for cancer
        - Proceed to Page 7
      - Positive for cancer
        - Proceed to Page 7

- Central mass or clinical N1, N2, N3
  - Bronchoscopy
    - Cell block should be obtained
      - And/or
      - Pathology
    - Change in result
      - Stable
        - Negative for cancer
          - Proceed to Page 7
        - Positive for cancer
          - Proceed to Page 7
    - Other diagnostic testing
      - Repeat biopsy of other diagnostic testing As appropriate
      - Negative for cancer
        - Proceed to Page 7
      - Positive for cancer
        - Proceed to Page 7

- Lung Cancer Tissue Pathway
  - Follow-up as per the Fleischner guidelines. For more information see Guidelines for Management of Small Pulmonary Nodules Detected on CT Scans: A Statement from the Fleischner Society. (2005), Radiology, 237, 395-400.
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Obtain sufficient tissue sample for histological and molecular diagnosis via least invasive, most accessible and most likely to up-stage the patient Cancer Imaging Guidelines

Thoracentesis
Perform procedure promptly. Can be done for diagnosis or for symptom relief. Note: If malignant cells found, this condition makes the patient inoperable. Cancer Imaging Guidelines

Tests on pleural fluid:
- Cytology (cell block should be obtained)
- Lactate dehydrogenase
- Protein concentration
- Glucose
- Amylase
- Cell count and differential
- Culture and sensitivity

Cytology\(^7\,^8\) (cell block should be obtained) And/Or Pathology\(^7\,^8\)

Results
- Positive for cancer (Stage IV)
  - Repeat biopsy, thoracentesis or other diagnostic testing As appropriate
  - Thoracic Surgery For diagnostic purposes
- Atypical Cytology\(^7\,^8\) (cell block should be obtained) And/Or Pathology\(^7\,^8\)

Results
- Negative for cancer
- Return to primary care provider for follow up
- Change in result
- Stable
- Follow-up by specialist
- Negative and low level of clinical suspicion
- Repeat thoracentesis
- Stable
- Return to primary care provider for follow up
- Change in result

Cancer Imaging Guidelines

Thoracentesis
Perform procedure promptly. Can be done for diagnosis or for symptom relief. Note: If malignant cells found, this condition makes the patient inoperable. Cancer Imaging Guidelines

Tests on pleural fluid:
- Cytology (cell block should be obtained)
- Lactate dehydrogenase
- Protein concentration
- Glucose
- Amylase
- Cell count and differential
- Culture and sensitivity

Cytology\(^7\,^8\) (cell block should be obtained) And/Or Pathology\(^7\,^8\)

Results
- Positive for cancer
- Negative for cancer
- Return to primary care provider for follow up...
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Tests to be completed (if not previously done)

PETCT scan

PET Scans Ontario

Pathological Non-Small Cell Lung Cancer Diagnosis (NSCLC)

MRI brain
For stage II, III, and IV. No MRI if patient is clinical stage I and asymptomatic (Cancer Imaging Guidelines)

Clinical Stage I

Results

Clinical Stage II or IIA

Invasive Mediastinal Staging

EBS #17-8

Mediastinoscopy or Endobronchial Ultrasound

Clinical Stage IIIB

Pathological Small Cell Lung Cancer Diagnosis (SCLC)

Medical Oncologist

Radiation Oncologist

Thoracic Surgeon

Medical history, physical exam and blood work (if not done already)

Tests to be completed (if not previously done)

MRI brain
CT if MRI is not available or contraindicated (Cancer Imaging Guidelines)

CT chest and abdomen if not already performed or outdated (Cancer Imaging Guidelines)

Clinical Stage III

PETCT scan
(if not previously done)

PET Scans Ontario

Bone scan
If suspected metastasis, bone pain or abnormal calcium and alkaline phosphatase. Not indicated if PET/CT is negative (Cancer Imaging Guidelines)

Clinical Stage IV

CNS metastases

PET CT scans Ontario

Thoracic Surgeon

EBS #17-6

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Tests to be completed (if not previously done)

MRI brain

CT if MRI is not available or contraindicated (Cancer Imaging Guidelines)

CT chest and abdomen if not already performed or outdated (Cancer Imaging Guidelines)

Bone scan
If suspected metastasis, bone pain or abnormal calcium and alkaline phosphatase. Not indicated if PET/CT is negative (Cancer Imaging Guidelines)

Clinical Stage I-III

Bone scan
If suspected metastasis, bone pain or abnormal calcium and alkaline phosphatase (Cancer Imaging Guidelines)

Clinical Stage IV

CNS metastases

PET CT scans Ontario

Thoracic Surgeon

EBS #17-6