

# RADIATION AND SYSTEMIC TREATMENT OF LUNG CANCER

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## DISCLOSURE

I have no disclosures related to this presentation.



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## OBJECTIVES

- Discuss staging of small cell lung cancer.
- Discuss radiation therapy, ablation therapy, and classes of systemic treatments indicated for the treatment of small cell and non-small cell lung cancer.
- Discuss common side effects of radiation therapy and systemic treatments.
- Discuss NCCN guidelines for surveillance.

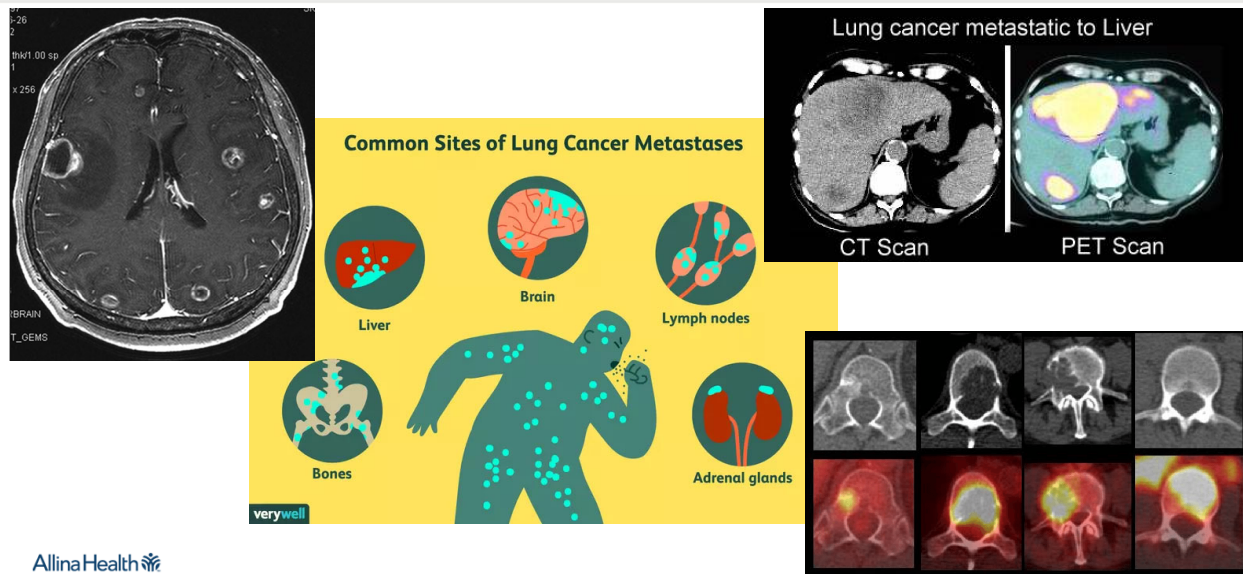
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## Small Cell Lung Cancer (SCLC) & Staging

- 15% of lung cancer cases
- Strongly associated with smoking
- Highly mitotic
- Most individuals present with locally advanced or extensive stage disease
- Limited-stage: Stage I-III (T any, N any, M0) that can be safely treated with definitive radiation doses.
  - Excludes T3-4 due to multiple lung nodules that are too extensive or have tumor/nodal volume that is too large to be encompassed in a tolerable radiation plan.
- Extensive-stage: Stage IV (T any, N any, M 1a/b/c), or T3-4 due to multiple lung nodules that are too extensive or have tumor/nodal volume that is too large to be encompassed in a tolerable radiation plan

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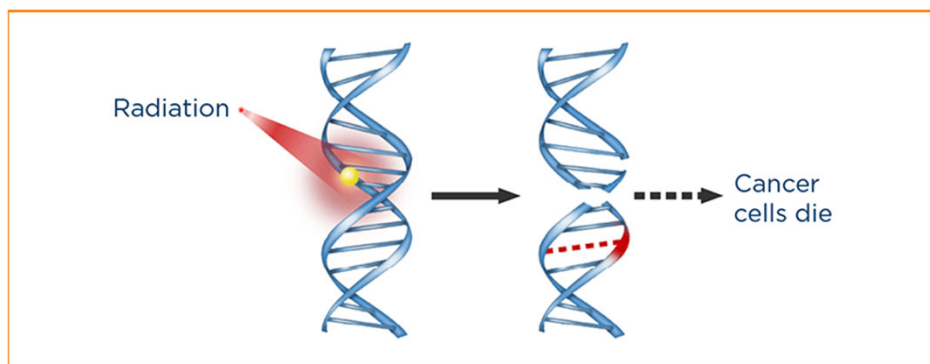
## Common Sites of Metastatic Lung Cancer



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## EXTERNAL BEAM RADIATION (EBRT)

### HOW RADIATION THERAPY WORKS



EBRT allows radiation beams conformed to the shape of the tumor to deliver the higher dose of radiation to the tumor and much lower doses to surrounding tissue; utilized for SCLC and NSCLC.

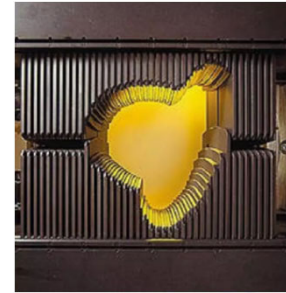
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## EXTERNAL BEAM RADIATION (EBRT)

EBRT is the most common method used for radiation of lung cancer.

Techniques of EBRT:

- Intensive modulated radiation therapy (IMRT) delivers radiation that conforms to the shape of the tumor and spares more normal tissue. 4-7 week treatment.
- Three dimensional conformal radiation therapy (3D-CRT) delivers radiation beams that matches the shape of the tumor but may not be as focused as IMRT.
- Stereotactic ablative radiotherapy (SBRT) delivers very precise high dose radiation therapy per treatment. Therefore, fewer treatments are required; usually 7 to 10 days.
- Proton therapy treats cancer with proton beams. 6 week treatment.



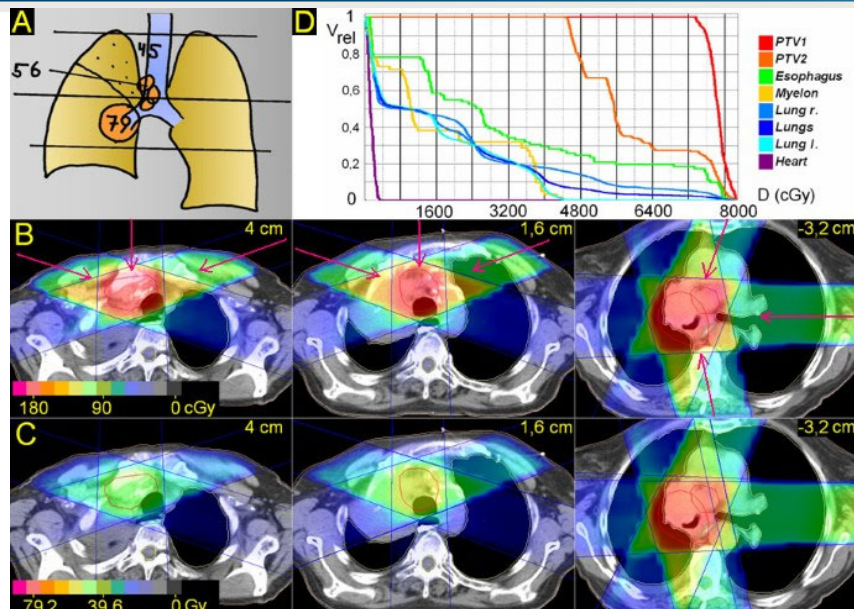
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## SIDE EFFECTS OF RADIATION THERAPY

Side effects vary depending on the site of the lung that was treated as well as the surrounding tissue that may receive some dose of radiation.



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## RADIATION THERAPY INDICATIONS: SCLC

- Limited stage SCLC s/p lobectomy with regional nodal involvement on final pathology (N1 or N2)
- Consolidation RT for selected SCLC patients with advanced limited stage or extensive following complete or very good response to chemotherapy prior to starting immunotherapy
- Prophylactic Cranial Irradiation (aka Whole Brain Radiation) for some limited stage SCLC and extensive stage SCLC after complete resection
  - Benefit unclear in patients undergoing definitive therapy for very early limited stage SCLC.
  - Usually not advised for persons with poor performance or neurocognitive impairment
  - Memantine during and after RT to decrease neurocognitive impairment x 6 months.
- Stage IV palliative radiation for alleviation of symptoms

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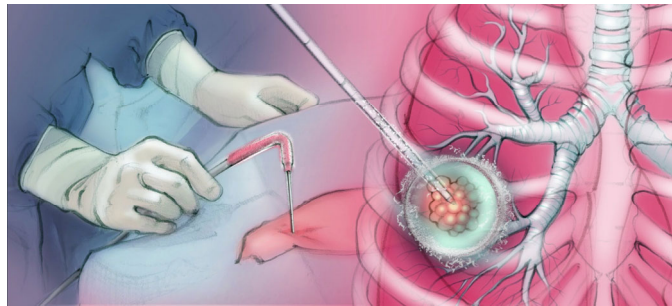
## RADIATION THERAPY INDICATIONS: NSCLC

- Unresectable lung cancer or poor surgical candidate with Stage IA/IB and II; curative intent
- Preoperative for certain tumors with that are borderline resectable
- Stage III; curative intent with concurrent chemoradiation
- Stage IV palliative radiation for prevention or alleviation of symptoms

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## IMAGE GUIDED THERMAL ABLATION THERAPY

- Includes radiofrequency ablation, microwave ablation, and cryoablation.
- Performed by interventional radiologist
- Considered for patients who are deemed “high risk”—those with tumors that are for the most part surgically resectable but rendered medically inoperable due to comorbidities such as poor pulmonary function, advanced age, pulmonary hypertension, advanced heart failure
- Tumors < 3 cm; multiple small tumors; local recurrence
- Risk for pneumothorax



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## SYSTEMIC TREATMENT INDICATIONS

- After radiation therapy for unresectable high risk Stage II lung cancer; curative.
- Concurrent with radiation therapy for Stage III cancer; curative intent
  - Commonly use platinum therapy (Cisplatin or carboplatin plus a second chemotherapy) followed by a year of immunotherapy.
- Metastatic cancer; palliative goal to alleviate symptoms and control of disease

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