

National Imaging Associates, Inc.	
<b>Clinical guidelines/considerations</b> <b><u>SMALL CELL LUNG CANCER</u></b> <b><u>RADIATION ONCOLOGY</u></b>	<b>Date: March 2011</b> <b>Page 1 of 6</b>
<b>Guideline Number: NIA_CG_123</b>	<b>Last Review Date: July 12, 2011</b>
<b>Responsible Department:</b> Clinical Operations	<b>Last Revised Date: July 20, 2011</b>

## **INTRODUCTION:**

The two major types of lung cancer are small cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC). SCLC differs significantly from NSCLC in that most patients with SCLC present with subclinical metastatic disease. Patients with SCLC are divided into those with limited- versus extensive-stage disease. Although limited-stage disease is confined to the ipsilateral hemithorax, a third of these patients have subclinical systemic disease. Extensive-stage disease is defined as disease extending beyond the ipsilateral hemithorax, including positive pleural/pericardial effusion or distant metastases. Systemic chemotherapy is an essential component of appropriate treatment for all SCLC patients, even those with limited-stage disease.

Radiation therapy has a role in the treatment of patients presenting with limited-stage disease. The rationale is that local tumor progression will occur in the majority of patients treated with chemotherapy alone. Concurrent chemoradiation is preferred for limited-stage disease. Tumor progression can be reduced with the use of localized irradiation, improving patient survival. Common dose fractionation schemes include radiation therapy administered for 3 weeks to 45 Gy at 1.5 (BID) or 3 Gy per fraction, or once daily radiation therapy to 60-70 Gy delivered at 1.8-2.0 Gy per fraction. If twice-daily fractionation is used, there should be at least a 6-hour interval between fractionations. In addition, prophylactic cranial irradiation to 25-30 Gy delivered in 10-15 fractions can be used to prevent central nervous system recurrence and improve survival of patients.

Chemotherapy alone can palliate symptoms and prolong survival in most patients with extensive-stage disease. The use of radiation therapy in the treatment of extensive-stage disease is limited except for treatment of symptomatic sites, bone metastasis, cord compression, and/or brain metastasis. Prophylactic cranial irradiation (PCI) reduces the incidence of symptomatic brain metastases and improves overall survival for patients who have achieved a complete response following chemotherapy. The rationale for prophylactic cranial irradiation is that chemotherapy used to treat SCLC does not adequately penetrate the blood brain barrier.

## **GOAL OF THE GUIDELINE:**

This guideline outlines methods suitable for the delivery of radiation therapy to treat SCLC. Radiation therapy may be delivered using conventional, accelerated fractionation,

hyperfractionated regimens and prophylactic cranial irradiation. Three-dimensional conformal radiation therapy (3D-CRT) is the preferred technique. If image guided radiation therapy is utilized, techniques to account for respiratory motion should be performed. The goal of this guideline is to guide diagnosis and treatment to the most efficient, comparatively effective, diagnostic and treatment pathway.

## **GENERAL CONSIDERATIONS:**

SCLC is highly sensitive to initial chemotherapy and radiation therapy; however, a cure is difficult to achieve because SCLC generally has a rapid doubling time, a high growth fraction, and early development of widespread metastases.

The treatment goal in patients with limited-stage disease is to achieve a cure with chemotherapy combined with thoracic radiation therapy. In patients with extensive-stage disease, this combined modality treatment does not improve survival compared with chemotherapy alone, but radiation therapy plays a role in palliation of symptoms. All patients with SCLC require systemic chemotherapy and where radiation therapy is utilized, it should be delivered concurrently with chemotherapy. Patients with both limited- and extensive-stage disease may benefit from prophylactic cranial irradiation (PCI), decreasing the incidence of central nervous system metastases and prolonging survival. Two-dimensional, post lateral fields should be used in PCI treatment.

## **MEDICALLY NECESSARY INDICATIONS FOR RADIATION THERAPY AND TREATMENT OPTIONS:**

### **Limited-Stage SCLC**

- T1-2, N0, M0 - Chemotherapy alone
- T1-2, N1-N2 M0 – Concurrent chemoradiation
- Radiation therapy administered for 3 weeks to 45 Gy at 1.5 Gy (BID) – 3Gy per fraction or radiation therapy administered to 60-70 Gy at 1.8 - 2.0 Gy per fraction
- Prophylactic cranial irradiation to 25 - 30 Gy delivered in 10-15 fractions

### **Extensive-Stage SCLC**

- T any, N any, M1a/b;T3-4 – Chemotherapy alone or concurrent chemoradiation
- Radiation therapy to treat symptomatic sites
- Radiation therapy for treatment of cord compression
- Prophylactic cranial irradiation is used to prevent inter-cranial relapse and has shown to improve survival for patients who have achieved a complete response following chemotherapy.
- Due to an increased risk of neurotoxicity, prophylactic cranial irradiation should not be given concurrently with systemic chemotherapy.

## **TREATMENT OPTIONS REQUIRING ADDITIONAL CLINICAL REVIEW:**

Intensity-modulated radiation therapy (IMRT) is not indicated as a standard treatment option for SCLC, but may be indicated for selected cases of lung cancer with close proximity to critical structures and by the observed limits of the radiation dose, with the expectation of less late toxicities. A peer review including provider documentation of the clinical rationale is required to determine the need for performing IMRT rather than conventional or 3D-CRT treatment planning and delivery. If IMRT is utilized, techniques to account for respiratory motion should be performed.

Stereotactic Body Radiation Therapy (SBRT) is not considered a standard form of treatment for SCLC. A request for SBRT will require a peer review to make a medical necessity determination. Documentation from the radiation oncologist must include the clinical rationale for performing SBRT rather than 3-D conformal treatment.

Proton beam is not an approved treatment option SCLC. Overall, studies have not shown clinical outcomes to be superior to conventional radiation therapy. A request for proton beam therapy will require a peer review. For peer review purposes supporting documentation from the radiation oncologist is required.

Real-time intra-fraction target tracking during radiation therapy to adjust radiation doses or monitor target movement during individual radiation therapy treatment sessions is not considered standard of care. A request for intra-fraction tracking will require a peer review for medical necessity determination. Documentation from the provider must include the clinical rationale for using intra-fraction tracking rather than the placement of interstitial devices (e.g. fiducial markers) and standard image guidance such as CT guidance or stereoscopic x-ray.

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