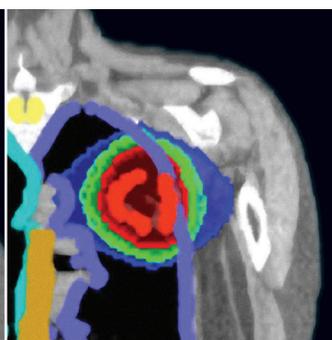
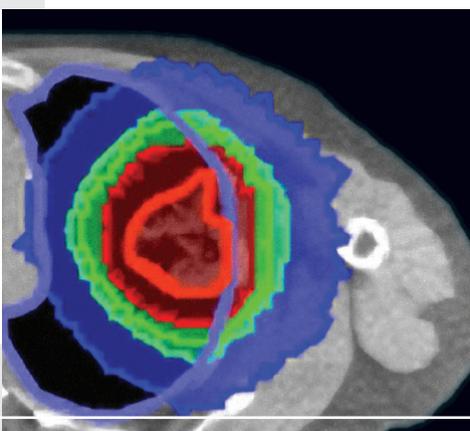


## SBRT for non-small cell carcinoma:

No metastases, no side effects, disease free for three years

TomoTherapy  
HI•ART



**Institution:** Willis-Knighton Cancer Center,  
Shreveport, Louisiana

**Patient:** Female, 56 years

**Diagnosis:** T2, N0, M0 non-small cell  
carcinoma in left upper lung

**Plan:** At least 95% of PTV to receive  
48 Gy; Right lung and esophagus  
to receive less than 20 Gy

**Treatment:** 12 Gy x 4 fractions  
over 1.5 weeks

A 56-year-old nurse saw her doctor after experiencing trouble breathing. She had no other medical problems, but was a lifelong smoker. Further diagnostic tests revealed lung cancer – specifically, a very large tumor in her upper left lung. In addition, the patient’s lung function was very poor, which ruled out the possibility of surgery.

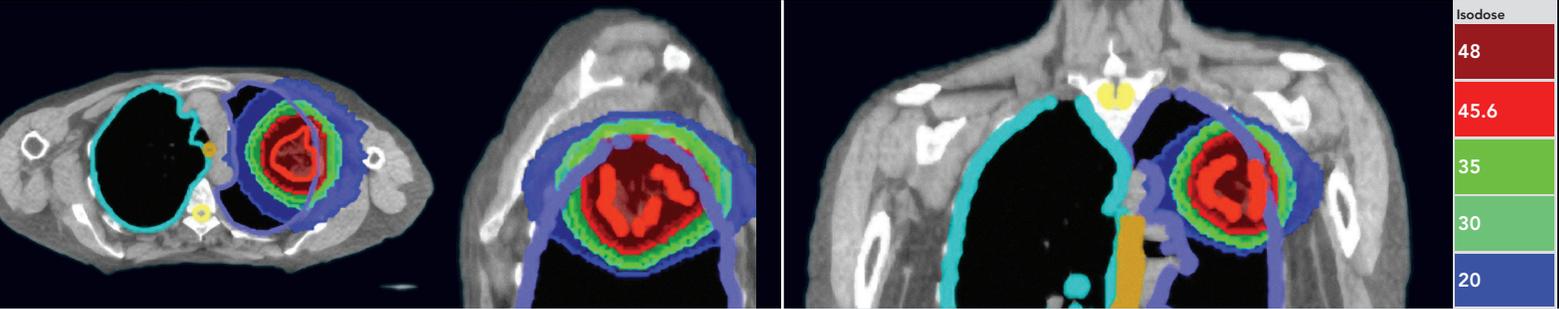
Because the patient was so young and otherwise healthy, her radiation oncologist selected stereotactic body radiation therapy (SBRT) instead of traditional radiation therapy. Using the TomoTherapy® Hi•Art® system’s precise dose guidance capabilities, the oncologist delivered intense radiation directly to the tumor during a week and a half of treatment. The patient experienced no side effects during this time and continued to work as a nurse. Three years later, she remains disease free.

### DEMOGRAPHICS

Sex: F  
Age: 56

### CLINICAL HISTORY

Referred by: Primary Physician  
Histology: T2, M0, N0 non-small cell carcinoma in left upper lung  
Health Problems: Extensive tobacco use and COPD

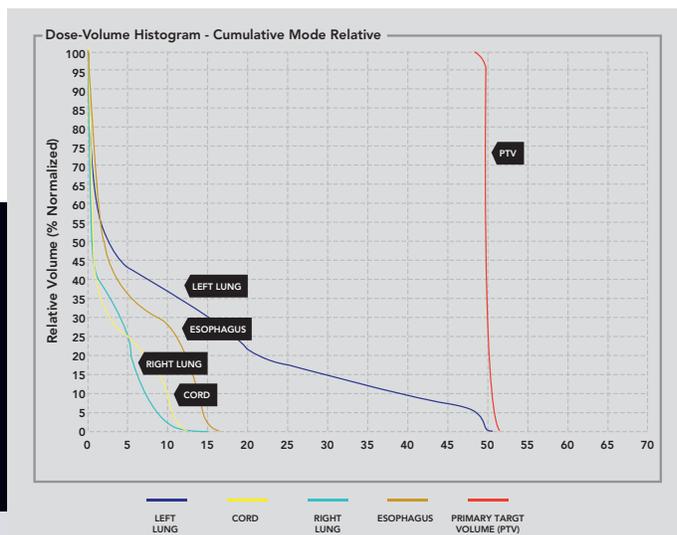


### PATIENT HISTORY AND PRESENTATION

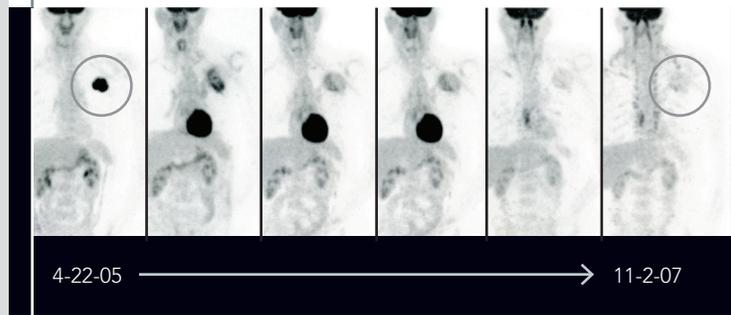
A 56-year-old nurse presented to her primary care physician with breathing trouble. Other than this condition, diagnosed as chronic obstructive pulmonary disease (COPD), the patient had no other medical problems. However, she had smoked one pack of cigarettes every day for 35 years.

Because her COPD was caused by extensive tobacco use, the patient's physician ordered a chest X-ray. It revealed an abnormality in the lung, and a subsequent CT scan showed a very large (5.5 cm) lesion in the left upper lobe, without adenopathy.

The patient saw a pulmonologist, who performed a bronchoscopy with washings and brushings that revealed a non-small cell carcinoma favoring adenocarcinoma. A series of pulmonary tests revealed the forced expiratory volume in one second (FEV1) to be only 0.68 liters. The poor lung function ruled out the possibility of surgery. At this point, the patient was referred to oncologist Lane R. Rosen, MD, Director of Radiation Oncology at Willis-Knighton Cancer Center in Shreveport, Louisiana.



## TREATMENT PLAN AND DELIVERY



## OUTCOME

**Dr. Rosen did not believe traditional radiation – with historically low eradication rates – would be the best approach for such a young, healthy patient. He instead chose stereotactic body radiation therapy (SBRT).**

The patient was immobilized with the Medical Intelligence BodyFIX® system. To create an extremely precise plan for delivering the radiation directly to the tumor, Dr. Rosen and his team used PET/CT images.

The patient received four doses of 12 Gy, every other day for a week and a half. Using the TomoTherapy Hi·Art treatment system's daily CT and dose guidance capabilities, the patient was scanned twice per treatment, once prior to the first 6 Gy and again for the second 6 Gy, to ensure highly accurate alignment.

The patient reported no side effects during her treatment and continued to work and function normally throughout.

Serial PET follow-up scans (below) revealed minimal FDG activity and only scar-like fibrosis with no indication of recurrence or metastatic disease. The patient reported no subsequent side effects and her lung function has since normalized.

**More than three years later the patient continues to be disease free.**



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