

Outcomes in Oncology

Ochsner Cancer Institute's Report to Physicians
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Enhanced Diagnosis and Treatment of Early Lung Cancer

Dear Physicians,

In this issue of Ochsner Cancer Institute's "Outcomes in Oncology" newsletter, I discuss the impact of lung cancer, for both men and women, in our country today. Little is it appreciated that lung cancer is responsible for more cancer deaths among both men and women than the other four most common cancers (colon, breast, prostate and pancreas) combined.

The question arises, however, as to the utility of routine surveillance programs for lung cancer involving radiographic screening and other measures, such as sputum cytologic analysis, for large patient populations at risk due to smoking history, chronic obstructive pulmonary disease or advancing age. Do such screening efforts affect patient survival by identifying a cancer in these higher risk persons at an early, more curable state?

New information related to the value of low energy, "fast", computed tomographic (CT) surveillance measures for "higher risk" patients for the development of lung cancer are intriguing, and the results of recent studies are discussed in this newsletter.

Minimally invasive thoracic surgical approaches to early stage lung cancer, which can reduce operative pain and enhance early recovery from surgery, are also described for the asymptomatic, early stage lung cancer identified through these early detection CT scanning efforts.

As our stated mission, the purpose of the "Outcomes in Oncology" newsletter series is to provide health care professionals of the Gulf South with timely and accurate accounts of important cancer problems that they may encounter in their daily practice.

Thank you for participating in this important educational effort provided by the Ochsner Cancer Institute.

Sincerely,

Rodney J. Landreneau, M.D.
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Enhanced Diagnosis and Treatment of Early Stage Lung Cancer

By Rodney J. Landreneau, M.D.
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Carcinoma of the lung is the leading cause of cancer-specific mortality among both men and women in the United States (Figure 1). Indeed, the national death rate from lung cancer exceeds the total of the other common cancers combined (1). However, the funding for lung cancer research falls far below that of other cancers (Figure 2).

As with other efforts to minimize cancer death rates, individual screening/surveillance measures aimed at identifying early, curable disease are intuitively considered an important strategy that has paid off with considerable benefit for other cancers. The greatest benefit has been noted with cervical cancer; however, frequent mammographic screening and complete colonoscopic examination have become accepted as important surveillance measures toward reducing death from breast and colon cancers.

Similar efforts aimed at improving the early diagnosis of lung cancer go back several decades with studies conducted by several institutions where patients with significant smoking history were randomized to standard chest x-ray and sputum cytology to clinical observation alone. Although more early stage lung cancers were identified in the CxR group, none of these studies resulted in a survival benefit for the

group undergoing these surveillance measures compared to diagnostic interventions initiated to evaluate clinical symptoms.

Over the last decade, there has been much important investigation into the utility of low-dose, fast computed tomographic (CT) screening for patients with increased risk of developing lung cancer (Figure 3). The International Early Lung Cancer Action Program (I-ELCAP) investigation demonstrated a high likelihood of curing small lung cancers identified through surveillance CT screening (Figure 4) (2).



Rodney J. Landreneau, M.D.

More recently, results of the National Lung Screening Trial (NLST) further supported the use of screening low energy, fast CT imaging of patients with intermediate risk for developing lung cancer. This study randomized over 50,000 patients to either low energy fast CT imaging or CxR (as placebo) over a 3-year period followed by four subsequent years of clinical observation. Importantly, the results of this study demonstrated a 20 percent improvement in lung cancer-related mortality and a 6 percent overall survival advantage among patients in the CT imaging arm of the trial (Figure 5) (3). These are important findings demonstrating for the first time a survival advantage with mass screening for lung cancer. At the present time, CT surveillance is not

covered by most health insurance plans; however, these compelling results will hopefully lead to acceptance of this strategy aimed at improving overall survival from lung cancer (4).

Once the suspicious lung lesion is identified (Figure 6), the next important consideration is obtaining definitive diagnosis and providing the most effective means of cure of the cancer. Certainly, positron emission tomography (PET) and CT imaging have become the standard of care for the suspicious peripheral lung nodule identified by CT screening. Percutaneous biopsy of the lung lesion should be attempted, and mediastinal nodal staging by endoscopic bronchial ultrasound (EBUS) needle aspiration biopsy or mediastinoscopy should follow for any suspicious mediastinal and/or hilar lymphadenopathy identified.

The treatment decisions for the lung nodule now come into play. Although open thoracotomy and resection of the malignant lung nodule is certainly an acceptable consideration, minimally invasive video-assisted thoracoscopic surgical (VATS) approaches are becoming a standard of care in the thoracic oncologic community (Figures 7a-b and Figure 8).

The thoracic surgical team at the Ochsner Cancer Center was the first in the world to perform this minimally invasive approach to lung cancer resection (5). They are also some of the most experienced physicians in the world with the VATS approach to anatomic lung resection (lobectomy and anatomic segmentectomy) for early stage lung cancer. The use of these minimal incisional approaches for early stage lung cancer, which in the case of anatomic segmentectomy, can also result in significant preservation in lung function without compromising long-term survival compared to lobectomy (6).

As we seek to improve the therapeutic outcomes of our patients suffering from lung cancer, it would be foolhardy to neglect the importance of tobacco product avoidance among our youth and cessation of tobacco use among present smokers in our country. Never starting smoking is an obvious public health care initiative; however, quitting smoking also has important implications on cardiovascular health and cancer risk reduction. Although the risk of developing lung cancer is always a concern among former smokers, that risk is substantially reduced the longer one is abstinent from smoking (Figure 9) (8).

Finally, cancer management outcomes for lung cancer depend on a team approach including pulmonary medical specialists, thoracic surgeons, and medical and radiation oncologists. Certainly expert cancer nursing care must accompany the efforts of the physician lung cancer specialists. Our lung cancer survival statistics fare well against that of the National Cancer Database led by the American College of Surgeons (Figure 10). We strongly believe these outcomes are reflective of our high volume clinical efforts, which provide the lung cancer patient the highest levels of surgical and medical expertise and

technical innovation (7). Addressing the problem of lung cancer in our region and nation, originally brought to the world's attention through our institution's founder, Dr. Alton Ochsner (Figure 11), remains a driving motivation of our cancer care team (9).

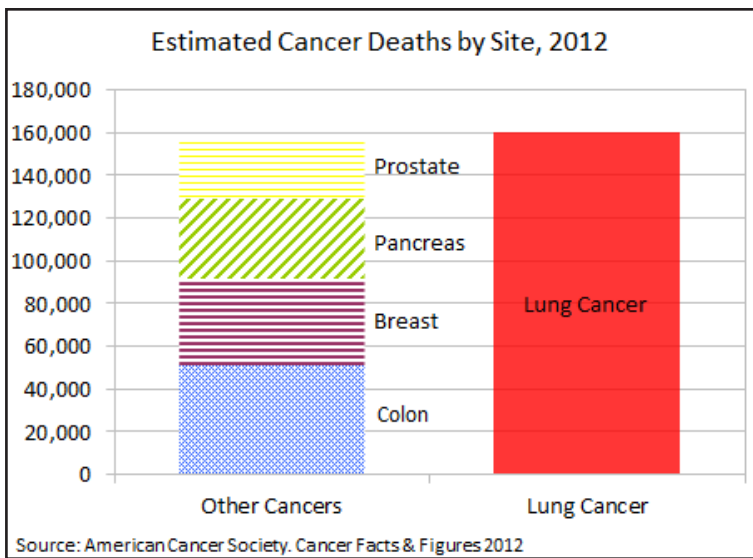
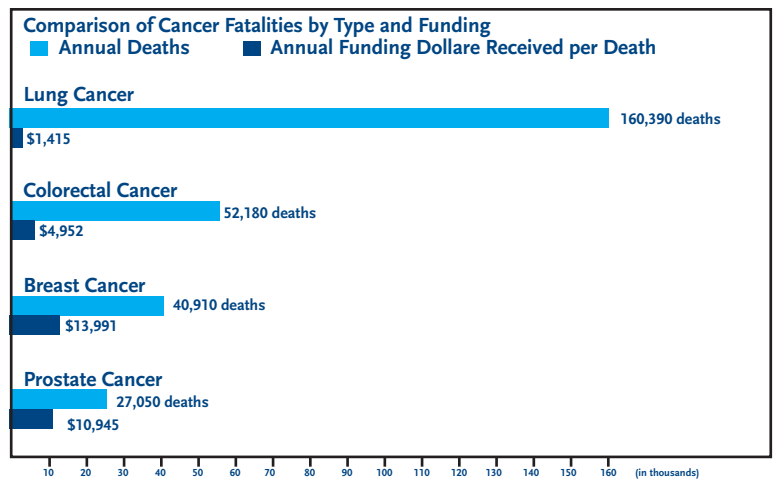


Figure 1 – Death rates from leading causes of cancer in the United States (2012)



Estimated deaths by cancer type in the U.S. for 2007 from the American Cancer Society, *Surveillance Research 2007*. Annual funding figures represent the National Cancer Institute's estimated 2007 spending. Deaths estimates are rounded to the nearest 10, Annual Funding Dollars Per Death rounded to the nearest dollar.

Figure 2 – Death rates and federally funded research dollars spent per disease-specific cancer death in the United States

High Risk Population CT Screening for Early Lung Cancer

- Smokers – age over 50
- Greater than 30 years of smoking
- Reduced pulmonary function related to emphysema
- Previous smoking-related cancer

Figure 3 – Patients with increased risk for lung cancer – prime candidates for low-dose CT scan surveillance

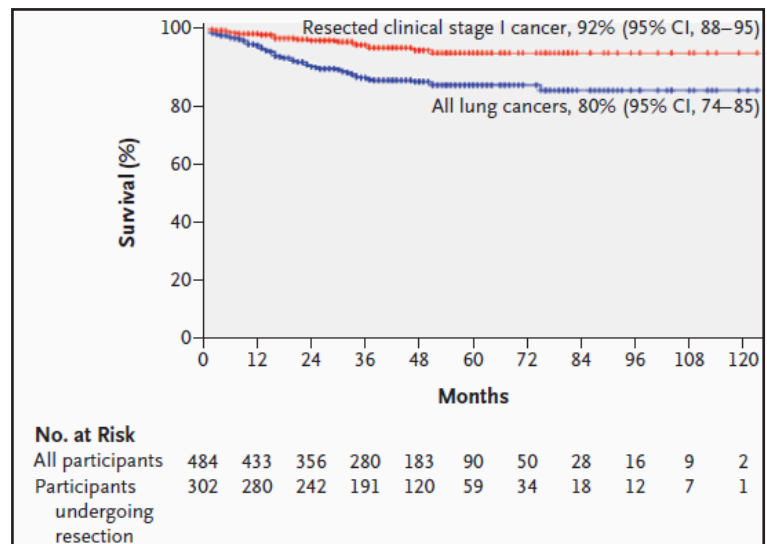


Figure 4 – Survival advantage of Stage I lung cancers identified by CT surveillance screening. The International Early Lung Cancer Action Program Investigators. *N Engl J Med* 2006; 355:1763-1771.

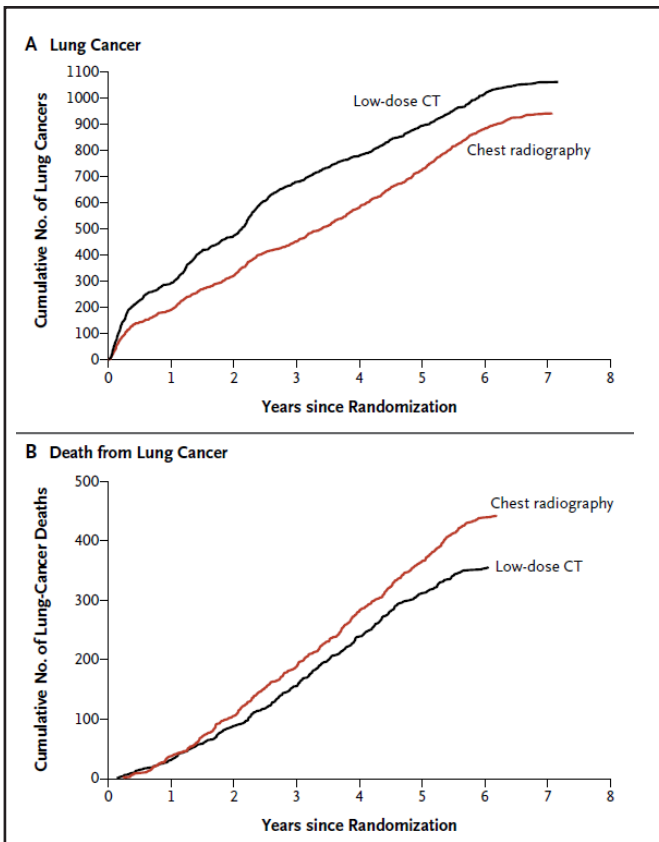


Figure 5 – Improved identification of lung cancer (a) and enhanced lung cancer survival (b) among patients undergoing low-dose CT screening. National Lung Screening Trial. N Engl J Med 2011; 365:395-409.



Figure 6 – Clinically early stage lung cancer easily resected by video-assisted thoracoscopic surgical (VATS) lobectomy identified by low-dose CT scanning

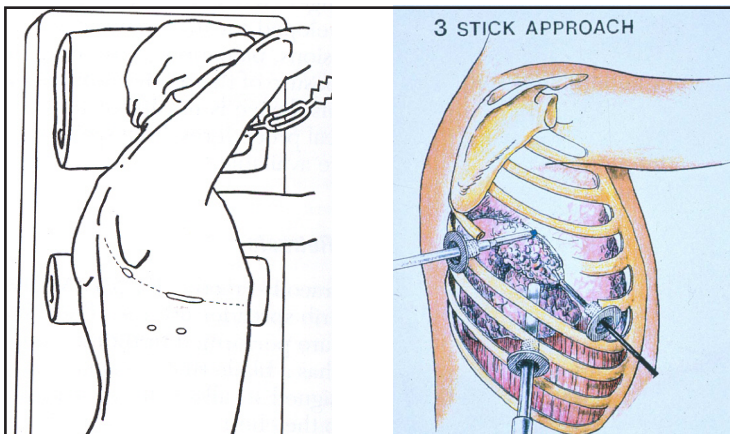


Figure 7a – Small incisions used for videoassisted lung resection (VATS) compared to the large incisions of open thoracotomy noted in dotted line of this drawing

Figure 7b – Usual videoscopic camera position and VATS instrument positioning for minimally invasive lung cancer resection



Figure 8 – Healed small incisions seen in the patient's armpit area following VATS lung resection for lung cancer

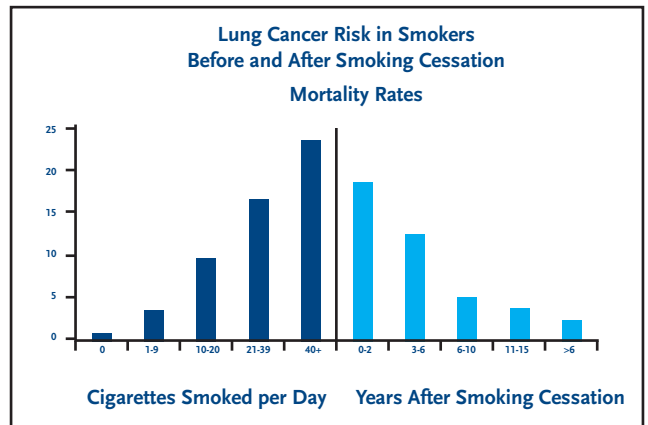


Figure 9 – Illustration of the difference in cancer risk among light and heavy smokers and also the reduction in lung cancer risk over time with abstinence from cigarettes

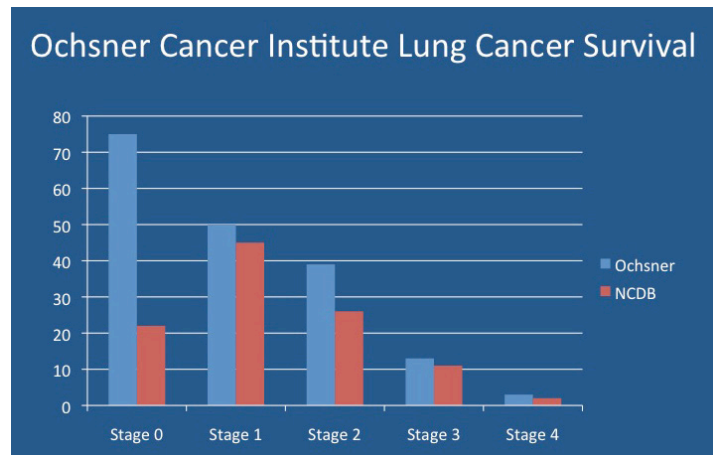


Figure 10 – Lung cancer survival among patients treated at Ochsner Cancer Institute compared to the National Cancer Database. These results are reflective of the improvement in survival noted among patients treated at high volume lung cancer treatment centers such as Ochsner (7).

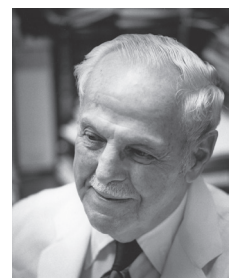


Figure 11 – Alton Ochsner, M.D.

1. What cancer is responsible for the most deaths from disease in the United States – for either men or women?

- a. Skin cancer
- b. Breast cancer
- c. Colon Cancer
- d. Lung cancer

2. Which national cancer surveillance initiatives have been substantiated by a randomized, large patient cohort, clinical trial?

- a. Breast cancer mammographic surveillance
- b. Lung and breast cancer surveillance
- c. Cervical cancer cytologic surveillance and breast mammography
- d. Low energy, fast chest CT surveillance of lung cancer
- e. Complete colonoscopic surveillance for colon cancer
- f. None of the above

3. Which of these statements regarding smoking cessation is true?

- a. It will not reduce the risk of developing lung cancer
- b. Immediately reduce the risk of lung cancer to non-smokers
- c. Reduces risk of developing lung cancer over time but not to that of non-smokers
- d. Can increase the risk of lung cancer among long term heavy smokers

Current Perspectives in Lung and Head and Neck Cancer

April 4-6, 2014

Royal Sonesta Hotel, New Orleans, Louisiana

33rd Annual Dr. John C Weed OB/GYN Women's Health Symposia

May 9-10, 2014

Hotel Monteleone, New Orleans, Louisiana

Information and registration for all conferences are available on our website at ochsner.org/cme

For answers to questions, see below.

Accreditation

The Ochsner Clinic Foundation is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

Designation

The Ochsner Clinic Foundation designates this enduring material for a maximum of 1 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

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Important Thoracic Cancer Treatment Protocols at Ochsner Cancer Institute

Esophageal Cancer

- **CALGB-80803:** *Randomized Phase II Trial Of Pet Scan-Directed Combined Modality Therapy (Chemo-Radiotherapy and Surgery) In Esophageal Cancer*

Lung Cancer

- **RTOG-0839:** *Randomized Phase II Study of Pre-Operative Chemoradiotherapy +/- Panitumumab (IND #110152) Followed By Consolidation Chemotherapy In Potentially Operable Locally Advanced (Stage IIIA, N2+) Non-Small Cell Lung Cancer*
- **CALGB-140503:** *A Phase III Randomized Trial of Lobectomy versus Sublobar Resection for Small (≤ 2 cm) Peripheral Non-Small Cell Lung Cancer*
- **E5508:** *Randomized Phase III Study of Maintenance Therapy with Bevacizumab, Pemetrexed or Both Following Carboplatin, Paclitaxel and Bevacizumab for Advanced Stage Non-Squamous Non-Small Cell Lung Cancer*

For more information regarding these and other clinical trials active at Ochsner Cancer Institute, visit our website, ochsner.org/ochsner_cancer_institute, or contact Ochsner Protocol Office Director, Kimberly Henry at **504-842-0275**.

Upcoming "Outcomes in Oncology" Topics:

May: Head/Neck Surgical Oncology
June: Urologic Oncology
July: Dermatologic Oncology
August: Colorectal Oncology
September: Hematologic Malignancy
October: Breast Cancer
November: Gynecologic Oncology
December: Neurooncology

To refer a patient, please call the Surgical Oncology Clinic at **504-842-4070**.
For 24/7 phone consults and/or patient transfers, please call the
Regional Referral Center at **1-855-OHS-LINK (647-5465)**.