2011 Outcome Study

Lung Cancer

Tift Regional Medical Center

Key Statistics

Lung cancer accounts for 15% of all new cancers and is the leading cause of cancer death in the United States. More people die of lung cancer than of colon, breast and prostate cancers combined. Lung cancer (both small cell and non-small cell) is the second most common cancer in both men (after prostate cancer) and women (after breast cancer).

The American Cancer Society's most recent estimates for lung cancer in the United States for 2010 are:

- About 222,520 new cases of lung cancer will be diagnosed (116,750 among men and 105,770 among women).
- There will be an estimated 157,300 deaths from lung cancer (86,220 among men and 71,080 among women), accounting for about 28% of all cancer deaths.
- 30% of all cancer deaths in Georgia result from lung cancer.

Statistics on survival in people with lung cancer vary depending on the stage (extent) of the cancer when it is diagnosed.

Despite the very serious prognosis of lung cancer, some people are cured. More than 400,000 people alive today have been diagnosed with lung cancer at some point.

Types of Lung Cancer

There are two main types of lung cancer and they are treated differently.

Non-small cell lung cancer (NSCLC) accounts for 80-90% of all lung cancers and is an umbrella term for several types of lung cancers that behave in a similar way.

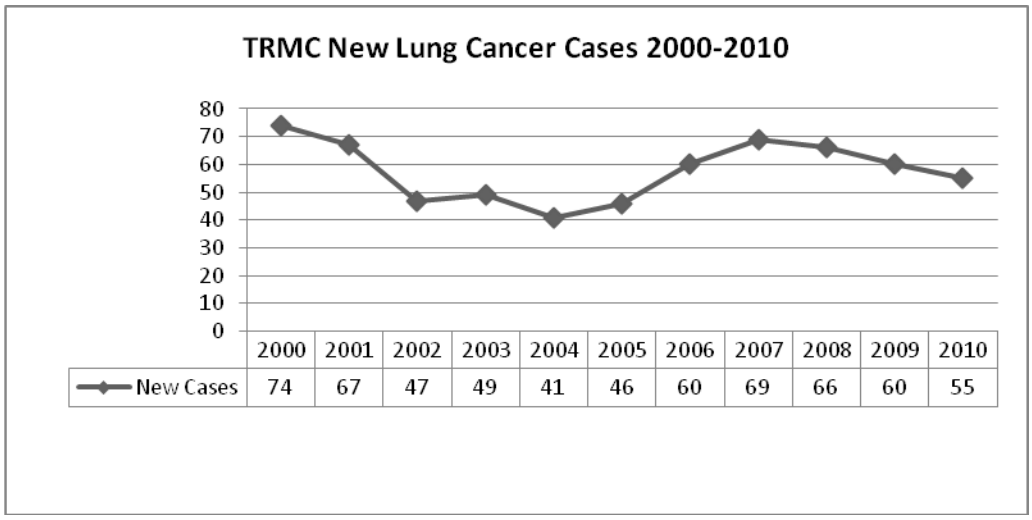
- Squamous cell carcinoma – mostly found in middle of lungs near bronchi
- Adenocarcinoma – usually found in outer part of the lung
- Large cell carcinoma – can start in any part of the lung

Small –cell lung cancer (SCLC) accounts for 10-15% of all lung cancers and occurs almost exclusively in heavy smokers.

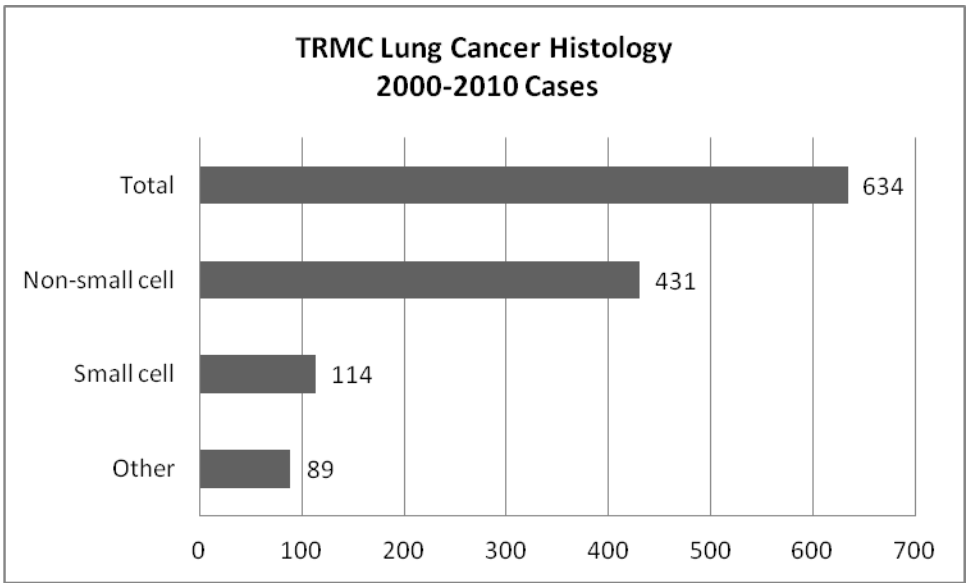
- Starts in bronchi near the center of the chest
- Cells can multiply quickly and form large tumors that can spread early
- This type is almost always caused by smoking

Other types of cancer can arise in the lung: These include rare types of lung cancer such as sarcoma and cancers that are diagnosed clinically without histological confirmation.

From 2000-2010 there have been 634 lung cancer cases diagnosed and/or treated at Tift Regional Medical Center.

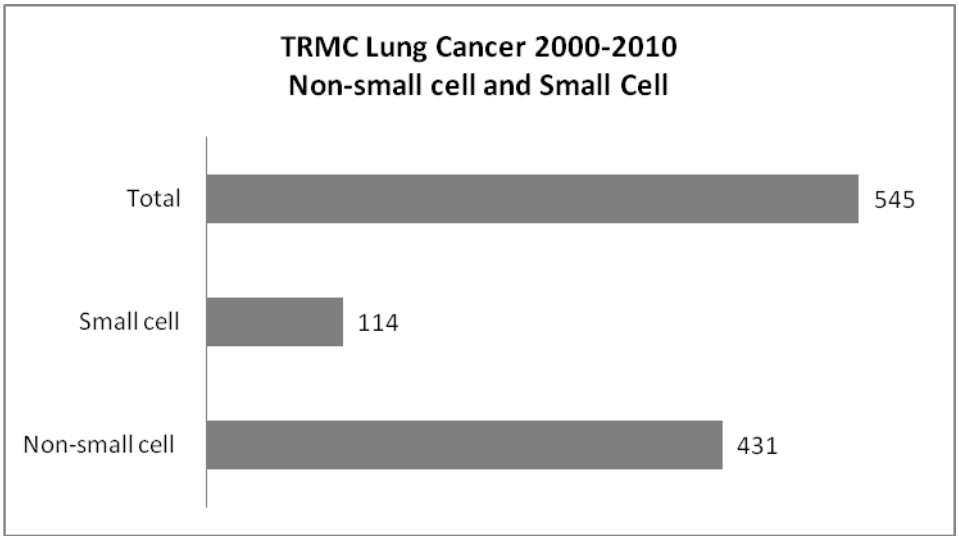


Graph A shows a decline in the number of lung cancer cases at TRMC from 2001 to 2004 and again from 2008-2010.



Graph B shows the breakout by histology and behavior for all lung cancer at TRMC from 2000-2010. 68% were non-small cell, 18% were small cell and 14% were a combination of other less common types and those cases that were diagnosed clinically.

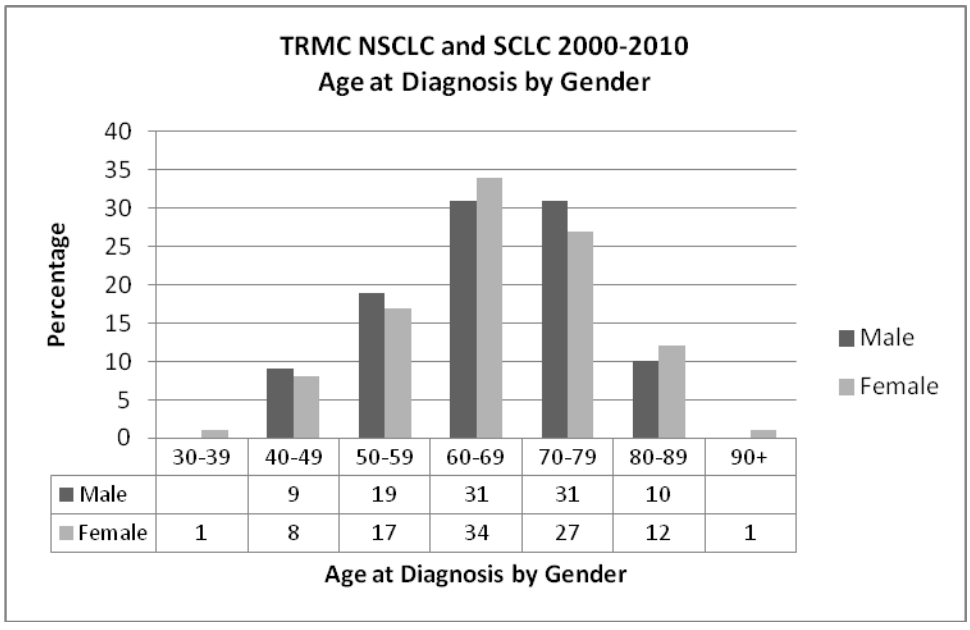
For the purpose of this study we will be evaluating only the two main types of lung cancer, non-small cell (NSCLC) and small cell (SCLC) which together account for 545 cases.



Graph C shows the number of non-small cell and small cell lung cancer cases at TRMC from 2000-2010.

Age and Gender

Lung cancer mainly occurs in older patients. About 2 out of 3 patients diagnosed with lung cancer are older than 65; fewer than 3% of all cases are found in patients younger than 45. The average age at the time of diagnosis is about 71.

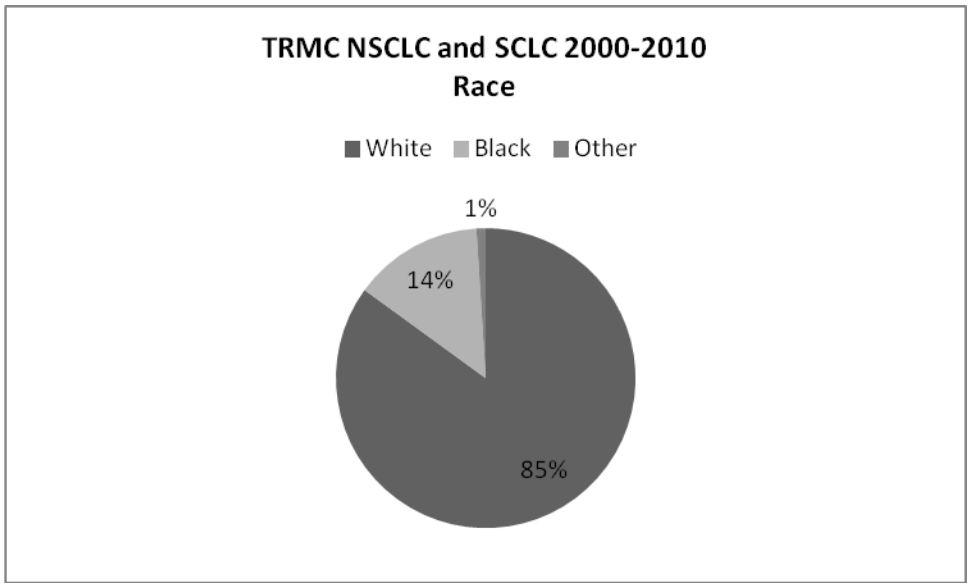


	30-39	40-49	50-59	60-69	70-79	80-89	90+
Male		9	19	31	31	10	
Female	1	8	17	34	27	12	1

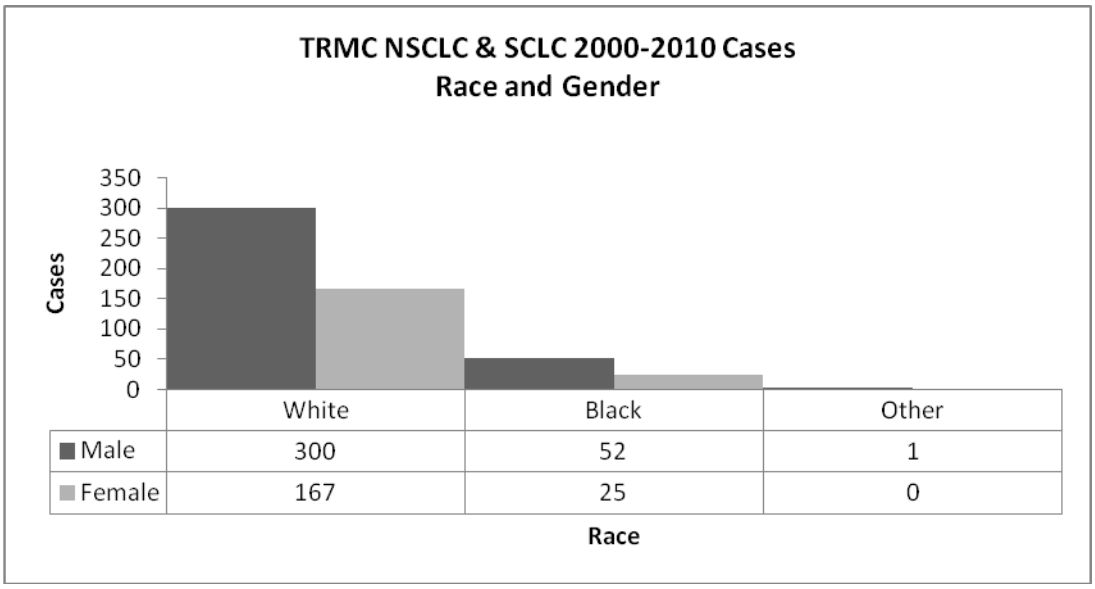
Graph D: The majority of lung cancers at Tift Regional Medical Center are diagnosed between the ages of 60-79.

Race and Gender

Both black and white women have lower rates than men, but the gap is closing. The rate of lung cancer has been dropping among men for many years and is fairly stable among women.

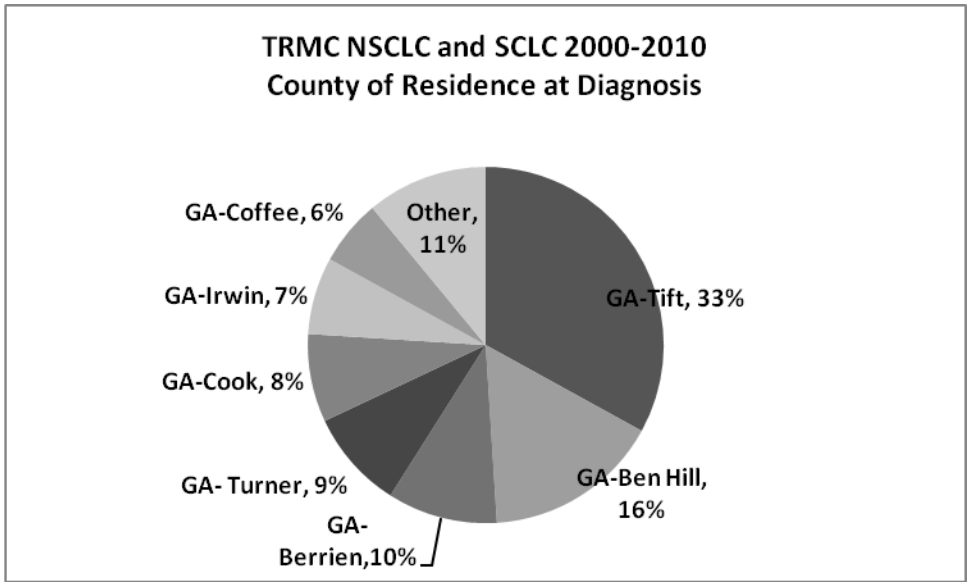


Graph E shows the majority of lung cancer patients, both male and female, diagnosed at TRMC are white.

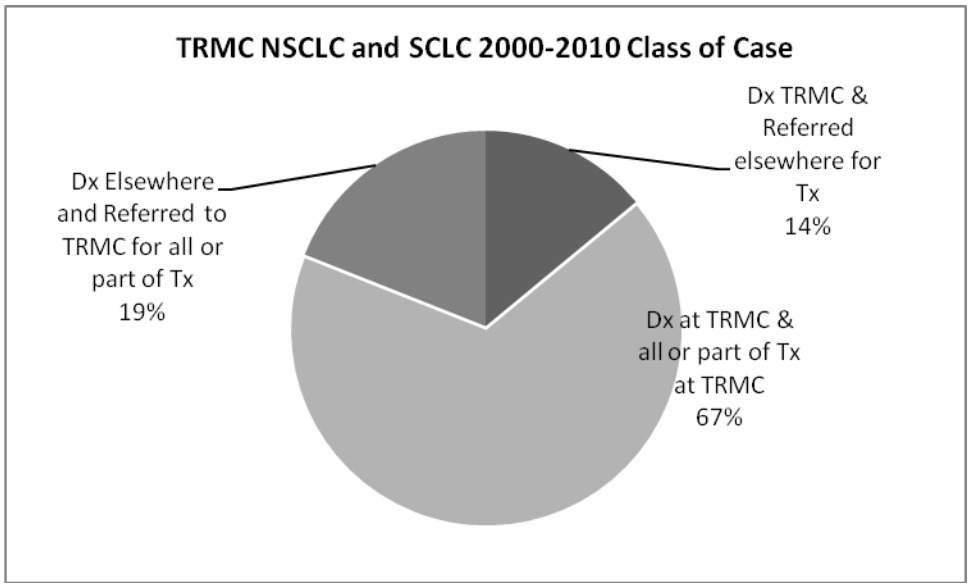


Graph F shows a lower number of cases for women than men at TRMC.

Service Area



Graph G shows 33% of the patients diagnosed with lung cancer are from Tift county, with the remaining from other surrounding counties.



Graph H: The majority (67%) of cases diagnosed at TRMC receive part or their entire first course of treatment at this facility. 14% are diagnosed at TRMC and referred elsewhere for their entire first course of treatment. 19% are diagnosed elsewhere and referred to TRMC for all or part of their first course of treatment.

Risk Factors

Tobacco smoke: Smoking is by far the leading risk factor for lung cancer. 85% to 95% of patients with lung cancer have had direct exposure to tobacco. The risk for lung cancer among smokers is many times higher than among non-smokers. The longer you smoke and the more packs a day you smoke, the greater your risk for lung cancer.

Cigar smoking and pipe smoking are almost as likely to cause lung cancer as cigarette smoking. Smoking low-tar or "light" cigarettes increases lung cancer risk as much as regular cigarettes. There is concern that menthol cigarettes may increase the risk even more since the menthol allows smokers to inhale more deeply.

Secondhand smoke: If you don't smoke, breathing in the smoke of others (called secondhand smoke or environmental tobacco smoke) can increase your risk of developing lung cancer. A non-smoker who lives with a smoker has about a 20% to 30% greater risk of developing lung cancer. Workers who have been exposed to tobacco smoke in the workplace are also more likely to get lung cancer. Secondhand smoke is thought to cause more than 3,000 deaths from lung cancer each year.

If you stop smoking before a cancer develops, your damaged lung tissue gradually starts to repair itself. No matter what your age or how long you've smoked, quitting may lower your risk of lung cancer and help you live longer. People who stop smoking before age 50 cut their risk of dying in the next 15 years in half compared with those who continue to smoke.

According to the CDC, in Georgia, 19.5% of the adult population (aged 18+ years)—over 1,393,000 individuals—are current cigarette smokers. Across all states, the prevalence of cigarette smoking among adults ranges from 9.3% to 26.5%. Georgia ranks 32nd among the states. Among youth aged 12–17 years, 10.0% smoke in Georgia. The range across all states is 6.5% to 15.9%. Georgia ranks 19th among the states.

Exposure to environmental and industrial substances: High levels of pollution, exposure to radon, arsenic, asbestos and some organic chemicals increases the risk of lung cancer, particularly for persons who smoke. The government and industry have taken steps in recent years to help protect workers from many of these exposures. But the dangers are still present.

Radiation exposure from occupational, medical and environmental sources is a risk factor. People who have had radiation therapy to the chest for other cancers are at higher risk for lung cancer, particularly if they smoke. Typical patients are those treated for Hodgkin's disease.

Personal or family history of lung cancer Patients who have had lung cancer are at a higher risk of developing another lung cancer. Brothers, sisters, and children of those who have had lung cancer may have a slightly higher risk of lung cancer themselves, especially if the relative was diagnosed at a younger age. It is not clear how much of this risk might be due to genetics and how much might be from shared household exposures (such as tobacco smoke or radon).

Excessive alcohol use: Drinking more than a moderate amount of alcohol – more than one drink a day for women and two drinks a day for men – may increase the risk of lung cancer.

Certain lung diseases: People with certain lung diseases, such as chronic obstructive pulmonary disease, may have an increased risk of lung cancer.

Screening for lung cancer

An effective screening test for lung cancer could save many lives. Efforts at early detection and treatment have been frustrating and the overall prognosis is poor. Until recently, no lung cancer screening test had been shown to lower the risk of dying from this disease. Earlier studies of 2 possible screening tests, chest x-ray and sputum cytology, did not find that these tests could detect lung cancers early enough to improve a person's chance for a cure. For this reason, major medical organizations have not recommended routine screening with these tests for the general public or even for people at increased risk, such as smokers.

A new screening method, called spiral CT, is currently being studied by the National Lung Screening Trial (NLST). Until the results of this study are released, there is no way of knowing if the spiral CT is a viable screening method to catch early disease and save lives.

Current screening recommendations

At this time, no major professional organizations, including the American Cancer Society, recommend routine lung cancer screening, either for all people or for those at increased risk.

The American Cancer Society recommends that, as much as possible, people who were smokers, are current smokers or have been exposed to secondhand smoke, or have worked around materials that increase the risk for lung cancer, be aware of their lung cancer risk. People who are current smokers should realize that the best way to avoid dying from lung cancer is to stop smoking.

Diagnosis

It is difficult to diagnosis lung cancer early due to lack of symptoms. Lung cancer usually spreads beyond the lungs before causing any symptoms. A small number of lung cancers are found early and are usually found incidentally during a test for another condition. About 25% of people diagnosed with advanced lung cancer do not have symptoms.

Common signs and symptoms of lung cancer

Lung cancer typically doesn't cause signs and symptoms in its earliest stages. Signs and symptoms of lung cancer typically occur only when the disease is advanced. About 85% of patients with lung cancer are symptomatic at presentation. The most common symptoms of lung cancer are:

- A new cough that does not go away
- Chest pain that is often worse with deep breathing, coughing, or laughing
- Hoarseness
- Weight loss and loss of appetite
- Coughing up blood , even a small amount
- Shortness of breath
- Fatigue
- Repeated problems with pneumonia or bronchitis
- New onset of wheezing
- Swelling of neck and face

When lung cancer spreads to distant organs, it may cause:

- Bone pain
- Neurologic changes (such as headache, weakness or numbness of a limb, dizziness, or seizures)
- Jaundice (yellowing of the skin and eyes)
- Lumps near the surface of the body, due to cancer spreading to the skin or to lymph nodes in the neck or above the collarbone

Diagnostic test and procedures to rule out or confirm diagnosis:

Medical history and physical exam

Imaging:

- Chest x-ray
- CT scan
- MRI
- PET scan
- Bone Scan

Procedures:

- Sputum cytology
- FNA (Fine needle aspiration)
- Bronchoscopy
- Mediastinoscopy and Mediastinotomy
- Thoracentesis and thorascopy
- Endoscopic bronchial ultrasound (EBUS)

Staging

Every cancer patient's treatment regimen is tailored to his or her stage of disease. Most treatment guidelines cannot be followed until the stage has been determined. Staging is the process of finding out how far a cancer has spread. The stage of a cancer is determined at diagnosis and does not change over time. A cancer that comes back or spreads is still referred to by the stage it was given when it was first found and diagnosed. Only information about the current extent of the cancer is added. A patient keeps the same original diagnosis stage, but more information is added to the diagnosis to explain the current disease status.

The system used at TRMC to describe the growth and spread (stage) of lung cancer is the American Joint Committee on Cancer (AJCC) **TNM** staging system. The TNM system is based on 3 key pieces of information:

- **T** indicates the size of the main (primary) tumor and whether it has grown into nearby areas.
- **N** describes the spread of cancer to nearby (regional) lymph nodes.
- **M** indicates whether the cancer has spread (metastasized) to other organs of the body. (The most common metastatic sites for lung cancer are the brain, bones, adrenal glands, liver, kidneys, and the other lung.)

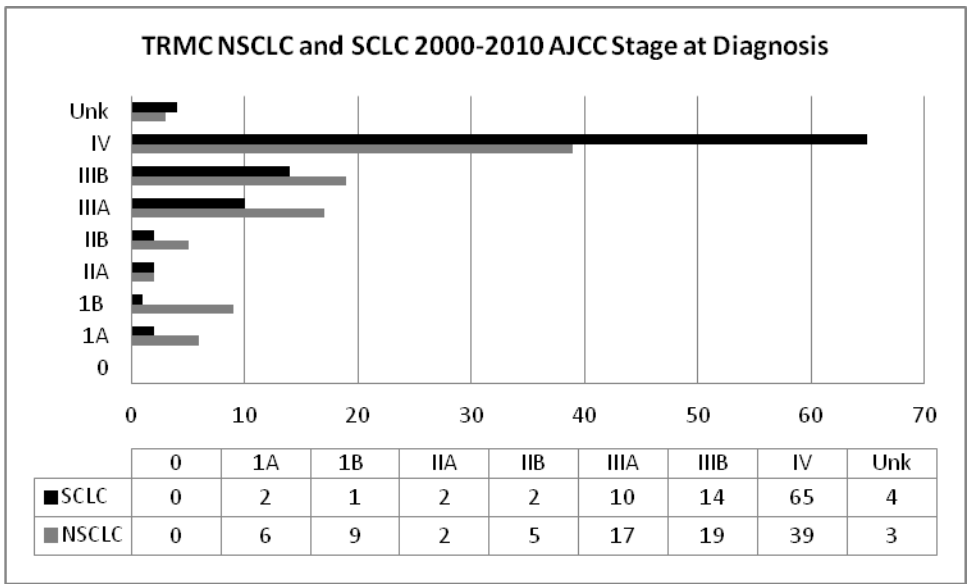
Numbers or letters appear after T, N, and M to provide more details about each of these factors. The numbers 0 through 4 indicate increasing severity. The letter X means "cannot be assessed because the information is not available."

- The *clinical stage* is based on the results of the physical exam, biopsies, and imaging tests (CT scan, chest x-ray, PET scan, etc.).
- The *pathologic stage*, is based on the same factors as the clinical stage, plus what is found as a result of the surgery. The pathologic stage is likely to be more accurate than the clinical stage, as it uses the additional information obtained at surgery.

Overall Stage Grouping is also referred to as Roman Numeral Staging. This system uses numerals I, II, III, and IV (plus the 0) to describe the progression of cancer.

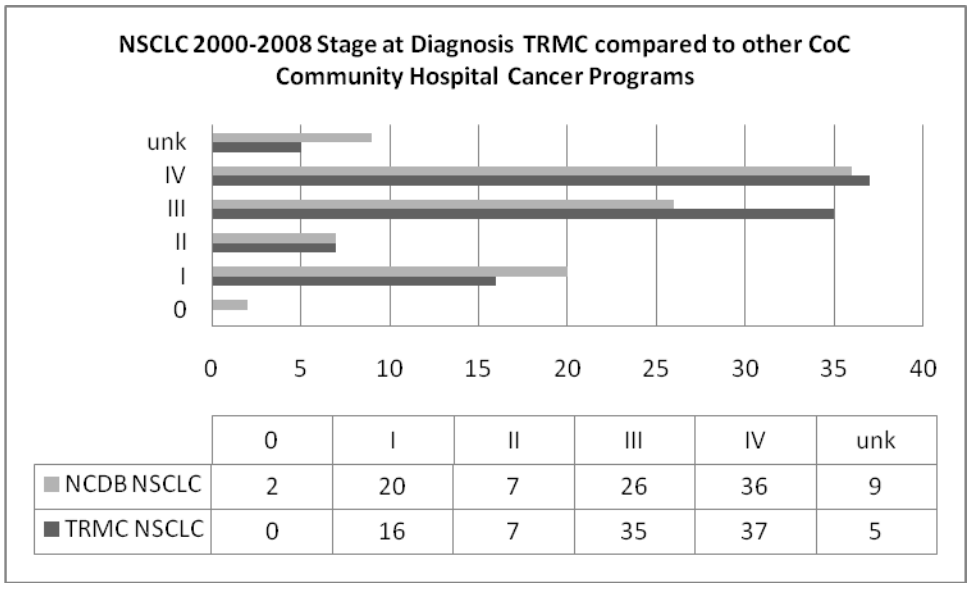
- **Stage 0** carcinoma in situ – Early non-invasive form

- **Stage I** cancers are localized to one part of the body.
- **Stage II** cancers are early locally advanced.
- **Stage III** cancers are also late locally advanced.
- **Stage IV** cancers have often metastasized or spread to other organs or throughout the body.
- **Recurrent** cancer has appeared again after being in remission or after all visible tumor had been eliminated.



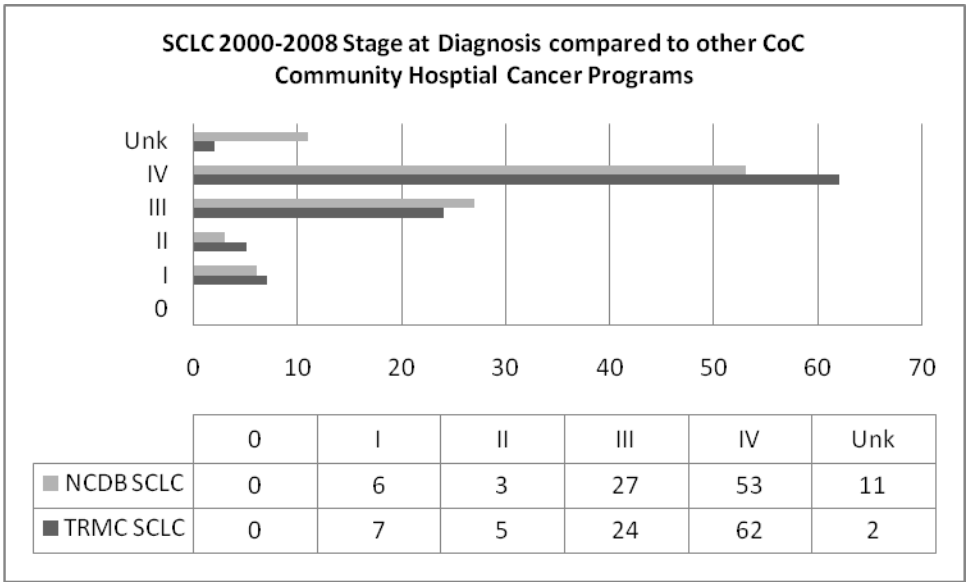
	0	1A	1B	IIA	IIB	IIIA	IIIB	IV	Unk
SCLC	0	2	1	2	2	10	14	65	4
NSCLC	0	6	9	2	5	17	19	39	3

Graph I shows the AJCC stage at Diagnosis for NSCLC and SCLC at TRMC. A higher percentage of small cell lung cancers are diagnosed at stage IV than non-small cell lung cancer.



	0	I	II	III	IV	unk
NCDB NSCLC	2	20	7	26	36	9
TRMC NSCLC	0	16	7	35	37	5

Graph J: shows a higher percentage of AJCC stage III and IV NSCLC are diagnosed at TRMC when compared with other CoC CHCP programs.



	0	I	II	III	IV	Unk
NCDB SCLC	0	6	3	27	53	11
TRMC SCLC	0	7	5	24	62	2

Graph K shows a higher percentage of AJCC stage IV SCLC are diagnosed at TRMC when compared to other CoC Community Hospital Cancer Programs (CHCP).

PROGNOSTIC FACTORS

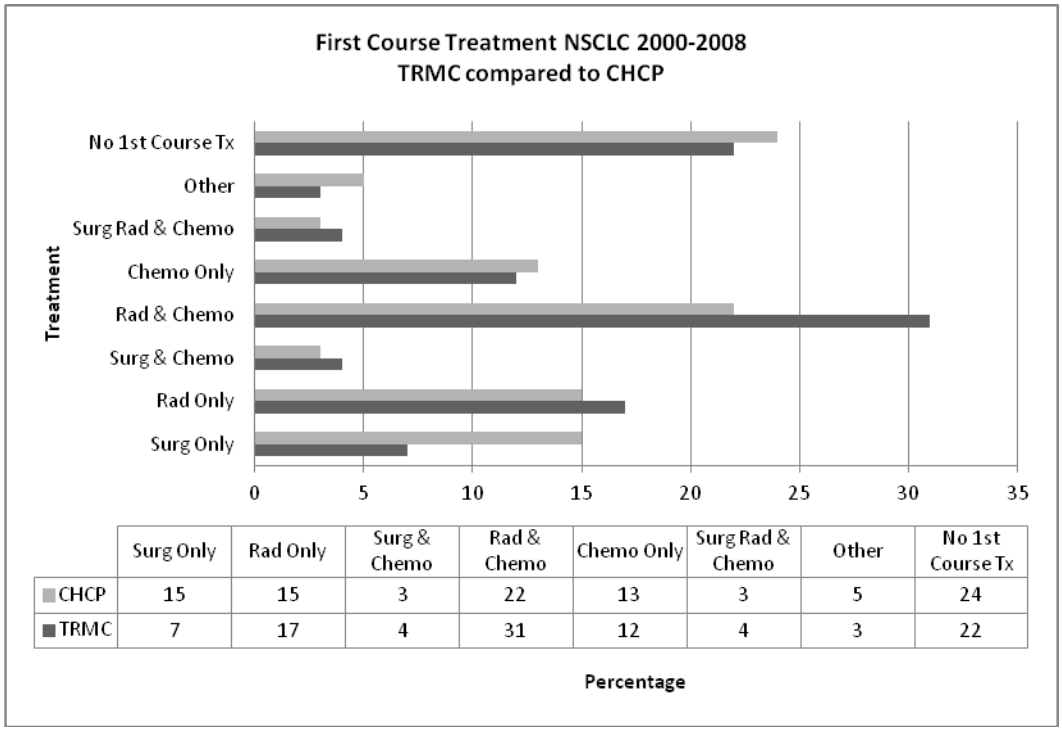
- Stage of cancer
- Performance status and general health
- Size of tumor
- Type of lung cancer
- Whether there are symptoms

TREATMENT

Depending on the stage and type of the disease and other prognostic factors, the main treatment options include:

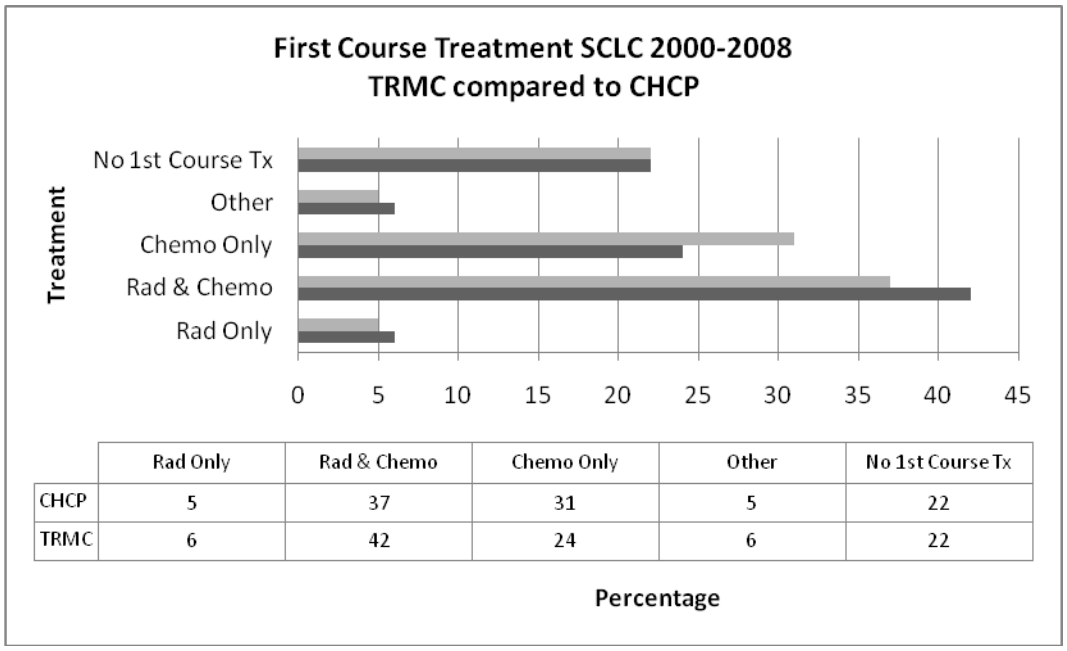
- Surgery
- Radiation therapy
- Other local treatments
- Chemotherapy
- Targeted therapy
- Palliation

In many cases, more than one of these treatments may be used. Surgery is the current treatment of choice for early stage non-small cell lung cancer. Chemotherapy combined with radiation is used for advanced, non-metastatic non-small cell lung cancer. Chemotherapy is the current treatment of choice for metastatic non-small cell lung cancer. Chemotherapy with or without radiation therapy is used to treat small cell lung cancer.



	Surg Only	Rad Only	Surg & Chemo	Rad & Chemo	Chemo Only	Surg Rad & Chemo	Other	No 1st Course Tx
CHCP	15	15	3	22	13	3	5	24
TRMC	7	17	4	31	12	4	3	22

Graph L shows 1st Course Treatment for NSCLC from 2000-2008 at TRMC compared to other Community Hospital Cancer Programs. When lung cancer patients receive any part of their treatment at a referral facility this treatment and location is documented in the TRMC cancer registry. These numbers are reflected in the above graph.



	Rad Only	Rad & Chemo	Chemo Only	Other	No 1st Course Tx
CHCP	5	37	31	5	22
TRMC	6	42	24	6	22

Graph M shows 1st Course Treatment for SCLC from 2000-2008 at TRMC compared to other Community Hospital Cancer Programs. When lung cancer patients receive any part of their treatment at a referral facility this treatment and location is documented in the TRMC cancer registry. These numbers are reflected in the above graph.

CLINICAL TRIALS

Clinical trials are essential to developing new cancer therapies and to ensure the best management of cancer patients. Less than 2% of Georgia cancer patients currently participate in clinical trials. Patients at TRMC are informed of available clinical trials at outside facilities and when appropriate are referred for evaluation and possible enrollment.

CONCLUSION

Lung cancer causes more cancer related deaths in the United States and Georgia than the next four causes of cancer-related mortality combined.

- Quiting smoking and avoiding secondhand smoke are the best current strategies for preventing lung cancer. Effective means to discourage individuals from taking up smoking and to help current smokers quit smoking could help prevent a substantial portion of lung cancer cases. TRMC offers smoking cessation classes and disperses information concerning the risk factors of smoking throughout the community and surrounding counties as a prevention measure.
- Symptoms are often absent until lung cancer has spread. On average, only 13% of the NSCLC patients at Tift Regional Medical Center live for 5 years after diagnosis and only 7% of the SCLC patients live for 5 years after diagnosis. TRMC offers education related to risk factors and signs and symptoms of lung cancer throughout Tift county and surrounding communities.
- The stage and type of lung cancer and the patient's performance status guide treatment decisions and influence the prognosis. TRMC encourages physicians to provide a documented clinical and/or pathological stage at diagnosis prior to initiation of treatment of lung cancer.
- The National Comprehensive Cancer Network (NCCN) and American College of Chest Physician (ACCP) guidelines for diagnosis, workup and treatment of lung cancer are used by physicians at Tift Regional Medical Center.
- TRMC Physicians encourage patient referral for evaluation for participation in clinical trials when appropriate.
- Most lung cancer patients seen at this facility are diagnosed in advanced stages. It is recommended that community awareness of the importance of early detection of lung cancer be improved.

References:

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- Georgia Center for Cancer Statistics www.sph.emory.edu
- American Joint Committee on Cancer (AJCC) www.cancerstaging.org
- National Comprehensive Cancer Network (NCCN) www.nccn.com
- American College of Chest Physicians (ACCP) www.chestnet.org/accp/guidelines
- Centers for Disease Control and Prevention (CDC) www.cdc.gov
- Assessing the Quality of Cancer Care an Approach to Measures in Georgia