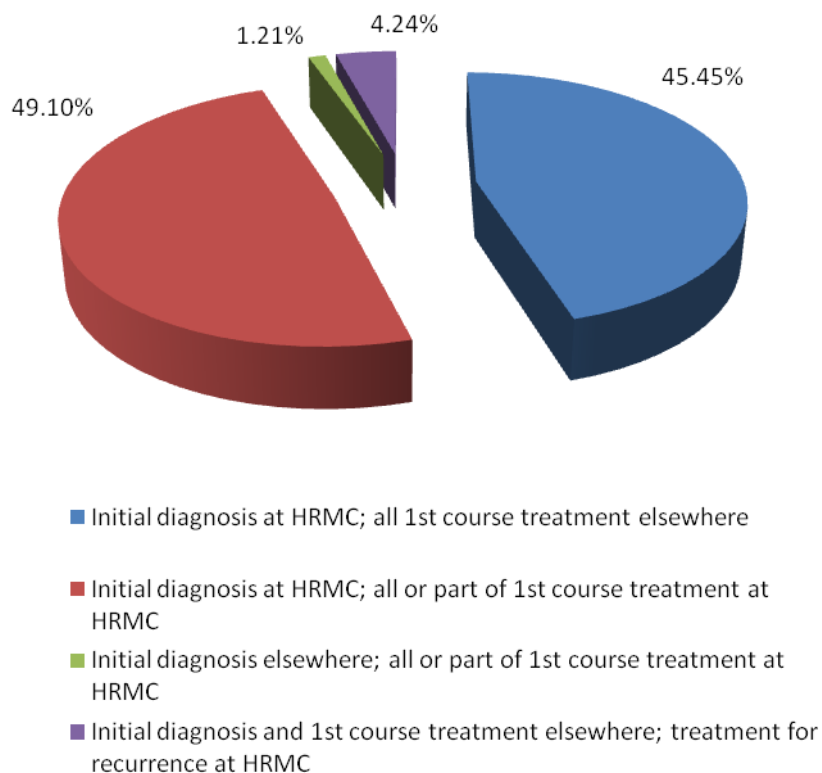


Cancer Registry Report

The Cancer Registry at Highlands Regional Medical Center continues to collect and maintain data on all patients diagnosed and/or treated for cancer at our facility. Maintaining our registry ensures that health officials have accurate and timely information, while ensuring the availability of data for treatment, research, and educational purposes. Confidentiality of patient identifying information and related medical data is strictly maintained. Aggregate data are analyzed and published without any patient identifiers.

Local, state, and national cancer agencies use registry data to make important public health decisions related to limited public health funds. Registry data is valuable to researchers interested in the etiology, diagnosis, and treatment of cancer. Current lifetime follow-up maintained by the registry provides accurate survival information as well as serves as a reminder to physicians and patients to schedule regular clinical examinations.

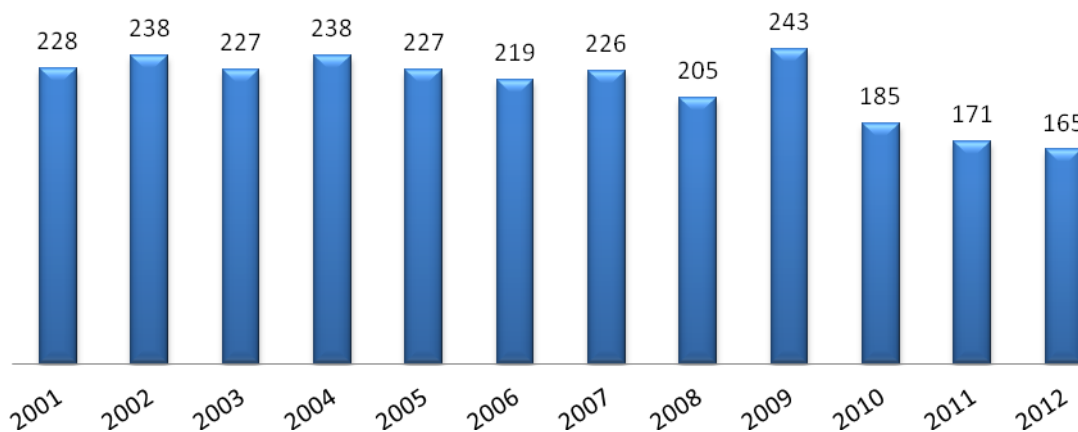
2012 HRMC Cancer Registry Case Reporting



In 2012, a total of 165 cases were reported by the Cancer Registry at Highlands Regional Medical Center. Of these, 49.1% (81) patients were diagnosed with their disease at HRMC and received all or part of their first course treatment here. A total of 45.45% (75) of patients were initially diagnosed at HRMC but were treated elsewhere for their disease. A total of 1.21% (2) patients were diagnosed elsewhere but received all or part of their first course treatment at HRMC. And patients who were initially diagnosed and treated elsewhere but received subsequent treatment at HRMC for recurrent disease accounted for 4.24% (7) of our cases.

Newly Diagnosed and/or Treated Cases at HRMC

2001-2012



The number of newly diagnosed and/or treated (analytic) cases reported at HRMC slightly decreased from 2011 to 2012, by 3.5% (6 cases).

2012 Comparison of Top Five Sites – Male & Female*

	HRMC	KY	US	US	KY	HRMC	
Breast	31%	29%	29%	14%	19%	26%	Trachea, Bronchus, Lung
Trachea, Bronchus, Lung	19%	15%	14%	29%	16%	20%	Prostate
Colon and Rectum	9%	9%	9%	9%	11%	10%	Colon and Rectum
Endometrium (corpus uteri)	6%	5%	6%	1%	2%	6%	Larynx
Thyroid	4%	4%	5%	7%	6%	6%	Bladder
All Other Sites	31%	38%	37%	40%	46%	32%	All Other Sites



According to the 2012 American Cancer Society's Cancer Facts & Figures, approximately 1,638,910 new cancer cases would be diagnosed in the US in 2012, excluding carcinoma in situ of any site except urinary bladder and basal and squamous cell skin cancers. The risk of being diagnosed with cancer increases with age, with most cases occurring in adults who are middle aged or older. About 77% of all cancers are diagnosed in persons 55 years of age or older. About 577,190

Americans were expected to die of cancer in 2012, more than 1,500 people per day. Cancer is the second most common cause of death in the US, exceeded only by heart disease, and accounts for nearly 1 of every 4 deaths.

**Data obtained from the 2012 ACS Cancer Facts & Figures, Kentucky Cancer Registry, and HRMC Cancer Registry*

5-Year Comparative Analysis of Top Ten Sites at HRMC 2008-2012

SITE	2008	2009	2010	2011	2012
Trachea, bronchus, lung	62	64	55	44	36
Breast, female & male	28	31	32	28	24
Colon Rectum/Anus	18	26	27	23	21
Prostate	25	21	4	14	16
Bladder	8	11	1	12	6
Non-Hodgkin's Lymphomas	10	8	5	3	4
Kidney	13	11	0	2	2
Endometrium (corpus uteri)	4	10	6	1	5
Unknown primary	4	4	8	2	4
Larynx	2	4	6	2	5

2012 Top Five Cancer Sites at HRMC by Best Collaborative/AJCC Stage

Site	Total Cases	Stage 0	Stage I	Stage II	Stage III	Stage IV	Stage Unknown
Trachea/Bronchus/Lung	36	0	5	0	6	23	2
Breast, female & male	24	2	7	9	3	2	1
Colon/Rectum	21	1	2	2	4	7	5
Prostate	16	0	0	13	2	1	0
Bladder	6	1	4	1	0	0	0
TOTAL	103	4	18	25	15	33	8

In 2012, the majority of lung cancer cases at HRMC were diagnosed at stages IV (63.8%). This is felt to be attributed to a lack of community education &/or the availability of the need for early screenings.

HRMC diagnosed the majority of breast cancer cases at stages I (29.16%) and stage II (37.5%). This early detection is due to community awareness & education of need of early detection through self breast exams & mammography. Also, HRMC has offered mammography services without need of physician referral & at reduced cost if the patient qualifies.

One-third of colorectal cases were diagnosed at stage IV (33.3%). This may be due in part to lack of early evaluations.

By far the majority of prostate cases were diagnosed at stage II (8.125%). This is true because of aggressive assessment by the urologist as well as increased public awareness of the need for exams.

And two-thirds of bladder cases were diagnosed at stage I (66.6%), most likely due to aggressive assessment by the urologist.

Analysis of Lung Cancer Care at HRMC

Using Cancer Registry Data

Goal: To increase public awareness of the need for early detection through screening for lung cancer.

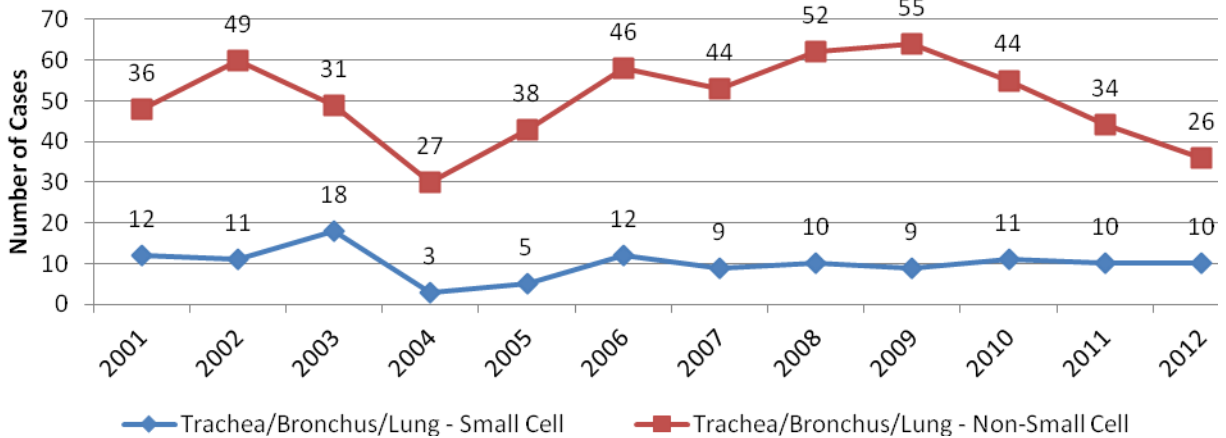
Criteria: Data includes records of newly diagnosed and/or treated patients at HRMC. Comparative analyses utilizing National Cancer Data Base data.

Sources: HRMC Cancer Registry Data, National Cancer Data Base, American Cancer Society 2012 Cancer Facts & Figures

Reviewer: Terry Hall, MD

New Cases: According to the ACS Facts & Figures, approximately 226,160 new cases of lung cancer would be diagnosed in the US in 2012, accounting for about 14% of cancer diagnoses. The incidence rate has been declining in men over the past 2 decades, from a high of 102 (cases per 100,000 men) in 1984 to 72 in 2008. In women, the rate has just begun to decrease after a long period of increase. From 2004 to 2008, lung cancer incidence rates decreased by 1.9% per year in men and by 0.3% per year in women.

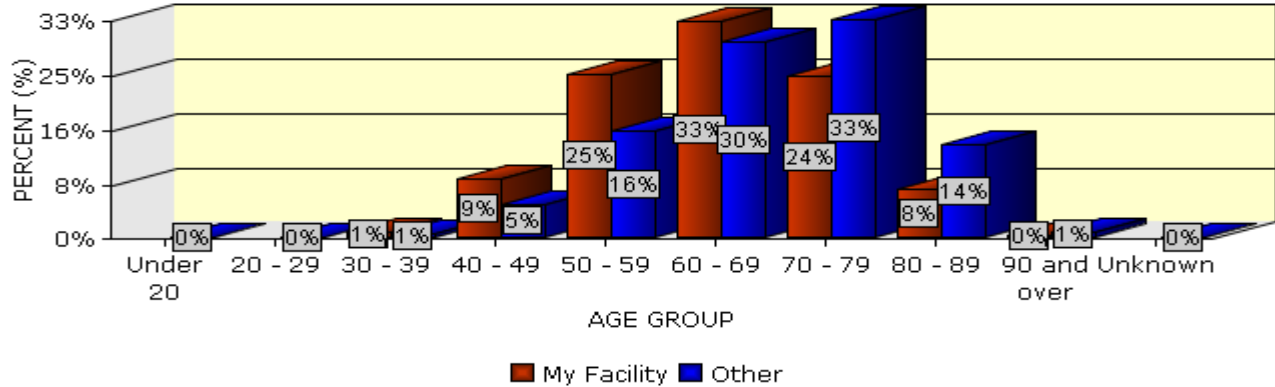
**Lung Cases Diagnosed and/or Treated at HRMC
2001-2012**



At HRMC, the number of lung cases diagnosed and/or treated dropped significantly in 2004 and then trended upward again from 2005 through 2009. The numbers have decreased steadily from 2010 through 2012. This could be attributed to the fact that many of the members of the community that are at high risk for lung diseases have experienced economic hardships due to loss of job &/or loss of insurance coverage.

Risk Factors: Cigarette smoking is by far the most important risk factor for lung cancer; risk increases with both quantity and duration of smoking. Cigar and pipe smoking also increase risk. Exposure to radon gas released from soil and building materials is estimated to be the second leading cause of lung cancer in Europe and North America. Other risk factors include occupational or environmental exposure to secondhand smoke, asbestos (particularly among smokers), certain metals (chromium, cadmium, arsenic), some organic chemicals, radiation, air pollution, and paint (occupational). Risk is also probably increased among people with medical history of tuberculosis. Genetic susceptibility plays a contributing role in the development of lung cancer, especially in those who develop the disease at a younger age.

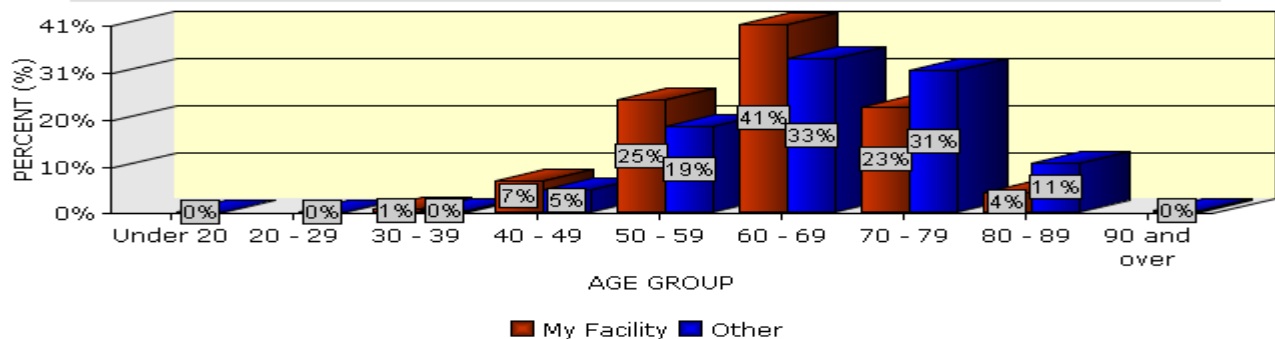
Age Group of Lung, Bronchus Non-Small Cell Carcinoma Cancer Diagnosed in 2000 to 2011
 Highlands Regional Medical Center, Prestonsburg KY
 vs. All Types Hospitals in All States
 All Diagnosed Cases - Data from 1659 Hospitals



	Under 20	20 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 89	90 and over	Unknown
My Facility			1%	9%	25%	33%	24%	8%	0%	
Other	0%	0%	1%	5%	16%	30%	33%	14%	1%	0%

At HRMC, 65% of patients with **non-small cell lung cancer** were diagnosed at age 60 years of age or older, and 90% of patients were diagnosed at age 50 or older. These findings are consistent with the NCDB data.

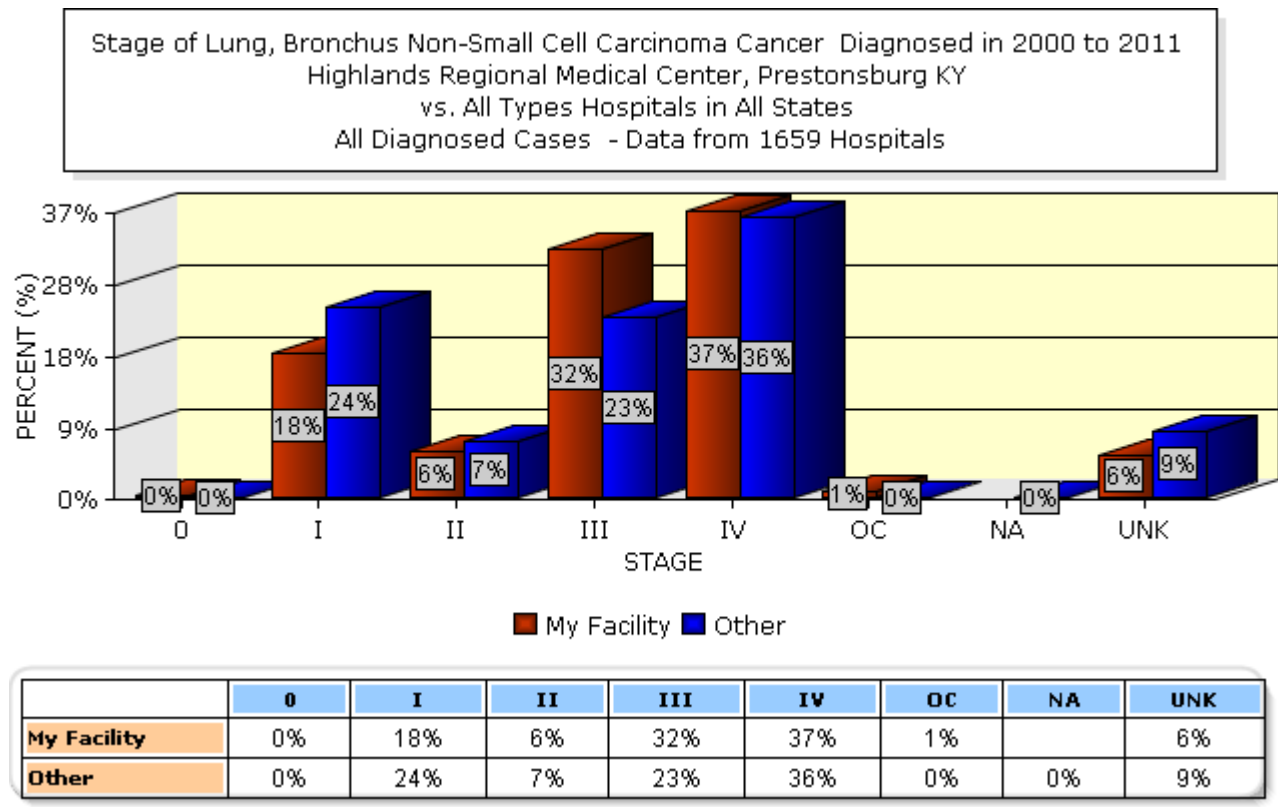
Age Group of Lung, Bronchus Small Cell Carcinoma Cancer Diagnosed in 2000 to 2011
 Highlands Regional Medical Center, Prestonsburg KY
 vs. All Types Hospitals in All States
 All Diagnosed Cases - Data from 1630 Hospitals



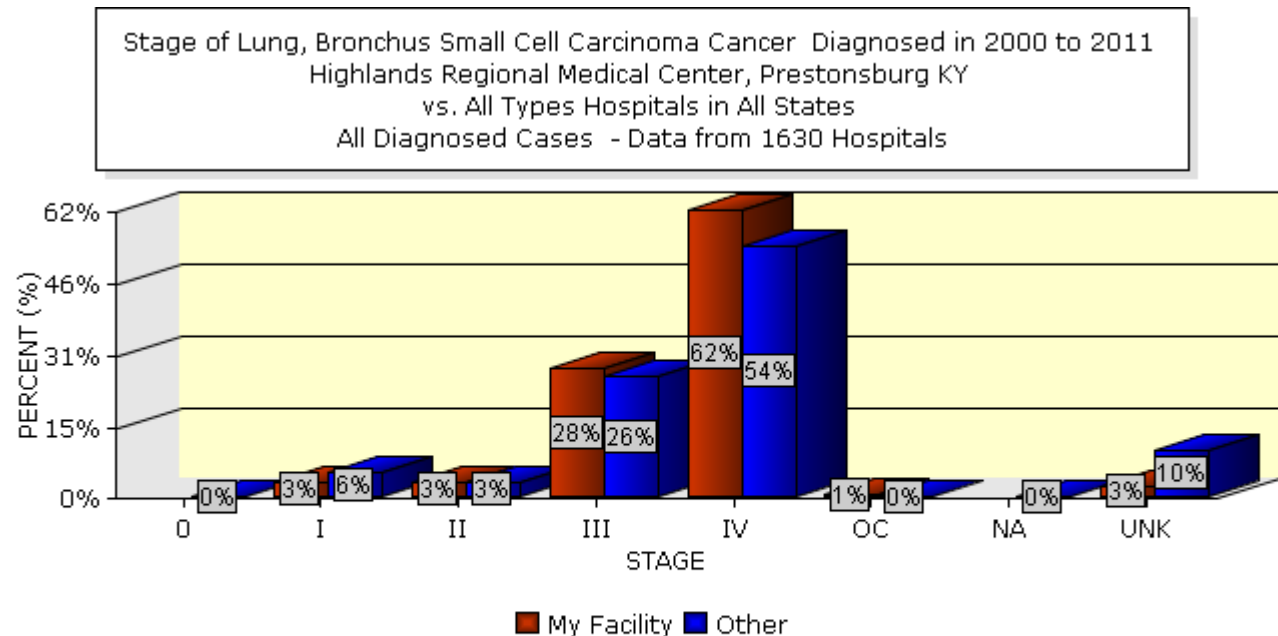
	Under 20	20 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 89	90 and over
My Facility			1%	7%	25%	41%	23%	4%	
Other	0%	0%	0%	5%	19%	33%	31%	11%	0%

At HRMC, 68% of patients with **small cell lung cancer** were diagnosed at age 60 years of age or older, and 93% of patients were diagnosed at age 50 or older. Again, these findings are consistent with the NCDB data.

Early Detection/Stage: Recently published results from a large clinical trial showed that annual screening with chest x-ray does not reduce lung cancer mortality. Newer tests, such as low-dose spiral computed tomography (CT) scans and molecular markers in sputum, have produced promising results in detecting lung cancers at earlier, more operable stages in high-risk patients. Results from the National Lung Screen Trial, a clinical trial designed to determine the effectiveness of lung cancer screening in high-risk individuals, showed 20% fewer lung cancer deaths among current and former heavy smokers who were screened with spiral CT compared to standard chest x-ray. However, it is not known how relevant these results are to individuals with a lesser smoking history compared with the study participants, who had a history of very heavy smoker – the equivalent of at least a pack of cigarettes per day for 30 years. In addition, the potential risks associated with screening, including cumulative radiation exposure from multiple CT scans, and unnecessary lung biopsy and surgery, have not yet been evaluated. It will take some time to develop formal guidelines based on a careful evaluation of the benefits, limitations, and harms associated with screening an asymptomatic population at high risk for lung cancer. In the interim, the American Cancer Society has issued lung cancer screening guidance for adults who would have met the criteria for participation in the screening trial. For more information, visit cancer.org/healthy/findcancerearly



At HRMC, 18% of **non-small cell lung cancer** patients were diagnosed at stage I, 32% at stage II, and 37% at stage IV, all consistent with the NCDB data. This is a result of screenings by the PCP's & pulmonologists.

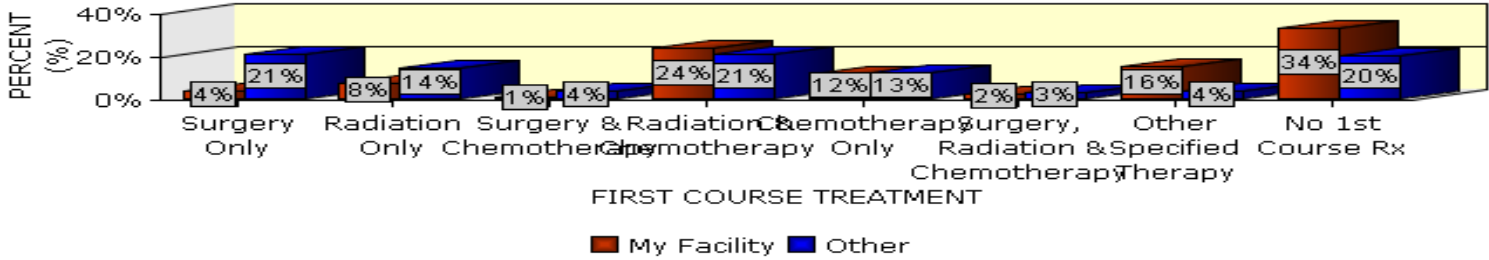


	0	I	II	III	IV	OC	NA	UNK
My Facility		3%	3%	28%	62%	1%		3%
Other	0%	6%	3%	26%	54%	0%	0%	10%

At HRMC, 28% of **small cell lung cancer** patients were diagnosed at stage III and 62% at stage IV, again consistent with the NCDB data. This is a result of screenings by the PCP's & pulmonologists.

Treatment: Lung cancer is classified as small cell (14%) or non-small cell (85%) for the purposes of treatment. Based on type and stage of cancer, treatments include surgery, radiation therapy, chemotherapy, and targeted therapies such as bevacizumab (Avastin), erlotinib (Tarceva), and crizotinib (Xalkori). For localized non-small cell lung cancers, surgery is usually the treatment of choice, and survival for most of these patients is improved by giving chemotherapy after surgery. Because the disease has usually spread by the time it is discovered, radiation therapy and chemotherapy are most often used, sometimes in combination with surgery. Advanced stage non-small cell lung cancer patients are usually treated with chemotherapy, targeted drugs, or some combination of the two. Chemotherapy alone or combined with radiation is the usual treatment of choice for small cell lung cancer; on this regimen, a large percentage of patients experience remission, though the cancer often returns.

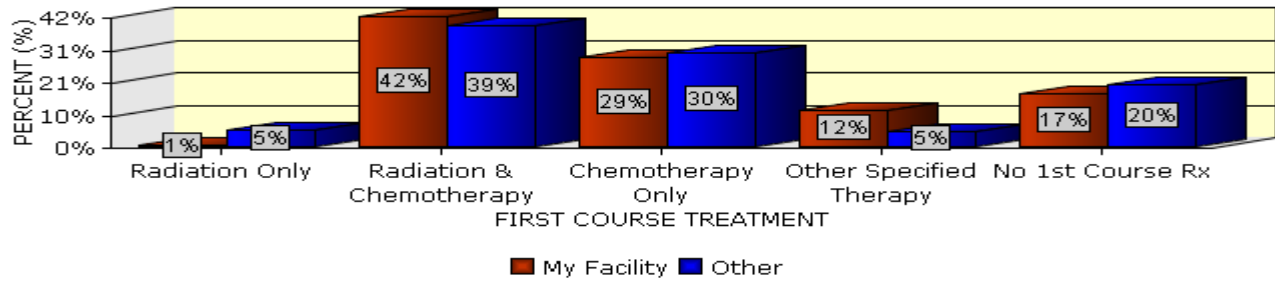
First Course Treatment of Lung, Bronchus Non-Small Cell Carcinoma Cancer Diagnosed in 2000 to 2011
 Highlands Regional Medical Center, Prestonsburg KY
 vs. All Types Hospitals in All States
 All Diagnosed Cases - Data from 1659 Hospitals



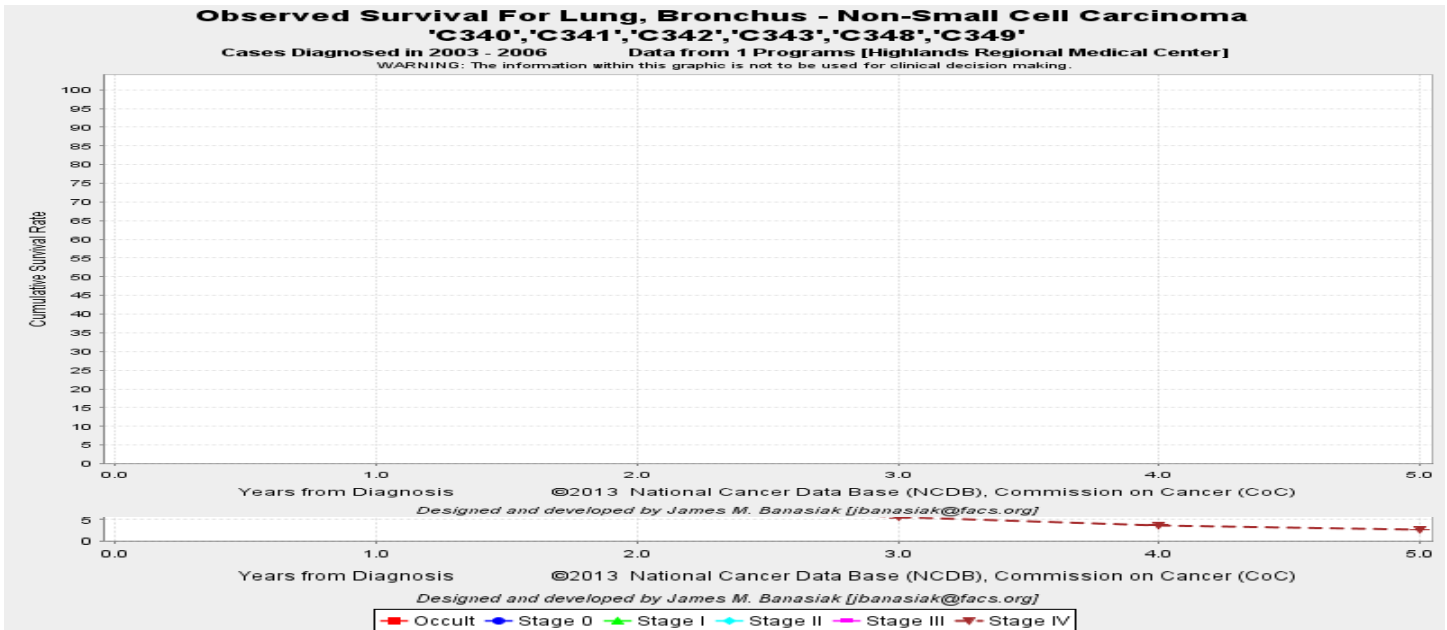
	Surgery Only	Radiation Only	Surgery & Chemotherapy	Radiation & Chemotherapy	Chemotherapy Only	Surgery, Radiation & Chemotherapy	Other Specified Therapy	No 1st Course Rx
My Facility	4%	8%	1%	24%	12%	2%	16%	34%
Other	21%	14%	4%	21%	13%	3%	4%	20%

At HRMC, more patients with **non-small cell lung cancer** were treated with a combination of radiation and chemotherapy or with chemotherapy only, both compatible with the NCDB data.

First Course Treatment of Lung, Bronchus Small Cell Carcinoma Cancer Diagnosed in 2000 to 2011
 Highlands Regional Medical Center, Prestonsburg KY
 vs. All Types Hospitals in All States
 All Diagnosed Cases - Data from 1630 Hospitals



	Radiation Only	Radiation & Chemotherapy	Chemotherapy Only	Other Specified Therapy	No 1st Course Rx
My Facility	1%	42%	29%	12%	17%
Other	5%	39%	30%	5%	20%

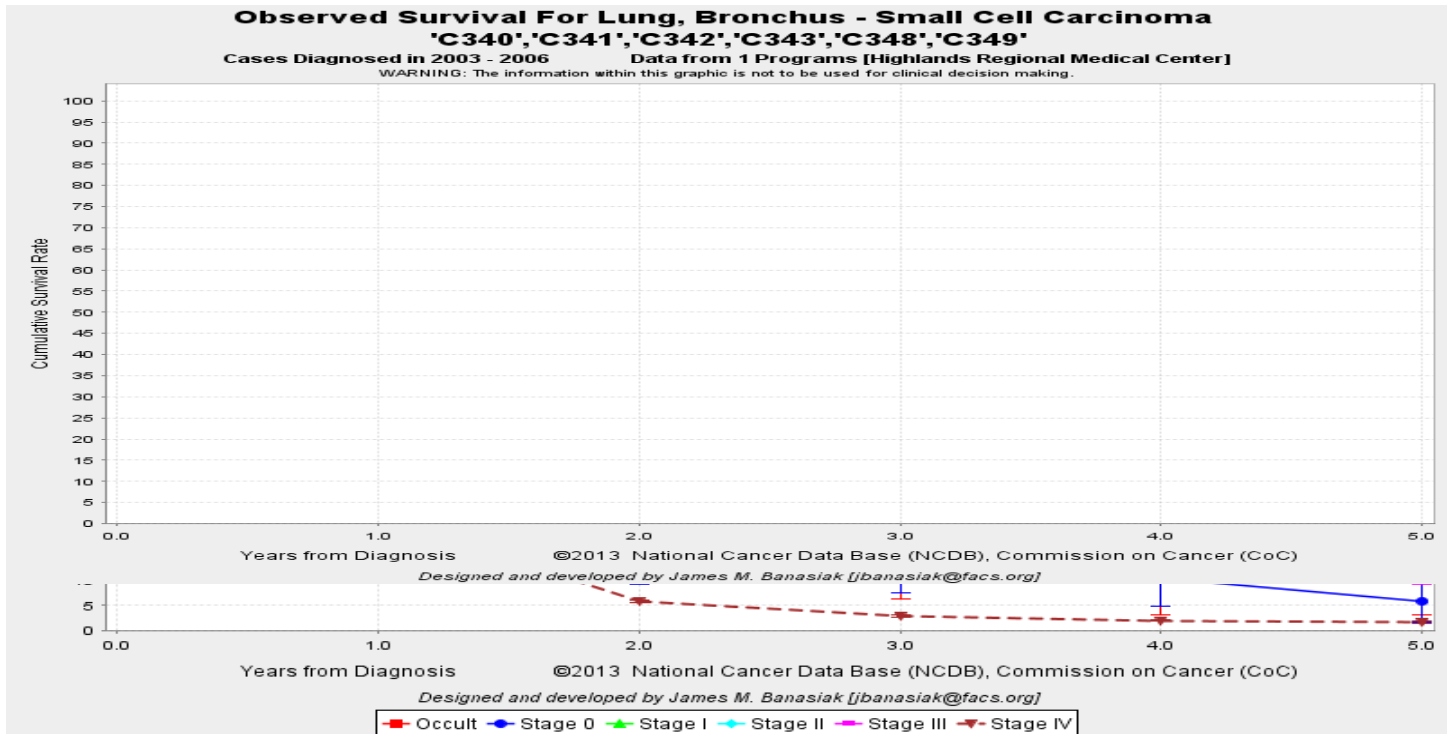


At HRMC, again most patients with **small cell lung cancer** were treated with a combination of radiation and chemotherapy or with chemotherapy alone, and again compatible with the NCDB data .

Survival: The 1-year relative survival for lung cancer increased from 37% in 1975-1979 to 43% in 2003-2006, largely due to improvements in surgical techniques and combined therapies. However, the 5-year survival rate for all stages combined is only 16%. The 5-year survival rate is 52% for cases detected when the disease is still localized, but only 15% of lung cancers are diagnosed at this early stage.

Summary for NCDB **non-small cell lung cancer** data for **all NCDB programs**: HRMC is complying with the national standards for treatment.

Stage of Disease	ENTER	0.0 yr	1.0 yr	2.0 yr	3.0 yr	4.0 yr	5.0 yr	95% Confidence Interval
Occult	<u>1</u>	✘ Insufficient cases to display survival information						
Stage I	<u>18</u>	✘ Insufficient cases to display survival information						
Stage II	<u>6</u>	✘ Insufficient cases to display survival information						
Stage III	<u>20</u>	✘ Insufficient cases to display survival information						



Stage of Disease	ENTER	0.0 yr	1.0 yr	2.0 yr	3.0 yr	4.0 yr	5.0 yr	95% Confidence Interval
Stage IV	30	⊗ Insufficient cases to display survival information						

Insufficient number of cases to display survival information from NCDB for non-small cell lung cancer data at HRMC.

The 5-year survival for small cell lung cancer (6%) is lower than that for non-small cell (17%).

Summary for NCDB small cell lung cancer data for all NCDB programs:

Stage of Disease	ENTER	0.0 yr	1.0 yr	2.0 yr	3.0 yr	4.0 yr	5.0 yr	95% Confidence Interval
Occult	1	⊗ Insufficient cases to display survival information						

Stage of Disease	ENTER	0.0 yr	1.0 yr	2.0 yr	3.0 yr	4.0 yr	5.0 yr	95% Confidence Interval
Stage I	<u>1</u>	✖ Insufficient cases to display survival information						
Stage III	<u>10</u>	✖ Insufficient cases to display survival information						
Stage IV	<u>20</u>	✖ Insufficient cases to display survival information						

Insufficient number of cases to display survival information from NCDB for **small cell lung cancer** data at **HRMC**.