



Rhode Island Hospital



The Miriam Hospital



Newport Hospital

**Cancer Program Annual Report
2014**

Report of the Cancer Committee

2014 Annual Report

Rhode Island Hospital : The Miriam Hospital : Newport Hospital

Content

1.0	Introduction & Quality Improvements	4
2.0	2014 Cancer Committee Membership List	6
3.0	Cancer Program Statistics	
3.1	2013 Analytic Primary Site Distribution	8
3.2	Top Ten Sites and Residence at Diagnosis	10
3.3	Gender by Age and Stage of Disease at Diagnosis	11
3.4	Cancer Program Practice Profile Report (CP3R)	12
3.5	Community Outreach – Prevention & Screening Program	13
4.0	Non-Small Cell Lung Cancer Patient Outcome Analysis	
4.1	Risk Factors and Symptoms	15
4.2	Diagnostic Techniques	16
4.3	Non-Small Cell Lung Cancer Case Distribution by Year	17
4.4	NCDB Non-Small Cell Lung Cancer Case Distribution by Year	18
4.5	NCDB Comparison Report by Race	19
4.6	Program and S.E.E.R. Age Distribution	20
4.7	NCDB Comparison Report by Age	21
4.8	Histology Distribution	22
4.9	NCDB Comparison Report by Stage and Program Stage Distribution	24
4.10	Treatment	25
4.11	NCDB Comparison Report by Treatment	26

2014 Annual Report

Rhode Island Hospital : The Miriam Hospital : Newport Hospital

Content

4.0	Non-Small Cell Lung Cancer Patient Outcome Analysis (continued)	
4.11	Lung Cancer Multidisciplinary Clinic & Clinical Trials	27
4.12	Quality Oncology Practice Initiative (QOPI) Program	28
4.13	Reduction of Emergency Department Utilization via Access to Outpatient Cancer Care	29
4.14	Non-Small Cell Lung Cancer Outcome Analysis Summary	30

Introduction

In August 2013, the cancer programs at Rhode Island Hospital, The Miriam Hospital, and Newport Hospital officially merged into one, system-wide Comprehensive Cancer Center.

The Comprehensive Cancer Center a Program of Rhode Island Hospital, brings together world-renowned physicians whose level of knowledge and experience are unparalleled in Rhode Island. A multidisciplinary team of specialists from Rhode Island Hospital, The Miriam Hospital and Newport Hospital, provide patients diagnosed with cancer or hematologic disorders, access to a full range of cancer services.

The center's hematology and oncology program has a disease specific focus, led by multidisciplinary teams of highly trained board certified specialists. Teams of expert medical oncologists, hematologists, radiation oncologists, oncology surgeons, radiologists, pathologists, nurse practitioners, physician assistants, nurses, clinical pharmacists, patient navigators, social workers and dietitians are dedicated to the diagnosis, treatment, and prevention of cancer. They work closely and compassionately with patients and families to ensure the best possible care is provided to achieve the best possible outcome. When treatment is completed, the center continues to support patients and their families through survivorship and wellness programs.

The Cancer Program at Rhode Island Hospital, The Miriam Hospital, and Newport Hospital were awarded a 3 year renewed accreditation with commendation from the American College of Surgeons (ACoS), Commission on Cancer (CoC) in 2013, 2012, and 2011 respectively. This voluntary accreditation validates that our Comprehensive Cancer Program meets and exceeds the rigorous standards set by the American College of Surgeons, Commission on Cancer.

The 2014 Annual Report summarizes Cancer Program statistics for 2013, during which time 4,438 cases were accessioned. The analytic case count was 3,601 and the non-analytic case count was 831. For patients diagnosed and treated at Rhode Island Hospital, The Miriam Hospital, and Newport Hospital a lifelong follow-up rate of at least 90% is maintained.

In 2014, the Cancer Committee conducted a lung cancer outcome analysis to assess the program's overall lung cancer experience. It is estimated 224,210 new cases of lung & bronchus cancer will be diagnosed in the United States, accounting for 13% of all cancer diagnoses. Lung cancer is also the second most commonly diagnosed cancer in men and the third most commonly diagnosed cancer in women. It is estimated that 870 residents in Rhode Island were affected by this disease during 2014.

The goals and achievements of the Cancer Program for 2014 were as follows:

Programmatic:

Develop a Patient and Family Advisory Council at the Rhode Island Hospital Cancer Center location. The mission of the council is to strengthen communication among patients, families, and caregivers in an effort to enhance their overall experience. The Miriam Hospital Patient and Family Advisory Council, implemented in September 2013 was used as the model for this initiative. The first Rhode Island Hospital Patient and Family Advisory Council meeting is slated for January 2015 and will focus on approval of the Council's bylaws.

Clinical:

Develop and implement a standardized chemotherapy teaching process across the continuum to ensure consistency of the education provided to our patients. In February 2014, a dedicated teaching nurse was hired for the Rhode Island Hospital & East Greenwich site. Following this addition, the educational binders utilized by the program were reviewed and aligned. Now, patients across the continuum are provided an educational binder which contains a comprehensive overview of their upcoming journey. The binder is broken down into various sections and includes contact information as well as information on blood work, treatment, various tests, nutrition, and other additional resources.

2014 Quality Improvements:

Developed and implemented a Breast Cancer Multidisciplinary Clinic (MDC):

- The breast cancer multidisciplinary clinic provides timely patient assessment and coordination of clinical care across the continuum. Patients who present with a breast malignancy typically require evaluation by multiple specialists including a surgical oncologist, medical oncologist, radiation oncologist, geneticist, and lymphedema specialist and may require treatment from some or all of the above disciplines. Shifting from traditional sequential care in a linear format to patient-centric multidisciplinary care will facilitate timely patient assessment by all required specialists. The Breast MDC team includes surgical oncologists Drs. T. Graves, C. Taneja, and D. Wiggins, medical oncologist Dr. M. Fenton, radiation oncologist Dr. J. Hepel, and patient navigators M. Powell, RN, and E. Llanos. Several clinical trials are available to patients through the breast multidisciplinary clinic. The breast MDC was officially implemented at the end of January 2014.

Addition of a Dedicated Breast Imaging Nurse Navigator

- In 2014, a dedicated NP/nurse navigator was added to the Anne C. Pappas Center for Breast Imaging. The navigator is responsible for core biopsy coordination, notification of the cancer to the referring physician, and referral to the Breast Multidisciplinary Clinic (MDC). Addition of this navigator resulted in better coordination of care and easier access to necessary services.

Implemented the Electronic Chemotherapy Status Board (eCSB)

- The Electronic Chemotherapy Status Board (eCSB) system was implemented at The Miriam Hospital and Newport Hospital. This system, which was developed by the Pharmacy and has been in use at Rhode Island Hospital's adult and pediatric inpatient and ambulatory areas, improves pharmacy/nursing communication, enhances safety, and reduces turnaround time. A recent Joint Commission survey highlighted the system as an innovative best practice.

Designed and opened a Lifespan retail pharmacy at The Miriam Hospital

- The Lifespan retail pharmacy provides bedside delivery to all patients being discharged from Rhode Island and The Miriam Hospital, who opt in for this service. Chair-side delivery to the infusion center and free home delivery to all patients and employees is also available. The pharmacy has worked closely with the physicians and staff in the infusion centers to promote use of these services and have placed pharmacy liaisons in the onsite adult Cancer Centers to assist with prior authorizations and other prescription services. The Lifespan retail pharmacy at The Miriam Hospital opened on October 1, 2014.

2014 Cancer Oversight Committee Membership

Charlene Ainscough, RN, OCN	Clinical Manager	Adult Inpatient Oncology Nursing
Douglas Anthony, MD	Pathologist-in-Chief	Pathology Services
Megan Begnoche, RN, AOCN	Nursing Quality & Safety Manager Quality Improvement Coordinator	The Comprehensive Cancer Center
James Butera, MD	Medical Oncologist Medical Director	The Comprehensive Cancer Center
Michelle Carpentier, RN	Director	The Comprehensive Cancer Center
Anjulika Chawla, MD	Pediatric Oncologist	Pediatric Medical Oncology
Christine Collins, MBA, RPh	Director	Pharmacy
Judy Diaz, RN, MPH	Director, Community Outreach Coordinator	Community Outreach
Thomas DiPetrillo, MD	Radiation Oncologist Chair, Cancer Committee Cancer Conference Coordinator	Radiation Oncology
Nicholas Dominick	Cancer Program Administration Sr. Vice President	Pharmacy & Cancer Services Diagnostic & Support Services
Damian Dupuy, MD	Director of Tumor Ablation Services Radiologist	Diagnostic Imaging
Sheila Earle, CTR	Cancer Registrar	Oncology Data Management
Alexandra Fiore	Representative	American Cancer Society
Mary Flynn, PhD, RD, LDN	Nutritionist	Nutrition Services
Theresa Graves, MD	Breast Surgeon ACS State Chair	Surgery
Arnold Herman, MD	Breast Surgeon Cancer Liaison Physician (CLP)	Surgery
Theresa Jenner	Director, Psychosocial Services Coordinator	Clinical Social Work
Susan Korber, RN, OCN	Cancer Program Administrative Director	The Comprehensive Cancer Center
Carrie Marcil, PT, LANA	Physical Therapist	Rehabilitation Services

2014 Cancer Oversight Committee Membership

Ikenna Okereke, MD	Thoracic Surgeon	Surgery
Alessandro Papa, MD	Medical Oncologist	The Comprehensive Cancer Center
Colleen Ramos	Manager	Radiation Oncology
Jayne Ritz, MS, RN, OCN	Manager	The Comprehensive Cancer Center
Andrew Schumacher, CCRP	Research Supervisor Clinical Research Coordinator	Lifespan Oncology Clinical Research
Jennifer Schwab, MS, CGC	Genetics Counselor	Genetics Clinic
Marsha Stephenson, RN	Clinical Coordinator	Home & Hospice Care Of RI
Rochelle Strenger, MD	Medical Oncologist	The Comprehensive Cancer Center
Tara Szymanski, CTR	Manager, Quality, Accreditations, & Data Management Cancer Registry Coordinator	Oncology Data Management
Angela Taber, MD	Palliative Care / Medical Oncologist	The Comprehensive Cancer Center
Sharon Tripp	Director	Quality Management
Susan Trout, CTR	Cancer Registrar	Oncology Data Management
Christina Vieira, CTR	Cancer Registrar	Oncology Data Management
Edward Wittels, MD	Medical Oncologist	The Comprehensive Cancer Center

2013 Analytic Case Distribution by Primary Site

Rhode Island Hospital : The Miriam Hospital : Newport Hospital

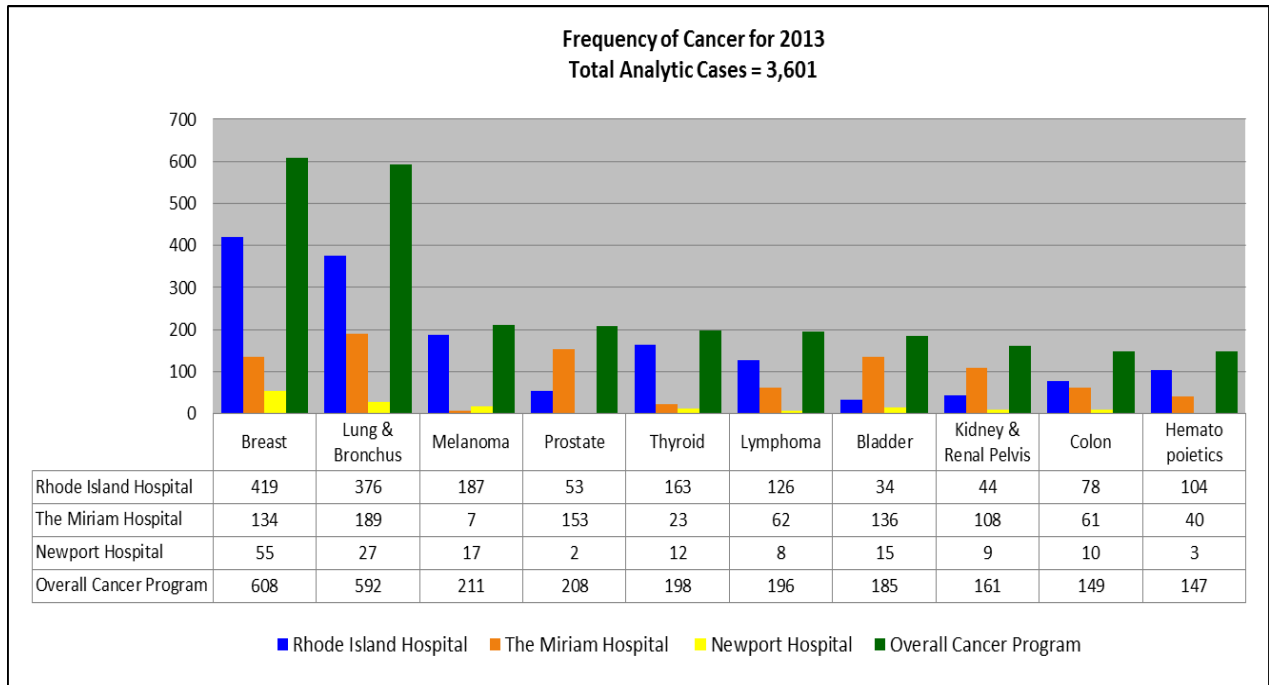
PRIMARY SITE	TOTAL	SEX		AJCC STAGE					Stage Unknown	Stage Not Applicable
		M	F	0	1	2	3	4	99	88
Oral Cavity	48	37	11	1	5	2	5	30	4	1
Lip	0	0	0	0	0	0	0	0	0	0
Tongue	15	9	6	0	4	0	1	10	0	0
Salivary Gland	2	2	0	0	0	1	1	0	0	0
Floor of Mouth	3	1	2	0	0	0	0	2	1	0
Gum & Other Mouth	4	4	0	1	1	0	0	2	0	0
Nasopharynx	2	2	0	0	0	0	1	1	0	0
Tonsil	13	13	0	0	0	1	2	8	2	0
Oropharynx	5	2	3	0	0	0	0	5	0	0
Hypopharynx	3	3	0	0	0	0	0	2	1	0
Other Oral Cavity Organs	1	1	0	0	0	0	0	0	0	1
Digestive System	595	346	249	12	105	104	148	166	43	17
Esophagus	35	27	8	1	4	6	11	8	5	0
Stomach	72	53	19	2	15	8	23	17	7	0
Small Intestine	10	7	3	0	0	1	3	5	1	0
Colon	149	61	88	4	35	32	37	34	7	0
Rectum & Rectosigmoid	103	57	46	2	19	17	40	16	9	0
Anus & Anorectum	23	10	13	3	1	2	14	0	1	2
Liver & Intrahepatic Duct	78	61	17	0	15	11	6	29	7	10
Gallbladder	2	1	1	0	0	1	0	1	0	0
Other Biliary	25	15	10	0	5	7	4	6	2	1
Pancreas	93	51	42	0	10	19	10	49	4	1
Retroperitoneum	1	0	1	0	1	0	0	0	0	0
Other Digestive Organs	4	3	1	0	0	0	0	1	0	3
Respiratory System	624	296	328	10	160	60	123	257	11	2
Larynx	26	17	9	4	3	4	4	10	1	0
Lung & Bronchus	592	275	317	6	156	55	118	245	10	1
Other Respiratory	6	4	2	0	1	1	1	2	0	1
Mesothelioma	6	6	0	0	1	0	1	3	0	1
Bone & Soft Tissue	29	16	13	0	9	4	4	6	5	1
Bone & Joints	9	6	3	0	4	1	0	1	2	1
Soft Tissue	20	10	10	0	5	3	4	5	3	0
Skin Excluding Basal & Squamous Cell	228	130	98	51	118	20	20	9	6	4
Melanoma – Skin	211	121	90	50	117	16	15	9	4	0
Other Non-Epithelial Skin	17	9	8	1	1	4	5	0	2	4
Other Defined Sites	78	41	37	0	0	0	0	0	0	78
Breast	608	13	595	114	246	138	38	27	45	0

PRIMARY SITE	TOTAL	SEX		AJCC STAGE					Stage Unknown	Stage Not Applicable
		M	F	0	1	2	3	4	99	88
Female System	91	N/A	91	1	27	7	22	28	5	2
Cervix Uteri	18	N/A	18	0	2	4	7	4	0	1
Corpus & Uterus, NOS	39	N/A	39	0	19	2	8	6	3	1
Ovary	24	N/A	24	0	4	0	6	12	2	0
Vagina	1	N/A	1	0	0	0	0	1	0	0
Vulva	7	N/A	7	0	1	1	1	4	0	0
Other Female Organs	3	N/A	3	1	1	0	0	1	0	0
Male System	234	234	N/A	0	42	114	40	35	2	1
Prostate	208	208	N/A	0	25	109	39	33	2	0
Testis	21	21	N/A	0	16	4	1	0	0	0
Penis	4	4	N/A	0	1	1	0	2	0	0
Other Male Organs	1	1	N/A	0	0	0	0	0	0	1
Urinary System	351	221	130	71	144	37	47	44	3	5
Urinary Bladder	185	120	65	65	56	27	16	18	2	1
Kidney & Renal Pelvis	161	99	62	5	88	10	30	25	1	2
Ureter	1	1	0	0	0	0	1	0	0	0
Other Urinary Organs	4	1	3	1	0	0	0	1	0	2
Brain & Other Nervous System	138	54	84	0	0	0	0	0	0	138
Brain	68	34	34	0	0	0	0	0	0	68
Cranial Nerves & Other	70	20	50	0	0	0	0	0	0	70
Endocrine System	225	67	158	0	134	35	17	10	3	26
Thyroid Gland	198	55	143	0	133	35	17	10	3	0
Other including Thymus	27	12	15	0	1	0	0	0	0	26
Hematopoietic System	147	76	71	0	0	0	0	0	0	147
Leukemia	105	53	52	0	0	0	0	0	0	105
Myeloma	42	23	19	0	0	0	0	0	0	42
Lymphomas	196	112	84	0	53	38	36	58	11	0
Hodgkin's Disease	34	19	15	0	3	15	10	6	0	0
Non-Hodgkin's	162	93	69	0	50	23	26	52	11	0
Kaposi Sarcoma	2	2	0	0	0	0	0	0	0	2
Total Analytic Cases	3,601	1,651	1,950	260	1,044	559	501	674	137	425
		46%	54%	7%	29%	15%	14%	19%	4%	12%

Top Ten Sites and Residence at Diagnosis

Top Ten Sites

The ten most common sites for the Cancer Program, based on 2013 analytic* cases are (in descending order by percent of total incidence) Breast (17%), Lung and Bronchus (16%), Skin (Melanoma) (6%), Prostate (6%), Thyroid (5%), Lymphoma (5%), Bladder (5%), Kidney & Renal Pelvis (4%), Colon (4%), and Hematopoietic Malignancy's (3%). This distribution differs from that of the American Cancer Society (ACS) which is noted to be (in descending order by percent of total incidence) Prostate (14%), Female Breast (14%), Lung and Bronchus (14%), Colon (6%), Lymphoma (5%), Melanoma (5%), Bladder (4%), Hematopoietic Malignancy's (4%), Kidney & Renal Pelvis (4%), and Thyroid (4%).



*Analytic - cancer case that was diagnosed and/or received all or part of the first course treatment at the reporting facility.

Source: Rhode Island, Miriam, & Newport Hospital Oncology Data Management Departments

Source: <http://www.cancer.org/acs/groups/content/@epidemiologysurveillance/documents/document/acspc-036845.pdf>

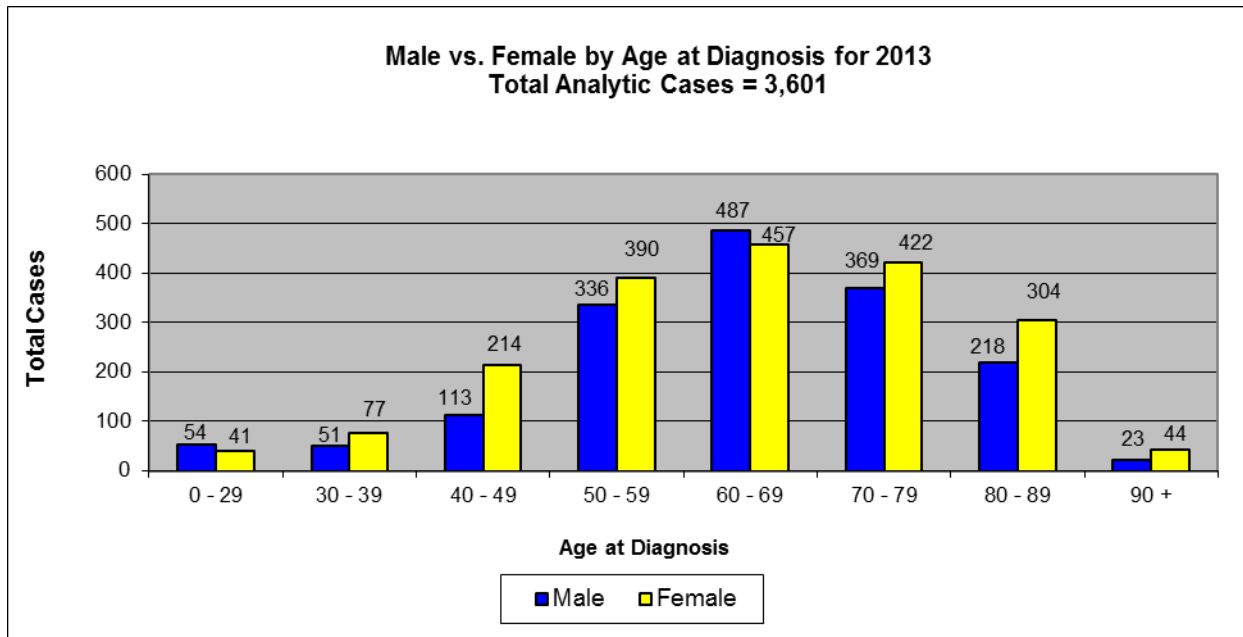
Residence at Diagnosis

Rhode Island Hospital and The Miriam Hospital located in Providence County serve as major referral centers for Rhode Island, Massachusetts, and the surrounding areas. More than 50% of the Hospital's analytic cancer patients accessioned in 2013 reside in Providence County. The remainder of the Hospital's analytic cancer patients is distributed throughout Rhode Island and Massachusetts. Newport Hospital however, is located on Aquidneck Island and serves as the major referral center for Newport and Bristol County. More than 85% of Newport Hospital's analytic cancer patients accessioned in 2013 reside in Newport County.

Gender by Age and Stage of Disease at Diagnosis

Gender by Age

In 2013, the gender distribution for the program was 46% male and 54% female. This distribution differs from the American Cancer Society (ACS) gender distribution. Based on American Cancer Society (ACS) data, the estimated gender distribution of US cancer cases in 2013 was 51% male and 49% female. The most common age group for the cancer program was 60 – 69; approximately 26% of patients were in this age group at the time of initial diagnosis.

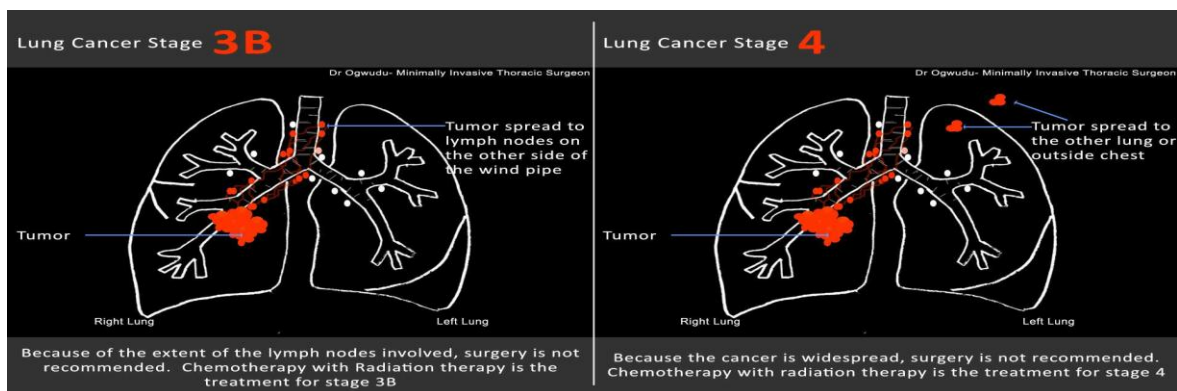


Source: Rhode Island, Miriam, & Newport Hospital Oncology Data Management Departments

Source: <http://www.cancer.org/acs/groups/content/@epidemiologysurveillance/documents/document/acspc-036845.pdf>

Stage of Disease at Diagnosis

Cases entered into the Cancer Registry are categorized according to the tumor / node / metastases (TNM) staging system developed by the American Joint Committee on Cancer (AJCC) to describe the extent or spread of disease at diagnosis, which is generally predictive of survival. Of analytic cases entered into the Cancer Registry, 260 (7%) were classified as TNM stage 0, 1,044 (29%) as stage I, 559 (15%) as stage II, 501 (14%) as stage III, 674 (19%) as stage IV, 137 (4%) were classified as not staged, and 425 (12%) were not applicable for the TNM staging system.



Source:

<http://www.bing.com/images/search?q=image+of+stage+1+lung+cancer&qpv=image+of+stage+1+lung+cancer&FORM=IGRE#view=detail&id=17C723999C7E7AE707539C50573A4C9726FCBF49&selectedIndex=20>

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Page 11 of 30

Cancer Program Practice Profile Report (CP3R)

Cancer Program Practice Profile Reports (CP3R)

The performance rates displayed in the Cancer Program Practice Profile Reports (CP3R) match the specifications of the breast and colon cancer care measures endorsed by the National Quality Forum (NQF) in April 2007. The concordance rates for Rhode Island Hospital, The Miriam Hospital, and Newport Hospital are illustrated in the table below.

- Breast Conserving Surgery/Radiation Therapy (BCS/RT) – patients receiving breast conserving surgery who are under the age of 70 should receive radiation therapy
- Multi Agent Chemotherapy (MAC) – patients with Stage I (tumor size > 1cm and N0) or Stage II/III, with ER/PR – tumors should receive or be considered for combination therapy
- Hormone Therapy (HT) – patients with Stage I (tumor size > 1cm and N0) or Stage II/III, ER+ or PR+ tumors should receive or be considered for hormone therapy (Tamoxifen or third generation Aromatase Inhibitor)
- Adjuvant Chemotherapy (ACT) – patients under the age of 80 with AJCC Stage III (lymph node positive) colon cancer, adjuvant chemotherapy is considered or administered within 4 months (120 days) of diagnosis
- Regional Lymph Node (12RLN) – at least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer.
- Adjuvant Radiation Therapy (AdjRT) – radiation therapy is considered or administered within 6 months (180 days) of diagnosis for patients under the age of 80 with a clinical or pathologic AJCC T4N0M0 or Stage III receiving surgical resection for rectal cancer.

BREAST	2011 CP3R Rates	Rhode Island Hospital	The Miriam Hospital	Newport Hospital	CoC Expected Rate
	Radiation therapy is administered within 1 year (365 days) of diagnosis for women under age 70 receiving breast conserving surgery for breast cancer (BCS/RT) .	94.3%	95.3%	100%	90%
	Combination chemotherapy is considered or administered within 4 months (120 days) of diagnosis for women under 70 with AJCC T1c N0 M0, or Stage II or III ERA and PRA negative breast cancer (MAC) .	100%	100%	100%	90%
	Tamoxifen or third generation aromatase inhibitor is considered or administered within 1 year (365 days) of diagnosis for women with AJCC T1c N0 M0, or Stage II or III ERA and/or PRA positive breast cancer (HT) .	95.3%	98.2%	100%	90%

COLORECTAL	2011 CP3R Rates	Rhode Island Hospital	The Miriam Hospital	Newport Hospital	CoC Expected Rate
	Adjuvant chemotherapy is considered or administered within 4 months (120 days) of diagnosis for patients under the age of 80 with AJCC Stage III (lymph node positive) colon cancer. [ACT]	100%	100%	100%	90%
	At least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer. [12RLN]	94.9%	91.7%	62.5%	80%
	Radiation therapy is considered or administered within 6 months (180 days) of diagnosis for patients under the age of 80 of with clinical or pathologic AJCC T4N0M0 or Stage III receiving surgical resection for rectal cancer. [AdjRT]	87.5%	100%	N/A	90%

2014 Community Outreach Summary

The mission of Lifespan Community Health Services is to develop, implement and evaluate initiatives to improve the health status of the people in Rhode Island and southern New England. This is accomplished through coordination of health education and prevention programs and services within Lifespan and its partners and with other community health providers.

In addition to activities directly provided through Lifespan Community Health Services, the system and its partners collaborate with other community groups on numerous programs and partnerships designed to keep people healthy and out of the hospital. Many of these programs are broad in scope, benefiting people from all walks of life with a wide range of health information and service needs. Others are designed specifically to meet the needs of certain populations. Some of these special populations include children and at-risk teens, people with HIV and AIDS, the elderly, people with substance abuse problems, and people coping with chronic illness or end-of-life issues.

2014 Prevention & Screening Programs

Tobacco Prevention – smoking cessation counseling continues to be a need of the community. Lifespan Community Health Services (LCHS) continues to partner with the Rhode Island Department of Health (DOH) to offer smoking cessation counseling and treatment services to uninsured and underinsured people who might not otherwise be able to access or afford treatment.

Sun Smarts – to reduce the increasing number of melanoma cases and prevent late stage disease LCHS has partnered with the Comprehensive Cancer Center, ABC 6, University Dermatology, and the Rhode Island Department of Health to offer free skin cancer screening events to the community. The events utilized the American Academy of Dermatology Melanoma/Skin Screening Form and screened a total of 336 individuals. Planning for the 2015 screening events has begun and based on findings from the participant surveys, next year's programs will include enhanced educational materials.

See, Test, Treat – was initiated by the College of American Pathologist (CAP) in 2001 to connect uninsured and underinsured women to preventive care and educational resources. The program provides free cervical and breast cancer screenings as well as Tdap immunization, rapid HIV, Hep C testing, and flu vaccines, as well as health education materials. The program also allows women to receive same day screening, diagnoses, and connection to follow-up care, removing any barriers to care that may exist. The state's very first See, Test, Treat screening program was held at Rhode Island Hospital's Comprehensive Cancer Center on September 28, 2013.

2014 Community Outreach Summary

Prevention & Screening Programs

Program Name	Date of Program	Number of Participants	Evidence-Based Guideline or Intervention Used
Tobacco Prevention Class for Adolescents	2/14/2014 3/12/2014 3/25/2014	70 80 20	American Cancer Society
Tobacco Prevention Class for Youth	2/24/2014 2/25/2014 03/10/2014	50 52 100	American Cancer Society
Education/Cancer Awareness: Breast Cancer	6/16/2014 8/20/2014 9/03/2014	7 5 9	RICC, Gloria Gemma and American Cancer Society
Education/Cancer Awareness: Breast & Cervical Cancer	8/12/2014	24	RICC, Gloria Gemma and American Cancer Society
Education/Cancer Awareness: Skin Cancer	1/9/2014 1/28/2014 3/20/2014 4/15/2014 5/7/2014 5/13/2014 5/15/2014 6/19/2014 7/31/2014 9/24/2014	25 7 24 22 10 8 27 18 27 11	American Academy of Dermatology and American Cancer Society
Education/Cancer Awareness: Colon Cancer	3/18/2014	25	American Cancer Society and National Colorectal Cancer Action Campaign
Education/Cancer Awareness: Prostate Cancer	2/8/2014	190	American Cancer Society
Breast Cancer Screening: Newport Hospital	4/2014 10/2014	8 12	National Comprehensive Cancer Network
Dermascan	3/12/2014 3/13/2014 3/29/2014 4/3 – 4/6/2014 4/16/2014 5/8/2014 6/6/2014 8/17/2014	48 363 39 807 50 7 22 200	American Academy of Dermatology and American Cancer Society
Sun Smarts	7/11/2014 7/18/2014 8/15/2014 8/22/2014	75 139 69 53	American Academy of Dermatology Melanoma / Skin Screening Form
See, Test, & Treat	9/20/14	40	College of American Pathologist

2014 Lung Cancer Patient Outcome Analysis

In 2014, an estimated 224,210 new cases of lung & bronchus cancer will be diagnosed in the United States, accounting for 13% of all cancer diagnoses. It is estimated 870 residents in Rhode Island will be diagnosed with this disease.

Lung cancer is the leading cause of cancer death in Rhode Island and the United States overall. Currently, it is the most common cancer to be diagnosed in Rhode Island, and second most common to be diagnosed in the United States. Annual counts of new lung cancer and deaths have increased over the past 25 years in Rhode Island (19% and 2% respectively), despite strides in prevention.

In the United States, tobacco use is the leading cause of lung cancer, followed in importance by exposure to radon gas.

Risk Factors

1. **Tobacco Use** – Smoking remains the greatest risk factor for developing lung cancer. The risk increases with the number of cigarettes smoked daily and the number of years smoked.
2. **Gender** – Current or former women smokers have a greater risk of developing lung cancer than men who have smoked an equal amount.
3. **Exposure to Second Hand Smoke** – The risk of lung cancer increases if exposed to second hand smoke.
4. **Exposure to Asbestos & Other Chemicals** – Exposure to asbestos and other substances and other chemicals such as arsenic, chromium, nickel, and tar soot can increase the risk of developing lung cancer especially if concurrently smoking.
5. **Family History of Lung Cancer** – People with a parent, sibling or other first degree relative with lung cancer have an increased risk of developing the disease.
6. **Excessive Alcohol Use** – Drinking more than a moderate amount of alcohol (one drink a day for women or two drinks a day for men) may increase your risk of lung cancer.

Symptoms/Signs of Lung Cancer

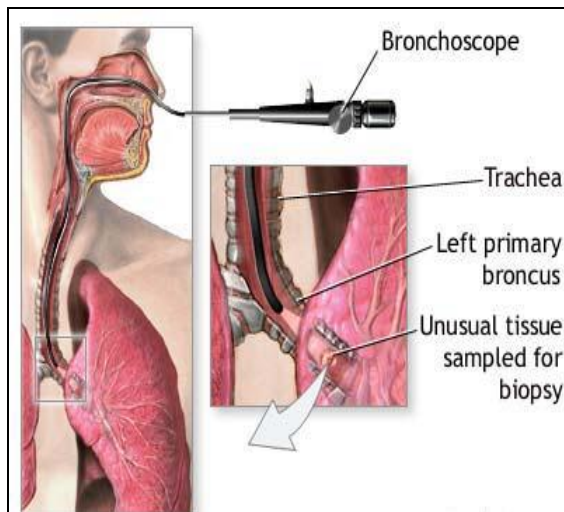
- A cough that does not go away and gets worse over time
- Coughing up blood
- Shortness of breath, or wheezing, hoarseness
- Recurrent pneumonia or bronchitis
- Swelling of neck and face
- Loss of appetite and weight loss, fatigue

Note: These symptoms may be attributed to conditions other than cancer. It is important to consult with a medical professional.

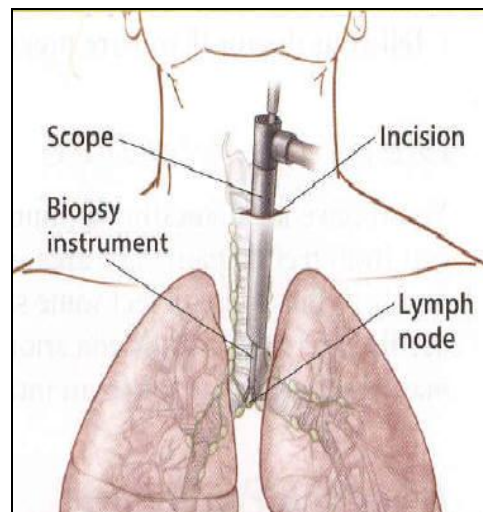
2014 Lung Cancer Patient Outcome Analysis

There are several accepted diagnostic techniques that assist physicians in diagnosing the disease and planning the treatment.

1. **Pulmonary Function Test (PFT)** – this test can measure how well the lungs are working by measuring the amount of air that one can inhale/exhale.
2. **Chest X-Ray** – chest x-rays are useful for identifying the size, shape, and location of a lung mass and other abnormalities.
3. **CT Scan** – an x-ray machine that uses a computer to take detailed pictures of the inside of the body. These pictures give the precise location of the tumor and its position in relationship to other organs.
4. **Fine Needle Aspiration** – a thin needle is inserted through the chest wall and cells are removed from the tumor. Many times this is done in a CT scanner to help the physician position the needle.
5. **Bronchoscopy** – a flexible lighted tube, called a bronchoscope, is passed through the nose then into the airway and then into the lungs. Often a biopsy or tissue sample is taken.
6. **Mediastinoscopy** – a lighted tube is inserted through a small incision at the base of the neck, just above the breast bone. This is used to look at lymph nodes in the middle of the chest (mediastinum). The purpose of this procedure is to take samples of the lymph nodes in order to confirm a diagnosis. This procedure can also assist with the staging of the cancer.
7. **Mediastinotomy** – an an incision is made in the left side of the chest wall in order to examine and biopsy the lymph nodes that cannot be reached by the mediastinoscopy.



Bronchoscopy



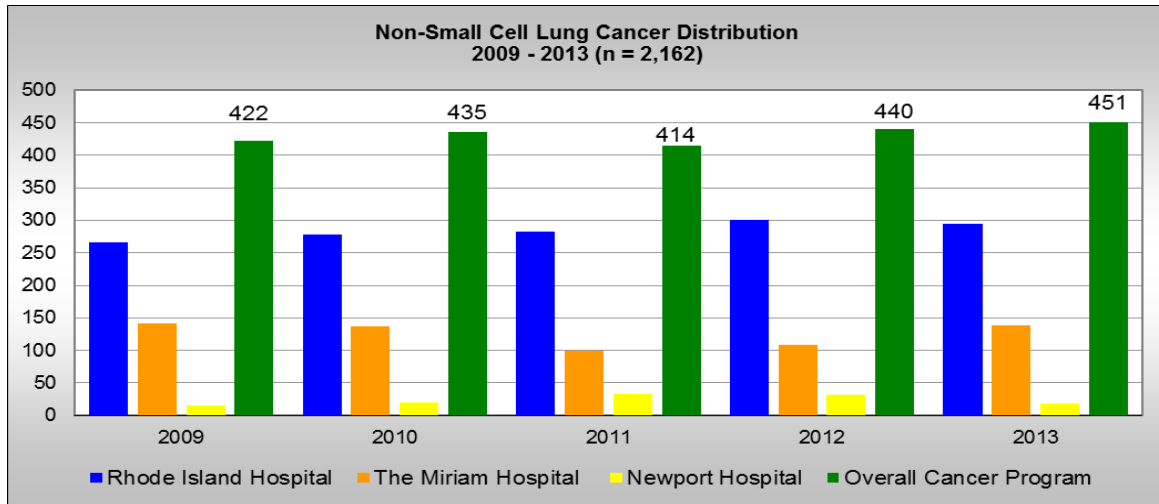
Mediastinoscopy

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Source Image 2: <http://www.bing.com/images/search?q=image+of+a+mediastinoscopy&qs=n&form=QBIR&pq=image+of+a+mediastinoscopy&sc=1-26&sp=1&sk=#view=detail&id=A21F4F949E8FF08BB89B054733420D63C3B15727&selectedIndex=2>

2014 Lung Cancer Patient Outcome Analysis

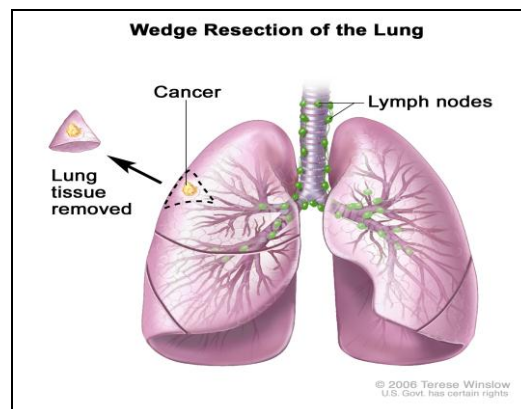
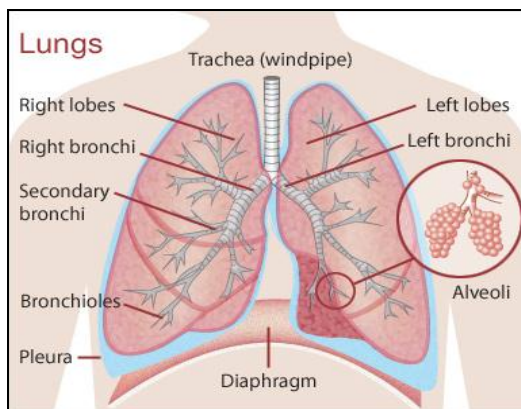
From 2009 through 2013, the Cancer Program's Oncology Data Management Department accessioned 2,162 analytic patients with non-small cell lung cancer.



ACoS Commission on Cancer – National Cancer Database Hospital Comparison Benchmark Reports

Hospital comparison benchmark reports are available from the NCDB for the years 2000 to 2011. Various comparisons can be made by primary site, hospital type (Academic, Comprehensive Community, and Community Cancer Programs), by geographical location (individual state, ACS Division, or all states) and diagnostic year (2000 to 2011, or combined).

Throughout this report are samples of hospital comparison benchmarks on non-small cell lung cancer generated for all ACoS approved Cancer Programs in the United States and the ACoS Cancer Programs in Rhode Island. This will be a valuable tool for assessing our diagnostic and therapeutic efforts as more data from proceeding years is added to the database.



Source Image 1:
<http://www.bing.com/images/search?q=images+of+the+lungs&qvrt=images+of+the+lungs&FORM=IGRE#view=detail&id=1704A5CC27898011AD81792E5AC8BEB8143FB03E&selectedIndex=1>

Source Image 2:
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2014 Lung Cancer Patient Outcome Analysis

The table below is based on information obtained from the National Cancer Data Base (NCDB) and illustrates a case distribution comparison between Rhode Island Hospital, The Miriam Hospital, Newport Hospital and the other hospitals within the state of Rhode Island.

Non-Small Cell Lung Cancer Diagnosed 2000 to 2011 by YEAR
 All Diagnosed Cases – Hospital Type: All Types/Systems
Rhode Island Hospital, The Miriam Hospital, Newport Hospital, Providence, RI vs. Other Hospitals in the State of Rhode Island
 Data from 10 Hospitals

	Number of Cases					Percent of Cases
	Rhode Island Hospital	The Miriam Hospital	Newport Hospital	Combined Program Total	Other Reporting Hospitals In Rhode Island	Combined Program Total
YEAR						
2000	137	112	28	277	552	50.18%
2001	157	113	29	299	556	53.78%
2002	230	122	25	377	660	57.12%
2003	196	130	22	348	642	54.21%
2004	246	113	36	395	632	62.50%
2005	238	121	31	390	641	60.84%
2006	273	105	31	409	610	67.05%
2007	294	104	13	411	663	61.99%
2008	272	145	25	442	666	66.37%
2009	276	149	15	440	647	68.01%
2010	287	140	20	447	634	70.50%
2011	286	98	33	417	600	69.50%
Total	2,892	1,452	308	4,652	7,513	61.92%

Source: 2014 National Cancer Data Base (NCDB) / Commission on Cancer (CoC) / Thursday, October 23, 2014

2014 Lung Cancer Patient Outcome Analysis

In 2014, an estimated 224,210 new cases of lung cancer will be diagnosed in the United States. The highest overall incidence of lung cancer is among African American men, followed by Caucasian, American Indian/Alaska Native, Asian/Pacific Islander, and Hispanic men. Among women Caucasians had the highest incidence rate, followed by African American, American Indian/Alaska Native, Asian/Pacific Islander, and Hispanic women.

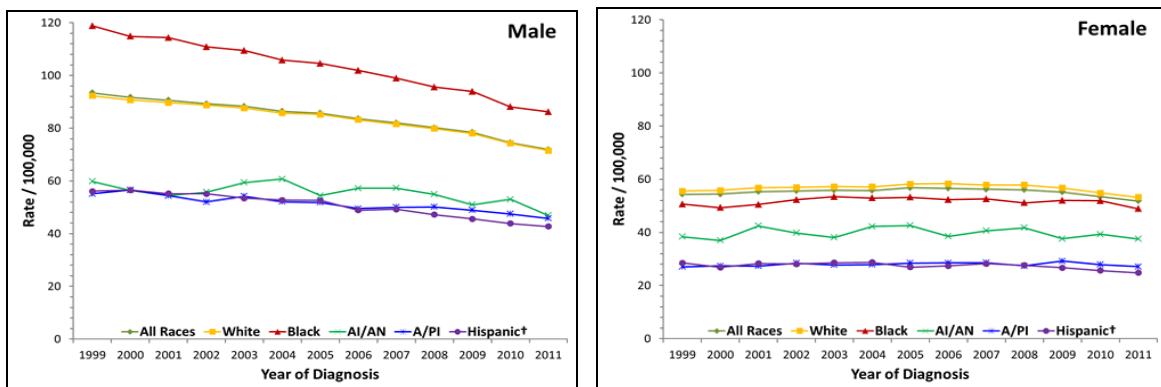
The table below is based on Non-Small Cell Lung Cancer and contains information obtained from the National Cancer Database (NCDB) which illustrates a race comparison between Rhode Island Hospital, The Miriam Hospital, Newport Hospital and other hospitals within the state of Rhode Island as well as hospitals in all other states.

Non-Small Cell Lung Cancer Diagnosed 2000 to 2011 by RACE
All Diagnosed Cases – Hospital Type: All Types/Systems
Rhode Island Hospital, The Miriam Hospital, Newport Hospital vs.
Other Hospitals in the State of Rhode Island vs. Hospitals in All States

RACE	Number of Cases			Percent of Total Non-Small Cell Lung Cancer Cases by Race		
	Combined Program Total	Other Reporting Hospitals In Rhode Island	National Reporting Hospitals	Combined Program Total	Other Reporting Hospitals In Rhode Island	National Reporting Hospitals
White	4,285	7,040	1,125,472	92.11%	93.7%	83.52%
Black	195	236	144,579	4.19%	3.14%	10.73%
Hispanic	86	125	34,963	1.85%	1.66%	2.59%
Other/Unknown	86	112	42,604	1.85%	1.49%	3.16%
Total	4,652	7,513	1,347,618	100%	100%	100%

Source: 2014 National Cancer Data Base (NCDB) / Commission on Cancer (CoC) / Thursday, October 23, 2014

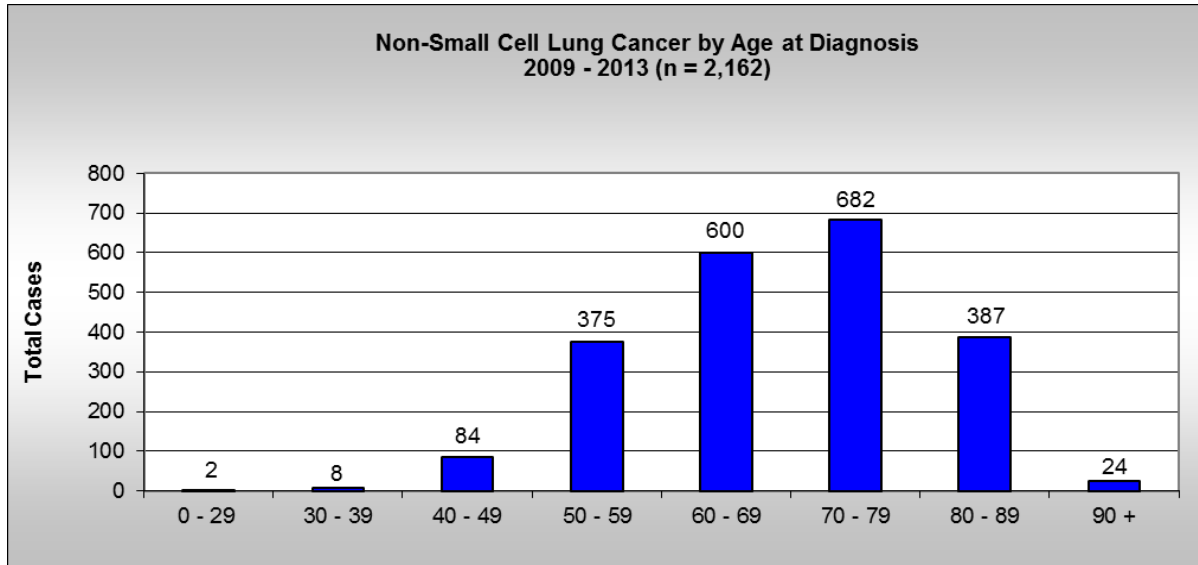
Lung and Bronchus Cancer
Incidence Rates* by Race/Ethnicity and Sex, U.S., 1999–2011



Source: <http://www.cdc.gov/cancer/lung/statistics/race.htm>

2014 Lung Cancer Patient Outcome Analysis

The age distribution for non-small cell lung cancer at Rhode Island, Miriam, and Newport Hospital ranges from 21 to 97 with the majority occurring in patients' age 70 to 79. The age distribution for the program is illustrated in the graph below and is based on overall age distribution.



Source: Cancer Registries at Rhode Island, Miriam, and Newport Hospital

Per S.E.E.R. website: From 2000 – 2011, Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130). The age distribution displayed below is not limited by any specific stage or histology.

Year	Age Adjusted SEER Incidence Rates Lung, All Races, Both Sexes				
	Ages < 20	Ages 20 – 49	Ages 50 – 64	Ages 65 – 74	Ages 75 +
2000	0.0699	8.1713	118.6252	351.4704	381.4905
2001	0.0953	7.8083	115.3269	349.7329	391.5027
2002	~	7.746	111.1496	339.9608	397.2511
2003	~	7.8038	106.7428	340.4227	397.812
2004	~	7.5286	100.8461	331.4415	402.4842
2005	~	7.2276	98.1677	328.4664	410.1389
2006	0.0706	7.1504	98.7472	327.4993	407.9679
2007	~	6.7109	93.9973	326.1958	409.0387
2008	0.0656	6.4574	91.2157	313.0459	412.1392
2009	0.0654	6.3436	88.9848	308.3454	412.6102
2010	~	5.8489	83.0146	292.7066	397.813
2011	0.0666	5.5093	81.2213	282.1155	375.7232

~ Statistic not displayed due to less than 16 cases.

2014 Lung Cancer Patient Outcome Analysis

The table below is based on Non-Small Cell Lung Cancer and contains information obtained from the National Cancer Database (NCDB) which illustrates a race comparison between Rhode Island Hospital, The Miriam Hospital, Newport Hospital and the other hospitals within the state of Rhode Island as well as hospitals in all other states.

Non-Small Cell Lung Cancer Diagnosed 2000 to 2011 by AGE
All Diagnosed Cases – Hospital Type: All Types/Systems
**Rhode Island Hospital, The Miriam Hospital, Newport Hospital vs.
Other Hospitals in the State of Rhode Island vs. Hospitals in All States**

	Number of Cases			Percent of Total Non-Small Cell Lung Cancer Cases by Age		
	Combined Program Total	Other Reporting Hospitals In Rhode Island	National Reporting Hospitals	Combined Program Total	Other Reporting Hospitals In Rhode Island	National Reporting Hospitals
AGE						
Under 20	1	1	325	0.02%	0.01%	0.02%
20-29	2	2	1,523	0.04%	0.03%	0.11%
30-39	27	40	8,569	0.58%	0.53%	0.64%
40-49	292	430	69,900	6.28%	5.72%	5.19%
50-59	735	1,149	219,018	15.80%	15.29%	16.25%
60-69	1,228	1,895	400,188	26.40%	25.22%	29.70%
70-79	1,546	2,606	444,083	33.23%	34.69%	32.95%
80-89	780	1,311	191,901	16.77%	17.45%	14.24%
90+	41	79	12,110	0.88%	1.05%	0.9%
Total	4,652	7,513	1,347,618	100%	100%	100%

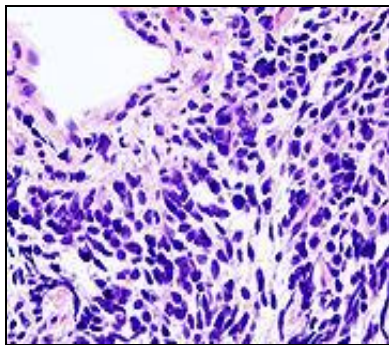
Source: 2014 National Cancer Data Base (NCDB) / Commission on Cancer (CoC) / Thursday, October 23, 2014

2014 Lung Cancer Patient Outcome Analysis

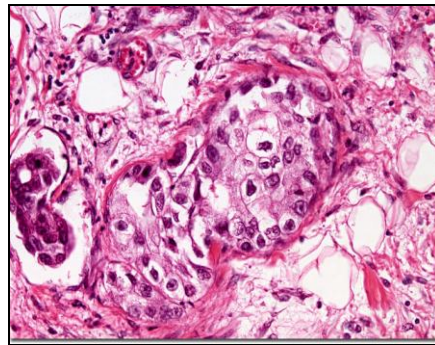
Histological Types of Lung Cancer

There are two general categories of lung cancer, non-small cell lung cancer and small cell lung cancer. Most lung cancer cases are non-small cell lung cancer (NSCLC). Non-small cell lung cancer usually grows and spreads more slowly than small cell lung cancer. There are four main types of non-small cell lung cancer. They are adenocarcinoma, squamous cell carcinoma, large cell carcinoma, and bronchiolo-alveolar carcinoma (a type of adenocarcinoma). Adenocarcinoma accounts for 40% of lung cancer and usually originates in peripheral lung tissue. Most cases of adenocarcinoma are associated with smoking. However, among people who have never smoked, adenocarcinoma is the most common form of lung cancer. A subtype of adenocarcinoma, the bronchiolo-alveolar carcinoma, is more common in females who have never smoked, and may have different responses to treatment. Squamous cell lung carcinoma accounts for 30% of lung cancer and usually starts near a central bronchus. A hollow cavity and associated necrosis are commonly found at the center of the tumor. Well-differentiated squamous cell lung cancers often grow more slowly than other cancer types.

Small cell lung cancer (SCLC) is sometimes called oat cell carcinoma (the cells are shaped like grains of oats when viewed under a microscope). There are three different types of small cell lung cancer. They are small cell carcinoma (oat cell carcinoma), mixed small cell/large cell carcinoma, and combined small cell carcinoma. This type of lung cancer usually starts in the air tubes (bronchi) in the center of the chest. Although these cancer cells are small, they grow quickly and are more likely to spread to other organs. About 15% of all lung cancer cases are small cell lung cancer. Small cell lung cancer is slightly more common in men than women.



Small Cell Lung Cancer



Adenocarcinoma

The lung cancer histological distribution for Rhode Island, Miriam, and Newport Hospital is displayed in the table below.

Lung Cancer Histological Distribution	Number of Cases Per Histology	Percentage of Cases Per Histology
Adenocarcinoma, NOS	956	34.39%
Adenocarcinoma w/ Mixed Subtypes	113	4.06%
Squamous Cell Carcinoma, NOS	463	16.65%
Non-Small Cell Carcinoma	211	7.59%
Bronchiolo-Alveolar Carcinoma, NOS	79	2.84%
Small Cell Carcinoma	315	11.33%
Acinar Cell Carcinoma	61	2.19%
Other	582	21.0%

2014 Lung Cancer Patient Outcome Analysis

Staging System

The most widely used staging scheme is the AJCC Cancer Staging Manual (TNM). The TNM describes the extent of the primary Tumor (T stage), whether or not the cancer has spread to regional lymph Nodes (N stage), and the absence or presence of distant Metastases (M stage). Patients diagnosed with lung cancer after January 1, 2003 are staged with the AJCC Cancer Staging Manual Sixth Edition. Fall 2008 brought the publishing of the 7th Edition, AJCC Cancer Staging Manual. Staging schemas increased from 44 to 57 and several, including Lung Cancer Staging, have been revised and updated. The 7th Edition Staging Manual is to be used for cancers diagnosed starting January 1, 2010.

Definition of TNM for Lung Cancer

- T1 Tumor 3 cm or less in greatest dimension, surrounded by lung or visceral pleura, without bronchoscopic evidence of invasion more proximal than the lobar bronchus, * (i.e., not in the main bronchus)
- T1a Tumor 2 cm or less in greatest dimension
- T1b Tumor more than 2 cm but 3 cm or less in greatest dimension
- T2 Tumor more than 3cm but 7 cm or less or tumor with any of the following features (T2 tumors with these features are classified T2a if 5 cm or less); Involves main bronchus, 2 cm or more distal to the carina; Invades visceral pleura (PL1 or PL2); Associated with atelectasis or obstructive pneumonitis that extends to the hilar region but does not involve the entire lung
- T2a Tumor more than 3 cm but 5 cm or less in greatest dimension
- T2b Tumor more than 5 cm but 7 cm or less in greatest dimension
- T3 Tumor more than 7 cm or one that directly invades any of the following: parietal pleura (PL3), chest wall (including superior sulcus tumors), diaphragm, phrenic nerve, mediastinal pleura, parietal pericardium; or tumor in the main bronchus (less than 2 cm distal to the carina but without involvement of the carina; or associated atelectasis or obstructive pneumonitis of the entire lung or separate tumor nodule(s) in the same lobe
- T4 Tumor of any size that invades any of the following: mediastinum, heart, great vessels, trachea, recurrent laryngeal nerve, esophagus, vertebral body, carina, separate tumor nodule(s) in a different ipsilateral lobe
- N0 No regional lymph node metastases
- N1 Metastasis to ipsilateral peribronchial and/or ipsilateral hilar lymph nodes, and intrapulmonary nodes, including involvement by direct extension
- N2 Metastasis to ipsilateral mediastinal and/or subcarinal lymph node(s)
- N3 Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supraclavicular lymph node(s)
- M0 No distant metastasis
- M1 Distant metastasis
- M1a Separate tumor nodule(s) in a contralateral lobe; tumor with pleural nodules or malignant pleural (or pericardial) effusion
- M1b Distant metastasis (in extra thoracic organs)

2014 Lung Cancer Patient Outcome Analysis

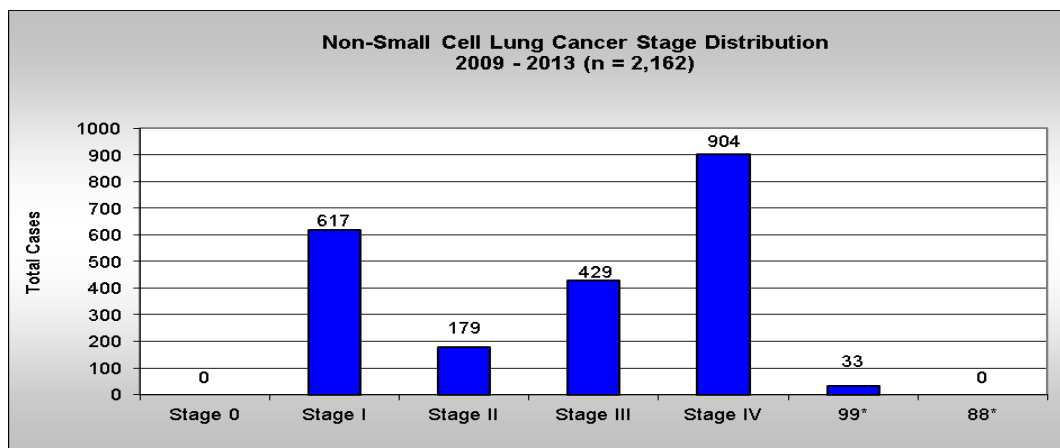
The table below is based on Non-Small Cell Lung Cancer and contains information obtained from the National Cancer Database (NCDB) which illustrates a stage comparison between Rhode Island Hospital, The Miriam Hospital, Newport Hospital and the other hospitals within the state of Rhode Island as well as hospitals in all other states.

Non-Small Cell Lung Cancer Diagnosed 2000 to 2011 by STAGE
All Diagnosed Cases – Hospital Type: All Types/Systems
**Rhode Island Hospital, The Miriam Hospital, Newport Hospital vs.
Other Hospitals in the State of Rhode Island vs. Hospitals in All States**

STAGE	Number of Cases			Percent of Total Non-Small Cell Lung Cancer Cases by Stage		
	Combined Program Total	Other Reporting Hospitals In Rhode Island	National Reporting Hospitals	Combined Program Total	Other Reporting Hospitals In Rhode Island	National Reporting Hospitals
0	10	12	3,115	0.21%	0.16%	0.23%
I	1,266	1,911	328,793	27.21%	25.44%	24.40%
II	339	558	100,068	7.29%	7.43%	7.43%
III	905	1,584	313,868	19.45%	21.08%	23.29%
IV	1,402	2,523	484,236	30.14%	33.58%	35.93%
Occult Carcinoma Not Applicable	5	9	1,352	0.11%	0.12%	0.10%
Unknown	725	916	116,177	15.59%	12.19%	8.62%
Total	4,652	7,513	1,347,618	100%	100%	100%

Source: 2014 National Cancer Data Base (NCDB) / Commission on Cancer (CoC) / Thursday, October 23, 2014

The stage distribution for the 2,162 non-small cell lung cancer patients diagnosed at Rhode Island, Miriam, and Newport Hospital from 2009 to 2013 is illustrated in the graph below.



Source: Cancer Registries at Rhode Island, Miriam, and Newport Hospital

2014 Lung Cancer Patient Outcome Analysis

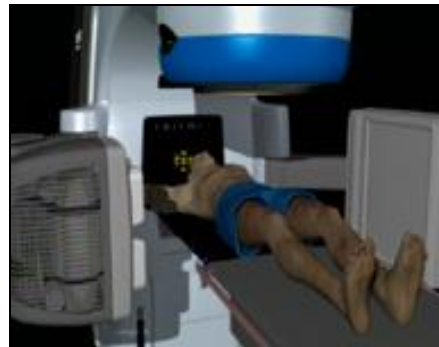
Treatment for Lung Cancer

Small cell lung cancer spreads quickly throughout the body. Treatment must include cancer-killing drugs called chemotherapy. Surgery is rarely used to treat small cell lung cancer. It is only considered if it is limited small cell lung cancer with only one tumor that has not spread. Chemotherapy and radiation treatment will be needed after surgery. However, because the disease has usually spread by the time of diagnosis, very few patients with small cell lung cancer are candidates for surgery. Treatment for lung cancer may consist of surgery, radiation therapy, chemotherapy, biotherapy, or a combination of these. Chemotherapy and/or radiation are sometimes used before surgery to shrink the tumor. They may also be used after surgery to kill any remaining cancer cells.

Surgery – is usually performed when the lung cancer is detected in only one lung and in nearby lymph nodes (usually stage 1 or 2). Surgery removes all or a portion of a lung to eliminate the cancer. The specific types of surgery are listed below.

- Pneumonectomy - removes the entire lung on one side
- Lobectomy – removes a lobe of the lung
- Wedge resection or segmentectomy - removes a small part of a lobe of the lung

Radiation Therapy – also called radiotherapy, this procedure delivers high-energy x-rays that can destroy rapidly dividing cancer cells. Radiation can also be used to relieve shortness of breath by helping to open blocked airways. Radiation can also be used to help relieve pain. Most often, radiation therapy is delivered by the external beam technique, which aims a beam of x-rays directly at the tumor. Treatment is given in a series of sessions, or fractions, usually over six weeks. One specific type of radiation treatment is three-dimensional conformal radiation therapy based on a 3-D image of the tumor taken with CT scanning. This image serves as the target for a high-dose radiation beam that automatically changes its shape and size to match the tumor. This method minimizes radiation exposure of nearby normal lung tissue.



Chemotherapy – kills cancer cells by interfering with the cellular chemistry. One or more types of chemotherapy may be used. This can be administered by mouth or by injection into a vein (IV). These medications travel through the bloodstream to all parts of the body. This treatment is used in all stages of lung cancer and can prolong life even in elderly persons as long as they are in good general health.

2014 Lung Cancer Patient Outcome Analysis

Treatment for Lung Cancer Continued

Radiofrequency Ablation (RFA) - uses radio waves to heat up and destroy tumors. The use of RFA in treating lung cancer is an emerging experimental technology requiring additional study to determine its effectiveness. Surgical removal of lung tumors (Lobectomy) currently remains the gold standard for treatment of local lung tumors. Other energy sources can be used for ablative treatment such as Cryotherapy and Microwave Ablation.



Pre-Ablation



Post Ablation

Biotherapy – uses the body's own natural agents, such as proteins, to stimulate the immune system to target cancer cells. The terms biotherapy or immuno-therapy are often used interchangeably. Biotherapy agents are broken down into four categories: interferons, interleukins, hematopoietic growth factors, and monoclonal antibodies. Some of the agents are also known as cytokines.

Non-Small Cell Lung Cancer Diagnosed 2000 to 2011 by TREATMENT
All Diagnosed Cases – Hospital Type: All Types/Systems
Rhode Island Hospital, The Miriam Hospital, Newport Hospital vs.
Other Hospitals in the State of Rhode Island vs. Hospitals in All States

	Number of Cases			Percent of Total Non-Small Cell Lung Cancer Cases by Treatment		
	Combined Program Total	Other Reporting Hospitals In Rhode Island	National Reporting Hospitals	Combined Program Total	Other Reporting Hospitals In Rhode Island	National Reporting Hospitals
TREATMENT						
Surgery Only	1,335	1,859	282,024	28.70%	24.74%	20.93%
Radiation (RT) Only	642	1,011	195,000	13.80%	13.46%	14.47%
Surg. & Chemo	199	316	56,870	4.28%	4.21%	4.22%
RT & Chemo	877	1,351	280,552	18.85%	17.98%	20.82%
Chemo Only	413	894	169,291	8.88%	11.90%	12.56%
Surg., RT, & Chemo	198	253	40,469	4.27%	3.37%	3%
Other Specified Therapy	231	279	48,841	4.96%	3.71%	3.62%
No 1st Course Rx	757	1,550	274,571	16.27%	20.63%	20.37%
Total	4,652	7,513	1,347,618	100%	100%	100%

2014 Lung Cancer Patient Outcome Analysis

Lung Cancer Multidisciplinary Clinic

The lung cancer multidisciplinary clinic (MDC), a program of the Comprehensive Cancer Center at Rhode Island Hospital, The Miriam Hospital, and Newport Hospital was originally established at The Miriam Hospital in 2009 to provide patients a streamlined approach to diagnostic and treatment options. Patients who present with a lung malignancy typically require evaluation by multiple specialists including a surgical oncologist, medical oncologist, radiation oncologist, and palliative care specialist, and may require treatment from some or all of the above disciplines. The team members of the lung MDC work together to create an individualized, coordinated plan of care which is based on national treatment guidelines. A dedicated nurse navigator then guides patients through the health care system and their treatment.

During 2014, 207 new lung cancer patients were seen in the MDC, 106 were seen at the Rhode Island Hospital campus and an additional 101 were seen at The Miriam Hospital campus. Patients who present with a lung cancer malignancy are also discussed during multidisciplinary tumor boards. In 2014, 220 cases were prospectively reviewed. Tumor board discussions include a case review, national treatment guidelines, applicable prognostic indicators, as well as applicable clinical trials.

The physicians of the lung cancer MDC are affiliated with The Warren Alpert Medical School of Brown University and actively participate in on-going clinical research. Eligible patients have access to clinical trials which focus on advanced radiation techniques and targeted chemotherapy agents.

Lung Cancer Clinical Trials Comprehensive Cancer Center

Lung	BrUOG 259	Stereotactic Body Radiation for Consolidation After Standard Chemoradiation for Stage III Lung Cancer
NSCL	LS-P-GO 28753I	A Phase II, Open-Label, Multicenter, Randomized Study to Investigate the Efficacy and Safety of MPDL3280A (anti-PD-L1 Antibody) Compared with Docetaxel in Patients with Non-Small Cell Lung Cancer After Platinum Failure
NSCL	LS-P-OAK	A Phase III, Open-Label, Multicenter, Randomized Study to Investigate the Efficacy and Safety of MPDL3280A (ANTI-PD-L1 ANTIBODY) Compared with Docetaxel in Patients with Non-Small Cell Lung Cancer After Failure With Platinum-Containing Chemotherapy
Solid Tumors	LS-P-POST	A Phase I, open-label, multiple-ascending dose trial to investigate the safety, tolerability, pharmacokinetics, biological and clinical activity of MSB0010718CI in subjects with metastatic or locally advanced solid tumors and expansion to selected indications

2014 Lung Cancer Patient Outcome Analysis

Quality Oncology Practice Initiative Spring 2014 Lung Cancer Measures

QOPI is an oncologist-led, practice-based quality improvement program sponsored by the American Society of Clinical Oncology (ASCO). The program offers a retrospective chart review for ambulatory hematology – oncology practices for systematic data collection, adherence to accepted standards of care and quality improvement goals to effectively measure and compare results with other practices in a consistent and meaningful way.

Rhode Island and Miriam Hospital performance rates for the lung cancer measures from the spring 2014 data collection round are illustrated in the table below.

Lung Cancer Spring 2014	Rhode Island Hospital	Miriam Hospital	Academic Aggregate ¹
Measures	Site Rate (%)		Mean
Adjuvant chemotherapy recommended for patients with AJCC stage II or IIIA NSCLC	100%	100%	89.58%
Adjuvant chemotherapy received by patients with AJCC stage II or IIIA NSCLC	100%	100%	95.00%
Adjuvant cisplatin-based chemotherapy received within 60 days after curative resection by patients with AJCC stage II or IIIA NSCLC	50%	100%	64.52%
Adjuvant radiation therapy recommended for patients with AJCC stage IB or II NSCLC (Lower Score – Better)	0%	0%	4.00%
Performance status documented for patients with initial AJCC stage IV or distant metastatic NSCLC	72.22%	60.87%	79.78%
Platinum doublet first-line chemotherapy or EGFR-TKI (or other targeted therapy with documented DNA mutation) received by patients with initial AJCC stage IV or distant metastatic NSCLC with performance status of 0-1 without prior history of chemotherapy	85.71%	100%	92.17%
Positive mutation for patients with stage IV NSCLC who received first-line EGFR tyrosine kinase inhibitor or other targeted therapy	~	100%	91.38%
First-line EGFR tyrosine kinase inhibitor or other targeted therapy received by patients with stage IV NSCLC in the absence of positive mutation (Lower Score - Better)	~	0%	8.62%
GCSF administered to patients who received chemotherapy for metastatic NSCLC (Lower Score – Better) (Test Measure – Top 5)	25.53%	21.74%	14.18%



2014 Lung Cancer Patient Outcome Analysis

Reduction of Emergency Department Utilization via Access to Outpatient Cancer Care

Background: Emergency department (ED) utilization for non-emergent medical problems is an inefficient use of medical resources. During calendar year 2013, 224 RIH adult cancer patients presented to the RIH ED. Retrospective chart review indicated up to 50% of these ED visits were avoidable.

Methods: A multidisciplinary team was assembled to address ED utilization. Retrospective chart review of ED visits included time and reason for visit, as well as primary tumor site. The team selected Lung Cancer as the target group. The team then developed a cause & effect analysis for ED visits, administered a patient survey, and implemented a series of Plan Do Study Act (PDSA) cycles. The team then initiated a revised patient education process focused on sick line symptom control and the availability of same day sick visits. A single-page, patient friendly "sick line tool" with nursing sick-line contact information was developed. The "tool" was then introduced at the patient's first visit by a patient navigator and reinforced at each subsequent visit.

Results:

For CCC lung cancer patients, a standard symptom control education process correlated with a 30% decrease in ED visits for any presenting complaint (42 visits vs. 60 visits) and a 32% decrease in ED visits with presenting complaint of pain (13 visits vs. 19 visits) during January/February 2014 compared to January/February 2013. No significant differences between the proportion of ED visits during Cancer Center business hours, evenings, or weekends was identified. Sick line calls were found to increase by 53% during January 2014 compared to December 2013. An additional 35% increase was noted in February 2014.

Case Distribution By Intervention		
Development of patient sick line education tool	Dec 4, 2012 - Dec 17, 2012	Dec 4, 2013 - Dec 17, 2013
	11	11
Navigator began meeting w/ patients during 1 st visit to distribute the "tool" (not consistently distributed during initial visit)	Dec 18, 2012 - Dec 31, 2012	Dec 18, 2013 - Dec 31, 2012
	12	22
Patient education process was revised; Navigator began consistently reviewing the "tool" w/ patients during the initial visit	Jan 2, 2013 - Feb 28, 2013	Jan 2, 2014 - Feb 28, 2014
	60	42 (30% Decrease)

Conclusion: A standardized patient education process resulted in a significant decrease in ED visits, concurrent with an increase in outpatient sick line utilization. This may reflect an improvement in efficiency of outpatient cancer patient care in a single-institution setting.

2014 Lung Cancer Patient Outcome Analysis

Summary

This is a review of non-small cell lung cancer patients who presented to Rhode Island, Miriam, and Newport Hospital over a five year period from 2009 – 2013. During this period, the program accessioned 2,162 patients. The number of non-small cell lung cancer cases within the program experienced a slight decrease in 2003 & 2011. However, this was followed by a steady increase from 2004 to 2010 and again in 2012. The number of cases diagnosed and treated within the program as a percent of those diagnosed elsewhere in Rhode Island remained stable over the period 2000 to 2003, ranging from 50% to 57%, an 8% increase was noted in 2004.

As seen in the rest of Rhode Island, Caucasians made-up the vast majority of non-small cell lung cancer cases for the program and like the rest of the state, African Americans made-up the second most common group. The distribution of non-small cell lung cancer by age at diagnosis for patients 20 to 39 and 50 to 79 was similar to other hospitals in Rhode Island as well as the nation average. However, the 40 to 49 age group was noted to be slightly higher than the state and national average.

Stage IV was the most frequently reported stage of non-small cell lung cancer for the program and was also the most frequently reported stage by the National Cancer Data Base (NCDB).

The Comprehensive Cancer Program at Rhode Island Hospital, The Miriam Hospital, and Newport Hospital adheres to NCCN (National Comprehensive Cancer Network) Clinical Practice Guidelines for the treatment of all cancers. The majority of patients treated for non-small cell lung cancer underwent surgery alone, which is consistent with the treatment distribution seen at other hospitals in the state and nationally. Chemotherapy with radiation therapy was the second most common treatment modality observed for most hospitals, demonstrating lung cancer treatment of our patients is in line with national expectations.