



SAINT LUKE'S CANCER INSTITUTE 2015 ANNUAL REPORT

Incorporating the 2014 Cancer Registry Statistical Review



 **Saint Luke's**
CANCER INSTITUTE



Dear Colleague,

We at Saint Luke's Cancer Institute know one size does not fit all—especially when it comes to treating cancer.

That's why we've built a team of caregivers with a passion to provide individualized care.

- Physicians with a range of specialties and subspecialties
- Advanced nurse practitioners focused on specialized cancer areas
- Multidisciplinary teams based on tumor type who jointly consult and manage each unique case
- A survivorship program dedicated to ensuring the highest possible quality of life from diagnosis through treatment and beyond
- A sustained commitment to ongoing clinical research and providing patients access to emerging new treatment options

And that passion for providing exceptional cancer care goes beyond our main doors. We insist upon bringing it to the communities where our patients live and work. Saint Luke's offers cancer care in 11 locations throughout the Kansas City region.

No two cancers are alike, no two people are alike, and no two cancer programs are alike. We know this so wholly because we live it each day with our patients.

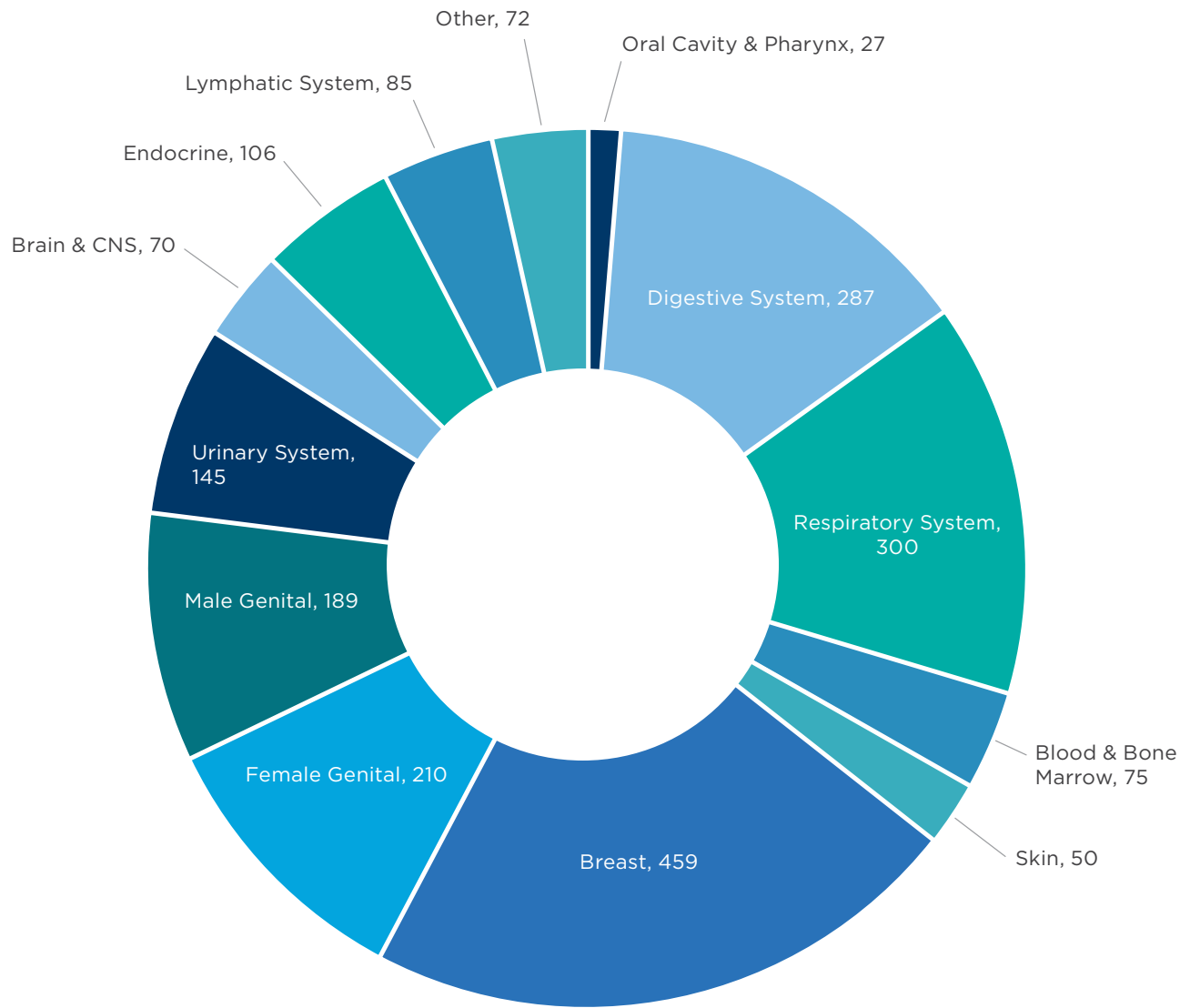
And *that's* the Saint Luke's difference.

Regards,

Timothy J. Pluard, M.D.
Medical Director



2014 Summary of Body System, Saint Luke's Health System Analytic Cases



Primary Site	2014
Oral Cavity & Pharynx	27
Digestive System	287
Respiratory System	300
Blood & Bone Marrow	75
Skin	50
Breast	459
Female Genital	210
Male Genital	189
Urinary System	145
Brain & CNS	70
Endocrine	106
Lymphatic System	85
Other	72
All Sites	2,075

Saint Luke's Multidisciplinary Cancer Conferences

Experts from multiple specialties form our Saint Luke's Cancer Conferences. Together they review patient cases and make treatment recommendations. Conference members vary by cancer site and include medical and radiation oncologists, surgeons, radiologists, pathologists, and ancillary support services.

In 2014, Saint Luke's offered site-specific cancer conferences for brain and spine, breast, lung, gynecological oncology, and gastrointestinal cancers.

Summary of 2014 Site-specific Conferences

Type of Conference	Interval	Number of Conferences	Number of Analytic Cases Presented
Site-focused: Thoracic	Weekly	48	131
Site-focused: Breast	Weekly	41	314
Site-focused: Gastrointestinal	Bimonthly	20	203
Site-focused: Neuro-oncology	Weekly	28	34
Site-focused: Gynecological Oncology	Weekly	47	450
Totals		184	1,132

Saint Luke's Cancer Committee

A multidisciplinary team provides oversight of the oncology program. Committee members hail from each of the Saint Luke's Cancer Institute locations and include physicians from diagnostic and treatment specialties and non-physicians from administrative and supportive services. The committee met five times in 2015.

2015 COMMITTEE MEMBERS

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AD HOC

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Saint Luke’s Cancer Prevention and Early Detection Outcomes

Saint Luke’s provides cancer prevention programs targeted to meet the needs of the community and designed to reduce the incidence of a specific cancer type. Each prevention program is consistent with evidence-based national guidelines for cancer prevention.

High-risk Breast Clinic

Program details

- Led by advanced nurse practitioners
- Locations at Saint Luke’s Hospital of Kansas City, Saint Luke’s East Hospital, and Saint Luke’s South Hospital
- Offers individuals at high risk for developing breast cancer:
 - Early detection
 - Surveillance
 - Education
 - Preventive therapies
 - Research
- Incorporates hands-on clinical assessment and technology following National Comprehensive Cancer Network guidelines
- Collaboration with genetic counselors

Program offerings

- Clinical breast exam by a MammaCare-certified nurse practitioner
- Breast self-exam instructions using the MammaCare method
- Imaging studies
- Referral to surgeons who specialize in breast surgery if indicated
- Consultation about personal risk factors as related to breast cancer and possible preventive strategies
- Referral for cancer risk assessment by a certified genetic counselor and genetic testing when applicable
- Medical oncologist referral if pharmacologic risk reduction options are necessary
- Research opportunities
- Referral for ovarian cancer screening when applicable

High-risk Breast Clinic Cancer screening	Patients	Patients requiring breast MRI	Cancer diagnosed related to screening
Jan. – July 2015	297	72	1

› Learn more

816-932-7900
saintlukeskc.org/high-risk

Low-dose Computed Tomography Lung Cancer Screening Program

Program details

- Led by Melissa Rosado de Christenson, M.D., radiology, and Michelle Tietz, clinical coordinator
- Patients meet high-risk criteria
- Low-dose lung CT performed
- Radiologist meets with patient to review screening findings
- Follow-up recommendations provided

Eligibility criteria

- 55 – 77 years old
- Asymptomatic
- Tobacco smoking history of at least 30 pack years (one pack year = smoking an average of one pack a day for one year; one pack = 20 cigarettes)
- Current smoker or one who has quit smoking within the last 15 years
- Receives a written order for low-dose CT lung cancer screening
- Lung cancer screening counseling and shared decision-making visit furnished by a physician or physician assistant, nurse practitioner, or clinical nurse specialist
- Specific criteria to be covered in the shared decision-making visit

Lung cancer screening with low-dose lung CT	Patients screened	Patients requiring active surveillance or follow-up	Patients needing surgical or treatment intervention	Cancer diagnosed related to screening
2014	94	18	1	1
2015	70	6	0	0

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816-932-6800

saintlukeskc.org/lung-screening

Smoking Cessation Program

Program details

- Led by Janis Elder, smoking cessation instructor and certified health and wellness coach
- Follows the QuitSmart program model
- Participants receive individual book
- Five-week program with 1- to 1.5-hour sessions
- High success rate compared to other programs

In a study conducted at five U.S. Air Force bases, 66 percent of those who participated in a QuitSmart program were still smoke-free after six months versus 16–30 percent of those who participated in four other well-known quit smoking programs (*published in Federal Practitioner, March 2002*).

QuitSmart course	Participants	Participants who quit	Smoking cessation % at end of class
Sept. – Oct. 2014	4	2	50%
Nov. – Dec. 2014	3	2	66%
Jan. – Feb. 2015	5	4	80%
Feb. – March 2015*	3	2	66%
April – May 2015*	3	2	66%
Total Participants	18	12	66%

*Six-month follow-up calls indicate 50 percent of participants have continued to not smoke

› Learn more

816-751-8327
 saintlukeskc.org

Saint Luke's Cancer Institute Site-specific Study on Lung Cancer

Janakiraman Subramanian, M.D.

Introduction

Lung cancer is the most common cause of cancer-related death in the United States. In the year 2015, over 200,000 patients are expected to be diagnosed with lung cancer and 158,040 patients will die due to this disease.¹ Tobacco smoking accounts for 85% to 90% of all lung cancer deaths.² Other agents, such as radon, ionizing radiation, heavy metals, asbestos, and cooking smoke exposure, have been implicated as causes for lung cancer. Lung cancer consists of two major histologic sub-groups: non-small cell lung cancer (NSCLC) and small cell lung cancer (SCLC). NSCLC constitutes 85% to 90% of all lung cancer cases and the remaining 10% to 15% are diagnosed with SCLC.³ Some lung carcinoid tumors may also present with malignant behavior, but these tumors are relatively rare (< 5%) when compared to NSCLC and SCLC.⁴

Treatment and outcomes are significantly different for NSCLC and SCLC. Tumor histology, disease stage, and presence of specific molecular markers play a significant role in treatment planning for patients with NSCLC. For patients with early stage NSCLC, surgical resection remains the treatment of choice. Patients who are ineligible for surgical resection are candidates for treatment with radiotherapy. In patients with locally advanced disease involving the mediastinal lymph nodes, concurrent chemoradiotherapy is the preferred treatment. More than half of all patients with NSCLC present with incurable advanced-stage disease, and systemic agents are the treatments of choice. Over the years there have been several small but significant improvements in how we diagnose and treat patients with NSCLC. This has resulted in a corresponding improvement in patient outcomes. Unfortunately for patients with SCLC there have not been any significant improvements in the last 30 years, and treatment options have continued to remain unchanged.

Lung Cancer at Saint Luke's Health System (SLHS)

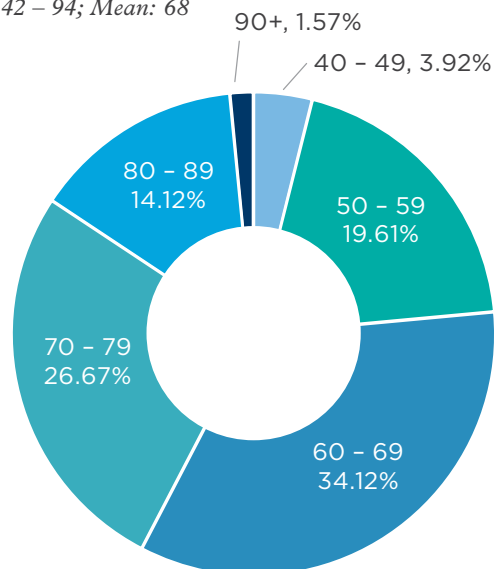
Demographics

In the year 2014, 255 patients with lung cancer were treated in SLHS compared to 195 patients treated in 2010, which represents a 24% increase. The median age for patients diagnosed with lung cancer in 2014 was 68 years (range 42 to 94).

Age at Diagnosis (in years)

Age at Diagnosis (in years)	Count (N)	Percent (%)
0 - 29	0	0.00%
30 - 39	0	0.00%
40 - 49	10	3.92%
50 - 59	50	19.61%
60 - 69	87	34.12%
70 - 79	68	26.67%
80 - 89	36	14.12%
90+	4	1.57%
Unknown	0	0.00%
Total	255	100.00%

Range: 42 - 94; Mean: 68



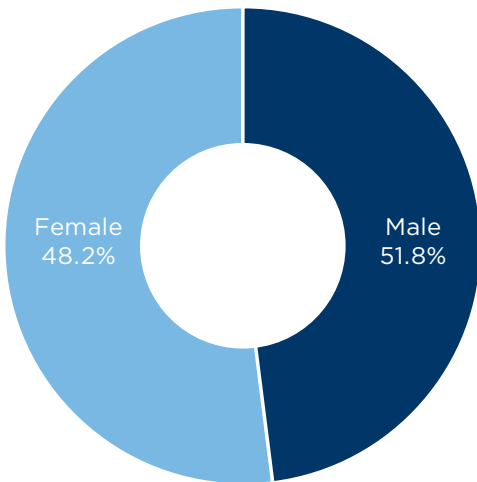
The proportion of men (51.8%) diagnosed with lung cancer was slightly higher than that of women (48.2%).

The majority of patients were Caucasian (86%); the rest were African-American (13%) and Filipino (1%). Tobacco use in some form was reported in 87% of all lung cancer cases.

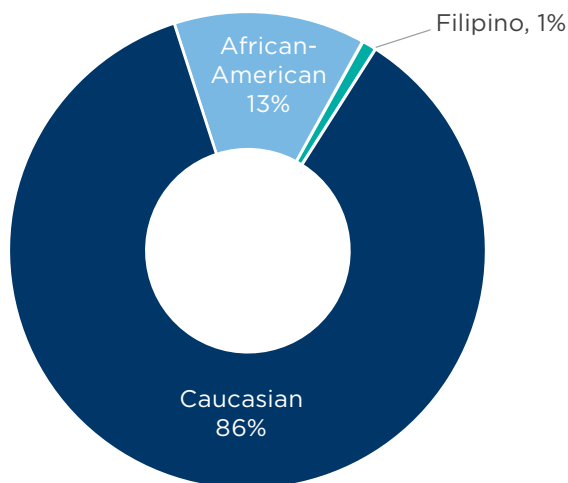
Gender & Racial Distribution

Race	Male	Female	Total
Caucasian	117	103	220
African-American	14	19	33
Filipino	1	1	2
Total	132	123	255

SLHS 2014 Lung Cases by Gender



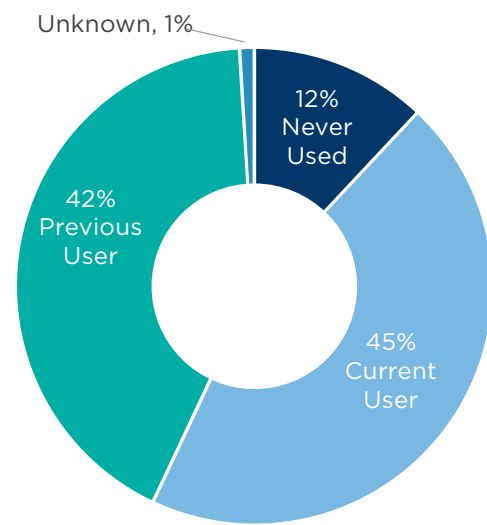
SLHS 2014 Lung Cases by Race



Of the 255 patients treated in 2014, 221 (86.7%) were diagnosed with NSCLC and 34 (15.3%) with SCLC. There has been a slight decline in the proportion of patients with SCLC from 13.3% to 10% in 2014.

2014 Lung Cases by Tobacco Usage

Never Used	Current User	Previous User	Unknown
36	132	124	1



We compared stage distribution of NSCLC cases for the years 2010 through 2014; we identified a significant increase in number of patients diagnosed with Stage 1 NSCLC in 2014 (38.5% vs. 25.1%).

In fact there appears to have been a steady increase in Stage 1 cases over the years since 2010. We also compared overall survival for patients treated in 2005 and 2010 and there was significant improvement in overall survival for patients with Stage 2 and 3 NSCLC diagnosed in 2010. The outcomes for patients with Stage 1 and 4 disease were not significantly different.

Treatment

In 2014, 54 patients (48.2%) with early stage NSCLC (Stage 1 and 2) underwent potentially curative surgical resection and 58 patients (51.7%) were treated with radiotherapy. Of patients with locally advanced disease, 27 (69.2%) were primarily treated with radiotherapy, and surgical resection was performed in

SITE-SPECIFIC STUDY ON LUNG CANCER

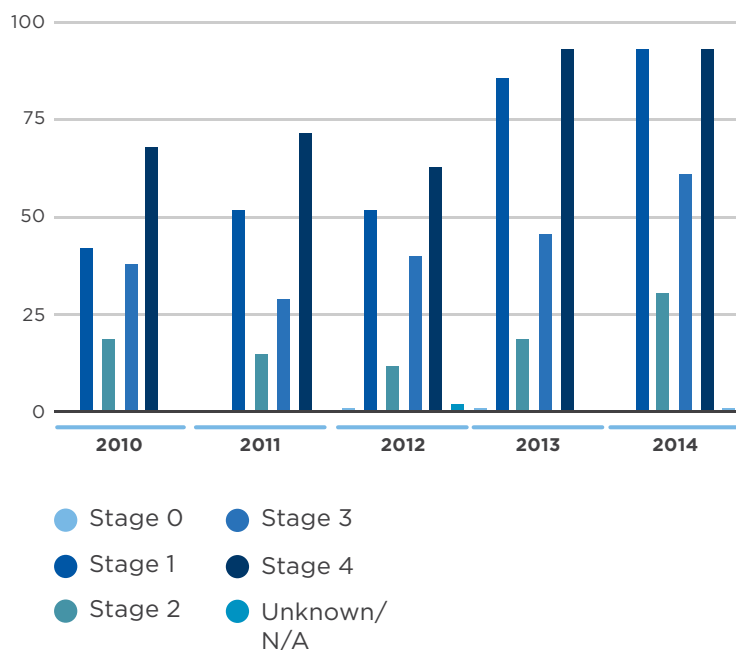
13 patients (33.3%). Multimodality treatment with chemotherapy and radiation was administered to 21 patients (53.8%). For Stage 4 patients, more than half of them received chemotherapy (51.3%). See charts on pages 13–16.

Conclusions

There has been a steady increase in the number of patients treated for lung cancer at SLHS. More importantly, the overall survival for patients with early stage NSCLC shows significant improvement over the years. The proportion of patients diagnosed with Stage 1 lung cancer, which is potentially curable, has increased as well. Exact reasons for these changes are difficult to pinpoint but the establishment of a computerized tomography screening program for lung cancer and the multidisciplinary thoracic oncology clinic may be some of the reasons for these significant changes. The ability to bring together subspecialists who specialize in thoracic oncology from different disciplines including surgery, radiation, and medical oncology allows us to deliver excellent care to our patients.

Recently Timothy Saettele, M.D., has joined our group and he is experienced in performing navigational bronchoscopy and endoscopic bronchial ultrasound. This capability helps with establishing diagnosis in difficult cases and also accurately stages our patients so they may receive the appropriate treatment. Tumor molecular testing is an integral part of treatment planning for patients with advanced stage disease. These test results are used to guide treatment, and we are also in the process of developing a molecular oncology tumor board, which we hope will serve SLHS and the wider oncology community in the Kansas City region. For our patients with advanced stage disease, we currently have several open clinical trials that incorporate modern molecularly targeted therapies and immunotherapy. We are also in the process of opening early phase clinical trials to provide additional treatment options for patients with relapsed and refractory cancer. In order to effectively utilize molecular testing for our patients with lung cancer, we will be participating in the NCI-MATCH trial to ensure that they receive appropriate targeted therapies.

Lung AJCC Stage Distribution



References

1. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2015. *CA Cancer J Clin* [Internet] 2015 [cited 2015 Jan 9]; 65(1):5–29. Available from www.ncbi.nlm.nih.gov/pubmed/25559415
2. Smoking-Attributable Mortality, Years of Potential Life Lost, and Productivity Losses—United States, 2000 – 2004 [Internet]. [cited 2015 Sep 24]; Available from www.cdc.gov/mmwr/preview/mmwrhtml/mm5745a3.htm
3. Govindan R, Page N, Morgensztern D, et al. Changing epidemiology of small-cell lung cancer in the United States over the last 30 years: analysis of the surveillance, epidemiologic, and end results database. *J Clin Oncol* [Internet] 2006 [cited 2015 Aug 16]; 24(28):4539–44. Available from jco.ascopubs.org/content/24/28/4539.long
4. What are the key statistics about lung carcinoid tumors? [Internet]. [cited 2015 Sep 24]; Available from www.cancer.org/cancer/lungcarcinoidtumor/detailedguide/lung-carcinoid-tumor-key-statistics

SLHS 2005 vs. 2010 1 Stage NSCLC Observed Survival

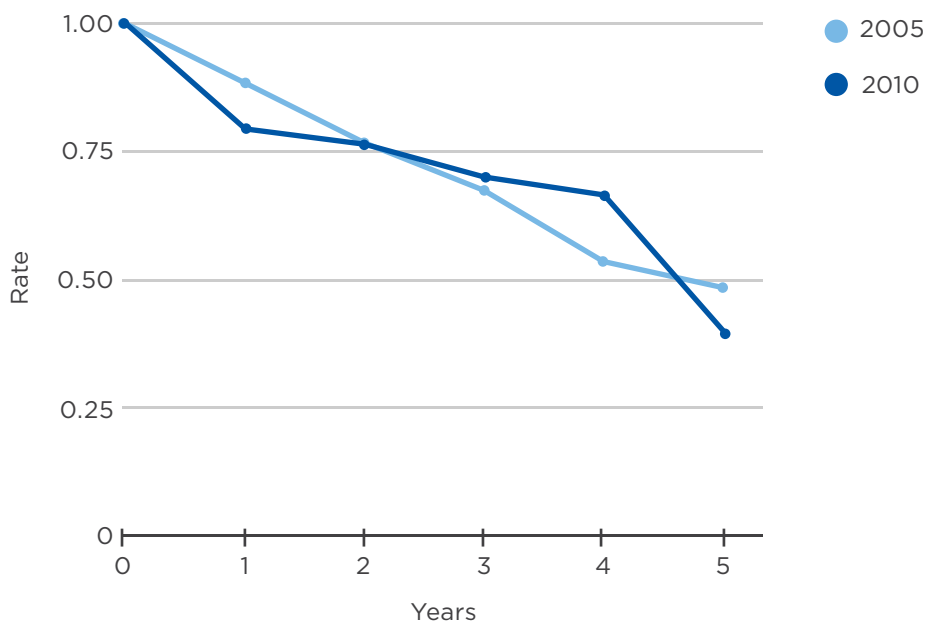
Interval (Years)	Alive	Dead	Dead w/o CA	Last Seen Alive	At Risk of Dying	Prop Surv	Cum Prop Surv	Std Accum Aver Surv
2005								
0	43	0	0	0	43	1	1	0
1	43	5	4	0	43	0.884	0.884	0.00306
2	38	5	3	0	38	0.868	0.767	0.00399
3	33	4	4	0	33	0.879	0.674	0.00418
4	29	6	3	0	29	0.793	0.535	0.009
5	23	2	2	2	21	0.905	0.484	0.00501

Observed Error: 0.0008

2010								
0	41	0	0	0	41	1	1	0
1	41	7	6	7	34	0.794	0.794	0.00763
2	27	1	1	1	26	0.962	0.764	0.00154
3	25	2	2	1	24	0.917	0.7	0.00379
4	22	1	1	2	20	0.95	0.665	0.00263
5	19	2	2	14	5	0.6	0.399	0.13333

Observed Error: 0.05145

SLHS 2005 vs. 2010 1 Stage NSCLC Observed Survival



SLHS 2005 vs. 2010 2 Stage NSCLC Observed Survival

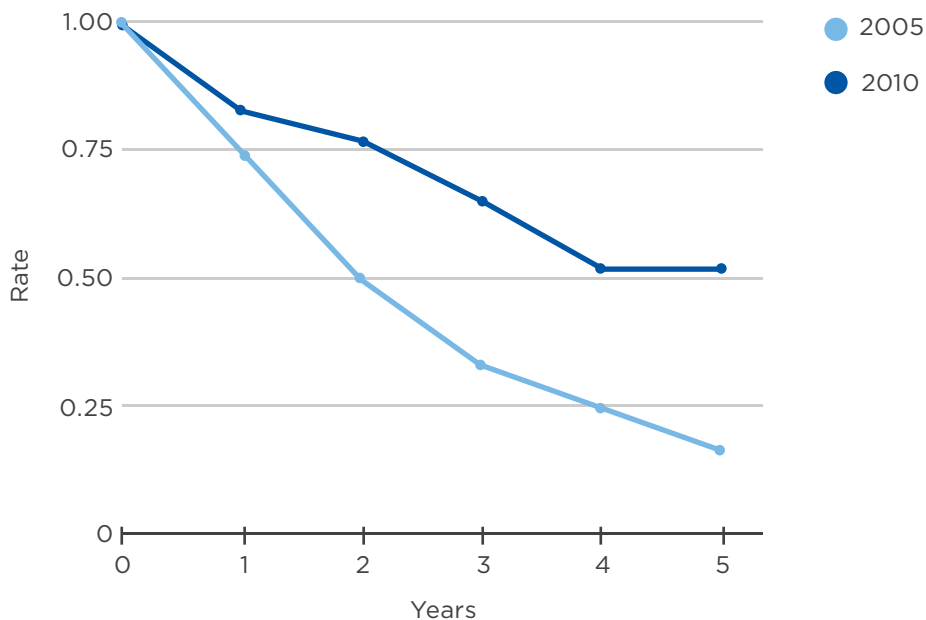
Interval (Years)	Alive	Dead	Dead w/o CA	Last Seen Alive	At Risk of Dying	Prop Surv	Cum Prop Surv	Std Accum Aver Surv
2005								
0	14	0	0	0	14	1	1	0
1	14	3	1	2	12	0.75	0.75	0.02778
2	9	3	2	0	9	0.667	0.5	0.05556
3	6	2	2	0	6	0.667	0.333	0.08333
4	4	1	1	0	4	0.75	0.25	0.08333
5	3	1	0	0	3	0.667	0.167	0.16667

Observed Error: 0.10758

2010								
0	19	0	0	0	19	1	1	0
1	19	3	2	1	18	0.833	0.833	0.01111
2	15	1	1	1	14	0.929	0.774	0.0055
3	13	2	1	0	13	0.846	0.655	0.01399
4	11	2	2	1	10	0.8	0.524	0.025
5	8	0	0	3	5	1	0.524	0

Observed Error: 0

SLHS 2005 vs. 2010 2 Stage NSCLC Observed Survival



SLHS 2005 vs. 2010 3 Stage NSCLC Observed Survival

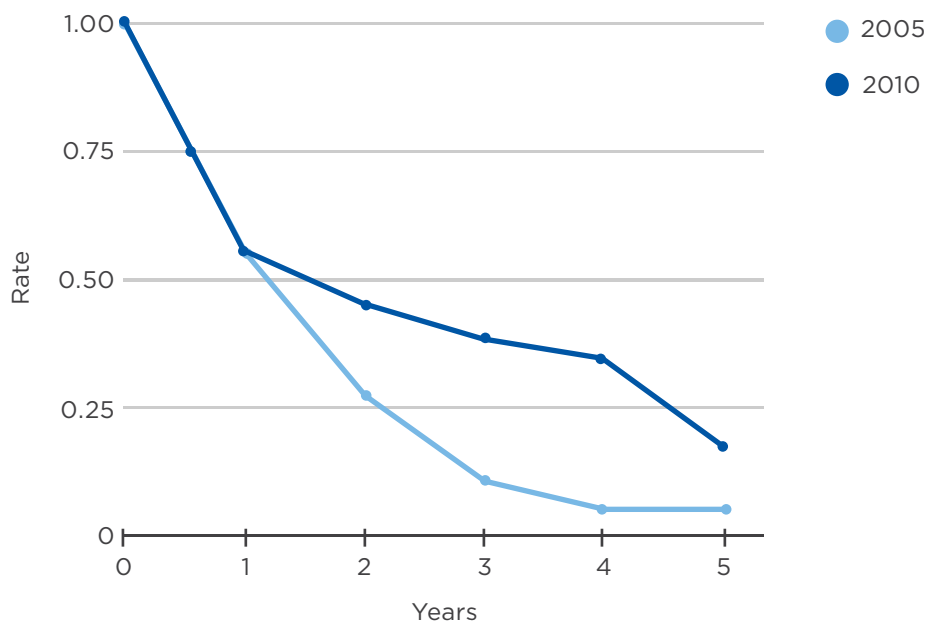
Interval (Years)	Alive	Dead	Dead w/o CA	Last Seen Alive	At Risk of Dying	Prop Surv	Cum Prop Surv	Std Accum Aver Surv
2005								
0	23	0	0	0	23	1	1	0
1	23	8	3	5	18	0.556	0.556	0.04444
2	10	5	2	0	10	0.5	0.278	0.1
3	5	3	3	0	5	0.4	0.111	0.3
4	2	1	1	0	2	0.5	0.056	0.5
5	1	0	0	0	1	1	0.056	0

Observed Error: 0

2010								
0	38	0	0	0	38	1	1	0
1	38	13	4	9	29	0.552	0.552	0.02802
2	16	3	2	0	16	0.813	0.448	0.01442
3	13	2	2	0	13	0.846	0.379	0.01399
4	11	1	1	1	10	0.9	0.341	0.01111
5	9	1	1	7	2	0.5	0.171	0.5

Observed Error: 0.37668

SLHS 2005 vs. 2010 3 Stage NSCLC Observed Survival



SLHS 2005 vs. 2010 4 Stage NSCLC Observed Survival

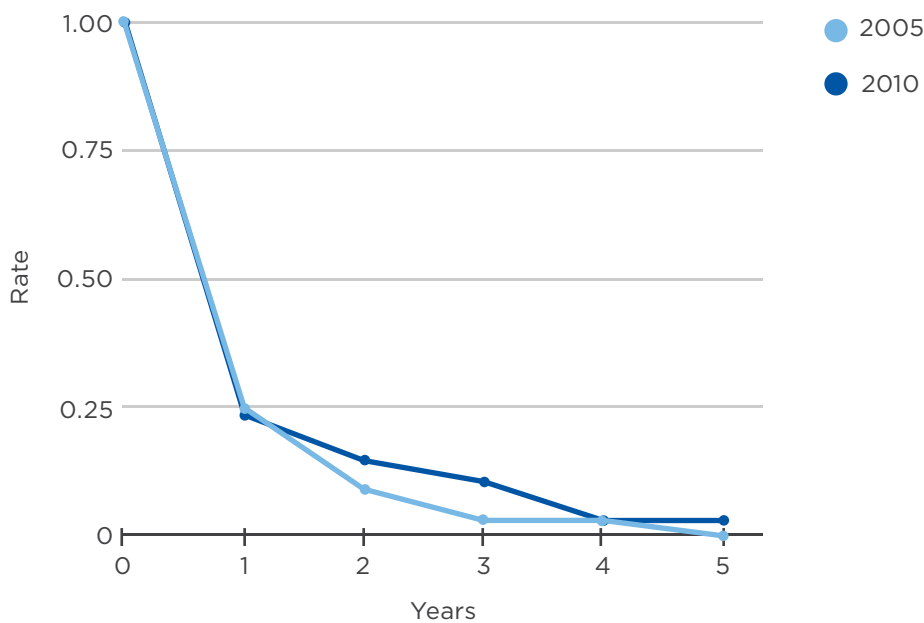
Interval (Years)	Alive	Dead	Dead w/o CA	Last Seen Alive	At Risk of Dying	Prop Surv	Cum Prop Surv	Std Accum Aver Surv
2005								
0	45	0	0	0	45	1	1	0
1	45	33	6	1	44	0.25	0.25	0.06818
2	11	7	1	0	11	0.364	0.091	0.15909
3	4	2	0	1	3	0.333	0.03	0.66667
4	1	0	0	0	1	1	0.03	0
5	1	1	0	0	1	0	0	0

Observed Error: 0

2010								
0	62	0	0	0	62	1	1	0
1	62	43	7	6	56	0.232	0.232	0.05907
2	13	5	2	0	13	0.615	0.143	0.04808
3	8	2	1	1	7	0.714	0.102	0.05714
4	5	3	3	1	4	0.25	0.026	0.75
5	1	0	0	1	0	1	0.026	0

Observed Error: 0

SLHS 2005 vs. 2010 4 Stage NSCLC Observed Survival



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