

Cancer Program

2008 ANNUAL REPORT



Baptist Hospital



**Middle Tennessee
Medical Center**



**Saint Thomas
Hospital**



**Saint Thomas
Health Services**

We're here for life.

A MESSAGE FROM OUR SERVICE LINE EXECUTIVE

Eliminating cancer is at the heart of all we do.

Each day, every day, the Saint Thomas Health Service Cancer Program utilizes innovative cancer treatments, integrated therapies and comprehensive education and prevention in the battle against cancer. Through this advanced, patient-centered approach, we're giving hope to thousands across middle Tennessee and winning the war against cancer—one patient at a time.

A critical part of cancer care is the support that is provided by patients' families and friends. That is why Saint Thomas Health Services has three American College of Surgeons' Accredited Community Cancer Programs. The Dan Rudy Cancer Program at Saint Thomas Hospital, Baptist Hospital's Cancer Center and Middle Tennessee Medical Center's Cancer Center have each been recognized and certified as premier community cancer programs. Together with our 70 physician cancer specialists, our three cancer programs treated more than 4000 people in 2007 with comprehensive cancer services, state-of-the-art technology and premier cancer specialists.

We are committed to erasing cancer. In 2007 our system became the only healthcare system in Middle Tennessee to provide all digital mammography, providing the best screening and diagnostic breast services to over 48,000 women a year who put their faith in us to screen for breast cancer. In November 2007 we launched the Saint Thomas Lung Clinic to provide multidisciplinary intervention for all lung and chest tumors. The Saint Thomas Brain Tumor Group remained one of the largest regional referral centers with advanced radio-surgery for the removal of brain tumors. With our specialized colorectal surgeons, our three cancer programs diagnosed and treated more patients with colon cancer than any other program in Middle Tennessee.

Saint Thomas Health Services three cancer programs and its experienced and dedicated associates provide our community with the assurance that advanced, and compassionate cancer care is available close to home. During this time of hope and change we will continue to hold our program to the highest standards, always looking for opportunities to grow and to meet the cancer care needs of our community.

Elizabeth Pace
Cancer Service Line Executive



SAINT THOMAS HEALTH SERVICES

“The premier, comprehensive and integrated system providing compassionate, patient centric cancer prevention, detection, treatment and support to the 3 million residents in Middle Tennessee.”

OUR EXPERIENCE:

MOST FREQUENTLY SEEN CANCERS AT STHS IN 2007

Breast	835
Digestive system	739
Respiratory system	692
Female genital system	347
Male genital system	343
Urinary system	238
Brain and CNS	232
All others	665
Total	4091

We're dedicated to offering the best in cancer care. In fact, all 3 of our cancer programs have been recognized by the Commission on Cancer of the American College of Surgeons as offering the very best in cancer care. Each of our cancer programs has been awarded Commendation Level of Accreditation and Saint Thomas Hospital was the first Community Hospital Comprehensive Cancer Program in Tennessee to receive the Outstanding Achievement Award at its last survey. This is recognition of the quality of our comprehensive, multidisciplinary patient care. We're proud to offer the very best in today's cancer treatment close to home.

For more information about the accreditation and what it means for you, visit:
www.facs.org/cancer/publicapproval.html





Baptist Hospital

We're here for life.

2008

BAPTIST HOSPITAL—2008 CANCER COMMITTEE

Nancy Peacock, MD
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Radiology

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Internal Medicine

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Urology

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Surgery, Cancer Liaison Physician

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Administration

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STHS Research Institute

Anita Miller, PharmD
Pharmacy

Brandy Greene, PharmD
Pharmacy

Elizabeth Pace, MHA
STHS Oncology Service Line Executive

Kimberly Parham, RN
STHS Breast Centers Nurse Manager

Sharon Tibbits, PT
STHS Cancer Center Program Coordinator

Chrystie Turner, RD
Nutrition Specialist

Baptist Hospital—2007 Accessioned Cases

Primary Site	Total	Class		Sex	
		Analytic	Non-Analytic	M	F
ALL SITES	1636	1526	110	536	1100
ORAL CAVITY	12	11	1	7	5
LIP	0	0	0	0	0
TONGUE	4	4	0	2	2
OROPHARYNX	0	0	0	0	0
HYPOPHARYNX	0	0	0	0	0
OTHER	8	7	1	5	3
DIGESTIVE SYSTEM	245	228	17	136	109
ESOPHAGUS	13	9	4	12	1
STOMACH	12	12	0	9	3
COLON	98	94	4	52	46
RECTUM	54	49	5	27	27
ANUS/ANAL CANAL	4	3	1	2	2
LIVER	11	10	1	9	2
PANCREAS	43	42	1	21	22
OTHER	10	9	1	4	6
RESPIRATORY SYSTEM	185	171	14	99	86
LARYNX	6	6	0	4	2
LUNG/BRONCHUS	179	165	14	95	84
BLOOD & BONE MARROW	37	31	6	23	14
LEUKEMIA	17	12	5	11	6
MULTIPLE MYELOMA	12	11	1	7	5
OTHER	8	8	0	5	3
BONE	0	0	0	0	0
CONNECT/SOFT TISSUE	9	6	3	4	5
SKIN	26	23	3	14	12
MELANOMA	21	19	2	11	10
OTHER	5	4	1	3	2
BREAST	452	435	17	3	449
FEMALE GENITAL	231	223	8	0	231
CERVIX UTERI	36	35	1	0	36
CORPUS UTERI	121	121	0	0	121
OVARY	47	44	3	0	47
VULVA	17	13	4	0	17
OTHER	10	10	0	0	10
MALE GENITAL	112	98	14	112	0
PROSTATE	110	96	14	110	0
TESTIS	2	2	0	2	0

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Primary Site	Total	Class		Sex	
		Analytic	Non-Analytic	M	F
URINARY SYSTEM	120	111	9	72	48
BLADDER	54	49	5	33	21
KIDNEY/RENAL	64	60	4	38	26
OTHER	2	2	0	1	1
BRAIN & CNS	72	67	5	26	46
BRAIN (BENIGN)	1	1	0	0	1
BRAIN (MALIGNANT)	15	11	4	9	6
OTHER	56	55	1	17	39
ENDOCRINE	60	56	4	11	49
THYROID	60	56	4	11	49
LYMPHATIC SYSTEM	34	27	7	16	18
HODGKIN'S DISEASE	6	4	2	1	5
NON-HODGKIN'S	28	23	5	15	13
UNKNOWN PRIMARY	32	30	2	13	19
OTHER/ILL-DEFINED	9	9	0	0	9

BREAST CANCER—SITE SPECIFIC STUDY

Nancy Peacock, MD

The American Cancer Society predicted there would be 180,510 (178,480 women and 2030 men) new cases of breast cancer for 2007 and 40,910 deaths (40,460 women and 450 men). Breast cancer remains the leading cancer diagnosed in women (26% of all female cancer cases) and the second leading cause of cancer deaths (15% of deaths) in women in the United States. Two large studies published in 2007 report a link between the recent reduction in invasive breast cancer and a decline in the use of hormone replacement therapy. The declines in breast cancer were noted in women aged 50 years and older and were more significant in breast cancers that were estrogen-receptor positive.^{1,2}

Screening initiatives make it possible to diagnose breast cancer at an earlier clinical stage and allow clinicians more options for treating and potentially curing breast cancer with minimum morbidity. Breast MRI is a newer technology allowing cancers to be detected at an earlier stage and also offering the potential to find more than one breast cancer. In 2007 the ACS released guidelines recommending routine MRI screening for women with a 20% or greater risk of developing breast cancer over their lifetime.³ Breast surgeons in the Nashville area are fortunate to have excellent MRI technology for breast imaging and have incorporated its use into their routine care of women in screening programs who are at high risk of developing breast cancer and also for decision planning for breast cancer patients when appropriate.

2007 Data from Baptist Hospital

AJCC Stage diagnosis: As can be seen in Figure 1 the majority of breast cancer cases at our hospital in 2007 were Stage I (invasive tumors up to 2 cm in diameter without lymph node involvement). These statistics compare favorably to the previous five years where we saw fewer patients diagnosed with Stage IV disease.

Figure 1: 2007 Analytic Breast Cases at Baptist Hospital

AJCC Stage	# of Cases	Percent
0	94	21.76%
I	185	42.82%
II	104	24.07%
III	25	5.79%
IV	2	.46%
Unknown	22	5.09%
Total cases	432	100

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Figure 2: 2000-2005 Analytic Breast Cancer Cases at Baptist Hospital compared to state and national data

AJCC Stage	# cases Baptist Hospital	% Baptist Hospital	# cases TN	% TN	# cases US	% US
0	479	21.25	3695	15.98	194,495	18.21
I	853	37.84	8882	38.41	408,013	38.21
II	489	21.69	6936	29.99	297,422	27.85
III	102	4.53	1861	8.05	84,296	7.89
IV	44	1.95	779	3.37	34,930	3.27
Unknown	287	12.73	971	4.2	48,654	4.56
Total	2254	100	23,124	100	1,067,810	100

Figure 2 confirms the diagnosis of more early stage breast cancer cases than comparable peer groups in the NCDB data base.¹ We attribute this largely to the quality of our imaging and the commitment of community physicians to aggressive screening efforts.

The diagnosis of breast cancer at any age is traumatic but prominently affects young women in our community. The fact remains, however that breast cancer is more common in women after menopause and this is demonstrated by the number of women diagnosed after the age of 50. (See figure 3). As our population ages we will see an increased number of women over the age of 70 affected with breast cancer, and many of our adjuvant systemic therapies will need to be tailored for this group of patients. Systemic therapy options can be expensive and toxic. Current research initiatives are underway at the national level to help determine which elderly patients are appropriate for systemic chemotherapy.

Figure 3: 2007 Breast Cancer Cases

sorted by age and sex at Diagnosis—Baptist Hospital

Age	Men	Women
20-29	0	1
30-39	0	26
40-49	1	84
50-59	0	137
60-69	1	92
70-79	1	59
80-89	0	27
90-99	0	2
100-109	0	1
Totals	3	429

There is evidence of increasing use of mastectomy or bilateral prophylactic mastectomy for younger women diagnosed with breast cancer. Recent national trends suggest that young women (defined here as under the age of 50) may be choosing mastectomy over lumpectomy. Breast surgeons at Baptist Hospital and in the Nashville community have been committed to breast conservation in appropriate patients for over a decade. National data from the NCDB over the past 5 years show

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the mastectomy rate for young women is nearly flat at 40% each year for the period 2000-2005. Data from Baptist Hospital demonstrates that the mastectomy rate in young women has been about 50% for the years 2000-2005 and nearly 60% for the past 2 years. Additionally, a report published in 2007 showed that the use of contra lateral prophylactic mastectomy has more than doubled in the 6 year period from 1998-2003.² We believe this number is increasing because many younger women have little tolerance for careful annual follow up. In addition the perception of risk of a second primary breast cancer may be higher than in past years. It will be interesting to see if this trend continues.

Figure 4: Surgical choices in younger women (16 to 49 yrs) with breast cancer

Year	% Lumpectomy		% Mastectomy	
	Baptist	U.S.	Baptist	U.S.
2000	48	53	49	42
2001	59	53	41	42
2002	42	53	55	40
2003	49	55	45	40
2004	40	55	55	40
2005	42	54	47	40
2006	38	*	61	*
2007	37	*	59	*

* 2006-2007 NCDB Data not available

Radiation oncology options are expanding with the introduction of Mammosite partial breast irradiation for certain women treated with lumpectomy. The first patient treated at Baptist hospital with this technology was in 2005. Criteria for Mammosite treatment in 2007 included women over the age of 45 with invasive tumors measuring < 3 cm, negative microscopic margins and without lymph node involvement. Four hundred of 432 patients diagnosed with breast cancer were treated with surgical procedures. 207 (52%) were treated with mastectomy and 193 (48%) treated with lumpectomy. Out of the 193 lumpectomies 82 (42%) were treated with Mammosite radiation (69 at the Baptist radiation facility) and 91 (47%) were treated with external beam radiation.

Six patients also participated in the joint NSABP B39/RTOG 413 protocol which randomizes patients undergoing lumpectomy to whole breast irradiation vs Mammosite technology. This protocol allows women over the age of 18 with both invasive adenocarcinoma and lobular carcinoma or DCIS and women with as many as 3 positive lymph nodes at the time of diagnosis. This study is ongoing and the long term results will obviously influence criteria for performing this procedure in the future.

Physicians make all treatment choices with the ultimate goal of long-term or lifetime survival. Accumulated survival data for cases diagnosed in 1998-2000 vs. US data accumulated through the NCDB help us compare outcomes. This information shows us that our short and long term survival of all stages of breast cancer is comparable to that throughout the country.⁴

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Figure 5: Observed survival (%) years 1-5 for all patients with breast cancer diagnosed 1998-2000

AJCC Stage	1 yr		2 yr		3yr		4yr		5yr	
	Baptist	US	Baptist	US	Baptist	US	Baptist	US	Baptist	US
0	99.5	99.4	99.5	98.6	98.3	97.5	98.3	96.3	98.3	94.9
I	98.1	98.9	96.8	97.2	93.8	95.3	91.5	93	89.1	90.7
II	98.9	97.9	95.9	93.9	92	89.6	88.1	85.5	83.8	81.8
III	93.5	92.4	84.8	80.5	69.6	70.4	58.7	62.3	56.3	56.1
IV	**	62.2	**	43.8	**	31.6	**	23.6	**	18.4
<i>**Insufficient cases to display survival information</i>										

Breast cancer treatment must be individualized for every unique patient situation. Advances in diagnostic imaging have been enormously helpful, although costly, and new technologies continue to surface. The Breast Center at Baptist has been updated with all digital mammography units. Breast MRI and ultrasound have been incorporated into routine use by radiologists who specialize in breast care at our hospital. Technical expertise provided by our radiologists and breast surgeons has enabled patients with a new breast problem to have a diagnostic procedure completed in a timely and professional manner.

Surgical choices abound due to the proficiency of our breast and reconstructive surgeons. All care providers continue to update their skills and incorporate new techniques regularly. Our radiation oncologists have updated choices for patients with the introduction of partial breast irradiation in the form of Mammosite technology.

Obviously improvement in long term survival depends on all physicians' ability to incorporate new research discoveries into their practices. Prevention, early detection and understanding of breast cancer at the molecular and genetic level continue to remain areas of high interest. Recent decreases in funding to the National Cancer Institute have hampered ongoing research efforts at the basic science level and also impaired efforts to run clinical trials to improve our practices for best therapy choices. This is a national crisis and those of us who advocate for the care of all cancer patients realize that this problem must be reversed. As we wait for this tide to change it is imperative that we continue to ask our patients to enroll in applicable and currently available clinical trials. Again, the physicians who care for cancer patients at Baptist Hospital have a wide array of clinical trials available to them and a goal of the cancer committee is to increase patient participation in these studies.

¹ Glass, Ag, et al. Breast Cancer Incidence, 1980-2006: Combined roles of menopausal hormone therapy, screening mammography, and estrogen receptor status. J Natl Cancer Inst. 2007; 99(15):1152-1161.

² Ravdin, PM, et al. The decrease in breast-cancer incidence in 2003 in the United States. N Engl J Med. 2007; 356(16):1670-4.

³ Saslow D, et al. American Cancer Society guidelines for breast screening with MRI as an adjunct to mammography. CA Cancer J Clin. 2007; 57:75-89.

⁴ ©Commission on Cancer; American College of Surgeons. NCDB Benchmark Reports, v1.1. Chicago, IL, 2002. The content reproduced from the applications remains the full and exclusive copyrighted property of the American College of Surgeons. The American College of Surgeons is not responsible for any ancillary or derivative works based on the original Text, Tables, or Figures.

⁵ Tuttle, et al, JCO 25:5203-5209.



Middle Tennessee Medical Center

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2008

MIDDLE TENNESSEE MEDICAL CENTER—2008 CANCER COMMITTEE

Rick Michaelson, MD

Chair, Pathology

David Beard, MD

Surgery

Lingaiah Chandrashekar, MD

Gastroenterology

George Eckles, MD

Surgery, Cancer Liaison Physician

Chad Jackson, MD

Urology

Ann Owen, MD

Diagnostic Radiology

Richard Parrish, MD

Pulmonology

Arundati Ramesh, MD

Internal Medicine

Charles Wendt, MD

Radiation Oncology

John Zubkus, MD

Medical Oncology

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STHS Breast Centers Nurse Manager

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VP Operations

Nannette Todd, RN, MHA

Director of Patient Care Systems and
Medical/Surgical Division

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Manager, Radiation Therapy

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Chief Nursing Officer

Pam ClenDening, CTR

STHS Oncology Data Manager

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Director, Medical Imaging & Radiation Therapy

Lisa Flamm, RN

Director, Case Management

Ruth Green, RHIT

Director, HIM

Danita Hawks, RN, CTR

Cancer Quality Coordinator

Christine Lombardi, RN, MSHA, CPHQ

Director Quality Improvement

Elizabeth Pace, MHA

STHS Oncology Service Line Executive

Patsy Peyton, RN, CTR

Tumor Registry

Sharon Tibbits, PT

STHS Cancer Center Program Coordinator

MTMC—2007 Accessioned Cases

Primary Site	Total	Class		Sex	
		Analytic	Non-Analytic	M	F
ALL SITES	730	675	55	355	375
ORAL CAVITY	17	15	2	12	5
LIP	0	0	0	0	0
TONGUE	3	3	0	3	0
OROPHARYNX	1	1	0	0	1
HYPOPHARYNX	1	1	0	1	0
OTHER	12	10	2	8	4
DIGESTIVE SYSTEM	101	95	6	56	45
ESOPHAGUS	15	13	2	15	0
STOMACH	4	4	0	3	1
COLON	38	35	3	16	22
RECTUM	15	15	0	5	10
ANUS/ANAL CANAL	7	7	0	4	3
LIVER	4	4	0	4	0
PANCREAS	12	11	1	7	5
OTHER	6	6	0	2	4
RESPIRATORY SYSTEM	135	122	13	74	61
NASAL/SINUS	0	0	0	0	0
LARYNX	8	7	1	5	3
LUNG/BRONCHUS	125	113	12	68	57
OTHER	2	2	0	1	1
BLOOD & BONE MARROW	14	12	2	8	6
LEUKEMIA	7	6	1	3	4
MULTIPLE MYELOMA	4	4	0	3	1
OTHER	3	2	1	2	1
BONE	0	0	0	0	0
CONNECT/SOFT TISSUE	5	5	0	3	2
SKIN	26	24	2	12	14
MELANOMA	26	24	2	12	14
BREAST	153	143	10	1	152
FEMALE GENITAL	23	17	6	0	23
CERVIX UTERI	9	5	4	0	9
CORPUS UTERI	7	5	2	0	7
OVARY	6	6	0	0	6
VULVA	1	1	0	0	1
MALE GENITAL	118	109	9	118	0
PROSTATE	113	104	9	113	0
TESTIS	5	5	0	5	0

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Primary Site	Total	Class		Sex	
		Analytic	Non-Analytic	M	F
URINARY SYSTEM	35	32	3	18	17
BLADDER	20	19	1	11	9
KIDNEY/RENAL	15	13	2	7	8
BRAIN & CNS	24	24	0	13	11
BRAIN (BENIGN)	0	0	0	0	0
BRAIN (MALIGNANT)	7	7	0	6	1
OTHER	17	17	0	7	10
ENDOCRINE	21	21	0	8	13
THYROID	19	19	0	7	12
OTHER	2	2	0	1	1
LYMPHATIC SYSTEM	32	31	1	17	15
HODGKIN'S DISEASE	4	4	0	0	4
NON-HODGKIN'S	28	27	1	17	11
UNKNOWN PRIMARY	23	22	1	14	9
OTHER/ILL-DEFINED	3	3	0	1	2

LUNG CANCER – SITE SPECIFIC STUDY

Charles Wendt, MD

Lung cancer has been the leading cause of cancer death in men since the 1950s, and in 1987 it surpassed breast cancer as the leading cause of cancer death in women. It now accounts for approximately 28% of all cancer deaths.

In 2008 it is estimated that lung cancer will account for 15% of all new cancer cases in the United States. In Tennessee it will account for 18.5 % of all new cases. At Middle Tennessee Medical Center 15% of all cases entered into the Cancer Registry from 2000 to 2007 were cancers of the lung.

The death rate from lung cancer has declined since 1990. Some of this decline may be attributed to improved therapy. The one-year survival rate improved from 34% in 1975 to 42% in 1998. Most of the decrease in death rate, however, is due to a decline in the incidence of the disease. The rate of new cancers in men was 102/100,000 in 1984; it had declined to 81/100,000. The decline in incidence is mostly attributable to a decrease in the number of adults who smoke. The percentage of adults who smoke declined from 40% in the 1960s to approximately 25% today.

Lung cancers are divided into two broad histological categories, non-small cell lung cancers and small cell lung cancers. The clinical presentation, behavior, and treatment of these two groups are different. Non-small cell cancer, which includes squamous cell cancer, adenocarcinoma, large cell cancer, and bronchioalveolar lung cancer, is more likely to be confined to the chest at the time of diagnosis and tends to grow more slowly than small cell lung cancers. Small cell, or oat cell, cancers tend to grow more rapidly but are more sensitive to chemotherapy and radiation than non-small cell cancers.

For earlier, localized non-small cell lung cancers the treatment of choice is surgical resection. In recent years adjuvant chemotherapy has been shown to provide a survival advantage for some resected malignancies. Unfortunately, most non-small cell lung cancers are more advanced at the time of diagnosis. A combination of chemotherapy and radiation is usually used for advanced cancers that are still confined to the chest. Chemotherapy alone is often used for cancers that have spread outside the chest.

The purpose of this study is to report the patterns of presentation and treatment for all patients who received some or all of their treatment for non-small cell cancer at Middle Tennessee Medical Center from 2000 to 2007. The study includes all 616 patients who received at least a portion of their initial therapy at Middle Tennessee Medical Center. Patients who were diagnosed at MTMC but had all initial therapy delivered at other facilities and patients who had small cell lung cancer or carcinoid were not included in this study. Three individuals had either two synchronous or sequential primaries, so the total number of cases analyzed 619.

As per Commission on Cancer standards pathological staging was used in preference to clinical staging in cases where both types of staging data were available. For patterns of care and disease presentation comparisons the National Cancer Data Base (NCDB) from the year 2005 was used. For survival comparisons, the 1998-2000 data, the latest data from NCDB, was used. This was compared to MTMC data from 2000-2003.

Figures 1 and 2 compare the age and sex distribution of the study patients with the NCDB database. There are no significant differences between the two groups.

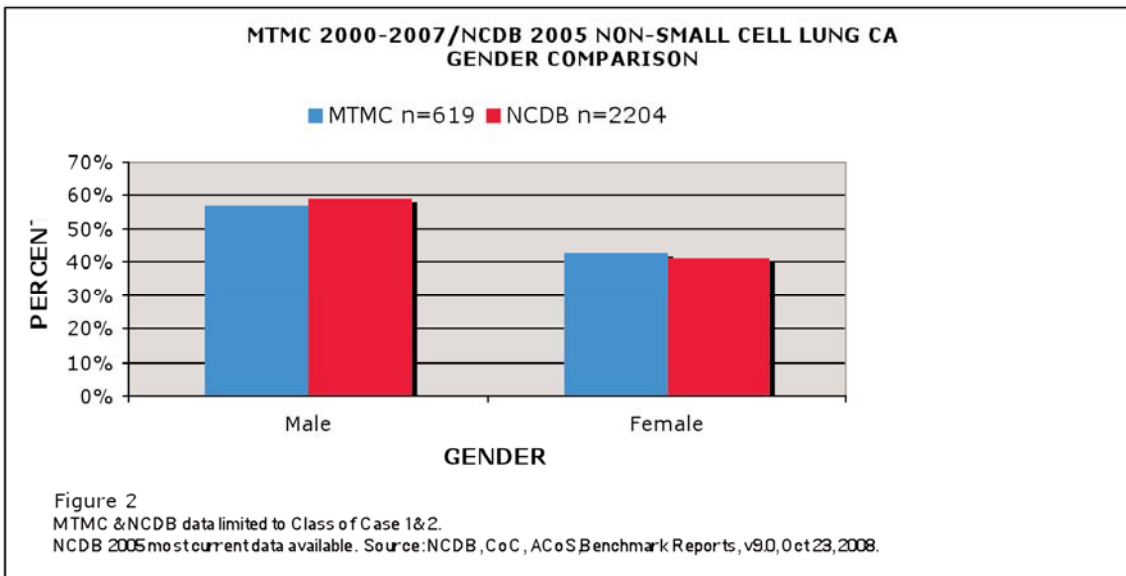
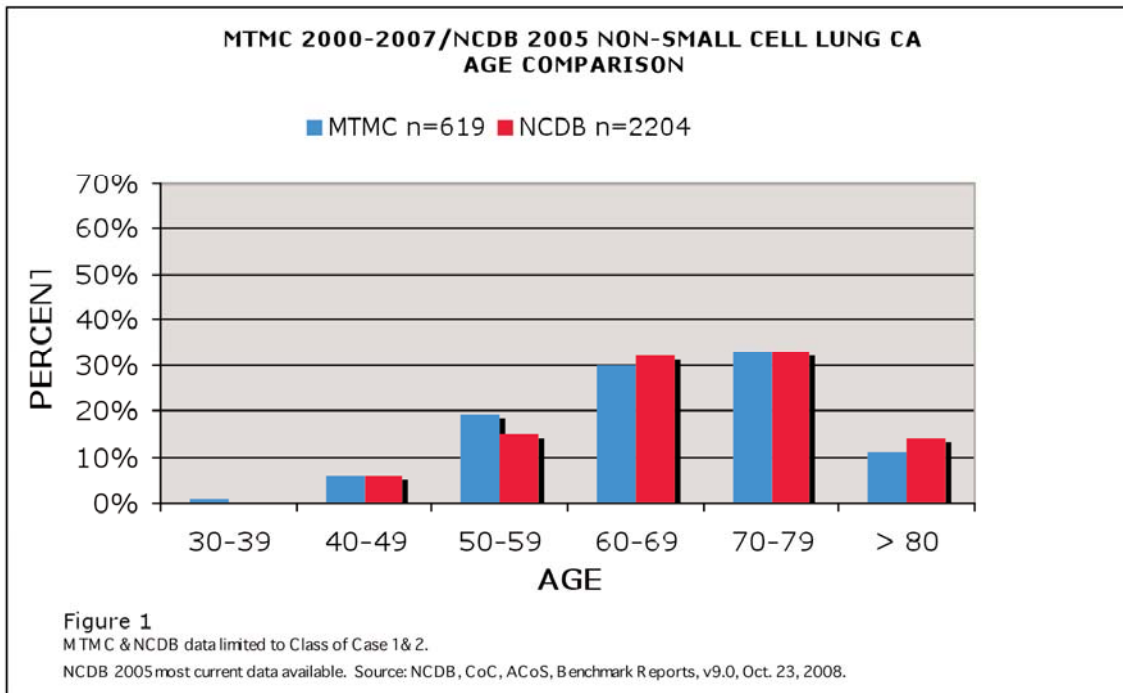


Figure 3 compares the distribution of histologies for MTMC patients with non-small cell cancer to the NCDB group. Patients in the MTMC group were slightly less likely to have a diagnosis of adenocarcinoma, and slightly more likely to have a more non-specific diagnosis of non-small cell carcinoma.

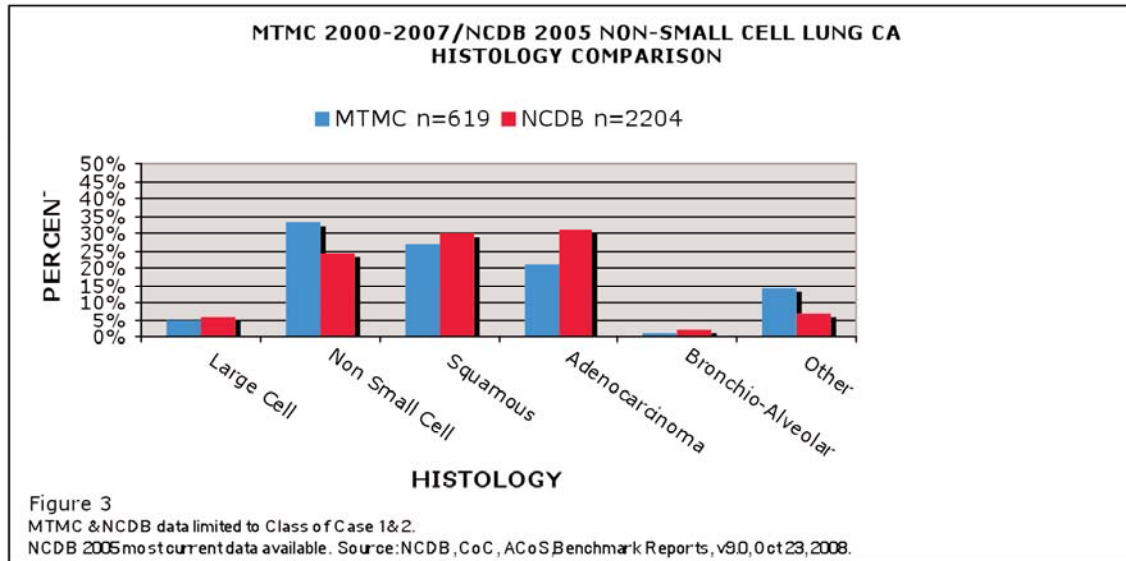
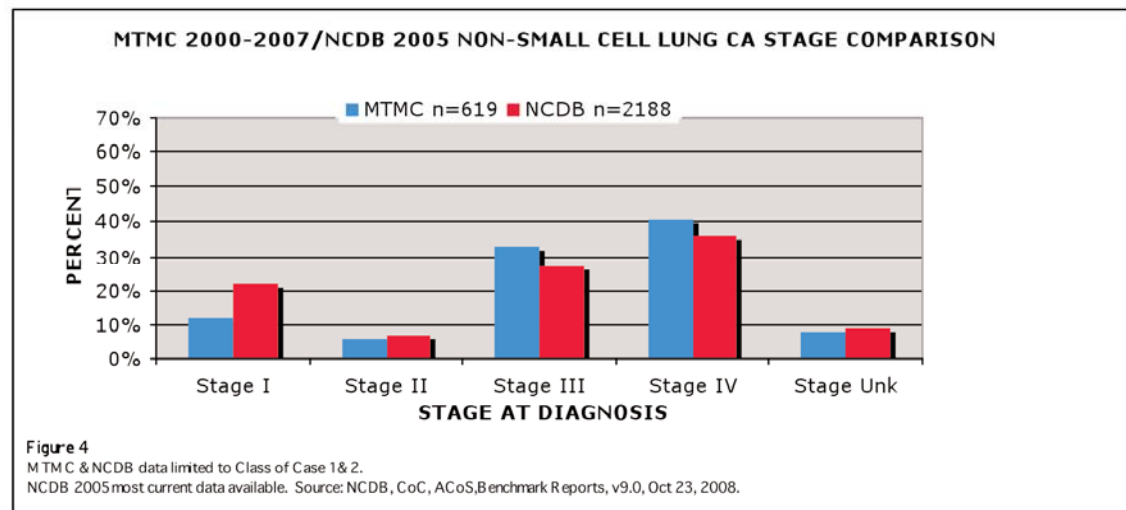


Figure 4 compares the stage distributions for non-small cell patients. Patients treated at MTMC were less likely to have stage I disease and slightly more likely to have Stage III and IV disease than patients in the NCDB database.



Tables 5-8 compare the type of therapy that patients with non-small cell cancer received at MTMC to the NCDB database by stage. Patients at MTMC with stage I disease were less likely to be treated with surgery, those with stage II disease were more likely to receive adjuvant chemotherapy and radiation, and patients with stage IV were more likely to receive chemotherapy as part of their treatment when compared to the NCDB database.

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Table 5
MTMC/NCDB Treatment Comparison Stage I

	MTMC 2000-2007 n= 75	NCDB 2005 n= 452
Surgery	43%	48%
Radiation	15%	12%
Rad + Chemo	16%	8%
Chemotherapy	8%	3%
Other Specified Therapy	8%	12%
None	10%	17%

Table 6
MTMC/NCDB Treatment Comparison Stage II

	MTMC 2000-2007 n= 34	NCDB 2005 n=142
Surgery	6%	25%
Radiation	15%	15%
Rad + Chemo	29%	14%
Chemotherapy	6%	6%
Other Specified Therapy	41%	20%
None	3%	20%

Table 7
MTMC/NCDB Treatment Comparison Stage III

	MTMC 2000-2007 n= 187	NCDB 2005 n= 532
Surgery	1%	2%
Radiation	12%	17%
Rad + Chemo	47%	39%
Chemotherapy	13%	11%
Other Specified Therapy	14%	12%
None	12%	19%

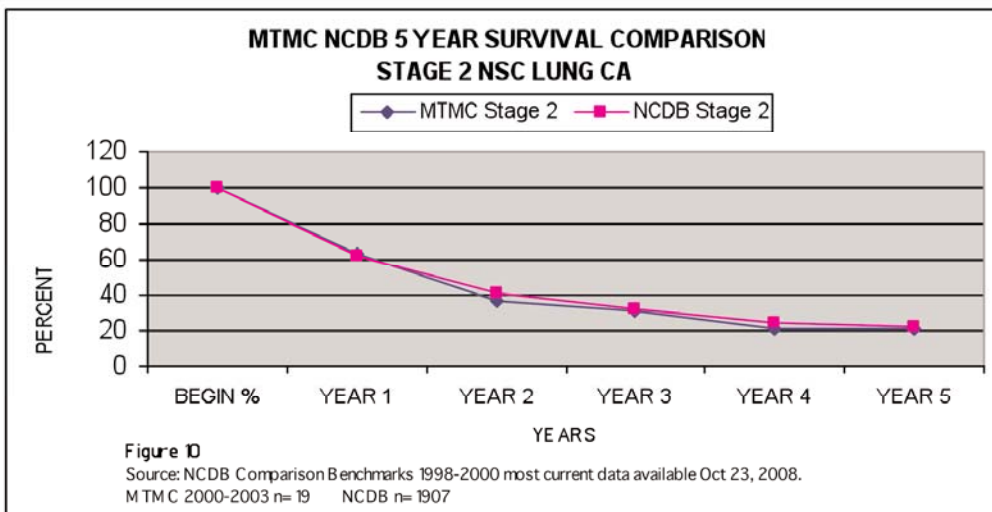
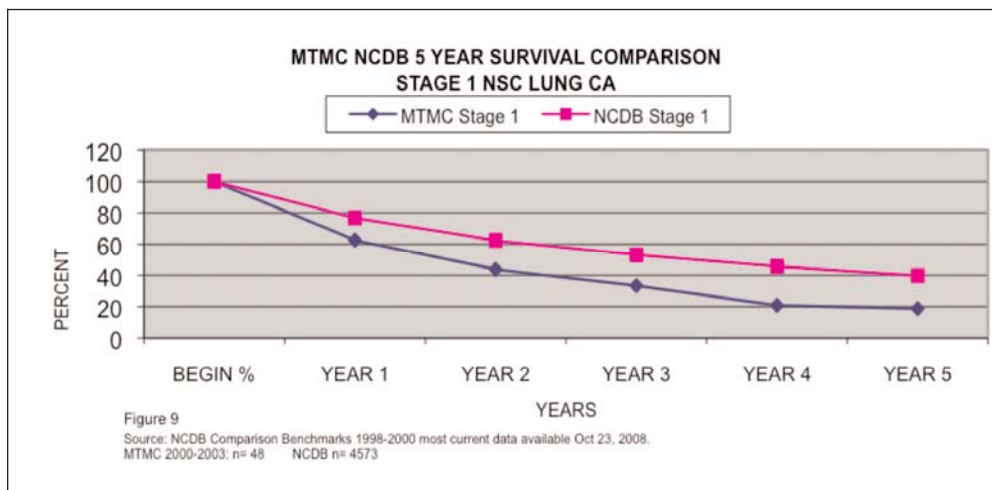
Table 8
MTMC/NCDB Treatment Comparison Stage IV

	MTMC 2000-2007 n= 256	NCDB 2005 n= 751
Surgery	0%	2%
Radiation	15%	23%
Rad + Chemo	38%	25%
Chemotherapy	26%	20%
Other Specified Therapy	4%	4%
None	17%	26%

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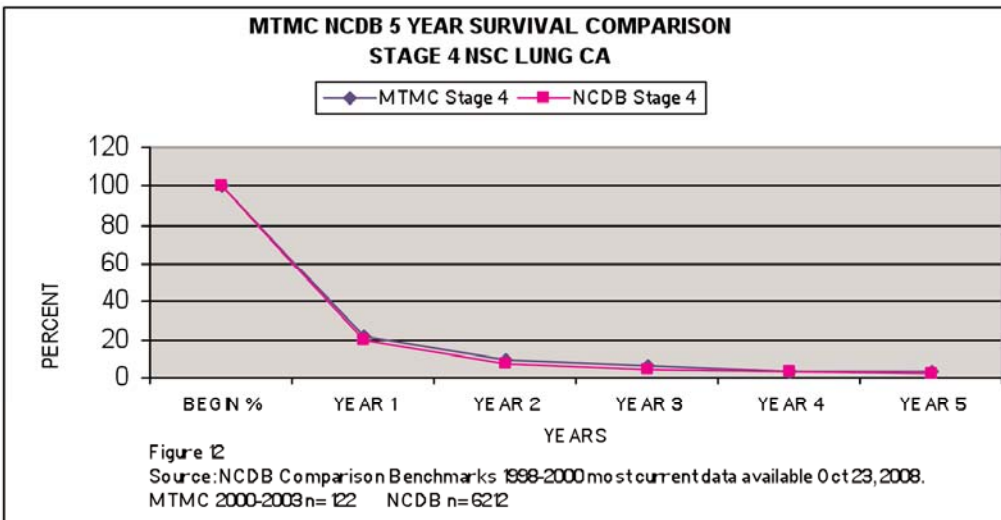
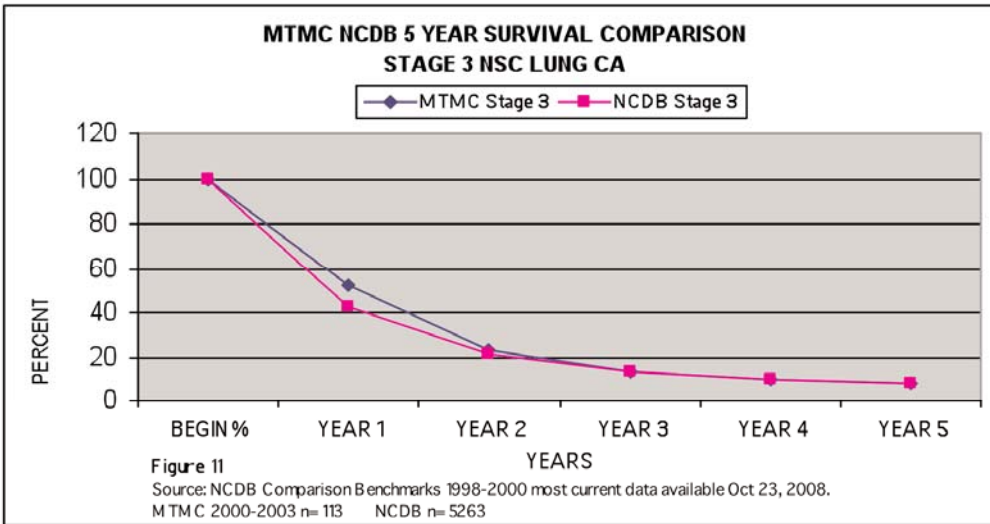
There are several possible reasons for these discrepancies. Many patients with earlier stage disease may have been treated with surgery at hospitals with thoracic oncology specialists. Only in this decade adjuvant chemotherapy has been shown to provide a survival advantage for patients with stage II disease who have been treated with surgery, and new chemotherapy regimens have been shown to prolong survival in patients with stage IV disease.

Figures 9-12 compare the observed survival of MTMC non-small cancer patients treated from 2000-2003 to patients in the NCDB database by stage. All survival curves are quite similar except for the curves for patients with stage I disease. Again, patients with stage I disease were less likely to be treated with surgery than stage I patients in the NCDB database. Observed survival curves do not distinguish death from cancer with death from intercurrent disease. It is likely that patients who were treated at MTMC, who were more likely to have diseases that made them poor candidates for surgical treatment, may have died of other causes than cancer during the follow-up period.



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In the past decade there have been several advances in the diagnosis and treatment of non-small cell lung cancer. PET scanning is now routinely used for initial staging. It is the most accurate radiological modality for the delineation of the extent of local-regional disease and the determination of distant metastases. Adjuvant chemotherapy has been shown to improve survival in patients with pathological stage II and III disease who have undergone surgical resection. New systemic agents improve survival in some patients with advanced disease. Neoadjuvant chemoradiotherapy shows promise in improving resectability rates and survival in some patients with stage III disease who are candidates for surgery. Hopefully these improvements, along with continued aggressive efforts to reduce smoking rates, will continue to decrease the death rate from this difficult disease.



Saint Thomas Hospital

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2008

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SAINT THOMAS HOSPITAL—2007 ACCESSIONED CASES

Primary Site	Total	Class		Sex	
		Analytic	Non-Analytic	M	F
ALL SITES	1725	1483	242	825	900
ORAL CAVITY	19	13	6	16	3
LIP	1	1	0	1	0
TONGUE	8	6	2	7	1
OROPHARYNX	0	0	0	0	0
HYPOPHARYNX	0	0	0	0	0
OTHER	10	6	4	8	2
DIGESTIVE SYSTEM	393	327	66	219	174
ESOPHAGUS	29	23	6	20	9
STOMACH	40	24	16	25	15
COLON	112	99	13	61	51
RECTUM	63	44	19	34	29
ANUS/ANAL CANAL	8	8	0	2	6
LIVER	18	15	3	12	6
PANCREAS	103	94	9	56	47
OTHER	20	20	0	9	11
RESPIRATORY SYSTEM	372	329	43	208	164
NASAL/SINUS	0	0	0	0	0
LARYNX	12	9	3	8	4
LUNG/BRONCHUS	357	317	40	197	160
OTHER	3	3	0	3	0
BLOOD & BONE MARROW	58	42	16	32	26
LEUKEMIA	41	29	12	22	19
MULTIPLE MYELOMA	12	11	1	7	5
OTHER	5	2	3	3	2
BONE	1	1	0	1	0
CONNECT/SOFT TISSUE	9	7	2	4	5
SKIN	48	41	7	29	19
MELANOMA	46	39	7	27	19
OTHER	2	2	0	2	0
BREAST	230	198	32	1	229
FEMALE GENITAL	93	83	10	0	93
CERVIX UTERI	16	13	3	0	16
CORPUS UTERI	23	22	1	0	23
OVARY	28	24	4	0	28
VULVA	21	19	2	0	21
OTHER	5	5	0	0	5

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Primary Site	Total	Class		Sex	
		Analytic	Non-Analytic	M	F
MALE GENITAL	113	104	9	113	0
PROSTATE	108	101	7	108	0
TESTIS	3	1	2	3	0
OTHER	2	2	0	2	0
URINARY SYSTEM	83	71	12	57	26
BLADDER	34	31	3	27	7
KIDNEY/RENAL	46	37	9	28	18
OTHER	3	3	0	2	1
BRAIN & CNS	136	116	20	71	65
BRAIN (BENIGN)	2	1	1	0	2
BRAIN (MALIGNANT)	46	42	4	31	15
OTHER	88	73	15	40	48
ENDOCRINE	68	65	3	21	47
THYROID	44	43	1	10	34
OTHER	24	22	2	11	13
LYMPHATIC SYSTEM	64	50	14	31	33
HODGKIN'S DISEASE	5	3	2	4	1
NON-HODGKIN'S	59	47	12	27	32
UNKNOWN PRIMARY	35	33	2	21	14
OTHER/ILL-DEFINED	3	3	0	1	2

ESOPHAGEAL CANCER—SITE SPECIFIC STUDY

Thomas Hunter, MD

The American Cancer Society estimates that during 2008 approximately 16,470 new esophageal cancer cases will be diagnosed in the United States and 14,280 deaths from esophageal cancer will occur. About 75% to 80% will occur among men. It is 50% more common among African Americans than among whites, though in Western countries, the rate of adenocarcinoma of the esophagus in white men has been increasing at about 2% a year. The esophageal cancer rate has been unchanged in white women. The rate of esophageal cancer, mainly squamous cell, has been dropping in African American men and women.

The esophagus is essentially a hollow tube and its walls are composed of a number of highly specialized layers, including an inner lining made up of thin, flat cells called squamous cells, a layer below the inner lining containing mucus-secreting glands, and a thick band of muscle tissue. The types of esophageal cancer are classified according to the types of cells from which it originates.

Squamous cell carcinoma, which is the most common form of cancer worldwide and in African Americans, arises from the flat squamous cells that line the esophagus. Cancer of the esophagus is much more common in some other countries, such as Iran, northern China, India and southern Africa where the rates of esophageal cancer are 10 to 100 times higher than in the United States. The main type of esophageal cancer in these countries is squamous cell carcinoma.

Adenocarcinoma arises from the glandular tissue in the lower part of the esophagus nearest the stomach. In the United States, adenocarcinoma is more common in whites than in African Americans. During the past two decades, this type of cancer has increased by 50 percent in African Americans and 450 percent in white Americans.

While squamous cell and adenocarcinoma are the typical types of esophageal cancer, rare forms of the disease sometimes occur. These include sarcoma, lymphoma, small cell carcinoma and spindle cell carcinoma. In addition, cancer that starts in other organs can spread through the bloodstream or lymphatic system to the esophagus.

Figure 1. Comparison NCDB and Saint Thomas Hospital—Histology of Esophageal Cancer
(Source: NCDB, Commission on Cancer, ACoS. Benchmark Reports, v9.0)

Histology	NCDB %	STH %
Carcinoma, NOS	4.49	3.76
Squamous Cell Carcinoma	30.57	13.53
Adenocarcinoma	53.91	62.41
Other Specified Types	11.03	20.30

Factors that have been associated with increased risk include heavy alcohol consumption and chronic alcohol abuse that causes inflammation of the lining of the esophagus that can lead to malignant changes. Also associated with esophageal cancer is use of tobacco products whether cigarettes, cigars, pipe or chewing tobacco. This risk increases with long-term usage and increases even more in people who smoke and use alcohol. Chronic acid reflux resulting in chronic heartburn and a change

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in the lining of the distal esophagus to lining that resembles the glandular lining of the stomach, Barrett's esophagus, results in about a third of esophageal cancers. Smoking, obesity and a high-sodium diet result in an increased risk of reflux problems. Dietary factors such as eating a diet low in fruits and vegetables appear to contribute to esophageal cancer. Especially implicated are diets lacking in vitamins A, C and B-1 (riboflavin). Also, obesity has been linked to an increased risk of adenocarcinoma. Esophageal cancer is also associated with the rare medical conditions of achalasia, esophageal webs, and tylosis.

Factors associated with a decreased risk of esophageal cancer include aspirin or NSAID usage, diets high in cruciferous vegetables and green and yellow vegetables, moderate coffee consumption, eating pizza more than once a week, and the presence of helicobacter pylori. The last two factors are still controversial.

The American Cancer Society estimates during 2008, because esophageal cancer is usually diagnosed at a late stage, most people with esophageal cancer will eventually die of this disease. However, survival rates have been improving. During the early 1960s, only 4% of all white patients and 1% of all African-American patients survived at least 5 years after diagnosis. Now, 18% of white patients and 11% of all African-American patients survive at least 5 years after diagnosis. These figures refer to patients with all stages of disease, so survival rates in earlier stage disease will be higher. In general the prognosis of esophageal cancer is so poor because the majority of patients present with advanced disease.

The main treatment for esophageal cancer includes surgery, radiation and chemotherapy. These may be utilized singularly or in combination. At Saint Thomas Hospital a total of 107 cases were reported from this institution from 2000-2005. The predominant treatment involved trimodality therapy utilizing preoperative chemotherapy and radiation therapy followed by surgery in 42% of cases. An additional 23% were treated with chemotherapy and radiation alone. Surgery was the sole modality in 16%. Chemotherapy alone was used 7% of the time, while radiation alone was used in 2% of cases. As preoperative therapy was so frequently utilized, accurate survival by stage was not available.

Figure 2. Comparison NCDB and Saint Thomas Hospital – Treatment of Esophageal Cancer
(Source: NCDB, Commission on Cancer, ACoS. Benchmark Reports, V9.0)

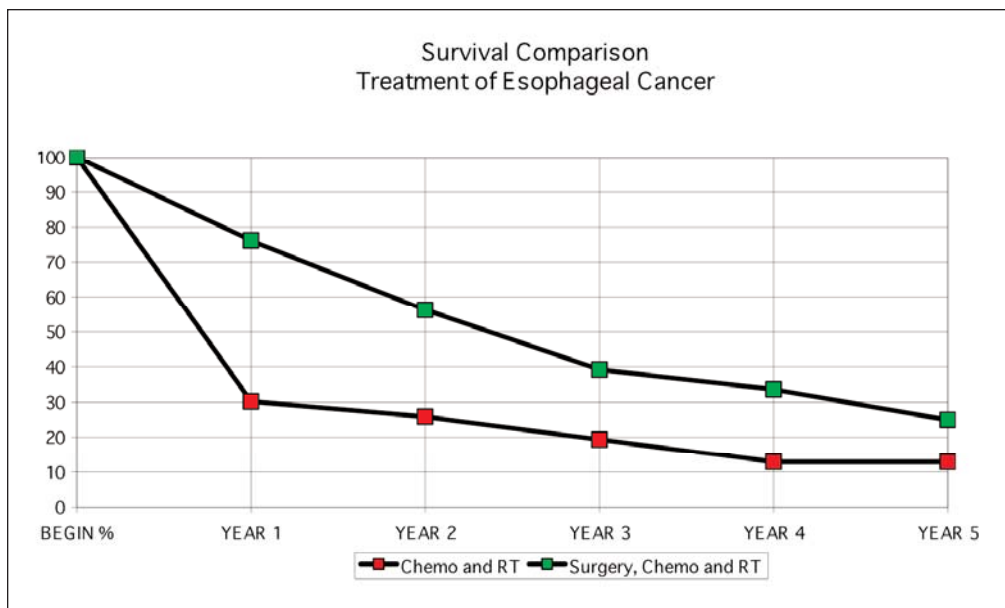
Treatment	NCDB%	STH%
Surgery Only	13.88	15.89
Radiation Only	8.92	1.87
Surgery & Radiation	0.01	0.00
Surgery & Chemotherapy	0.01	0.00
Radiation & Chemotherapy	30.49	23.36
Chemotherapy Only	8.29	7.48
Surgery, Radiation & Chemotherapy	13.01	42.06
Other Specified Therapy	4.39	1.87
No First Course Treatment	21.00	7.48

Over the past 5 years, neoadjuvant chemoradiotherapy has been utilized more often at Saint Thomas Hospital. An analysis of 65 cases from the period 2002–2007 revealed the following tumor response at time of surgical resection:

Figure 3. Tumor Response at Surgical Resection Following Neoadjuvant Chemoradiotherapy at Saint Thomas Hospital

Partial Response	52%
Complete Response	37%
Progression of Disease	8%
Indeterminate	3%

A five-year observed survival analysis calculated by actuarial method comparing patients treated with chemotherapy and radiation and patients who received surgery, chemotherapy and radiation shows a survival advantage for those treated with tri-modality therapy.



The five-year survival of patients with esophageal cancer has improved from historic 5% levels to the current 18% levels nationally. Trimodality therapy as practiced at Saint Thomas Hospital appears to improve on the national average by about 10% by actuarial analysis. The histological 37% complete response rate is excellent. The treatment of esophageal cancer at Saint Thomas is at least equivalent to national standards.