

SENTARA CANCER NETWORK

2008 ANNUAL OUTCOMES REPORT



While driven to make advances in quality and outcomes, the physicians and other professionals of the Sentara Cancer Network are also focused on delivering compassionate care for the whole person. Improvements in the care and treatment of cancer, along with efforts for early screening and detection, are helping people live longer and better lives. Survivorship also creates a new set of circumstances, issues and topics for patients and their families to consider. That's why the Sentara Cancer Network launched "The Journey

Funding for "The Journey Beyond the Diagnosis" is provided by the Sentara Legacy Society. The Sentara Legacy Society supports projects reflecting Sentara's mission of improving health, by providing new technologies, programs and best practices in healthcare.

surgeries to improve the quality of life for head and neck cancer patients and efforts for early outreach to women who are at the highest risk for breast cancer. You can read more about these topics, and accompanying clinical data, in this report.

Beyond the Diagnosis: Finding Your Path to Survivorship."

Monthly workshops provide aid on topics such as family and relationships, employment and financial planning, and emotional and social aspects to living with cancer.

A Focus on Quality

Highly skilled physicians and staff, advanced technology and treatments and a focus on quality have resulted in accomplishments such as a compliance standard for 12-node sampling in colon cancer surgeries, reconstructive

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Among other noteworthy achievements in 2008 that will contribute to ongoing quality outcomes, the Sentara Cancer Network:

- Increased Multidisciplinary Cancer Conference case presentations by 64% from 1,099 cases in 2007 to 1,801 cases in 2008. Physicians from across medical disciplines to contribute their specialized expertise and collaborate on individualized care plans to give each patient the best advantage
- Reached more than 8,000 participants with cancer education, prevention and early detection topics from the Sentara Cancer Network Outreach and Education staff
- Expanded the number of support groups offered and increased attendance to nearly 2,000 people



- Established network model for breast cancer care with physician leaders from each breast center
- Added and expanded advanced technology, including digital mammography and intraoperative radiation
- Provided access to national clinical trials through our partnerships with Virginia Oncology Associates and Eastern Virginia Medical School

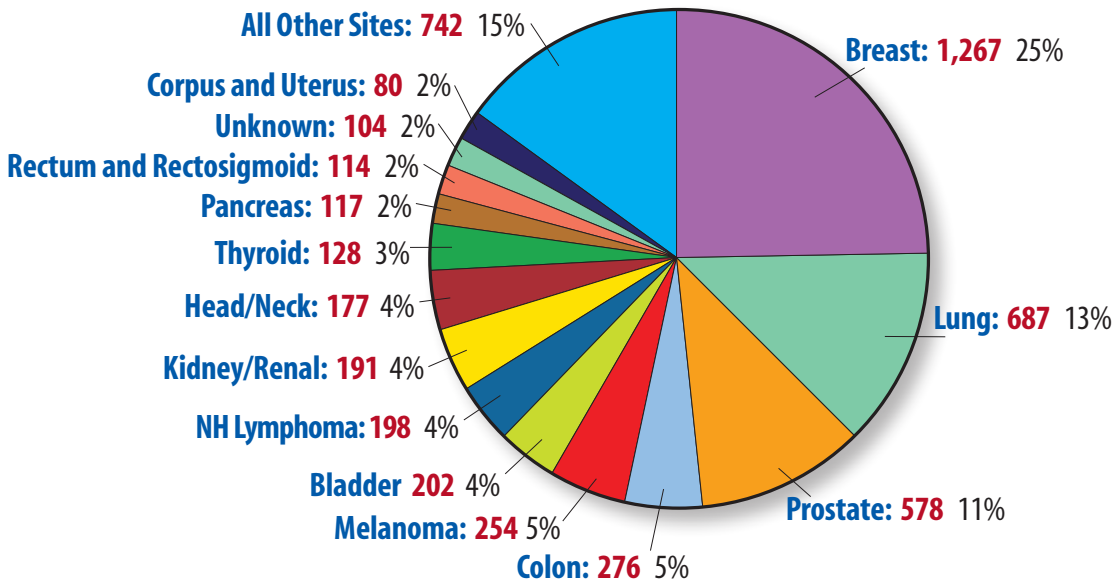
Looking Forward

The Sentara Cancer Network started 2009 with the launch of the Sentara Advanced Radiosurgery Center, featuring CyberKnife technology. Unlike older radiosurgery systems, CyberKnife applications extend beyond the head and neck to tumors of the lung, pancreas, liver and spine, providing unprecedented accuracy in the delivery of radiation therapy.

For continuing updates on all aspects of the Sentara Cancer Network, and to subscribe to the e-newsletter, please visit www.sentara.com/cancer.

Figure 1.
2007 Sentara Cancer Network Top 10 Analytic Cancer Sites

Breast cancer is the leading primary site, accounting for 25% of the total cancer caseload (1,267 cases). Breast cancer is followed by lung cancer, prostate cancer, colon cancer, and melanoma as the top 5 sites for 2007. Other sites account for 15% of the total caseload and include all primary sites not in the top 10 for the Sentara Cancer Network.



Head and Neck Cancer Achievements

As a tertiary care program – and the only one of its kind in the region – the Head and Neck Cancer Center at Sentara Norfolk General Hospital serves patients and referring physicians from a wide geographic area. The hospital team and the physicians of Eastern Virginia Medical School Health Services represent a truly multidisciplinary approach. Surgery, radiation therapy and chemotherapy are often combined with new clinical protocols to enhance patient outcomes. Advanced services, including pathologists who specialize in head and neck cancer, add to sound diagnosis and staging.

Quality of life has emerged as an important outcome in the treatment of head and neck cancer patients – with swallowing, eating and talking evaluated as key measures.

[More Online](#)

Patient Support:

The Tidewater Lost Chord Club, one of many support groups in the Sentara Cancer Network, is dedicated to assisting patients who have had the voice box surgically removed due to cancer.



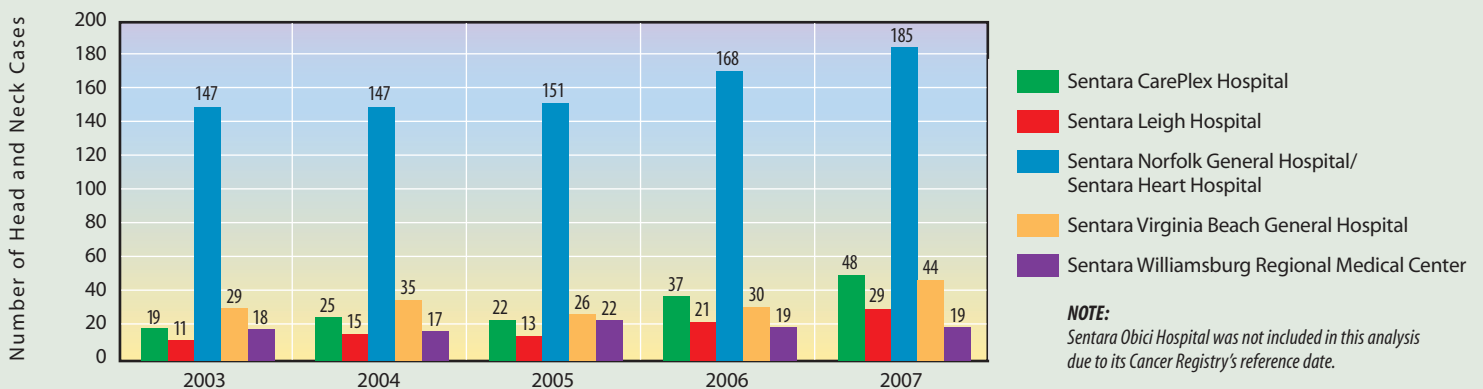
The advanced reconstructive work of the fellowship-trained head and neck surgeons enhances quality of life for patients. Social and emotional well-being, along with health and functional ability, have become important goals in the multidisciplinary treatment plan. The collaborative team includes rehabilitation and home care services from Sentara.

Figure 2.

2003 - 2007 Sentara Cancer Network Head and Neck Cases

Head and Neck includes Oral Cavity/Pharynx, Larynx, Nasal/Sinuses, and Thyroid

Figure 2 illustrates the head and neck cancer caseload for the years 2003 to 2007 in the Sentara Cancer Network. As a specialized tertiary program, Sentara Norfolk General Hospital sees the overwhelming number of head and neck cancers within the network. This number has been steadily increasing from 2003 through 2007.

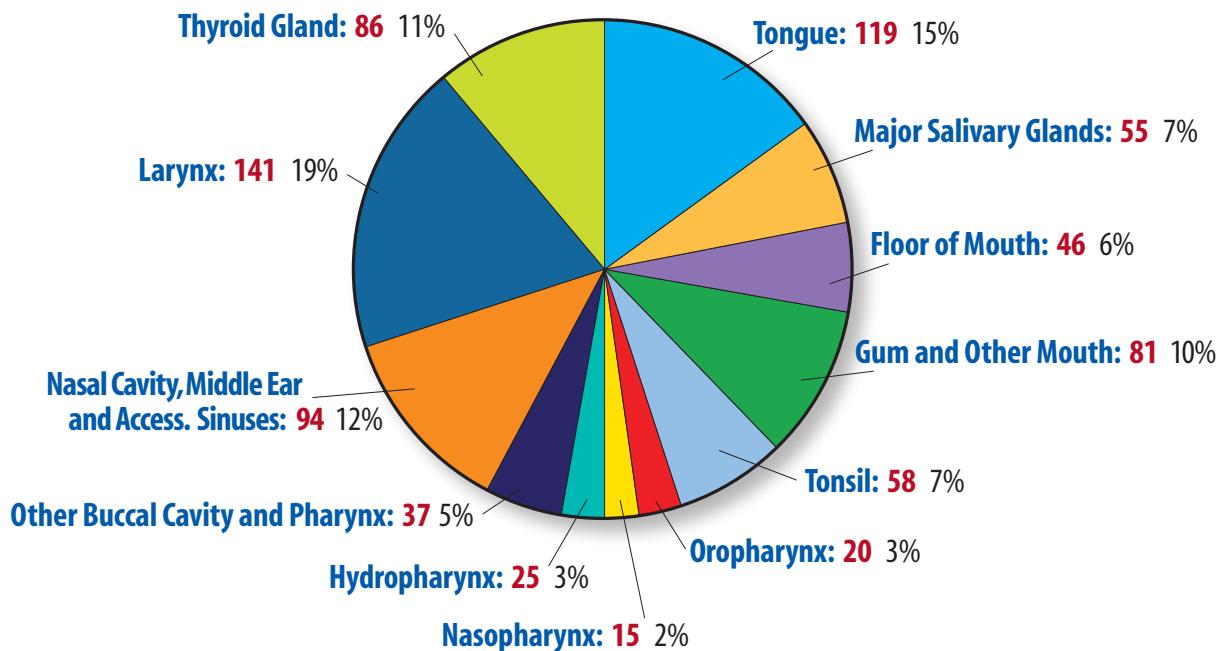


Multidisciplinary Cancer Conferences

Prospective Head & Neck Cases – The team at Sentara Norfolk General Hospital presents 100% of its head and neck cancer patients at a prospective head and neck-specific multidisciplinary cancer conference. These conferences increase the quality of patient care by incor-

porating the opinion and discussion of each discipline involved in the diagnosis and treatment of cancer (imaging, pathology, surgery, medical oncology, and radiation oncology). Figure 3 below is a breakdown of primary sites presented at this conference between 2006 and 2008.

Figure 3.
Sentara Norfolk General Hospital Head and Neck Cancer Conference
Site-Specific Case Presentation Breakdown 2006-2008



Head and Neck Cancer Linked to Tobacco

and cardiovascular disease. In order to help employees, patients and visitors with their journey to becoming tobacco free, Sentara has designated all of its hospitals plus many other Sentara facilities as Tobacco Free Environments (TFE). Sentara has offered tobacco cessation classes, at-cost

The National Cancer Institute reports that 85% of head and neck cancers are linked to tobacco use, along with the risk of other cancers

medications and other incentives for employees and their spouses to quit tobacco, and former tobacco users have volunteered as tobacco cessation facilitators. Visitors can obtain a single dose of nicotine replacement therapy to help them manage their cravings and comply with the policy while on campus. Community members also have the option to participate in free Sentara community health and prevention programs like “Get off your Butt and Stay Smokeless for Life” free of charge.

It is a way for everyone to live the Sentara mission of Improving Health Every Day.

Transanal Endoscopic Microsurgery (TEM): A Less Invasive Surgery for Removing Middle and Upper Rectal Tumors

Sentara CarePlex Hospital was the first in the area to perform a new, minimally invasive surgical procedure to remove select rectal tumors that traditionally would require a more involved and invasive surgery.

For people who develop middle and upper rectal tumors—cancerous or non-cancerous—there is a new innovative surgery, called Transanal Endoscopic Microsurgery (TEM) that offers a quicker recovery, with no scar and fewer complications.

The last six inches of the large intestine is the rectum. To reach a tumor that develops in the middle to upper rectum, surgeons



traditionally perform a more invasive surgery called low anterior resection. This involves a surgical incision, a three- to 10-day hospital stay, associated complications after surgery and a recovery time of six to eight weeks.

TEM is designed to allow removal of tumors from the middle to upper rectum through a natural opening, the anus, without a surgical incision. The tumor is removed through the anus opening using specialized instruments that allow the surgeon to very clearly see the tumor for more precise removal.

Figure 4.
Observed Survival for Colorectal Cases Diagnosed in 1998-2001 in the Sentara Cancer Network (Sentara CarePlex Hospital, Sentara Norfolk General Hospital, Sentara Virginia Beach General Hospital, Sentara Williamsburg Regional Medical Center)

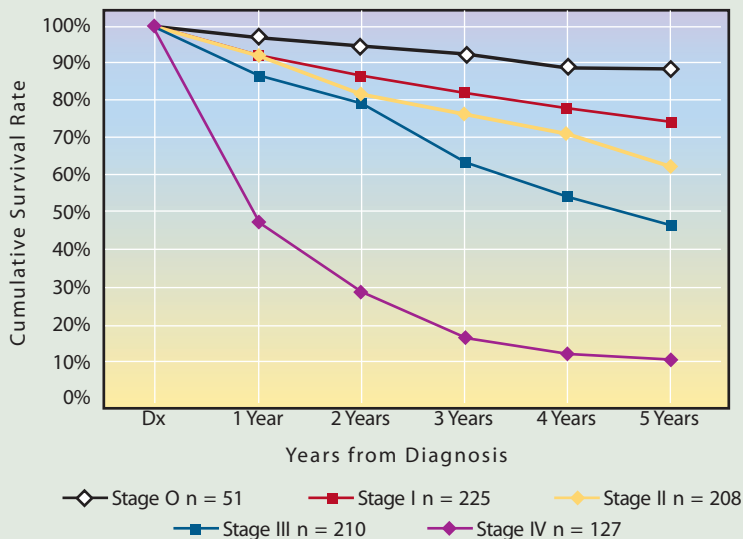
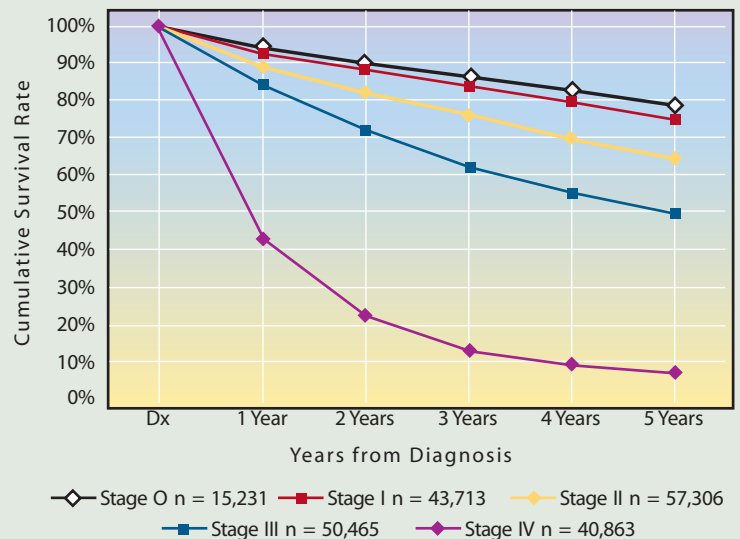


Figure 5.
Observed Survival For Colon Cases Diagnosed in 1998 - 2001 Data from 1,319 Facilities National Cancer Database

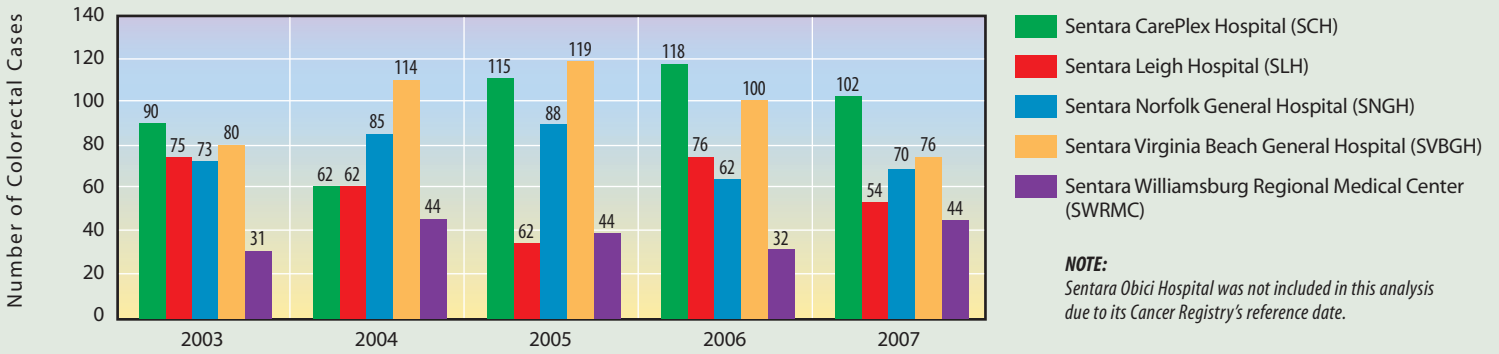


The above graphs are a comparison between the 5-year survival for colon cancer in the National Cancer Database and the 5-year survival for the Sentara Cancer Network (Sentara CarePlex Hospital, Sentara Norfolk General Hospital, Sentara Virginia Beach General Hospital, and Sentara Williamsburg Regional Medical Center). The Network's 5-year survival for stage 0 (in-situ) and stage IV (distant) colon cancers is better than the National Cancer Database (NCDB). Sentara Cancer Network rates for stage I, II, and III colon cancers is almost identical to the National Cancer Database for the years 1998 to 2001.

Figure 6.

2003 - 2007 Sentara Cancer Network Colorectal Cases

This graph illustrates the number of colorectal cancer cases diagnosed and/or treated at Sentara Cancer Network facilities from 2003-2007. Sentara CarePlex Hospital and Sentara Virginia Beach General Hospital treated the majority of the colorectal cancer cases within the network during this time period.



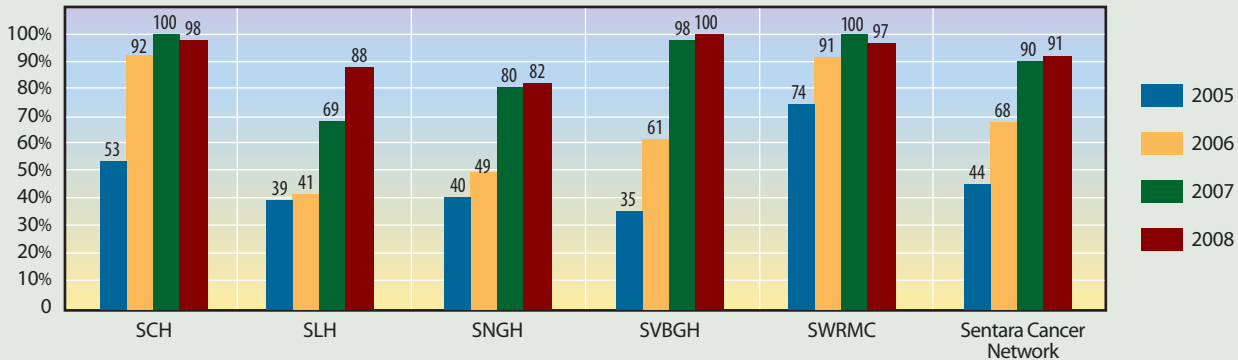
NOTE:
Sentara Obici Hospital was not included in this analysis due to its Cancer Registry's reference date.

Figure 7.

**National Quality Forum/Commission on Cancer Quality Indicator
Percent of Colon Surgical Resection includes at least 12 nodes**

In 2006, the National Quality Forum (NQF) and the Commission on Cancer (CoC) began developing trackable indicators to represent cancer care quality throughout the nation. One of these indicators created was the inclusion of at least 12 lymph nodes in a colon resection specimen to ensure an adequate sample to identify potential metastases. Initially, like most of the United States, the Sentara Cancer Network's compliance rate for this indicator was relatively low. As Figure 7 illustrates, the adoption of this indicator as an internal quality improvement initiative at Sentara has increased the compliance rate above 80% at each hospital and over 90% for the entire network.

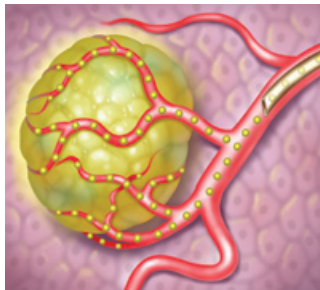
Internal quality improvement is an ongoing goal of the Sentara Cancer Network.



**SIR-Spheres®
Selective Internal Radiation Sphere Therapy**

For primary colon cancer that has spread to the liver, physicians can offer a new alternative. Sentara Norfolk General Hospital was the first in the area to begin using Selective Internal Radiation (SIR) Spheres Therapy.

Imagine millions of microscopic radioactive resin beads (spheres) traveling through the bloodstream with one mission: to target and destroy advanced liver metastases. In this non-surgical, outpatient therapy, a catheter is placed in the femoral artery of the upper thigh and threaded through the hepatic artery. Through this catheter the



microscopic spheres are delivered directly to the tumor where they become trapped.

For about two weeks, the injected spheres radiate the tumor, destroying the cancerous cells from the inside. SIR-Spheres® can safely deliver many times more radiation than conventional techniques.

While SIR-Spheres® therapy is not considered a cure, it can extend survival, sometimes by years, and improve patients' quality of life. In some cases, it can also shrink the liver tumors enough to allow for surgical removal.

Breast Cancer Achievements

The women's imaging centers at Sentara Leigh Hospital and Sentara Williamsburg Regional Medical Center became comprehensive breast centers in 2008.

The women's imaging centers at Sentara Leigh Hospital and Sentara Williamsburg Regional Medical Center became comprehensive breast centers in 2008. They join the Dorothy G. Hoefler Comprehensive Breast Center at Sentara Port Warwick in offering comprehensive, multidisciplinary care. These centers are held to higher standards and requirements

As part of the comprehensive breast center model, Sentara offers a Breast Cancer High Risk Assessment Program. Directed by nurse navigators, the program helps those at the highest risk establish physician relationships and establish a proactive screening plan to avoid the disease.

for having fellowship-trained mammographers and nurse navigators, high risk assessment resources, state-of-the-art technology, a majority of cases reviewed by a prospective cancer conference and active clinical improvement programs. Other women's imaging centers at Sentara are expected to be designated as comprehensive in 2009.

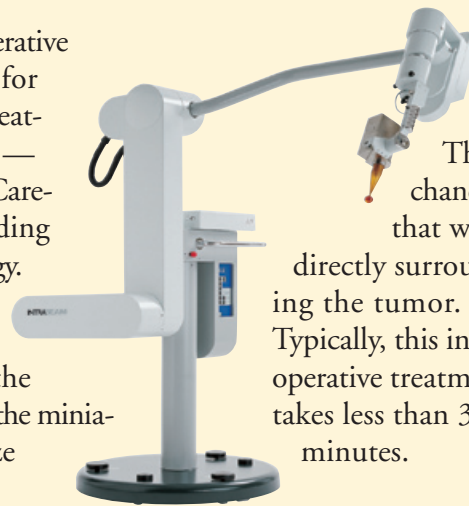


Download a copy of this brochure.

IntraBeam® Intraoperative Radiation Therapy For Early Stage Breast Cancer Therapy

The technology of IntraBeam® Intraoperative Radiation Therapy offers the ability for patients to receive radiation therapy treatments immediately following surgery — right in the operating room. Sentara CarePlex Hospital is one of only a few leading centers in the U.S. to have this technology.

IntraBeam can be used immediately after the surgeon completes the removal of the tumor. While still in the operating room, the physicians position the miniature X-ray source with the custom-size



applicator to deliver radiation therapy directly into the tumor bed (the cavity left after the tumor has been removed).

This targets the breast cells with the highest chance of cancer recurrence and those that were directly surrounding the tumor. Typically, this intraoperative treatment takes less than 30 minutes.

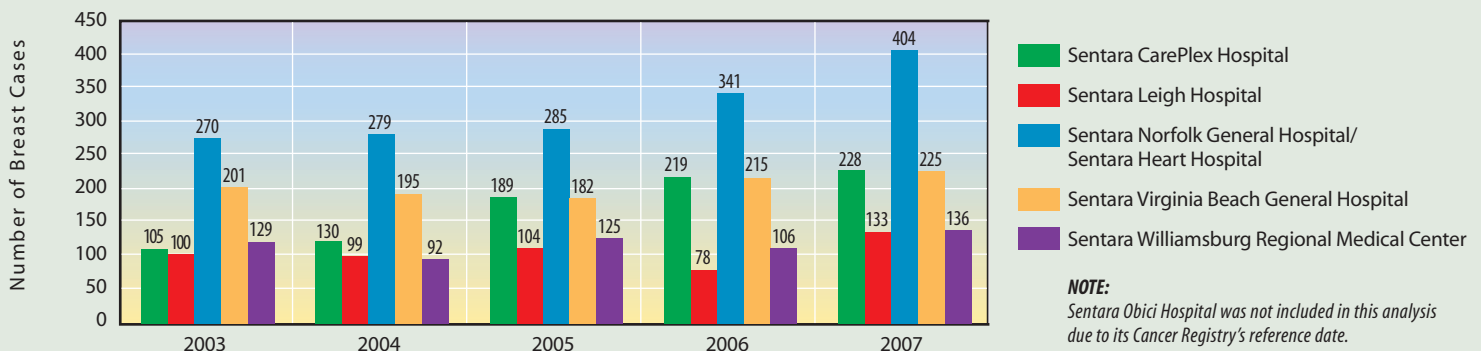
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Surgery Webcast

IntraBeam®: Intraoperative Radiation Treatment In Early Stage Breast Cancer
www.sentara.com/explorehealth

Figure 8.
2003 - 2007 Sentara Cancer Network Breast Cases

Figure 8 summarizes the number of breast cancer cases by Sentara hospital between 2003 and 2007. Each hospital in the network noted an increase in breast cancer cases reported from 2006 to 2007. With Sentara's focus on the creation of comprehensive breast cancer centers, this trend of increasing cases is likely to continue.



NOTE:
 Sentara Obici Hospital was not included in this analysis due to its Cancer Registry's reference date.

Figure 9.
Observed Survival for Breast Cases Diagnosed in 1998-2001 in the Sentara Cancer Network (Sentara CarePlex Hospital, Sentara Norfolk General Hospital, Sentara Virginia Beach General Hospital, Sentara Williamsburg Regional Medical Center)

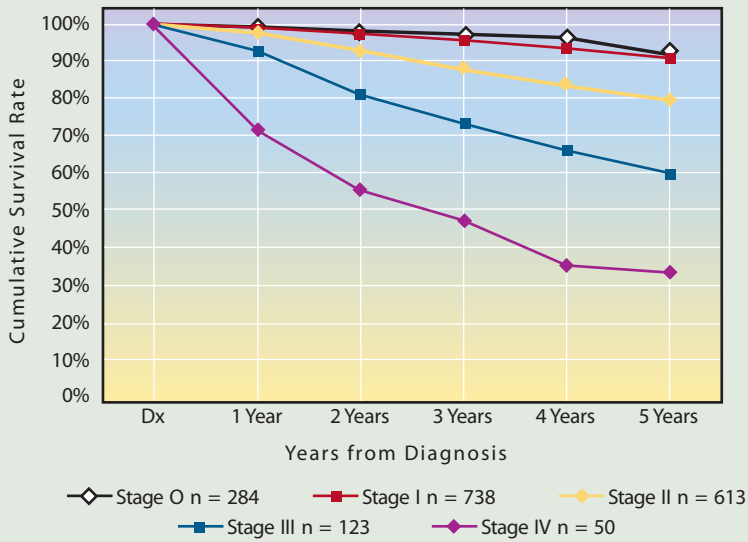
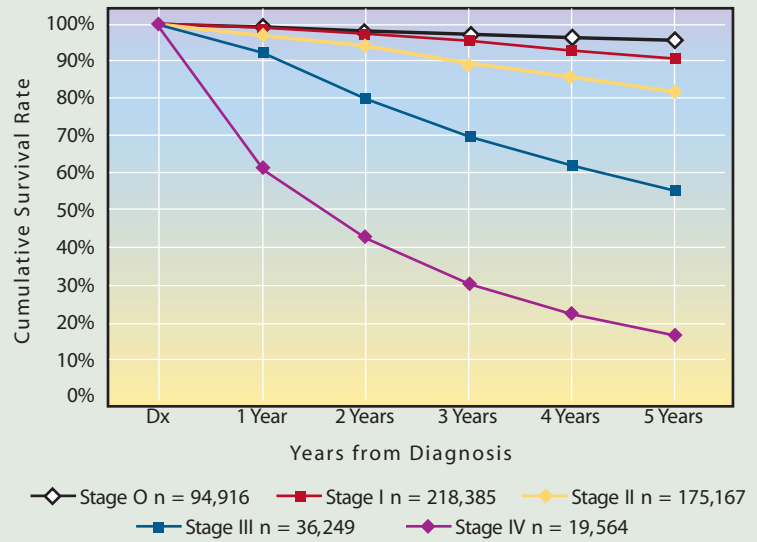


Figure 10.
Observed Survival For Breast Cases Diagnosed in 1998 - 2001 Data from 1,319 Facilities National Cancer Database



The above graphs illustrate the 5-year survival of all breast cancer cases 1998-2001 in the National Cancer Database and the 5-year survival of all breast cancer cases in the Sentara Cancer Network Cancer Registries from 1998-2001. Sentara Cancer Network's Stage 0, I, and II rates are similar to the National data. Stage III and IV 5-year survival rates are much better in the Sentara Cancer Network than the national average.

Preview to 2009

CyberKnife® Radiosurgery System A Non-Invasive Alternative To Surgery

The highly accurate, non-invasive CyberKnife® radiosurgery system became available January 2009 at the Sentara Advanced Radiosurgery Center at Sentara Norfolk General Hospital and is offering cancer patients a new option. This technology, combined with the multidisciplinary team approach of the Sentara Cancer Network, provides the most advanced system of its kind in Hampton Roads.

The CyberKnife® System can be used to treat a broad range of cancers and non-cancerous conditions of the head, neck, brain, spine, lung, liver, pancreas, kidney and bone.

In addition to being highly accurate, the CyberKnife offers many other patient benefits:

- Pain-free, non-invasive (no surgical incision) and no anesthesia required;
- Outpatient procedure with no recovery time and an immediate return to normal activities;
- No breath-holding required during the procedure and no invasive head or body frame.

CyberKnife is also effective for treating non-cancerous diseases, such as trigeminal neuralgia (severe facial pain).



2007 Sentara Cancer Network Primary Site Table

Analytic cases are cases diagnosed and/or treated during the first course of treatment at the assigned institution.
Total cases include cases that enter the institution for recurrences or later courses of treatment as well.

Primary Site	SCH		SLH		SNGH		SOH		SVBGH		SWRMC		Sentara Cancer Network Total Caseload	Sentara Cancer Network Total Analytic Caseload
	Total	Analytic	Total	Analytic	Total	Analytic	Total	Analytic	Total	Analytic	Total	Analytic		
Head and Neck	17	17	8	7	117	104	3	3	22	18	13	10	177	156
Lip	0	0	0	0	2	0	0	0	0	0	0	0	2	0
Tongue	4	4	1	1	34	28	0	0	4	3	5	5	48	41
Salivary Glands	1	1	2	2	11	11	0	0	6	5	0	0	20	19
Floor of Mouth	1	1	1	0	7	7	0	0	1	1	0	0	10	9
Gum and Other Mouth	3	3	0	0	22	19	0	0	0	0	0	0	24	22
Nasopharynx	1	1	1	1	5	5	1	1	2	1	0	0	9	8
Tonsil	5	5	2	2	23	22	1	1	4	3	3	2	37	34
Oropharynx	1	1	0	0	2	2	0	0	0	0	1	1	4	4
Hypopharynx	1	1	1	1	11	10	0	0	4	4	2	2	19	18
Other Buccal Cavity and Pharynx	0	0	0	0	0	0	1	1	1	1	2	0	3	1
Digestive	184	171	118	107	214	175	65	65	158	146	69	65	743	664
Esophagus	10	10	14	11	28	23	11	11	18	17	3	3	73	64
Stomach	16	15	9	8	14	12	6	6	10	9	5	4	54	48
Small Intestine	4	3	2	2	8	5	0	0	3	2	4	3	21	15
Colon Excluding Rectum	70	68	49	45	64	48	27	27	58	53	35	33	276	247
Rectum and Rectosigmoid	39	35	10	9	31	22	8	8	24	23	10	10	114	99
Anus	2	1	5	5	5	4	1	1	6	4	1	1	19	15
Liver and Intrahepatic Bile Duct	3	2	7	7	11	10	1	1	9	8	0	0	30	27
Gallbladder	2	2	0	0	5	5	6	6	3	3	3	3	13	13
Other Biliary	5	4	2	2	6	4	1	1	3	3	1	1	17	14
Pancreas	27	25	19	18	42	42	4	4	24	24	5	5	117	114
Retroperitoneum	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peritoneum, Omentum, and Mesentery	3	3	1	0	0	0	0	0	0	0	1	1	5	4
Other Digestive Organs	3	3	0	0	0	0	0	0	0	0	1	1	4	4
Respiratory	109	106	131	115	263	230	86	86	175	154	73	68	751	673
Nasal Cavity, Middle Ear, and Sinuses	1	1	0	0	9	9	0	0	2	1	0	0	12	11
Larynx	7	7	3	1	30	24	3	3	10	7	1	1	51	40
Lung and Bronchus	101	98	128	114	223	196	82	82	163	146	72	67	687	621
Trachea, Mediastinum, and Other Resp.Organs	0	0	0	0	1	1	1	1	0	0	0	0	1	1
Bones and Joints	1	1	3	2	3	3	0	0	1	0	1	0	9	6
Bones and Joints	1	1	3	2	3	3	0	0	1	0	1	0	9	6
Soft Tissue	5	5	5	4	30	29	0	0	8	7	5	4	53	49
Soft Tissue (including heart)	5	5	5	4	30	29	0	0	8	7	5	4	53	49
Skin (excluding Basal and Squamous)	75	74	17	16	96	69	17	17	67	39	17	7	272	205
Melanoma	74	73	15	14	88	63	14	14	61	36	16	6	254	192
Other Non-epithelial Skin	1	1	2	2	8	6	3	3	6	3	1	1	18	13
Breast	235	228	146	133	495	404	92	92	250	225	141	135	1267	1125
Breast	235	228	146	133	495	404	92	92	250	225	141	135	1267	1125

SCH Sentara CarePlex Hospital

SLH Sentara Leigh Hospital

SNGH Sentara Norfolk General Hospital

SOH Sentara Obici Hospital

SVBGH Sentara Virginia Beach General Hospital

SWRMC Sentara Williamsburg Regional Medical Center

Primary Site	SCH		SLH		SNGH		SOH		SVBGH		SWRMC		Sentara Cancer Network Total Caseload	Sentara Cancer Network Total Analytic Caseload
	Total	Analytic	Total	Analytic	Total	Analytic	Total	Analytic	Total	Analytic	Total	Analytic		
Female Genital System	46	42	24	21	37	32	15	15	37	27	8	7	152	129
Cervix Uteri	4	4	1	0	9	9	6	6	7	5	1	1	22	19
Corpus and Uterus	20	20	18	16	20	18	7	7	17	11	5	5	80	70
Ovary	21	17	5	5	5	2	1	1	7	5	0	0	38	29
Vagina	1	1	0	0	2	2	0	0	0	0	0	0	3	3
Vulva	0	0	0	0	1	1	0	0	6	6	2	1	9	8
Other Female Genital Organs	0	0	0	0	0	0	1	1	0	0	0	0	0	0
Male Genital System	113	103	16	14	335	311	32	32	71	52	65	54	600	534
Prostate	110	100	14	12	323	300	31	31	69	51	62	51	578	514
Testis	3	3	2	2	11	10	1	1	1	1	3	3	20	19
Penis	0	0	0	0	1	1	0	0	1	0	0	0	2	1
Urinary System	35	31	66	62	222	201	13	13	56	49	28	27	407	370
Urinary Bladder	24	22	39	36	84	69	9	9	41	37	14	13	202	177
Kidney and Renal Pelvis	9	7	23	23	133	128	4	4	13	10	13	13	191	181
Ureter	1	1	2	2	2	2	0	0	2	2	1	1	8	8
Other Urinary Organs	1	1	2	1	3	2	0	0	0	0	0	0	6	4
Eye & Orbit	0	0	0	0	1	0	1	1	1	1	0	0	2	1
Eye & Orbit	0	0	0	0	1	0	1	1	1	1	0	0	2	1
Brain and Other Nervous System	6	6	0	0	60	58	2	2	26	21	2	2	94	87
Brain	2	2	0	0	37	37	2	2	18	15	2	2	59	56
Other Nervous System	4	4	0	0	23	21	0	0	8	6	0	0	35	31
Endocrine System	26	23	22	22	62	56	10	10	28	24	8	8	146	133
Thyroid	26	23	21	21	53	48	8	8	20	18	8	8	128	118
Other Endocrine (including Thymus)	0	0	1	1	9	8	2	2	8	6	0	0	18	15
Lymphomas	38	33	28	23	83	60	10	10	52	43	24	23	225	182
Hodgkin Lymphoma	1	1	0	0	13	12	3	3	9	8	4	3	27	24
Non-Hodgkin Lymphoma	37	32	28	23	70	48	7	7	43	35	20	20	198	158
Myeloma	5	5	3	3	11	10	1	1	7	6	6	5	32	29
Multiple Myeloma	5	5	3	3	11	10	1	1	7	6	6	5	32	29
Leukemias	7	7	4	3	23	15	6	6	18	13	7	6	59	44
Lymphocytic Leukemia	3	3	2	2	14	8	—	—	5	1	5	4	29	18
Myeloid & Monocytic Leukemia	4	4	2	1	8	6	—	—	13	12	2	2	29	25
Other Leukemia	0	0	0	0	1	1	—	—	0	0	0	0	1	1
Mesothelioma	3	2	3	3	4	3	1	1	2	2	0	0	12	10
Mesothelioma	3	2	3	3	4	3	1	1	2	2	0	0	12	10
Kaposi Sarcoma	0	0	0	0	3	2	0	0	2	2	0	0	5	4
Kaposi Sarcoma	0	0	0	0	3	2	0	0	2	2	0	0	5	4
III-Defined/Unspecified	15	15	15	15	34	29	12	12	25	20	15	12	104	91
III-Defined/Unspecified	15	15	15	15	34	29	12	12	25	20	15	12	104	91
TOTAL	921	870	610	551	2095	1792	365	365	1007	850	482	433	5115	4496

How to Access Cancer Care at Sentara

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- 1-800-SENTARA

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- www.sentara.com/cancer

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www.sentara.com/cancer

1-800-SENTARA