The academic year July 2002 through June 2003 was the first full year of operation for the Saint Louis University Cancer Center. Under the leadership of Interim Director James Hardin, PhD, the Cancer Center is a cooperative effort between Saint Louis University and Saint Louis University Hospital. We have increased the membership to allow most of the active cancer physicians to participate. In the past year, two colorectal surgeons have been hired. The Department of Otolaryngology/Head and Neck Surgery has a new chairman, Mark Varvares, MD, who was previously here at Saint Louis University. He joined us from the Massachusetts Eye and Ear Infirmary, which is part of the Harvard system, and will be leading the Cancer Center’s effort in head and neck cancer research and treatment.

We have recently developed a multidisciplinary cancer center approach in at least two areas. Adrian Di Bisceglie, MD, in the Division of Gastroenterology, and John Richart, MD, Division of Hematology and Oncology, are working together in the area of liver cancer. A hepatocellular fellowship program has been developed, and our first fellow has been hired.

In the past year, the Cancer Center has added two new colorectal surgeons: Erik Grossmann, MD; and Anil Bahadursingh, MD.

In addition, Dr. Varvares has organized a multidisciplinary head and neck clinic in cooperation with Hans-Joachim Reimers, MD, Division of Hematology and Oncology. Dean Norton, MD, medical director of Saint Louis University Hospital’s Radiation Oncology Department, is also an active member of this program.

Teresa Dunleavy, RN, OCN, senior education coordinator of the Grand Vision Cancer Information Center, has continued her efforts in education, including a program to assist patients who desire to quit smoking. This education is offered in alliance with the American Lung Association. A leukemia and lymphoma support group has been formed and meets quarterly. A new education initiative recently began with weekly meetings for patients receiving radiotherapy and chemotherapy. The Tumor Registry has been going well, is up to date, and has been quite successful over the last four years. I personally would like to thank the administrators of Saint Louis University Hospital for their administrative and financial support of the Tumor Registry.

Research is a key piece in every cancer treatment program. The Saint Louis University School of Medicine has many clinical trials from various national groups and pharmaceutical companies. One of our researchers is Maulik Shah, MD, PhD, who has a joint appointment in the Cancer Center and the Department of Pediatrics, Division of Genetics at Saint Louis University School of Medicine, and also has an article in this annual report. This annual report will also include two special reports, one by Dr. Di Bisceglie about the Liver Center, and another by Dr. Varvares in the head and neck program.

We have made tremendous progress this past year toward quality and access to patient care services. We remain committed to these goals and to providing excellence in our patient care services.
The Tumor Registry at Saint Louis University Hospital performs a vital role in the collection, analysis and management of all patients diagnosed with and/or treated for cancer or other benign neoplasms. The Tumor Registry staff has done an outstanding job in timely abstraction and follow-up activity of our cancer cases during the past year. The Registry, which has a reference date of January 1, 1997, gathers information pertaining to demographics, pertinent medical history, diagnosis, treatment and outcome of care. The purpose of the Registry is to provide accurate and complete cancer information while maintaining strict confidentiality of the patient. Encouraging the use of its data, the Registry submits information to the Missouri Cancer Registry and the National Cancer Database. This year, 95 requests for data were met. The Registry also presented information for the patient care evaluations on colorectal and bladder cancer cases.

Paula J. Carr, RHIT, CTR, and Pam Melton, LPN, CTR, staff the Tumor Registry. The Registry is under the direction of Debra Wilderman, RHIT, director of Saint Louis University Hospital’s Health Information Management Services. The Cancer Committee, chaired by Paul J. Petruska, MD, professor and director of Hematology/Oncology at Saint Louis University School of Medicine, oversees the Registry.

Of a total of 670 cases entered into the Registry in 2002, 556 were analytic. An analytic case refers to patients who are either first diagnosed at Saint Louis University Hospital or receive all or part of their first course of treatment at Saint Louis University Hospital. The remaining 114 non-analytic cases were patients treated at Saint Louis University Hospital after a first course of treatment had been completed at another facility. A non-analytic case also refers to patients who were entered into the Registry database with a benign neoplasm, and patients who were diagnosed at autopsy as having had an unsuspected malignancy. In most instances, the first course of treatment defines the initial tumor-directed treatment or series of treatments initiated within four months of diagnosis. (Refer to Table 1)

As of December 31, 2002, the total number of accessioned cases was 4,162. (Refer to Table 2)

The 10 most frequently seen analytic cancer cases at Saint Louis University Hospital in 2002 are displayed in Table 3. Lung cancer has continued to be the cancer seen most frequently. Liver cancer has moved from fifth in 2001 to second in 2002. Pancreatic cancer, which was eighth in 2001, is now third. Breast cancer has decreased from second to fourth. The fifth most frequently seen type of cancer at Saint Louis University Hospital is hematopoietic cancers, or cancers of the bone marrow. Annual lifetime follow-up of cancer patients is another important function of the Tumor Registry. Periodic follow-up increases the likelihood that patients will receive appropriate medical care for early detection and treatment of recurrent or new cancer, which can potentially improve chances of survival. Information obtained also provides researchers and clinicians with the data to study the natural history of the disease and the effectiveness of the treatment modalities. As a result of computerized follow-up letters, the Registry has maintained a follow-up rate of 90 percent or greater.

The Tumor Registry converted to a new computerized database in 2002. It has enhanced its ability to provide timely and accurate information. It is a goal of the Tumor Registry to continue to supply complete, accurate data and to expand its uses.
A Community Resource

The Grand Vision Cancer Information Center, formerly called the Community Cancer Resource Center, was renamed in honor of the continuing support of the Saint Louis University Hospital Auxiliary. The Information Center enters its third year as an educational resource for patients, the public and healthcare professionals. This past year, Cathy Turcotte, RN, MSN, joined Teresa Dunlevy, RN, OCN, senior education coordinator, in educating patients, leading group programs and staffing educational events. Both of these expert oncology nurses provide services to patients and to help them, their loved ones, and their caregivers better understand their diseases and treatments.

The Grand Vision Cancer Information Center began providing support services to patients undergoing treatment for cancer in April, 2002. Since then, a consistent increase of patients has been counseled through this service. (See Figure 1.) The staff not only focuses its efforts on patients but also provides services to family members and friends. In addition to assisting patients at Saint Louis University Cancer Center, the staff also focuses on the specific needs and needs of patients by providing support services to anyone in the community. Figure 2 illustrates the significant increase of the access of these support services. This increase reflects the need for the various types of educational and emotional support services required throughout the whole process of treatment. The significant increase noted in the number of return visits also represents the importance of the need for the continuity of the ongoing care for both the physical as well as the emotional healing of the patient, their family and friends.

A number of educational programs were introduced by the Grand Vision Cancer Information Center during the past year. Many other programs that were initiated at the Information Center’s opening have been modified and adapted to meet our patients’ needs. Participation in community events is one of the Information Center’s main initiatives. This year, the center participated in the American Cancer Society’s Relay for Life, the St. Louis Komen Foundation Race for the Cure and the Leukemia & Lymphoma Society’s Light the Night Walk, to name a few.

Each year, the information center hosts Survivors’ Day, held on the first Sunday in June. Karyn Buxman, RN, CSP, a nationally known motivational speaker, gave the keynote presentation this year. This celebration for cancer survivors and their guests included food, music, camaraderie and time for reflection. In October, the Information Center observed National Breast Cancer Awareness Month with a luncheon and fashion show for patients and the public, in conjunction with the American Cancer Society’s “Look Good...Feel Better” program.

Each month, educational events are offered that concentrate on a specific type of cancer. The Information Center is a valuable resource for all who are touched by cancer. Programs sponsored by the Grand Vision Cancer Information Center include:

- Cancer Treatment Classes

Informational classes for patients undergoing cancer treatments, their families and friends are held every Thursday from 10 a.m. to noon. Participants learn about cancer and its treatments, as well as managing side effects.

- Lung Cancer Education and Support Group

This group meets the second Thursday of every month from 11:30 a.m. to 1 p.m. It is open to any adult patients, plus their family members and friends, who are coping with leukemia, lymphoma, myeloma and other blood-related cancers.

- Look Good...Feel Better

This program is offered to any female cancer patient undergoing cancer treatment on the fourth Wednesday of every month from 10 a.m. to noon. Patients are taught skin care, makeup application and beauty enhancement methods to help improve their self-esteem and self-image during this difficult time. These sessions are taught by licensed cosmetologists, and each participant receives a free makeup kit and wig.

- Tell-a-Friend Tuesday

The National Breast Cancer Awareness Month event is held on the first Tuesday in October. Informational displays are set up and staffed by Cancer Center professionals and are placed at several locations on the university campus and at Saint Louis University Hospital, to promote early detection through monthly breast self-exams.

I Can Cope

These American Cancer Society education classes provide a supportive environment for adults with cancer, their family members and friends. I Can Cope helps participants with all aspects of their cancer experience by improving their knowledge, attitudes and coping skills.

The Grand Vision Cancer Information Center is open Monday through Friday from 8 a.m. to 4:30 p.m. and evening hours by appointment. Resources available in the Information Center include brochures, videos, user-friendly computers and personalized teaching.
Every family has stories. But the family stories that we at the Saint Louis University Cancer Center are most interested in are those hidden in the family genes. One in three Americans will be diagnosed with cancer at some point in their lifetime. Some of the most common cancers — breast, colon, ovarian, endometrial and melanoma — seem to run in families.

As a component of the Grand Vision Cancer Information Center, the Cancer Center offers a genetic counseling and education service to help people determine if they possibly carry a gene that has passed cancer risk from one generation to the next. The Genetic and Education Counseling Service at the Saint Louis University Cancer Center assisted 75 families in 2003. We start with a comprehensive family history and create a family tree. After the initial assessment, which includes both a family and individual history, a person’s genetic susceptibility to cancer can be determined and the option of genetic testing can be offered. Clinical indicators of hereditary predisposition include the following:

- close relatives who have had cancers such as breast, colon, ovarian or malignant melanoma. Members of these families may have one type of these cancers or a combination of these cancers.
- multiple cases of a cancer in one generation.
- a history of developing malignancy 15 to 20 years earlier than the norm.
- individuals in a family who develop more than one type of cancer in their lifetime. For example, an individual who is diagnosed with breast cancer at age 35 and ovarian cancer at age 55.

Once individuals and families are identified as possibly having a genetic predisposition to developing cancer, a program of early detection screenings can be designed. We also help people from high-risk families look at the direct steps they can take to reduce their cancer risk, such as making lifestyle changes or taking chemopreventive agents such as Tamoxifen to prevent breast cancer. For individuals with a known mutation, even more aggressive prevention measures may be recommended such as prophylactic surgery. Intensive education and counseling assit individuals and families in understanding their cancer risk, reduce that risk and make early detection possible.

Testing for genetic changes associated with hereditary risk for breast and ovarian cancer, as well as some colorectal cancers and melanoma, is now commercially available. Individuals who test positive for one of these defective genes may have more than a 90 percent chance of developing one of these malignancies. Testing for other hereditary cancers is on the horizon.

But making the decision to undergo genetic testing can be an emotionally difficult one. Patients need to be educated on the benefits of testing — whether it be relief or the ability to make the appropriate decision in the case of a positive test. Individuals also need to understand the risks associated with genetic testing including psychological distress upon learning they are at risk, loss of privacy, job discrimination and insurance discrimination. Prior to making any decision about testing, most individuals and families will require two to three counseling sessions of 60 to 90 minutes. For those who opt to undergo testing, additional counseling will be needed at the time results are disclosed, and in subsequent follow-up to assure that psychological distress is minimized and individuals receive the necessary information to manage their risk.

All of these educational services are available to members of the community without charge through the Saint Louis University Cancer Center. For more information, please contact Dr. Suzanne Mahon at 314-577-8854.

The figure below is an example of a pedigree or family tree that is constructed for each family who suspects a hereditary cancer. Circles represent women, and men are represented by squares. When a family history is illustrated in this manner, it is easy to see a family history of certain types of cancer, such as breast cancer in this family. This family also has a history of breast, colon and ovarian cancer at a younger age than expected. This is a family at risk for hereditary cancer who would benefit from education about the strengths and limitations of genetic testing and could develop a plan for cancer prevention and early detection.
The Oncology Nursing Unit at Saint Louis University Hospital

The experienced staff on 8 North, the inpatient oncology unit at Saint Louis University Hospital, has developed standards of care for the treatment of oncology and bone marrow transplant (BMT) patients. At the center of each protocol are the patient, the family and the holistic approach the staff uses to treat them.

The oncology staff developed these protocols, as well as policies and procedures, through a system called shared governance. The Shared Governance Committee was developed more than 10 years ago to give the oncology unit staff autonomy in decision making, as well as the responsibility that goes along with this autonomy. This committee is made up of an expert Level III nurse, a Level II nurse, a representative from the night and weekend shifts, as well as a representative from the nurse-assistant group. The committee works with the nurse manager to resolve issues related to staffing, as well as coordination of patient care and the development of best practice based on identified issues.

The staff prides itself on its professionalism. Many of the staff are certified by the Nursing Certification Corporation, and one nurse is a clinical nurse specialist. The staff, including the nurse manager and the clinical nurse specialist, has created multidisciplinary critical pathways. These critical pathways direct the care of patients based on their disease and treatment. These pathways incorporate the patient’s medical and nursing care, as well as social, nutritional, pastoral care and physical and occupational therapy needs into the treatment plan. The patient and family are encouraged to take part in their treatment planning. They are given education, encouraged to do research on their own by using the Grand Vision Cancer Information Center in the Cancer Center, and offered multiple resources and support programs. Patients and families are also encouraged to be active participants in their care.

On 8 North, patients stay an average of 14 days. Recognizing the inevitable boredom that ensues, the 8 North staff applied for a grant through the Saint Louis University Hospital Auxiliary to purchase equipment for a patient and family lounge. The staff envisioned a place for patients to meet other patients, enjoy a variety of activities and pursue their interests. The auxiliary granted the request and gave the unit $3,700 for two computers, a PlayStation II, appropriate furnishings and supplies for art therapy. The staff converted an existing exam room into a nice space for families and patients to retreat from the doldrums of their room (if medical conditions allow). The computers are now Internet accessible for patients to use to check their e-mail, gain information on their disease, as well as play games to pass idle time. The response from patients has been positive, with many using the equipment and computers.

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The nurses strive for excellence in patient-focused care. They treat, listening to the patient, the family and the holistic approach the staff uses to treat them.

The inpatient oncology unit at Saint Louis University Hospital has a long history of patient-focused care. The nurses strive for excellence in patient-focused care. They treat, listening to the patient, the family and the holistic approach the staff uses to treat them.

There are two areas of research being conducted at the Saint Louis University Cancer Center that offer promises of new therapies in the future. Research is being conducted in the field of cancer gene therapy. It aims to manipulate genes within cancer cells to render them more susceptible to chemotherapeutic agents. In the field of cancer immunotherapy, treatments are being designed to enhance recognition of cancer cells by the body’s immune system.

Cancer Gene Therapy

Over the past 20 years, it has been well defined that cancer is a genetic disease. Our bodies are composed of numerous types of cells that have a life cycle of growth and replication. As they grow and divide, they create new daughter cells. Cancer forms when normal cells lose the signals that tell them when to stop growing and dividing. The loss of these signals is due to genetic alterations within a cell. It is now well established that in many forms of cancer, the genetic alterations responsible for transformation of the normal cells to cancerous cells are common. With greater understanding of the mechanism and role of these genetic alterations, we can develop better treatment options. Cancer gene therapy aims to treat cancer by altering the genetic instructions of the cancer cell to render it more susceptible to chemotherapeutic agents.

As one may imagine, it is difficult to alter the genes within any cell including cancer cells. The most common method used for gene transfer is the use of engineered viruses. In our laboratory, we have engineered an adenovirus (a common virus which causes mild respiratory symptoms) for cancer gene therapy. First, various genes from the adenovirus are removed so that the virus is no longer harmful to humans. Then, we insert genes that we wish to transfer to cancer cells in the place of the missing genes.
As a result, we get a virus that has the ability to infect numerous types of cancer cells and can transfer a gene or multiple genes to these cancer cells. In our laboratory, we have engineered an adenovirus that transfers the thymidine kinase gene. This gene renders cells susceptible to the drug, ganciclovir. By itself, ganciclovir is non-toxic to tumor cells. In cells expressing the thymidine kinase gene, however, it is converted to a toxic metabolite. This toxic metabolite can also diffuse to adjacent tumor cells resulting in significant tumor cell death (Figure 1).

In Figure 2, we show the results of a brain tumor that has been infected with the adenovirus-thymidine kinase. Cells that are infected with the virus die when exposed to ganciclovir where the non-infected cancer cells are resistant to cell death. This virus has been used in clinical trials at the NIH with moderate success for the treatment of brain tumors and is currently in advanced testing.

In Figure 2, we show the susceptibility of a human glioblastoma to ganciclovir.

**Figure 2 • Susceptibility of a human glioblastoma to ganciclovir**

![Graph showing susceptibility of a human glioblastoma to ganciclovir](image)

**Cancer Immunotherapy**

Immunotherapy is an intense field of research. Its aim is to increase the body's ability to recognize and eliminate cancer cells. It has been known for more than 60 years that a person's immune system plays a vital role in the elimination of cancer cells. Over time, however, cancer cells develop methods by which to escape recognition by the immune system. The immune system has to recognize all types of cells, those which are cancerous and those which are not. Then it has to recruit other cells to help in the elimination of the cancerous cells. The immune system recognizes cells by the interactions of proteins on the surface of the immune cells and the surface of target cells. A common method by which cancer cells evade the immune response is to hide from the immune cells by not expressing the proteins necessary for recognition on their surface. In order to prevent this process, we have engineered an adenovirus that expresses the chaperone gene HSP70. HSP70 is expressed in all cell types and functions to chaperone or transport proteins around a cell. It also has the unique ability to bind tumor antigens (proteins specific for cancer cells) and to present them to the immune system. By using HSP70 to infect cancer cells, we have increased the ability of the cellular immune system to recognize these cancer cells. In a mouse model, we used our virus to infect colon cancer cells and then surgically removed the tumor.

In Figure 3, we show that animals treated with our virus had generated immune responses against the tumor cells. Additionally, once an immune response is generated, there should be long-term resistance against that tumor— preventing relapse. In Figure 4 we show that treated animals were resistant to tumor challenges at later dates. These results offer insight into the use of this virus as pre-surgical adjuvant therapy. In most cases, if surgical therapy is inadequate there are considerable problems associated with tumor relapse. We have developed a potential new treatment strategy aimed at preventing tumor relapse by generating anti-tumor immune responses.

**Figure 3 • Cytotoxic cellular immune responses against a colorectal cancer**

![Graph showing cytotoxic cellular immune responses against a colorectal cancer](image)

**Figure 4 • Percent of animals with tumor recurrence**

![Graph showing percent of animals with tumor recurrence](image)
Primary liver cancer is one of the most common forms of cancer worldwide and includes both hepatocellular carcinoma (HCC) and cholangiocarcinoma. Although HCC has not been thought to be a very common tumor in the developed western countries, it has risen dramatically in incidence over the past two decades. This rise is thought to be due to the emergence of hepatitis C.

In September 2003, the Saint Louis University Cancer Center created the Liver Cancer Clinic solely for patients with primary liver cancer. Hepatologists and medical oncologists staff the clinic. This partnership greatly benefits the patient for several reasons. Because primary liver cancer very often arises in patients with underlying liver disease such as chronic viral hepatitis or cirrhosis, patients already have a hepatologist they know and trust. The hepatologist plays a critical role in accurately assessing the severity of the underlying liver disease in planning therapy. The role of the medical oncologist is to supervise the administration of chemotherapy to patients with primary liver cancer and to make recommendations about surgical resection, liver transplantation or ablation. This may be in the form of systemic chemotherapy given by mouth or intravenously. Chemotherapy can also be given as part of chemoembolization intra-arterially.

The Liver Cancer Clinic grew out of a long-standing liver tumor conference held every two weeks and attended by Saint Louis University pathologists, cytologists, transplant surgeons, surgical oncologists, radiation therapists, diagnostic and interventional radiologists, in addition to hepatologists and medical oncologists. The tumor conference is devoted to discussing the care of individual patients diagnosed with or suspected of having liver cancer and who will continue treatments offered through the Liver Cancer Clinic.

**TREATMENTS OFFERED THROUGH THE LIVER CANCER CLINIC**

**Surgery** • Surgical resection offers an excellent opportunity for long-term survival in selected patients. Surgery is performed by experienced liver surgeons who have done many procedures of this kind.

**Liver transplantation** • Liver transplantation is an excellent choice for patients who have smaller liver cancers confined to the liver, particularly if their underlying liver disease is severe. Patients are evaluated for transplantation by a hepatologist and other members of the transplant team. Transplants are done by one of three transplant surgeons.

**Ablation** • Liver cancers can be destroyed by injecting 100 percent alcohol or by a technique called radio-frequency ablation. These ablative procedures are done by interventional radiologists.

**Chemoembolization** • In this procedure, chemotherapeutic agents are injected into a hepatic artery (from which liver tumors derive their blood supply). The artery is then occluded by injecting coils or a plugging substance through the arterial catheter.

**Chemotherapy** • Under the supervision of medical oncologists, patients can be treated for primary liver cancer with chemotherapy, which is either given by mouth or intravenously.

Liver Cancer Clinic patients will be informed of any research studies of new treatments for liver cancer for which they might be eligible.

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**THE LIVER CANCER CLINIC PHYSICIANS**

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Saint Louis University School of Medicine

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Saint Louis University School of Medicine
Experimental Protocols Presently Under Investigation

With our clinicians having membership both in the Radiation Therapy Oncology Group (RTOG) and the Southwest Oncology Group (SWOG), a variety of randomized prospective multi-center trials are available to our patients who wish to be enrolled in these studies. Currently being offered through the RTOG is a phase II trial comparing weekly cisplatin and once-a-day radiation therapy to weekly cisplatin with concomitant boost radiation therapy. We see this as a very important trial, as most studies to date have indicated that chemotherapy in the treatment of patients with head and neck malignancies is most useful when given concomitant with radiation therapy. It has been our own experience that the accelerated fractionation in the concomitant boost arm seems to offer improved complete response rates without increased long-term morbidity. Our patient education coordinator and licensed social workers are also in the process of instituting a prospective quality of life assessment on all of our patients who undergo treatment for head and neck cancer through the SLU Cancer Center.

It is widely hoped by the participants in the Multi-Disciplinary Program in Head and Neck Oncology and by all participants at the SLU Cancer Center that the establishment of a multi-disciplinary center will allow state-of-the-art delivery of cancer care in an efficient venue for the patient. It has been our experience that pooled expert results in the best treatment planning and delivery for the individual patient. Our ultimate goal is to raise the standard of care to the head and neck cancer patient in the Saint Louis area over the years to come.

The Multi-Disciplinary Program in Head and Neck Oncology was recently established to help to continue to deliver state-of-the-art cancer care to the head and neck cancer patient in the face of rapidly evolving treatment patterns. As demonstrated by the landmark Veterans Administration (VA) laryngeal study, it is now widely known that for many head and neck sites, non-surgical management using chemotherapy and radiation therapy offers equal cure rates as extensive surgery followed by radiation therapy. By avoiding the need to remove the organ involved, such as the larynx in the case of the VA study, the patient’s abilities to speak and swallow through normal routes are not disrupted. Ongoing assessments are attempting to measure quality-of-life improvements.

The participating clinicians in the Multi-Disciplinary Program in Head and Neck Oncology include individuals with extensive experience in the treatment of patients with head and neck malignancies. This includes a head and neck surgical service experienced in all facets of ablative head and neck surgery, surgery of the cranial base, cranial nerve and voice restorative surgery, as well as free tissue transfer. The medical oncology service is comprised of an experienced team of clinicians well versed in the use of chemotherapy in the treatment of advanced head and neck malignancies. The radiation oncologists involved in the program have extensive experience in the use of complicated irradiation therapy techniques used to delivered curative doses with a minimal number of side effects. In addition, they offer intensity modulated radiation therapy, which has been widely lauded as a means of delivering high-dose radiation therapy while sparing the major salivary glands and therefore decreasing the possibility of long-term xerostomia.

The Multi-Disciplinary Program in Head and Neck Oncology at the Saint Louis University (SLU) Cancer Center is a new initiative created by the Departments of Otolaryngology-Head and Neck Surgery, Internal Medicine-Hematology and Oncology and Radiation Oncology of Saint Louis University School of Medicine. This truly multi-disciplinary center allows for the evaluation, planning and comprehensive treatment of patients diagnosed with head and neck malignancies of any stage or site. By drawing upon extensive resources available through the SLU Cancer Center and School of Medicine, such as patient education coordinator, licensed social workers and speech and language pathology, all the critical needs and concerns of the patients may be addressed in one location.
Colorectal cancer is the third leading cancer in the United States. It follows lung and prostate cancer in men and lung and breast cancer in women in terms of frequency. Colorectal cancer affects males and females in roughly equal percentages. There are approximately 130,000 new cases a year with an estimated 56,000 deaths each year. The overall five-year survival rate of colorectal cancer is about 62 percent. When we compare this with the five-year survival of lung cancer of six percent, or in the case of pancreatic cancer at four percent, we see that patients with colorectal cancer have a much greater survival rate.

Colorectal cancer begins with the detection and removal of benign polyps. Early detection with screening colonoscopies in suitable patients has been shown to increase the survival rates of patients with colorectal cancer. Research has demonstrated that early detection and removal of certain benign polyps can prevent malignant transformation.

The Division of Colon and Rectal Surgery in the Department of Surgery at Saint Louis University School of Medicine is a major referral center for all types of colon and rectal conditions for the Midwest, especially in the St. Louis area and eastern Illinois. Patients are referred to Saint Louis University Hospital because their condition is rare, extremely complex or both. Patients are referred by their primary-care physicians, other specialists or are self-referred.

Since 1997, Saint Louis University Hospital has participated in the National Cancer Data Base (NCDB). Through this national database, Saint Louis University Hospital is able to compare its data on colorectal cancer to a national registry. This allows us to critically review our data and compare it to national statistics.

**METHODS**

**Saint Louis University Hospital Database** — Our data examined several patient variables such as age, gender, ethnicity, stage at presentation, type of surgery performed and adjuvant therapy. This data was further subdivided in colon cancers and rectal cancers.

**Comparison Database** — The NCDB was obtained from published reports. The NCDB is a joint project of the Commission on Cancer from the American College of Surgeons and the American Cancer Society. It is a nationwide oncology outcomes database for 1,600 hospitals in 50 states. The NCDB is in essence a national hospital cancer registry for more than 25 cancers.

**Data Analysis of Saint Louis University Hospital** — The age distribution of our patient database is similar to the NCDB with no significant differences in gender (Tables 1, 2 and 3). There are a few notable exceptions. Table 4 shows that our ethnic demographics show a trend towards more African-Americans from the national data. Saint Louis University Hospital has nearly three times the number of cases from the African-American community who were diagnosed with colorectal cancer when compared to the national average. This is likely attributable to the demographics of the city of St. Louis and our surrounding neighborhood.

**Comparison of Saint Louis University Hospital data to the NCDB** — Age, gender, ethnicity, stage at presentation and treatment were compared in the tables provided. Note, however, that smaller sample size of the number of SLU Hospital cases limits the statistical power in order to be able to detect a statistically significant difference when comparisons are made to the NCDB.

**Methods**

**Table 1: Age of Rectal Cancer**

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<th>PERCENTAGE</th>
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<th>PERCENTAGE</th>
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**Table 2: Age of Colon Cancer**

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</tr>
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<td>16-29</td>
<td>225</td>
<td>0.3%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>30-39</td>
<td>1,020</td>
<td>1.5%</td>
<td>2</td>
<td>3.6%</td>
</tr>
<tr>
<td>40-49</td>
<td>3,531</td>
<td>5.3%</td>
<td>5</td>
<td>8.9%</td>
</tr>
<tr>
<td>50-59</td>
<td>8,602</td>
<td>12.9%</td>
<td>7</td>
<td>12.5%</td>
</tr>
<tr>
<td>60-69</td>
<td>14,596</td>
<td>21.8%</td>
<td>6</td>
<td>10.7%</td>
</tr>
<tr>
<td>70-79</td>
<td>21,229</td>
<td>31.8%</td>
<td>19</td>
<td>33.9%</td>
</tr>
<tr>
<td>80+</td>
<td>17,636</td>
<td>26.4%</td>
<td>17</td>
<td>30.4%</td>
</tr>
<tr>
<td>Total</td>
<td>66,848</td>
<td>100.0%</td>
<td>56</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

**Table 3: Gender of Colon Cancer**

<table>
<thead>
<tr>
<th>GENDER</th>
<th>NUMBER</th>
<th>PERCENTAGE</th>
<th>NUMBER</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>32,643</td>
<td>48.8%</td>
<td>29</td>
<td>51.8%</td>
</tr>
<tr>
<td>Female</td>
<td>34,205</td>
<td>51.2%</td>
<td>27</td>
<td>48.2%</td>
</tr>
<tr>
<td>Total</td>
<td>66,848</td>
<td>100.0%</td>
<td>56</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Table 5 shows a higher number of late-presenting cancers when compared to the national database. When the cancer is at a more advanced (late) stage, this often leads to a poorer prognosis. In many ways, the stage of presentation of colorectal cancer is a reflection of the community in which our hospital serves, the awareness of this disease by our population, and the proactive response of the medical and associated medical community.

With respect to surgery, our resection rates were similar to the NCDB with the majority of our patients undergoing a hemicolectomy or greater. Adjuvant therapy was given to a slightly larger population here than compared to the NCDB. Our database also allowed us to look at other data that is not readily available on the NCDB. For example, we found that 40 percent of our patients had previous major abdominal surgery. This demonstrates to a degree the complexity involved in caring for our patient population. The majority of our patients were discharged in six days, which is consistent for a patient population with multiple co-morbidities.

Table 6 shows the five-year survival rates for colorectal cancer are poor for patients who present with very late-stage cancers. While other rates appear quite good, it is important to note that the statistical power in order to be able to detect a statistical difference of these survival rates is limited by the number of cases currently tracked at the five-year level. Although the SLU Hospital database is six years old and has been compliant with ACoS standards since 1997, additional time will be required to accumulate enough cases to calculate statistical differences in survival rates at the five-year level.
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