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Aurora Health Care Metro Region Cancer Programs Annual Report, 1999

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The Cancer Services Team within the Metro Region of Aurora Health Care is most pleased to present this year’s annual report. Within these pages you will see a comprehensiveness of care made possible only through the dedication and cooperation of health professionals working together to provide a better patient care experience.

With a focus upon colorectal cancer, one of the leading causes of death in the United States, the articles contained in this report demonstrate the intellectual, interdisciplinary approach directed toward cancer prevention, diagnosis and treatment. Less readily apparent in a written document, but equally important, is the passion and desire for excellence shown by all physicians and staff. Attendance at tumor conferences, stereotactic conferences, or treatment planning sessions would impress the observer with the fact that Aurora Health Care has discovered a way to combine advances in technology with compassion and concern.

As we continue to work together as a region, our strategic planning process will allow us to redefine cancer care across the continuum as our clinicians and scientists combine their efforts towards prevention, control, increased survival and improvements in quality of life. With advances in technology such as acquisition of a gamma knife, expansion of services, especially in the areas of psycho-oncology and genetics counseling, gynecologic oncology and coordination of patient care throughout the region, Aurora continues serving as a model for personalized advanced cancer diagnosis and treatment.

We hope you will enjoy reading this report and discovering both the intellect and compassion within our system. It is a combination of which we are proud and one which has a single focus – quality patient care.
Special Focus

Cancer Committee
Chairpersons' Reports

1999
I am honored and excited to be the new Chairman of the St. Luke's Cancer Committee. I will have to admit I was a little nervous and anxious about the appointment. Dr. Marcia Richards, who has been the chairperson for the past 10 years, has done an outstanding job with the Cancer Committee. It will be a tough act to follow. All of us at St. Luke's and those on the Cancer Committee wish to say “Thank you for a job well done.” Her commitment to the Cancer Committee and excellence has improved the lives of cancer patients throughout our community.

Looking back on the activities of the Cancer Committee during the past year, several exciting developments have occurred. Dr. Jeffrey Knajdl, a psychiatrist, has helped develop and is the Director of the new psychosocial oncology program at St. Luke's Medical Center and the Vince Lombardi Cancer Clinics. The program's mission is to identify and treat psychosocial distress in cancer patients. Already over 1,200 contacts with patients and family members have been recorded at St. Luke's Medical Center, the Vince Lombardi Cancer Clinics and the Cancer Counseling Center itself.

A new lymphedema program for upper and lower extremities was implemented in November 1998 at St. Luke's Medical Center. The lymphedema program has been expanded for the metro region and is being offered at West Allis Memorial Hospital, Aurora Rehab Center in Slinger and new programs are opening this year at Sinai Samaritan Medical Center and the Aurora Rehab Center in Waukesha.

Lymphedema can be treated and controlled allowing people to lead more positive and productive lives.

In 1998, Marija Bjegovich-Weidman resigned as the regional director of cancer services. She will be greatly missed. She was replaced by William Laffey who comes to us from Boston, Massachusetts. Mr. Laffey has over 20 years of health care field experience and will be a great asset to the Cancer Committee and Cancer Services.

Last year St. Luke’s Medical Center was upgraded from a Commission on Cancer “Community Cancer Program” to a “Comprehensive Community Cancer Program,” due to the fact that we see over 750 cancer cases a year (1,920 in 1998).

In January 1998, we had our first regional cancer committee meeting, which consisted of representatives from West Allis Memorial Hospital, Sinai Samaritan Medical Center, and St. Luke’s Medical Center. To welcome in the new millennium, the Regional Cancer Committee is working on teleconferencing of the tumor boards in the Aurora Metro Region to facilitate the discussion of interesting cases and educational topics relating to oncology and the establishment of Hartford Memorial Hospital as an accredited program as well.
Community outreach activities have taken place throughout the year and can be found in the education outreach activities in the annual report. The Vince Lombardi Golf Classic and Ball was a great success last year, thanks to the generosity of the volunteers and support from the Vince Lombardi Clinic. The Vince Lombardi Cancer Hotline served as a "call to action" for a multimedia campaign for cancer prevention and early detection awareness. Phone banks were held during the evening news on WTMJ-4 and promoted in statewide newspapers. A cancer risk assessment questionnaire was offered to callers, which can provide risk assessment for 19 primary cancer sites.

Exciting new developments on the horizon include the new St. Luke's South Shore Vince Lombardi Cancer Clinic, which opened in early 1999. Other sites opening Vince Lombardi Cancer Clinics this year include Elkhorn and West Bend. In the fall of 1999, St. Luke's Medical Center established and opened the first operational Gamma Knife in Wisconsin. Gamma Knife is a state of the art, high technological tool dedicated to perform radiosurgery on brain lesions. Gamma Knife applications include treating primary malignant, metastatic or benign brain tumors and arterial venous malformations and for such debilitating conditions as trigeminal neuralgia. The Gamma Knife radiosurgery precludes the need for open brain surgery or hospitalization. These patients can be treated almost exclusively in an outpatient setting. St. Luke's decision to purchase Wisconsin's first Gamma Knife affirms its commitment to developing cutting edge advances in cancer programs and technology.
The overall effort against cancer can be enhanced with collaboration between institutions as well as between disciplines. This is accomplished when each institution cultivates its own strengths and at the same time contributes to a complete program of cancer prevention, detection and treatment. In 1998, progress was made toward an integrated cancer program between Aurora institutions in the Milwaukee metro area. Sinai Samaritan Medical Center (SSMC) was an active participant.

Initiation of a cancer network began with the appointment of a regional director for Cancer Services, who effectively moved the process forward. A regional cancer committee met for the first time. This meeting provided the chairs of the cancer committee at each hospital a means to share information and discuss common goals and research objectives. A pilot project was initiated to share tumor board programs and educational presentations on cancer through innovative teleconferencing. Lisa Robinson assumed the task of standardizing the data collection systems in the region. Under her guidance the cancer registries at each institution are being melded into one information system. For the first time, the cancer program annual report was published jointly as a composite of information from each Aurora metro institution. The report included cancer registry data and educational contributions from each of our medical centers, the in-depth site topic featured breast cancer, the most frequent cancer we are called upon to diagnose and treat.

Currently, SSMC's cancer program is approved independently as that of a comprehensive community hospital program. Ultimately the goal is to seek Commission on Cancer approval of Aurora hospitals as a cancer program network.

Programs of service and education marked the year at SSMC. The cancer committee met on four occasions during the year to plan and to hear reports. We maintained an active role in community fund-raising for cancer research with a display at the Wisconsin Breast Cancer Showhouse. Oza Holmes and Joan Sagan initiated plans for a Susan G. Komen Race for the Cure in Milwaukee for 1999. Seventy-five percent of the funds raised from this event remains locally for projects in our community. Cancer prevention remained a priority. SSMC will be the nucleus center in Milwaukee for the second national breast cancer prevention trial, the STAR (study of tamoxifen versus raloxifene) trial, with Julie Jensen as its coordinator. A goal of 22,000 participants makes this perhaps the largest prevention trial.
ever to be attempted. Surgeons at SSMC will be participating with other surgeons across the country in clinical trials research sponsored by the newly formed American College of Surgeons Oncology Group. Consideration was given to establishing a resource room at SSMC to further serve the needs of cancer patients. A public education plan was formulated for community outreach to increase awareness of the importance of cancer screening and the treatment resources that are available. We collaborated with the National Cancer database by contributing data on colorectal cancer and lymphoma to the national pool.

This year's annual report concentrates on colorectal cancer, the fourth leading organ site for cancer in the nation and the third most frequent cancer among both men and women. Colorectal cancer causes 56,600 deaths each year in the USA and presents a major challenge for diagnosis and treatment. The frequency of colorectal cancer at SSMC reflects the national statistics. Much information is becoming available about the genetics of risk and progression of colorectal cancer. Attention to diet and regular screening currently offer the most promising avenues for reducing the morbidity from this particular malignancy. We need to emphasize these strategies.

It was a pleasure to chair the cancer committee at SSMC again this year. I wish to thank the dedicated members of the cancer committee and all at our institution who participate in the effort against cancer for their good works.
1998 was highlighted by the approval of the cancer program at West Allis Memorial Hospital at the highest level possible granted by the Commission on Cancer. In addition, 1998 saw the completion of several studies and the beginning of new ones. The former include colorectal cancer, diagnosis and therapy thereof, and our data revealed that we compared favorably with the national benchmarks. It is obvious from increased surveillance by the primary care physician community, along with more aggressive endoscopy, that these lesions are being found at an earlier stage. We also began studies on prostate cancer and early breast cancer. In regards to breast cancer, a sub-committee was formed to look at several aspects of care which included increased use of sentinel lymph node mapping and radiation therapy referrals for early lesions when appropriate. We are still below the national level of 70% of all breast cancers having local surgery and increased efforts will be made so that our numbers in the future will approach that.

This past year saw the establishment of the regional Aurora laboratory facility at West Allis Memorial Hospital with at least six pathologists on campus at all times and laboratory testing for hematology/oncology that I feel would rival any university center. In regards to supportive care, the Aurora Visiting Nursing Association has developed an excellent home care and hospice branch which has allowed many patients to stay at home in their final days in comfort with the assistance of this excellent nursing staff. We saw a continuation of our “Positive People” evening support group, which is quite popular and an increase in informational service access for patients and their families through Joan Crouse, the librarian. I wish to thank Lisa Robinson for her outstanding work in overseeing the data development of all the oncology programs for the Aurora Regional System.

This issue of the 1998 Cancer Program update includes the new regionalization as previously mentioned of Sinai Samaritan, St. Luke’s and West Allis Memorial. I feel this has been very successful thus far and we have had very fruitful quarterly meetings at the Heil Center with representatives from these three
institutions and administrative staff for the cancer and Vince Lombardi program through Aurora Health.

I would also like to welcome William Laffey, who has assumed the new position of regional director for cancer services for the Aurora system. I am sure that with this emphasis on system wide coordination of cancer services, it will be beneficial to the patients and the Aurora provider community.

I feel strongly that West Allis Memorial Hospital, through the combination of its excellent laboratory, radiation therapy, diagnostic radiology, and physician staffs, will continue to meet national and community standards for oncology care.

Cancer Committee Membership

West Allis Memorial Hospital Cancer Committee Members
- Maury Berger, MD - Chairman, Medical Oncology
- Linda Barrows, MD - Physical Medicine & Rehab
- Kenneth Bastin, MD - Radiation Oncology
- Brian Butler, MD - Urology
- A. Craig Evans, MD - Gynecological Oncology
- Donald Feinsilver, MD - Psychiatry
- John Kelly, MD - Otolaryngology
- John Hanson, MD - Medical Oncology
- Ronald Hart, MD - Medical Oncology
- Thomas Lass, MD - Anesthesiology
- Steven Sperling, MD - Radiology
- Rodolfo Suaverdez, MD - Family Practice
- Terence Roth, MD - Surgery
- Shelly Underhill, MD - Pathology
- Richard Kellar - Administration
- Maria DeNario, MSN - Social Services
- Pat Kadlec, RN - Outpatient Nursing
- William Laffey, MBA - Regional Director Cancer Services
- Becky Pogacar, RN, MSN - Nursing
- Lisa Robinson, RHIA, CTR - Data Registries
- Monique Swiecichowski, RN, BSN - Research
- Vicki Volp, RN, MSN, - Quality Management
- Phil Whitton, RTT - Radiation Oncology

St. Luke's Medical Center Cancer Committee Members
- Jeffrey Derus, MD, Chairman, Urology
- Kenneth Bastin, MD - Radiation Oncology
- William Deshur, MD - Surgery
- Ajit Divgi, MD - Medical Oncology
- A. Craig Evans, MD - Gynecologic Oncology
- Daniel Geenan, MD - Gastroenterology
- John Hanson, MD - Medical Oncology
- Ronald Hart, MD - Medical Oncology
- Jeffrey Knajdl, MD - Psychiatry
- Ann Lefeber, Ph.D - Immunotherapy
• Mahmood Mirhoseini, MD - Cardiothoracic Surgery
• Gordon Mortensen, MD - Anesthesiology
• David Munoz, MD - Family Practice
• Michael Nordstrom, MD - Otolaryngology
• William Pao, MD - Radiation Oncology
• Jorge Pellegri, MD - Pathology
• Elaine Thomas, MD - Pediatrics
• Jonathan Treisman, MD - Medical Oncology
• Mark Wenzel, MD - Radiology
• Vicki George, RN, Ph.D - Regional Vice President
• Patty Abella, RN - Regional Manager Oncology
• Sheri Hackbarth, RHIA - Cancer Registry
• Grace Jesson, MSW - Social Services
• William Laffey, MBA - Regional Director Cancer Services
• Pam Lyon, RN, OCN - ABMT Coordinator
• Rev. Marica Marino, M.Div, B.C.C. - Pastoral Care
• Jennifer Martone, RN, MSN - Inpatient CNS
• Donna Metoff, RN, MSN - Inpatient Nursing
• Kristin Niendorf, MS, CGC - Genetic Counseling
• Sharon Paulson, RN - SLSS Oncology
• Lisa Robinson, RHIA, CTR - Clinical Data Registries
• Mary Runge, RN, MSN - Visting Nurses Association
• Donna Thesfeld, RN - Quality Management
• Carol Tutino, RN, CCRC - Research
• Kerry Twite, RN, OCN- CNS VLCC
• Marija Weidman, RN, MSN- Business & Market Dev.
• Phil Whitton, RTT - Manager Radiation Oncology
• Sol Yoder, PharmD - Oncology Pharmacy

**Sinai Samaritan Medical Center Cancer Committee Members**

• Mitchell Pircus, MD - Radiation Oncology
• Gary Shapiro, MD - Medical Oncology
• Allen Torkelson, MD - Medical Oncology
• Len Wilk, FACHE - Administration
• Patty Abella, RN - Regional Manager Oncology
• Nancy Briggs, RN, OCN - Research
• Jacque Cooors, BS, RRT - Quality Management
• Cindy Ganzel, RN, RHIT - Clinical Data Registry
• Barb Haag-Heitman, RN - Women’s Health
• Oza Holmes, RN, OCN - Breast Health Center
• Julie Jensen, MSN, RN, NP - Nursing
• William Laffey, MBA - Regional Director Cancer Services
• Margaret Lange, RN - Outpatient Oncology
• Janet Lotegeluaki, RN, OCN - CNS
• Pam Maier, RN - Inpatient Nursing
• Mary Mavraganis, MSW - Social Services
• Kristin Niendorf, MS, CGC - Genetics Counseling
• Lisa Robinson, RHIA, CTR - Clinical Data Registries
• Mary Runge, RN, MSN - VNA Hospice Services
• Phil Whitton, RTT - Radiation Oncology
• Sol Yoder, PharmD - Oncology Pharmacy
Special Focus

colorectal cancer
experience and excellence

1999
Pathologic/Histologic Tumor Grading and Staging

Dr. C. Dukes published a pathologic study of one thousand cases of rectal carcinoma in 1940. This article has become the standard upon which subsequent pathologic staging has been based. Dr. Dukes expanded upon the clinical observation that a digitally examined rectal carcinoma that is freely moveable has a good post-operative survival, while one that is fixed and immobile has a poor postoperative survival. Examining the histology of these resected specimens, he clearly identified that carcinoma limited to the mucosa or submucosa corresponded to a freely moveable tumor while that which invaded the muscularis propria, became fixed and eventually immobile. He further showed that regional lymph node metastases offered an even poorer prognosis. His original stages have been referred to as "Dukes' Stage A, B or C". This basic terminology and its corresponding relationship to survival statistics has withstood 60 years of time. Numerous revisions of the original Dukes' categories have been published. However, all corroborated his original observation, mainly that the deeper the tumor invades the worse the prognosis and that the presence of lymph node metastases at any depth of invasion confers the poorest prognosis.

With the advent of the TNM Staging and grading of malignancies, it has been decided to essentially incorporate and/or expand upon Dr. Dukes' original observations. The pT category refers to the depth of tumor invasion in a resected specimen, pN refers to the number of regional lymph node metastases, and the pM refers to the presence or absence of distant metastases. What is important to note is that the pT category of this system does not refer to the size of the tumor, as is the case for virtually all other malignancies. Extensive investigations have not shown any clear-cut relationship of colorectal tumor size to that of prognosis. There is an important corollary here that frequently escapes the medical community, namely that a small carcinoma can be just as devastating as a large one.

Histologic grading of colorectal carcinomas according to the TNM classification suggests that four categories (Grade I through Grade 4) be used in reporting data to cancer registries and tumor boards. Unfortunately, most institutions prefer to use the time honored three-grade system of well, moderately or poorly differentiated adenocarcinoma.

Although the overwhelming majority of carcinomas of the colon and rectum are adenocarcinomas, there are a small percentage of variants, which have a poor prognosis, notably signet-ring carcinomas, small cell carcinomas and undifferentiated carcinomas that have no evidence of any type of differentiation. The presence or absence extensive amounts mucin production (so called colloid carcinomas) also appear to have a
worse prognosis, however, some published reports have made the opposite observations.

Additional pathologic prognostic parameters have been identified and have been proposed as important features to include in a pathology report. The proximity of the leading edge of a carcinoma to the radial resected margins, the presence or absence of direct serosal involvement by tumor and extramural venous invasion. The time honored tradition of dividing the regional mesenteric lymph nodes into those that are proximal to, at the level of, or distal to the carcinoma is less frequently used. However, it continues to be a suggested standard approach in many pathology textbooks, as in the proximity of lymph nodes to the transected mesenteric vascular pedicle.

The category of pTis refers to carcinoma in-situ. Histologically this combines several entities that have at one time or another had different terms. The presence of severely dysplastic cells within colonic glands that are still bounded by the glandular basement membrane without any evidence of invasion has in the past been referred to as severe or high grade dysplasia. The previous designation of carcinoma in-situ involved a spectrum of severely dysplastic cells within colonic glands to those glands that form cribiform patterns but still without any definite evidence of invasion. Once invasion had been identified beyond the gland into the mucosa, this previously was referred to as intramucosal carcinoma. All of these above entities have a minuscule (approaching 0%) capacity to metastasize and therefore have been collectively referred to as carcinoma in-situ that is either intraepithelial or intramucosal.

Colorectal Premalignant Lesions

It is important to differentiate risk factors from predisposing conditions and from premalignant lesions. A risk factor is defined as conditions that are associated with a higher incidence than expected of carcinoma in a cohort population. Risk factors might include; age, gender, family history, diet, geography or unusual environmental conditions.

A predisposing condition is a process or disease condition that has a known associated increased risk of developing carcinoma in a given cohort. Examples of this would include chronic ulcerative colitis, schistosomiasis, previous history of either adenoma, or carcinoma, Crohn's disease and potentially previous exposure to radiation.

A premalignant lesion on the other hand is a recognized morphologic entity that has the potential to become malignant. In the colon, the currently recognized histopathologic gold standard is dysplasia, or increasing degrees of cytologic atypia of cells lining the colorectal glands. The majority of the time dysplasia is present within well-recognized exophytic type adenomas, which traditionally are divided into tubular, villotubular and villous. There is an increasing awareness of an uncommon
Recognizing and diagnosing varying degrees of dysplasia in exophytic or flat adenomas is not difficult and traditionally shows high concordance rates in interobserver correlations. This is not true, however, in de novo dysplasias, which occur in chronic active ulcerative colitis. The difficulty is due to the active mucosal inflammation that is associated with glandular and cellular destruction and very brisk and exuberant cellular regeneration and hyperplasia. These latter features are very difficult to differentiate from true dysplasia. Published interobserver concordance rates have ranged anywhere from 60% to 80%. An attempt to standardize criteria for grading dysplasia in the colon under these conditions was attempted by a panel of internationally recognized gastrointestinal pathologists in the early 1980’s. The original classification was complex and included high-grade, low-grade, indefinite (probably dysplastic, indefinite, probably reactive) and negative for dysplasia. Over the ensuing 16 years, the indefinite subcategories have been dropped. There is currently an attempt to reevaluate criteria for dysplasia by an international committee.

**Malignant Polyps**

The term “polyp” is a gross visual description of any lump or bump or exophytic lesion projecting from the surface of the colorectal mucosa. The majority of these, in fact, are not true tumors (adenomas) and can be sub-categorized as mucosal folds, hyperplastic polyps, lymphoid aggregates, inflammatory polyps, etc. A small percentage of colorectal polyps (approximately 10%) represent true glandular neoplasms or adenomas. By histologic definition these represent colorectal glands that contain variable degrees of dysplastic cells and create a small mass or projection from the surface.

The term “malignant polyp” has created some confusion. This due in great part to the fact that many terms have been modified or dropped in the terminology of colorectal adenomas. The original consensus terminology differentiated high-grade dysplasia from carcinoma in situ from intramucosal carcinoma. However since the colonic mucosa is essentially devoid of lymphatics, the metastatic potential of all these lesions is essentially zero. For this reason, there is an increasing consensus opinion to refer to these lesions as in situ carcinoma corresponding to the pTis designation of the TNM classification. By extension, invasive carcinoma is now being defined as that which has metastatic potential at the time of diagnosis. This has been defined anatomically as the muscularis mucosa above which there are only rare lymphatic channels. The current definition then of invasive carcinoma is based on identifying carcinoma that
is invading into or through the muscularis mucosa, into the submucosa. Anything above that is in-situ.

The overall incidence of in-situ carcinoma in adenomas has been recorded to occur somewhere between 8% and 13% while that of invasive carcinoma somewhere between 2% and 6%. The term “malignant polyp” now has to be either redefined or sub-categorized. If only in-situ adenocarcinoma is identified with any polypectomy specimen, no further treatment is typically warranted providing the lesion has been adequately excised. If on the other hand an invasive adenocarcinoma is identified in a polypectomy specimen, specific histologic criteria must be looked for and evaluated in order to predict either recurrence or metastasis at the time of diagnosis. Specifically, the deepest point of penetration of the carcinoma should be clearly stated (polyp head, neck, stalk, etc) and its proximity to the polypectomy resection margin. Also, the histologic grade of differentiation and the presence or absence lymphatic or vascular invasion. An increasing number of investigators are now agreeing that a polypectomy specimen with an invasive adenocarcinoma that is within 1mm to 2mm of the margin, or has poorly differentiated carcinoma, or has lymphangio invasion should be considered for further definitive treatment.

A pathologist’s role in examining and dissecting polypectomy specimens is quite important. It becomes critical for the pathologist to identify the stalk (frequently retracted into the head after fixation) or the base of an otherwise flat or bulky adenoma.

The base or transected stalk should be identified, clearly designated (e.g., India ink), and the specimen transected in such a way that an appropriate cross-section be placed on a slide for definitive microscopic examination. With this kind of an approach, it is usually possible to identify the relationship of any invasive carcinoma to the anatomic landmarks of the adenoma and to the margin of resection. Clearly large polyps that have been fragmented become increasingly more difficult to examine and evaluate and not uncommonly the resection margin is unclear.
According to the 1999 Facts and Figures Report by the American Cancer Society, men are more likely to develop colorectal cancer than women with a rate of 54.5 per 100,000 for men and 38.2 per 100,000 among women (see SEER numbers). But study findings by the NCDB (98 Rectal Study and 96 Colon Study) and findings in the Metro Region of Aurora Health Care show that women were diagnosed more than men by a margin of at least 4%.

Subsite distribution of colorectal tumors was compiled from the Metro Region Hospitals with comparative data excluding the rectosigmoid junction. Therefore, the NCDB's rectal percentage is probably higher due to the inclusion of rectosigmoid junction cases. The findings show that the majority of colon tumors are found in the right colon.
To compare stage of disease at diagnosis to the nation general summary staging was used. The benchmarking outcome shows more patients at our metro region hospitals were diagnosed with regional disease by 10% than the nation, but also reveals the metro region had fewer patients diagnosed with stage IV disease than the nation.

**General Summary Stage at Diagnosis**

<table>
<thead>
<tr>
<th>Histology</th>
<th>Percent of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adenocarcinoma/Adenoma</td>
<td>67</td>
</tr>
<tr>
<td>Mucinous Adenocarcinoma/Adenoma</td>
<td>7</td>
</tr>
<tr>
<td>Mucin Producing Adenocarcinoma</td>
<td>7</td>
</tr>
<tr>
<td>Carcinoma In Situ</td>
<td>4</td>
</tr>
<tr>
<td>Carcinoma NOS</td>
<td>2</td>
</tr>
<tr>
<td>Adenocarcinoma in Tubulovillous Adenoma</td>
<td>4</td>
</tr>
<tr>
<td>Adenocarcinoma in a Villous Adenoma</td>
<td>2</td>
</tr>
<tr>
<td>Adenocarcinoma in Polyp</td>
<td>2</td>
</tr>
<tr>
<td>Other Histologic Types</td>
<td>3</td>
</tr>
</tbody>
</table>

Most Frequent Histology: The most frequent occurring histology for colorectal cancer is adenocarcinoma at 67%. 14% includes mucin variants and the rest include adenocarcinomas found in villous, tubulo-villous and adenomatous polyps. There are no comparative statistics available at this time.
Colon cancer screening has only recently received the attention it truly deserves. With the help of well recognized celebrities, the mass media has provided a wealth of information regarding the prevalence of colon cancer and what steps can be taken to identify tumors at a curable stage.

In the United States there are approximately 130,000 new cases of colon cancer diagnosed yearly with 50,000 deaths. This makes colon cancer the second most common cause of death from a malignancy surpassed only by lung cancer. The difference from lung cancer, however, is that colon cancer deaths can be prevented in a majority of cases if screening recommendations are followed. The prevention of deaths occurs as a result of identifying malignant tumors in an early stage and by removing their precursors, adenomatous polyps. Ten-year survival rates for early stage cancers are greater than 90% compared to less than 10% for metastatic disease.

Understanding the difference between screening, surveillance and diagnostic testing is crucial when reviewing guidelines for colon cancer screening. The definition of screening involves the application of a detection method on an asymptomatic patient. Included are: fecal occult blood testing (FOBT), flexible sigmoidoscopy, colonoscopy and barium enema (BE). Surveillance is the term used for testing patients who have a personal history of colonic neoplasia or inflammatory bowel disease, but otherwise remain asymptomatic. The usual test for surveillance is a colonoscopy. Diagnostic exams are used to identify a source of symptoms or lab abnormality. Examples would include iron deficiency anemia or hematochezia.

Screening guidelines for colon cancer are available from a number of different sources including the American Cancer Society, Agency for Healthcare Policy and Research (AHCPR), and the U. S. Preventative Task Force. The guidelines endorsed by the ACS and AHCPR are nearly identical with regards to screening the asymptomatic patient. The only difference is the AHCPR includes isolated FOBT as a screening option. The ACS technique for FOBT is outlined below.

- Take 2 smears from 2 sites of 3 separate bowel movements
- Develop within 7 days - no rehydration
- Avoid for 48-72 hours prior to testing the following that could cause false positive or false negative results respectively.

**False Positive Results**

- Red Meat (beets, lamb, processed meats)
- Uncooked Turnips, Broccoli and Radishes
- NSAID and ASA > 325 mg/day

**False Negative Results**

- Cantaloupe and Other Melons (watermelon excluded)
- Vitamin C Supplements > 500 mg/day
Primary care providers need to know the strengths and weaknesses involved with each of the recommended testing strategies. FOBT is the only test, which has been shown to decrease colon cancer mortality rates through the use of randomized control trials. The decrease ranged from 15% in the European studies to 35% in the United States. The fairly large difference noted between these studies likely occurred from rehydration of the stool samples in the United States. This led to a higher false + rate with more colonoscopies being performed.

Recommendations for FOBT should include the following: with any positive test, a complete evaluation of the colon needs to be performed. Repeating a FOBT for confirmation is not an option as polyps and malignant lesions can bleed intermittently.

When looking at family, personal and previous medical history of patients diagnosed in the Metro Region, two statistically significant findings are noted. The first is that 14% of the patients had a family history of colorectal cancer and secondly, an interesting 29% of the female population has had a previous total abdominal hysterectomy or bilateral salpingoopherectomy (TAH/BSO). Also of note, is 9% of the patients had a prior history of polyps.

<table>
<thead>
<tr>
<th>History</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family History of Colorectal Cancer</td>
<td>14%</td>
</tr>
<tr>
<td>Personal History of Colorectal Cancer</td>
<td>4%</td>
</tr>
<tr>
<td>Multiple Primaries...Colon, Rectum</td>
<td>6%</td>
</tr>
<tr>
<td>Previous TAH/BSO</td>
<td>29%</td>
</tr>
<tr>
<td>(calculated on female population only)</td>
<td></td>
</tr>
<tr>
<td>Previous History of Polyps</td>
<td>9%</td>
</tr>
<tr>
<td>Personal History of Cancer</td>
<td></td>
</tr>
<tr>
<td>Breast – 5%</td>
<td></td>
</tr>
<tr>
<td>Cervix – 1%</td>
<td></td>
</tr>
<tr>
<td>Lung – 1%</td>
<td></td>
</tr>
<tr>
<td>Ovary – 2%</td>
<td></td>
</tr>
<tr>
<td>Prostate – 4%</td>
<td></td>
</tr>
<tr>
<td>Uterus – 2%</td>
<td></td>
</tr>
<tr>
<td>Other – 7%</td>
<td></td>
</tr>
</tbody>
</table>
According to the incidence and mortality report from the American Cancer Society, the risk of developing colorectal cancer increases with age in men and women. The incidence is reportedly 6 times higher among persons ages 65 years and older than among persons aged 40-64, with 75% of all new cases being diagnosed after the age of 65. In comparing our statistics to the rate of cancer reported nationally by the NCDB, Sinai Samaritan Medical Center's population was diagnosed at an earlier age. This may be correlated to the African American population, who the nation also reports as having a higher incidence and mortality rate than men and women of the other racial and ethnic groups.

**Age at Diagnosis of Colorectal Cancer**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>SLMC</th>
<th>SSMC</th>
<th>WAMH</th>
<th>NCDB</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-29</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30-39</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>40-49</td>
<td>4</td>
<td>7</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>50-59</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>11</td>
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<td>60-69</td>
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</tr>
<tr>
<td>90+</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>—</td>
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</table>

*age groups*
Of the reasons leading to diagnosis of colorectal carcinoma within the Metro Region, patients presenting with symptoms were the leading precursor to diagnosis (78%). Screening for colorectal cancer diagnosed 17% of the cases. Familial history accounted for 2% of the diagnoses and 3% were diagnosed due to other or unknown reasons.

**Reason Leading to Diagnosis**

- Symptoms: 78%
- Screening: 17%
- Familial history: 2%
- Other: 3%
Evidence exists that reduction in colorectal cancer morbidity and mortality can be achieved through detection and treatment of early stage colorectal cancers and identification and removal of adenomatous polyps, the precursors of colorectal cancer. Current American Cancer Society screening recommendations for colorectal cancer include digital rectal examination every year for ages 40 and over, annual fecal occult blood tests for age 50 and over. Recent studies have shown that only 17.3% of people greater than 50 have had fecal occult blood testing. Additionally, of people greater than 50 only 9% have had a flexible sigmoidoscopy.

There are two major reasons to screen asymptomatic individuals for colorectal cancer. The first is to diminish mortality from this cancer through early detection and possibly through secondary prevention. The second reason is to select a limited number of patients who are to be examined by colonoscopy. Universal colonoscopy for screening is considered too expensive, and therefore, is reserved for those most likely to have positive findings on previous screening methods or who are under surveillance. Reduction in colorectal cancer mortality and possible reduction in incidence through detection and removal of adenomas are very important benefits of screening. Flexible sigmoidoscopy to 60 cm can decrease mortality risk from colon cancer 60-80%.

Individuals who undergo colonoscopy because of a false positive screen probably do not need to be screened for a decade. Detection of early stage colorectal cancer also may involve less post surgical care such as adjuvant therapy including chemotherapy and radiation. A cancer detected early has a five-year survival rate of 90%. Metastatic colon cancer has a five-year survival of 10%. Complications of flexible sigmoidoscopy are rare; it is a cheap, quick, effective and safe screening test. Presently, the one major limitation to the benefits of colorectal screening is the low compliance rate outside of study populations. The sigmoid examination covers the distal 60cm of the colorectum. The coverage is adequate because greater than 50% of colorectal cancers occurs in the distal colorectum and a substantial number of individuals with cancer or adenomas proximal to the splenic flexure have neoplasms distal to the splenic flexure as well. For these individuals total colonoscopy would follow sigmoidoscopy and the proximal lesions discovered.

Certain groups of people are to be screened and subjected to closer surveillance with colonoscopy. They include people with a history of colorectal cancer, polyps, ulcerative colitis or a family member with colorectal cancer. The risk of developing colon cancer in this population is significantly higher, and therefore, more intensive surveillance is necessary. It is important as a medical community for us to push forward these screening techniques for colon cancer, as we can significantly decrease morbidity and mortality of colon cancer.
The majority of the Metro Region patients had a relatively short duration of symptoms prior to presenting for diagnosis, usually one to two months. The five most common symptoms patients presented with were rectal bleeding, occult positive stool, abdominal pain, anemia and change in bowel habits. In this figure, patients may be included in more than one category.

**Colorectal Cancer Symptoms at Presentation**

- rectal bleeding
- abdominal pain
- anemia
- occult positive stool
- change in bowel habits
- malaise
- bowel obstruction
- pelvic pain
- ER visit for obstruction
- jaundice

![Chart showing percentage of patients experiencing various symptoms.]

Percent of Patients
New advances in the diagnosis and treatment of colon and rectal cancers have resulted in improved survival rates and lifestyles for patients. Specifically, advances in surgical techniques, oncology and radiation therapy have been responsible for these improvements.

Endorectal ultrasound has improved staging of colorectal cancers. In the case of rectal cancers, endorectal ultrasound has led to the identification of early cancers. These are amenable to less morbid (transanal excision) procedure and result in equivalent survival and recurrence rates as more radical procedures. Endorectal ultrasound has not been as helpful in the colon secondary to its inaccessibility.

The surgical management of colon cancers has changed very little in the last few decades. The tumor and its draining lymphatics are resected with a margin of normal colon. The remaining ends of the bowel are then reconnected using either staples or sutures. Laparoscopic bowel resections have gained partial acceptance because they minimize incisions, pain, and length of hospital stay and time out of work. Unfortunately, these goals are frequently not achieved for many reasons. Furthermore, there is significant concern about increased recurrences in patients with stage I and stage II cancers treated laparoscopically as compared to "open" procedures. This has significantly hindered the widespread use of laparoscopic techniques in the management of colorectal cancers.

The availability of intraoperative radiation therapy (IORT) has facilitated the ability of the surgeon to tackle locally invasive lesions of the retroperitoneum, flank and pelvis that would not have been possible years ago. This has resulted in improved local control of cancers, improved quality of life for patients, and even improved survival for some.

Many more technical advances have occurred in the surgical treatment of rectal cancers than colon cancers. These advances have developed from the desire to avoid colostomies thus preserving "normal" gastrointestinal function. Permanent colostomies (abdominal perineal resections or APR) have become exceedingly rare. Transanal circular staplers have allowed the surgeon to reconnect the bowel in situations that would have otherwise required an APR. Techniques such as extended low anterior resections, coloanal anastomosis, and transanal excisions (so called sphincter-saving procedures) have nearly replaced the APR. This has all been accomplished without compromising recurrence and survival rates. In addition, morbidity and mortality have been reduced with these less invasive procedures.

The addition of preoperative chemoradiation therapy has resulted in the increased use of these "sphincter-saving procedures." Preoperative chemoradiation therapy in rectal cancers has resulted in downstaging, improved resectability, reduced recurrence rates and improved survival.
It has been recently recognized that surgeons with specialty training in surgery of the rectum have better results with regard to local recurrence. Surgeons using specialized techniques such as Total Mesorectal Excision have demonstrated markedly reduced local recurrence rates. This technique involves the meticulous removal of the rectum and its mesentry in specifically described planes to prevent contamination of the pelvis with cancer cells.

Metastatic colorectal cancer to the liver has been traditionally dealt with by surgical extirpation. Hepatic cryotherapy has added a therapeutic modality for the treatment of those tumors previously not amenable to surgical therapy. The two modalities may be used in conjunction with each other. Furthermore, cryotherapy accomplishes similar survival and recurrence rates as excision with less morbidity and mortality. Cryotherapy uses a probe placed in the tumor with the liver using ultrasound guidance. The probe is cooled with liquid nitrogen, cooling the tumor to -191 degrees Celsius creating an “iceball” which destroys the tumor cells.

Radioimmunoguided surgery or R.I.G.S. uses radioisotope labeled antibodies to intraoperatively find tumor cells not detectable by standard surgical techniques. Most often used for patients with recurrent colorectal cancer, radioisolated antibodies are injected into the patient 48 hours prior to surgery. During surgery, the surgeon uses a probe that detects the isotope that has attached itself to the tumor. Once identified by the probe, the tumor is removed. The specificity and sensitivity of this modality have limited its widespread use.

Recently, more attention is being paid to the patients’ functional outcomes rather than more traditional parameters of morbidity, mortality, survival and recurrence. Functional outcomes refer to patients’ continence, number of bowel movements, sexual function, and overall well being. New surgical techniques have followed to improve these measures in addition to the more traditional parameters. The use of a specially designed “J” pouch made from the remaining colon has improved patient function post-operatively by reducing the number of movements and increasing bowel control. This has been especially important when patients are receiving postoperative chemoradiation therapy, which may further compromise function.

Trends for the future focus on less radical surgery with improved multimodality (surgery, chemotherapy, and radiation) treatments. In addition, trials are underway looking at lymphnode mapping, already used in breast cancer to better delineate the most appropriate patients for adjuvant therapy. Ultimately, the treatment and or prevention of colorectal cancers is in the hands of the molecular biologist through gene therapy.
Surgical resection alone of the primary tumor was done in the majority of the cases (65%) at all of the facilities, followed by surgery and chemotherapy (20%). Radiation was used as either primary or adjuvant treatment 11% of the time and no treatment was given in 3% of the cases.

The ACoS study looked at the type of anastomosis that was done with surgical resection. Of the cases utilizing anastomosis, 46% used the staple method, 23% of them were hand sewn, 28% did not have an anastomosis and 3% were unknown.
Kaplan-Meier DFS by AJCC Stage - 5 Year Survival Colon by AJCC Stage 0-4

Kaplan Meier DFS by AJCC Stage - 5 Year Survival Rectosigmoid Rectum Stages 0-4

Stage
0
1
2
3
4

Number of Months
Enterostomal Therapy (ET) is a nursing specialty which focuses on the care of patients with diversions of the intestinal or urinary tracts (i.e. colostomies, ileostomies, urostomies) and chronic wounds. The Enterostomal therapy nurses are key to those ostomy patients who may have or have had surgery for colorectal cancer, bladder cancer, diverticulitis, ulcerative colitis, Crohn’s disease and fistulas to name a few. The ET nurses work in close collaboration with general surgeons, colorectal surgeons and urologists in preparing patients for either a temporary or lifetime diversion.

A patient may first encounter an ET nurse pre-operatively where they explain the surgical procedure, characteristics of the stoma opening, appliances/appliance management techniques, skin care, diet and where to obtain ostomy supplies post-discharge. During the pre-op visit the ET nurse selects a site on the patient’s abdomen for the stoma opening, considering the type of ostomy, abdominal contour, skin folds, beltline, and style of dress. This is a crucial step in preparing one for ostomy surgery, as a well positioned stoma allows for secure adherence of an appliance. Appliance security is key to a patient achieving confidence in the ostomy so that a normal lifestyle can be resumed.

During hospitalization the ET nurse educates the patient and significant others in appliance management and skin care. This is often an emotional time for patients as they encounter their new stomas. However, by discharge they are usually able to empty the appliance themselves and have a good beginning understanding of the appliance change procedure. A visiting nurse, or visiting ET nurse follows the patient in the home setting until independence in ostomy care is achieved.

ET nurses find their roles to be extremely rewarding as they help patients adjust to their ostomies physically and emotionally. “Taking a patient from a very overwhelmed and sometimes hopeless state of mind to a realization that life can go on as before, makes it all worthwhile,” states Jan Avakian-Kopatich, RN, CETN. “Patients truly appreciate our expertise and the time we spend teaching them how to care for themselves. Ostomy care deals with a very personal bodily function. The patient has to feel comfortable with the nurse caring for it. Once he or she does, a close personal rapport often develops and the ET nurse becomes a key contact person for as long as the patient has the ostomy. It is what nursing is all about for me.”
The metro region of Aurora Health Care employs seven ET nurses. They are Jan Avakian-Kopatich (SLMC), Judy Bell (SLMC), Mary Sue Coffey (WAMH and SLSS), Margaret Driss (St. Luke’s Wound Care Center), Jeanne Linnemanstons (VNA), Barbara Provo (SSMC), and Kay Wienke (VNA).

Based on NCDB's 1996 report on colon cancer, all ethnic groups have generally similar stages of disease at presentation, except for African Americans who have a slightly higher incidence of late stage disease. According to the 1999 Facts and Figures, African Americans have higher colorectal cancer incidence than men and women of other racial and ethnic groups. Comparison of new cancer cases by race among Metro facilities show Sinai Samaritan with the highest number of African Americans, which may correlate to the finding of patients diagnosed at a younger age at that facility.

**Race by Hospital at Diagnosis**
Although cancer of the colon is very treatable, it is still the second most common cause of cancer death in the United States. Approximately three-quarters of patients present with localized disease, and resection for cure is possible. Unfortunately, one third of these patients will eventually develop recurrent cancer. Thus, over half of all colon cancer patients will ultimately die from distant metastases. In addition to palliative treatment for metastatic colon cancer, chemotherapeutic strategies have developed to prevent postoperative relapses.

Adjuvant Therapy

Adjuvant therapy refers to the administration of chemotherapy (or radiation therapy or both) after curative surgery to eradicate micrometastases that are responsible for postoperative relapses. The goal of this therapy is cure.

Recurrence following surgery is clearly related to the degree of penetration of the cancer through the bowel wall and the presence or absence of tumor in the loco-regional lymph nodes. Large prospective randomized trials have conclusively shown that patients with loco-regional lymph node involvement (Stage III or Dukes’ C) benefit from systemic adjuvant chemotherapy employing 5-fluorouracil based chemotherapy regimens. With very mild toxicity, adjuvant chemotherapy reduces the recurrence rate by 40%, and the death rate by 33%.

There is no consistent evidence that adjuvant chemotherapy is beneficial in the absence of loco-regional lymph node metastases. With its limited penetration into the bowel wall, stage I (Dukes’ A) colon cancer is curable by surgery alone. Although 25 - 30% of patients with Stage II (Dukes’ B2, B3) disease will eventually succumb to their illness, the adjuvant studies have only shown a trend favoring adjuvant therapy in this group of lymph node negative patients. Adjuvant therapy cannot be recommended routinely in this group, but, pending further studies, most oncologists do treat the subgroup of high risk Stage II patients who have colonic obstruction or perforation.

In recent years, 6 months of postoperative 5-fluorouracil and leucovorin has become the standard approach for patients with stage III adenocarcinoma of the colon. Twelve months of 5-fluorouracil and levamisole may also be considered, but at least one trial has shown this to be inferior to the 5-fluorouracil and leucovorin regimen. Eligible patients should be considered for entry into clinical trials comparing various postoperative chemotherapy regimens, postoperative radiation therapy, biological therapy, or combinations of these modalities.
**Advanced Disease**

For many years, 5-fluorouracil has been the mainstay of chemotherapy for the treatment of patients with metastatic (Stage IV, Dukes’ D) colon cancer. Response rates in these patients range from 10 - 50%. Combination chemotherapy has not been shown to be more effective than 5-fluorouracil alone. A recent Eastern Cooperative Oncology Group study showed complete responses in 0.5%, partial responses in 14%, and disease stabilization in 7.6% of patients with metastatic colon cancer regardless of how 5-fluorouracil was combined with leucovorin, PALA, or interferon. The median duration of response in the group treated with 5-fluorouracil alone was 8 1/2 months. 5-fluorouracil chemotherapy has also been used as a radiation sensitizer, and intraarterially to treat liver metastases.

Over the past few years, the topoisomerase I inhibitor, irinotecan has emerged as the first effective drug for patients whose tumors no longer respond to 5-fluorouracil. It produces response rates of 15 - 30% in this group. It is now the standard treatment for patients with refractory colon cancer, and it is being tested in various combinations in all phases of advanced disease. In addition, many other exciting new agents, including other topoisomerase I inhibitors (Hycamptin), thymidylate synthase inhibitors (Raltitrexed, Tomudex), platinum analogues (oxaliplatin), and oral fluorinated pyrimidines (Capecitabine, oral 5-fluorouracil, eniluracil) are undergoing preclinical and clinical investigation.

Despite the promise of these new agents, the treatment of advanced colon cancer remains palliative. Recent progress in understanding the molecular biology of colon cancer may ultimately permit the identification of those patients most likely to benefit from adjuvant and palliative treatments. Such advances may also identify alternative targets for chemotherapy, and improve prognosis in this disease. Clinical research trials are available throughout the Aurora System. It is of the utmost importance that patients with colon cancer be given the opportunity to participate in these studies.
A and B. Typical treatment fields for preoperative irradiation of rectal cancer. Small bowel contrast given prior to the simulation procedure is helpful for field shaping. Rectal contrast is inserted prior to simulation of the lateral fields. If a boost is given, a small volume of air can be inserted in the bladder. The air will rise and indicate the posterior aspect of the bladder in the prone patient, which is helpful when the lateral fields are designed.

Figure 1
Isodose distribution for a rectal cancer using a posterior field weighted 0.5 and opposed lateral fields with 45° wedges and weighed 0.25 each. As in the bladder tumor, hot spots are present under the thin portion of the wedges.

Figure 2
The addition of an anterior field reduces the hot spots in the lateral aspect of the pelvis. The posterior field is weighted 0.5, the lateral fields 0.2 each, and the anterior 0.1.

Figure 3 and 4
A and B. Typical treatment fields for preoperative irradiation of rectal cancer. Small bowel contrast given prior to the simulation procedure is helpful for field shaping. Rectal contrast is inserted prior to simulation of the lateral fields. If a boost is given, a small volume of air can be inserted in the bladder. The air will rise and indicate the posterior aspect of the bladder in the prone patient, which is helpful when the lateral fields are designed.
Large bowel cancers are subdivided into colon adenocarcinomas and rectal adenocarcinomas, and the treatment regimens for both differ markedly. By definition, the rectum begins at the point where the large bowel loses its mesentery. As the lymphatic drainage patterns are different, cancers above and below the peritoneal reflection are managed differently. Likewise, presenting symptoms vary as rectal cancer typically present with melena, and colon cancers present with abdominal pain.

The initial treatment of choice for colorectal cancer has been surgical resection. Important prognostic factors determining who would benefit from adjuvant radiation therapy include tumor penetration of the bowel wall and lymph node involvement, as both factors are associated with a high rate of local recurrence. Other poor prognostic factors include deletions from chromosome 14, overexpression of p53, aneuploidy, and high Ki-67 index.

When using local radiation therapy in the adjuvant setting, the patterns of failure following surgical resection are determined by the patterns of failure following curative surgery. Radiation therapy is an excellent treatment modality, but it is typically reserved in clinical situations where the risk of local recurrence is high enough to justify its use and when an effective regional treatment can be delivered safely.

For cancer, the role of adjuvant radiation therapy is not well defined. The most common site for recurrence is abdominal rather than pelvic. Local failure does not result in the same degree of morbidity as in patients with rectal cancer who develop a local pelvic recurrence.

There are subsets of patients with high local failure rates, and a few retrospective series suggest an improvement in local control and disease-free survival with the use of postoperative radiation therapy, either to the tumor bed or whole abdomen, particularly in patients with T4, N0, M0 or T4, N1-2, M0 disease. However, preliminary data from an intergroup trial showed no significant improvement in outcome with adjuvant radiation, 5FU, and levamisole over 5FU and levamisole alone (INT 0130, ASCO, 1999). Thus, the use of radiation therapy in colon cancer remains under investigation.

In contrast, radiation therapy has clear benefits in a number of cohorts of patients with rectal cancer. In resectable rectal cancer, it has been used historically in both a postoperative setting as well as a preoperative setting. A number of series have shown that the risk of local recurrence in surgically managed patients without adjuvant therapy in stages T1-2, N0, M0 is less than 10%. However, it increased to 15-35% in stages T3, N0, M0 and T1, N1, M0 and 45-65% in T3-4, N1-2, M0 adenocarcinomas.
A number of randomized trials and retrospective series have shown an improvement in local control with adjuvant postoperative radiation therapy, versus a surgical control arm (16% vs. 25%, p=0.06). More impressive results have been seen in combined adjuvant postoperative radiation therapy and chemotherapy in patients with T3-4 and node positive rectal cancers. There are three randomized trials of postoperative combined modality therapy and they have consistently shown an improvement in overall survival, disease free survival, and local control.

Radiation therapy has also been used in a preoperative setting. This has both biological and physical advantages as, theoretically, there is increased radiosensitivity due to more oxygenated cells, and there is no post-surgical small bowel fixation in the pelvis. Furthermore, preoperative therapy results in significant downsizing of the tumor allowing for sphincter preservation in 75-80% of patients who otherwise would need abdominoperineal resection.

Similarly, preoperative therapy may improve the resectability rate, particularly in patients with locally advanced or unresectable disease.

Other novel approaches in such patients include integrating intraoperative radiation therapy (IORT), whereby one can use either electrons or brachytherapy to deliver additional radiation to the tumor bed or region with the highest risk of local failure.

Radiation therapy is typically delivered via a 3 or 4 field shrinking field technique to 5040 - 5400 Cgy (Figure 1&2). The sacral canal and regional lymphatics, including the internal iliac and prescaral lymph nodes are typically included in the pelvic fields. After an abdominoperineal resection, one usually includes the perineum with the radiation ports to reduce the risk of perineal recurrence, which can range up to 20-25% (Figures 3&4).

There are many questions that have yet to be answered, and there appears to be an emerging trend towards local excision alone and integrating adjuvant therapy in the appropriate candidate. Currently, the focus of the Radiation Therapy Oncology Group (RTOG) is to examine issues of radiation dose, fractionation, and the incorporation of new radiosensitizers into the treatment schema.

Clearly, radiation therapy and systemic chemotherapy have proven to be integral additions to surgery in the treatment of colorectal adenocarcinomas.
Colorectal cancer is a major cause of death from cancer in Western civilizations; it will claim approximately 55,000 lives in the United States in 1999. The age-adjusted death rates are highly variable in populations located in different parts of the world. For example, there are 3.4 cases per 100,000 in Nigeria compared with 35.8 cases per 100,000 in Connecticut per year.

This obviously indicates that there are environmental, dietary, as well as genetic components, which makes population studies often difficult but must be taken into light in doing preventative studies.

We know that early detection by fecal occult blood testing and flexible sigmoidoscopy may decrease the risk of colorectal cancer by 20% to 30%; however, most of the United States population does not undergo appropriate screening. Therefore, epidemiologists have focused on understanding a molecular basis for the chemoprotective facts resulting from drugs, foods, and other materials to decrease the incidence of this cancer. Substances explored as chemopreventive agents in colorectal cancer include:

1. The nonsteroidal anti-inflammatory drugs (NSAIDs) which may inhibit the evolution of formation of adenomas by their inhibition of cyclooxygenases and decrease of prosticlinosynthesis; 2. Antioxidants, such as vitamin E or C which may modulate carcinogenic substances; and 3. Folate and calcium, which may interfere with tumor growth and replication. Dietary intervention, such as decreasing fat intake and increasing fiber consumption have been linked to a lower incidence of colon cancer in many epidemiologic studies. This field is continuing to evolve and some data are difficult to analyze. This article attempts to summarize some of this data on dietary and pharmacologic approaches to the prevention of colorectal cancer.

Cyclooxygenases

Studies in humans have evaluated the effect of aspirin and NSAIDS on the relative risk of colorectal cancer. The most common drug used, has of course, been aspirin and in the use of ASA and the NSAID there has been little information regarding the most effective dose and duration of drug use, which is extremely important since one would have to take these drugs long term as a preventative measure. The cyclooxygenases inhibitors have been studied in a variety of settings including the Nurses Health Study in which a protective effect was seen after several years of aspirin use. Similar studies have revealed a protective effect of NSAIDS in relation to adenomatous polyp detection. Some groups have found that continuous NSAID use results in a 40% to 50% reduction in relative risk for colorectal cancer.

The mechanisms for chemoprevention of these drugs is not entirely clear but is thought by researchers that the inhibition of cyclooxygenases enzymes affects the conversion of a rhodanic acid to prosticlinasins and other eicosanoids. The two inducible
isoforms of cyclooxygenases COX-1 and COX-2 both affect prostaglandin production and may work as mitogens or tumor promoters in a wide variety of cell types. Disregulation of COX-2 coincides with development of gastrointestinal malignancies. Increased COX-2 expression has been detected in 80-90% of colorectal adenocarcinomas and in 40-50% of premalignant adenomas. This elevation of COX-2 expression may be secondary to other events such as the APC gene (adenomatous polyposis coli), K-ras mutation and P 53 mutation. Thus, the new class of NSAIDS that are highly selective for the inhibition of COX-2 enzyme but lack inhibition of COX-1 may prove to be very helpful in inhibiting tumor growth.

NSAIDS

Other studies have shown that NSAIDS induce apoptosis (orderly cell death) and alter expression of cell cycle regulatory genes. Many studies are underway using NSAID like drugs for the prevention of gastrointestinal malignancies as well as skin, lung, prostate and breast. Recent trials show that NSAIDS combined with statin drugs such as mevacor may work to prevent colon dysplasia that can lead to cancer. This has been an exciting area and future studies will show this safety and efficacy as a pharmacologic agent in the future.

Other Drugs

Other drugs that may affect cancer-developing pathways that are under study include:

Arachidonic acid in fecal matter are cytotoxic to the colorectal epithelium and may promote cell transformation.

Alpha-difluoromethylornithine (DFMO) may inhibit cellular proliferation and suppress carcinogen inducing oncogenes such as p21, ras expression. Retinoids seem to reduce proliferation, induce differentiation and perhaps inhibit basement membrane invasion angiogenesis and have been used for a number of years in a variety of chemoprevention studies.

Oltipraz

Oltipraz is a synthetic compound similar to those found in cruciferous vegetables. This compound may affect regulation of certain metabolic enzymes to prevent their carcinogenic properties and has been shown to have antineoplastic activity in several target organs such as bladder, skin, mammary gland and lungs.

Calcium

Theorists have thought that calcium may act by binding fatty and bile acids. The high fat western diet (100 to 150 grams per day of fat) produces
hyperproliferative changes in the colonic mucosa of humans and rodents. An increased calcium concentration may also directly inhibit the development of malignancy by inhibiting the proliferation of pluripotent stem cells in the colonic crypt epithelium. However, at present, the role of calcium in colon carcinoma prevention is unclear. Dartmouth College has an ongoing study of using calcium carbonate in a dose of 1200 mgs. per day with every three year colonoscopy.

Fat

Dietary factors have thought to be an important cause of colon cancer and may account for as much as 90% of the variation in rates of this tumor in different parts of the world. Recently 13 epidemiological studies were evaluated and found that in 12 of them, increased fat intake resulted in an increased incidence of colorectal cancer. However, the results of epidemiological studies are suggestive but do not conclusively define an association between dietary fat and colon cancer. There are several mechanisms that have been proposed to explain how fat intake might increase the risk for colorectal cancer. One study has suggested that fatty and bile acids cause irritation of the colonic epithelium leading to an increase in the rate of cellular proliferation. Another mechanism involves the role of fat in colon carcinogenesis because of an interaction among fat, bile acids and bacteria. At the present time, the NCI is conducting the Polyp Prevention Trial One in which patients are on a low fat, high fiber, high fruit and vegetable diet and monitoring for the incidence of bowel adenomas.

Fiber

Epidemiologists in the 70's found that colon cancer was rare in Africans whose diets are high in unrefined foods and contain more fiber than those of westernized populations. (Recent studies reveal little effect of diet in general in the prevention of colon cancer in the general population.) Mechanisms for dietary fiber to have an anticarcinogenic effect have been proposed, including binding of bile acids in the gut and diluting the effects of potential dietary carcinogens by increasing stool bulk. Also, it is thought that fiber may act as a substrate for bacterial fermentation causing more short chain fatty acid production which are less carcinogenic. Several large studies are going on at the present time which should further define fibers role.

Vitamins

The antioxident vitamins including Vitamins E, C, and betacarotine have been studied for their role in prevention of cancers in humans. It is thought that betacarotine can trap organic free radicals and/or deactivate excited oxygen molecules. Betacarotine also may prevent genetic changes by preventing DNA damage induced by free radicals.
Vitamin E functions as a free radical scavenger to prevent lipid peroxidation of polyunsaturated fatty acids. Vitamin C may also act as a free radical scavenger. Studies thus far, however, have not shown a significant decrease in colon cancer risk with the above-mentioned vitamins. Several studies have shown a reduction in colon polyps but there is nothing conclusive and, thus, there is no support for the use in colon cancer prevention.

**Folate**

Researchers use data from the food frequency questionnaires of 88,000 women who have participated in the Nurse Health Study from 1980 to 1984. Women who had a folate intake of greater than 400 mcg. per day in 1980 were less likely to be diagnosed than women who had an intake of less than 200 mcg. per day. Women who had taken supplements for 15 years or more showed a significant decrease in colon cancer risk (relative risk of 0.25). One theory has reviewed the role of folate in DNA methylation stating that an inadequate folate intake could lead to abnormalities in DNA methylation and thus to normal cell development. A recent study following 29,000 male smokers in Finland suggested that a diet high in Folate combined with low alcohol, high protein diet may have a protective effect against colon cancer and further studies are being done on the use of folate as chemopreventive of colorectal cancer.

In summary, it is thought that the use of NSAIDS or aspirin, and that a diet low in fat and high in fiber, as well as regular exercise, would be the best choice. Recent recommendations for the prevention of cancer by the World Cancer Research Fund include:

- Choose predominantly plant-based diets rich in a variety of vegetable and fruits, legume and minimally processed starchy staple foods.
- Avoid being underweight or overweight and limit weight gain during adulthood to less than 11 pounds.
- Maintain physical activity.
- Eat 15 oz. to 30 oz. of five or more portions per day of a variety of vegetables and fruits year round.
- Limit consumption of fatty foods, particularly those of animal origin to less than 25% to 30% of total calories and saturated fat to less than 10% of total calories.
• Limit consumption of salted foods and the use of table salt in cooking. Use herbs and spices to season food.
• Do not smoke or chew tobacco.

As our knowledge base increases at the basic science level, such as cellular promoters and inhibitors, oncogenes and their over and under expression, and other molecular biological pathways, I feel strongly that more knowledge will be gained and we will come closer to a regular regimen of chemo prevention to reduce the significant incidence of colorectal cancer in the United States.
Special Focus

regional activities in Aurora's Metro Region

1999
Research Trials for Colorectal Cancer

What will find the cure for cancer? Research. Research is one of the most important elements in finding a cure for this deadly disease. With so many treatment modalities that aim to prevent, treat and cure cancer, research is the factor that helps determine which method works best. The Cancer Program in Aurora Health Care's Metro Region is actively pursuing that end by taking an active role in educating and enrolling our patients in approved national studies. No other hospital system in Southeastern Wisconsin can offer its providers a brochure with over 250 open protocols for their prospective patients. The GI protocols are listed in this report. The entire listing of open protocols is updated on a quarterly basis and distributed to all the staff physicians of the metro region.

Some of the studies included on this brochure are highlighted below with updates and highlights from 1998, including studies that pertain to this year's in-depth site of disease, colorectal carcinoma.

CALGB

The Cancer and Leukemia Group B studies continue to be a part of the clinical research program at St. Luke's Medical Center with 13 studies currently open. The studies cover 5 different cancer sites, including breast, colorectal, leukemia, lymphoma and respiratory.

In 1998, 13 patients were entered into CALGB studies. Four of the 13 studies focus on colorectal cancer. They include:

CALGB 9498: 5FU/Leucovorin vs. 5FU continuous infusion + Levamisole for Dukes B2 with obstruction or perforation or resected Duke's C 1-2.

CALGB 9581: Monoclonal Antibody 17-1A vs. observation for resected Stage II colon cancer.

CALGB 9770: High dose vs. regular dose Octreotide Acetate vs. Loperamide for 5 FU induced diarrhea.

CALGB 89804: CPT-11/5FU/Leucovorin vs. 5FU/Leucovorin for advanced adenocarcinoma of the colon and rectum. This study was just recently opened for patient accrual after the chemotherapy agent Oxaliplatin (Oxal) was added to the study.

Follow-up continues for approximately 175 patients in numerous CALGB studies that either remain open for additional accrual or are now closed.

For more information, contact Dr. Ronald Hart (Elizabeth Meyer, RN, Coordinator) at 384-5111 or Dr. John Hanson (Carol Tutino, RN, CCRC, Coordinator) at 385-3086.

Eastern Cooperative Oncology Group (ECOG)

The Medical Oncology Clinic at Sinai Samaritan Medical Center is an affiliate of the University of Wisconsin's Comprehensive Cancer Center (UWCCC) and the Eastern Cooperative Oncology Group (ECOG). In addition, the clinic is a charter member of the Wisconsin Oncology Network (WON), a newly developed statewide network of UWCCC affiliated hospitals and clinics. Through this network,
Wisconsin’s cancer patients have greater access to innovative investigational cancer treatments. These include agents that have just come out of the laboratory and are being evaluated in humans for the first time. One of these agents is perillyl alcohol, a plant derivative, which is taken orally.

Active ECOG studies include evaluation of 5-FU (bolus vs. continuous infusion) for colon cancer; 5-FU (bolus vs. continuous infusion) with pelvic radiation for rectal cancer; oral 5-FU and GW 776 (an enzyme inhibitor) for metastatic colon cancer; and monoclonal antibody 17–1A vs. observation for resected Stage II colon cancer.

Upcoming research projects in 1999 include studies evaluating additional oral chemotherapy agents, including the ECOG Phase III trial evaluating oral 5-FU/ Eniluaracil vs. protracted intravenous infusional 5-FU in previously untreated advanced colorectal cancer (E 5296).

For more information contact Dr. Gary Shapiro, Principal Investigator (Nancy Briggs, RN, MSN, OCN, Coordinator) at 219-6591.

**Radiation Therapy Oncology Group (RTOG)**

St. Luke’s Medical Center (SLMC) has been a member of RTOG as an affiliate of Dartmouth Hitchcock Medical Center since 1993. West Allis Memorial Hospital (WAMH) was granted “joint center” status with St. Luke’s Medical Center in 1998.

In 1998, on behalf of Principal Investigator Dr. Mitchell Pincus, MD, 11 protocols were submitted and approved for use by the Institutional Review Board (IRB). This brought the total to 25 available RTOG protocols. As is the philosophy of RTOG, these included studies have a variety of focuses:

Adjuvant treatment protocols were made available to patients with node positive prostate cancer, poor-risk stage III non-small cell lung carcinoma, recurrent head and neck cancer, resected pancreatic carcinoma, PSA failure following radical prostatectomy of the prostate and high risk endometrial carcinoma.

Quality of life and palliation (using different treatment schedules) is being studied on breast and prostate cancer patients with painful bone metastases.

An attempt to alleviate radiation-induced toxicities is the focus in two studies involving breast and head and neck cancer patients. These studies evaluate the effectiveness of various topical products in minimizing radiation induced skin toxicity and the efficacy of prophylactic Salagen during radiation to reduce xerostomia and mucositis.
A new evaluation tool was put in place to measure and record late effects of radiation treatment given to patient receiving therapy for head and neck cancer. And finally, prevention was the focus of a study evaluating low-dose 13-Cis Retinoic Acid (Accutane) in the prevention of second primary tumors in patients with Stage I or II squamous cell carcinoma of the head and neck.

**NSABP**

The National Surgical Adjuvant Breast and Bowel Project (NSABP) began recruitment efforts for the second breast cancer prevention trial in May of 1999.

The study of Tamoxifene and Raloxifene (STAR) will compare proven benefits of Tamoxifene against Raloxifene in 22,000 post menopausal women 35 years of age and older who are at increased risk of developing breast cancer. The STAR Study opened in July 1999 at Sinai Samaritan. Sinai Samaritan Medical Center is the Milwaukee headquarters for the study and coordinates recruitment efforts with participating institutions in Southeastern Wisconsin and Green Bay. Dr. William Donegan is the principal investigator for the study.

Sinai Samaritan Medical Center also participated in the National Surgical Adjuvant Breast Cancer Prevention Trial (BCPT) which was the first national trial using Tamoxifene in women at high risk for developing breast cancer. The study demonstrated that Tamoxifene reduced the incidence of breast cancer in 13,388 high risk women, and Tamoxifene was approved for this purpose by the Federal Drug Administration in 1998. Sinai Samaritan was the Milwaukee Headquarters for the study, 85 women in Southeastern Wisconsin participated.

**Autologous Bone Marrow Transplant Program**

Opened in 1990, the Autologous Bone Marrow Transplant (ABMT) Program, under the direction of Robert Taylor, MD, celebrated its 9th anniversary this fall. The annual celebration reunites patients, physicians, and other ABMT Program staff members. Over 300 patients have been treated for cancer with ABMT.

Research continues in the arena of advanced cancers. The physicians and scientists of the ABMT Program have designed two state-of-the-art research studies that combine ABMT with immunotherapy. The first of these studies involved patients with non-Hodgkin’s lymphoma, Hodgkin’s disease and multiple myeloma patients and has just been completed. The second study is still in progress and involves women with metastatic breast cancer. Though it is too early to draw conclusions, the patients treated thus far are without any significant toxicities from the addition of the immunotherapy.

Two non-experimental treatment plans have been added to the ABMT Program this year. These treatment plans are for patients with ovarian and testicular cancer. The patients treated thus far have tolerated the therapy very well.
In a continued effort to manage the continuum of care in an efficient and cost-effective manner, the ABMT Program utilizes patient pathways. These pathways outline the care delivered at any time during the ABMT process by all members of the multidisciplinary team. Variations from the standard are recorded and analyzed as the cause and the outcome. Performance improvement measures are then designed to address the variances where needed.

**Breast Care Program**

Last year over 32,500 mammograms were performed at over 25 sites in the Metro Region of Aurora. Our aggressive and widespread mammography screening program increases the identification of breast cancer in its earliest stages. There was also substantial growth in the number of minimally invasive breast biopsy procedures performed in Aurora’s Breast Centers. Additionally, several new treatment and diagnostic procedures were advanced during the year. The investigational protocol involving sentinel node biopsy, aimed at obtaining prognostic information in a less invasive way and thereby reducing the morbidity associated with axially dissection, is near completion. A lymphedema and exercise program for women who have had breast surgery, has both a prevention focus and symptom management component.

Also new is the multidisciplinary care conference for newly diagnosed patients with breast cancer at St. Luke's Medical Center. Participants in the treatment planning process include surgeons, radiologists, pathologists, medical oncologists, radiation oncologists, plastic surgeons, a psychiatrist, pharmacists, nurses, and mammogram technologists. The conference is designed to assist the patient's treating physician by offering a comprehensive collaborative treatment recommendation.

Enabling patients to participate more in the decision making about their care and treatment has been another focus. A new customized patient education binder, which tailors and organizes information specific to each patient's case, has been developed and will soon be available to all breast cancer patients in the Metro area through the Breast Care Coordinators at St. Luke's Medical Center, Sinai Samaritan Medical Center, West Allis Memorial Hospital and VLCC — Slinger.

**Cancer Counseling Center**

Under the medical direction of Jeffrey Knajdl, M.D., and with nursing coordination provided by Barbara Clinkenbeard, RN, MSN, NP, the Cancer Counseling Center’s mission is to identify and treat psychosocial distress in cancer patients. This is born out of the recognition and understanding that by decreasing levels of distress, patients may experience a host of benefits including a higher quality
of life, better nausea and pain control, relief from depression and anxiety, improved relationships, and even prolongation of one’s life. The psycho-oncology program at St. Luke’s has been carefully tailored and designed under the working models of programs at Memorial Sloan-Kettering Cancer Center and the Johns Hopkins Psycho-oncology program. It is a program like no other in the state of Wisconsin.

The Cancer Counseling Center also places a special focus on the role of the cancer patient’s family and other significant persons present in their lives. Every attempt is made to maximize patients’ abilities to interact and communicate with the critical people making up their support system.

The Cancer Counseling Center has as one of its goals to screen every patient diagnosed with cancer for psychosocial distress and to provide ongoing measures of quality of life. This data will be collected on an ongoing basis so as to allow the Center to be a hub of psycho-oncology research worthy of national and international publication. The National Comprehensive Cancer Network has published a set of guidelines by which psychosocial distress in cancer patients should be managed. The Cancer Counseling Center embraces the approach, which includes integration of psychiatric, psychological, social, and spiritual services.

Every patient seen undergoes a thorough psychosocial evaluation and a determination of the treatment plan is made based on that information. In fact, the Cancer Counseling Center will be the central support system as the plan to screen every Vince Lombardi Cancer Clinic patient for bio-psycho-social distress comes to fruition by January 2000. Treatment options for those with moderate-high distress include: (1) providing access to support groups, (2) facilitating a referral for counseling or psychotherapy (individual, family, or group), (3) starting medication management, or (4) building a combination of these three modes of intervention, which is what most often occurs.

**Community Outreach**

This activity continues to evolve in a manner and at a pace now set by the communities which we serve. As past activities were examined it was determined that on occasion the same participants were attending every event offered. While this is a dedicated audience which should not be taken for granted, the goal of this activity has been and will remain reaching those individuals who continue to have no knowledge of prevention and early detection. To this end it has become increasingly more advantageous to let our communities indicate the outreach activities which are most appropriate. So instead of “lectures” held at the medical centers there are “brown-bag conferences” held in the cafeterias of local businesses at their invitation. Instead of going to school for “career day”, a class may come to one of the Vince Lombardi Cancer Clinics for a tour, information about health care vocations, and being and staying well through life.
Gynecologic Oncology

The Metro region of Aurora Health Care extended its scope of services in gynecologic oncology this year with the addition of Anthony C. Evans, M.D., Ph.D. and Jeannette Wade, R.N., N.P. Dr. Evans is a fellowship-trained (Duke University) gynecologic oncologist whose practice is limited to care of women with gynecologic cancers and pre-malignant conditions. Ms. Wade has expertise as a nurse practitioner in the highly specialized field of gynecologic oncology.

Comprehensive, state-of-the-art care for women with ovarian, cervical, uterine, vulvar, and gestational trophoblastic tumors is available at the Vince Lombardi Clinics and St. Luke’s Medical Center. Dr. Evans also is available to lend his expertise to the management of women with gynecologic neoplasms at other sites as well. Care of these women is enhanced by the availability of medical and radiation oncologists skilled in treatment of gynecologic cancers. The region also offers the availability of the Cancer Counseling Center, Hyperbaric Medicine, Lymphedema, Nutritional, and Social Services as well as the Ovarian Cancer Support Group.

Immunotherapy Program

In the last year, the Immunotherapy Program was reviewed by our Scientific Advisory Board, which consists of nationally known physician researchers from the National Cancer Institute and the University of Pittsburgh Cancer Center. Each member of this board has expertise to evaluate the areas our program is pursuing in order to provide innovative, effective forms of immunotherapy to our patients through the Vince Lombardi Cancer Clinics. Dr. John P. Hanson, Dr. Jonathan Treisman and the other senior investigators of our program presented written and oral summaries of the progress of our work as well as our future directions. The program received an excellent reaction from this board which determined that we were successfully proceeding towards bringing critically needed therapies to our patients which would incorporate the latest scientific and technical expertise available.

The William Schuett Cellular Laboratory continues to provide cellular immune products for many of our clinical trials. This laboratory modifies the technical advances developed in our research laboratories for use in the treatment of patients under carefully prepared clinical protocols. The generation and administration of these cells is closely regulated for patient safety and to this end the laboratory received accreditation from the American Association of Blood Banks (AABB) which determined that we met or exceeded all requirements. Only about 10 laboratories in the United States have the capability to generate the types of immune cells that we use to treat patients and we are one of four that have this AABB accreditation for cellular production of immune therapies.

The Vince Lombardi Gene Therapy Laboratory has continued to focus on developing genes which can instruct cancer killing T cells how to find and efficiently kill cancer cells. In the laboratory setting, these gene-educated T cells
bind cancer cells more effectively, kill the tumor cells more efficiently and produce other immune products capable of killing surrounding tumor cells. The Gene Laboratory, in conjunction with the clinical cell laboratory, is now in the process of revising and refining procedures so that these successful research activities can evolve into patient treatment. In the coming year, we will be conducting testing of the gene product which is required by the FDA and preparing quantities of this gene that we will require for subsequent clinical trials to treat patients with colon, renal, breast or lung cancer.

The Cellular Research Laboratory has been developing the laboratory and clinical expertise to bring tumor vaccines into our armament of cancer treatments. The vaccine approach to cancer therapy is designed to enhance a patient's immune system so that it can then function efficiently to destroy tumor cells. This form of therapy will be specifically generated for each patient's tumor. Preliminary results of clinical trials in other centers suggest the potential for this form of therapy and points to the importance of our program pursuing this treatment strategy. We are currently awaiting final approval of a vaccine trial to be conducted in collaboration with the National Cancer Institute for the treatment of metastatic melanoma.

**Lymphedema Program**

On June 14, 1999, Aurora Rehabilitation Center announced the opening of Lymphedema Services at the Vince Lombardi Cancer Clinic at St. Luke's. Lymphedema Services are also being offered at West Allis Memorial Hospital and at Aurora Rehabilitation Center – Slinger, with new programs opening this fall at Sinai Samaritan Medical Center and Aurora Rehabilitation Center – Waukesha.

Lymphedema is the chronic swelling of a body part, most often an arm or leg, resulting from the accumulation of fluid when lymph nodes and vessels are blocked, removed, or damaged. It is triggered by the removal or radiation of lymph vessels or nodes and may occur following surgery or treatment of breast, cervical, prostate, uterine, or colon cancer, as well as post injury or other surgical procedures. It also may be a primary condition that is congenital. Both men and women are at risk. The condition may occur following a recent medical condition or procedure, or many years later.

Lymphedema causes tissues to become swollen, thick, and painful and increases the risk for infection leading to more complicated medical conditions. With proper evaluation and intervention, lymphedema can be treated and controlled allowing a person to lead a positive and productive life.

**Pastoral Care**

The Pastoral Care Department offers professional spiritual care to patients and families who are dealing with cancer. Chaplains provide daily visits to inpatients and outpatients, co-facilitate cancer support groups, provide sacraments as requested, provide 24 hour coverage for spiritual care needs, and communicate with area clergy as requested by patients.
A highlight of the past year was the development and sponsoring of the first annual Retreat for Women with Cancer. Chaplain Marcia Marino (along with Kerry Twite, CNS, Laura Molleson, Breast Program Assistant, and Sharon Paulson, RN, SLSS) developed an overnight retreat program which included prayer, meditation, journaling, massage therapy, and music therapy. The retreat, which took place at St. Francis Retreat Center in Burlington, WI, was well received by the participants.

Another highlight was the Fifth Annual Cancer Residence for Clergy, Pastoral Ministers, and Parish Nurses. Eight participants had an opportunity to lie on a Radiation Oncology treatment table, study tumors in the lab, read X-rays, tour the Vince Lombardi Cancer Clinic, watch videos about cancer evaluation and treatment, listen to a patient panel discussion, and interact with physicians, nurses, psychologists, and other members of the Cancer Services team.

Multiple research studies have highlighted the importance of spiritual care as a part of healing. Chaplains play an important role on the clinical team providing spiritual support for those who are dealing with cancer, their families, and the staff who care for them.

Pharmacy

The Department of Pharmaceutical Services within the Aurora Health Care Metro Region strives to provide safe, reliable and specialized care to our patients in collaboration with other disciplines.

St. Luke's Medical Center pharmacy department is actively involved in supporting healthcare professionals and patients with up to date drug information. Pharmacists participate in many multidisciplinary work groups to facilitate meeting patient needs and optimizing medication therapy.

The pharmacy department at St. Luke's South Shore is now located closer to the clinic to better serve our patients. There is also a new outpatient pharmacy to provide additional, convenient pharmacy services.

The pharmacists at Sinai Samaritan Medical Center collaborate with nursing to assure delivery of treatments to patients during non-clinic hours.

The pharmacists at West Allis Memorial Hospital, as well as the other metro sites mentioned above, assess all oncology orders for safety and appropriateness. This includes multiple checks that are made to assure accuracy of preparation and administration.
Radiation Oncology

Based at St. Luke’s Medical Center, Aurora Health Care has installed the first operational Gamma Knife in Wisconsin, and began treating patients in the fall of 1999. The Gamma Knife is a state-of-the-art, high technology tool dedicated to performing radiosurgery of brain lesions. The Gamma Knife is so named because it houses 201 radioactive cobalt sources – with all 201 radiation beams converging on a defined brain target. Subsequently, a highly intense radiation dose is given to the brain target with minimal dose to normal surrounding tissue. Typical Gamma Knife applications include treating primary malignant, metastatic, or benign brain tumors, arteriovenous malformations, and such debilitating conditions such as trigeminal neuralgia. Gamma Knife Radiosurgery precludes the need for open brain surgery or hospitalization. Patients are treated exclusively in the outpatient setting, with modest risk of complications, and minimal discomfort. Gamma Knife Radiosurgery requires the dedicated teamwork of neurosurgeons, radiation oncologists, and medical physicists for the selection, planning and treating of patients, and affords definite advantages to linear accelerator radiosurgery because small and complex shaped tumors are more easily and more accurately treated in a cost effective manner.

Social Service

The Social Service staff functions as an integral part of a multidisciplinary oncology team and yet stands independently in the provision of patient advocacy and skills unique to the discipline itself. Oncology patients are in a distinctive place as they contemplate issues of morbidity and mortality while at the same time undergoing treatment that impacts all aspects of their life and lifestyle. It is at this critical point where a social worker is able to make a connection and offer emotional support.

The social worker’s expertise in family systems and community resource mobilization provides patients and families with a foundation and understanding of the process of discharge planning and the continuum of care. Through ongoing interaction, the social worker builds rapport through which to assist each individual and tailor their services accordingly. The focus of our needs assessment and practice may include but is not limited to: family dynamics, environment, education/career, support system, financial, transportation, spirituality, sexuality, alcohol and drug history, domestic violence, crisis intervention and community based affiliations. These categories are researched on behalf of the patient. A plan is then formulated consistent with their own needs, level of care and most importantly their personal desires and preferences.

For those patients that face sensitive issues around end of life planning, the social worker addresses such uncertainty with special attention to a patient/family educational needs, hospice consideration and a support system of agencies cognizant of dying with dignity. The oncology social worker then integrates community agencies with Aurora-wide resources to formulate a discharge plan that is personally unique to a patient’s needs and wishes.
Among the different roles that a social worker has, one that is most pivotal is that of a liaison. Oncology social workers ensure clear, concise communication and the provision of information by acting as a bridge between the patient, family, internal and external staff and services. This empowers patients and families with the necessary tools to take better control of situations where they may feel a need for guidance or direction.

Such empowerment is often accomplished through education about and execution of Advance Directives. This is a specialty unique to the Social Worker with no other discipline except pastoral care authorized, under the state statutes, to do so. The Durable Medical Power of Attorney for Health Care and Living Will provide patients and families with legal tools in which to specify wishes related to their ongoing health care. The Durable Power of Attorney document further allows for a patient to designate a spokesperson in the event of incapacity. It also provides the multidisciplinary team with information about their individual values and belief systems and thus ensures that the patient's wishes are carried out while under medical care.

The Social Services department honors and actively promotes highly individualized care and service to our patients and their loved ones at a time when their needs may be greatest and their resources weakest. With the oncology social worker's expertise and compassion, life's transitions can be made less of a hardship. The covenant that is created places the patient and family at the center, as equal members, in the decision making and treatment process, respecting their wishes with regard to quality of life and survival.

Patient Resource Centers

Patient education resources play a vital part in assisting patients in participating in their treatment decisions with their care providers. With this concept in mind, space is allocated in the planning of each Vince Lombardi Cancer Clinic site to accommodate a patient resource center. For example, the patient resource center at the Vince Lombardi Cancer Clinic in Slinger was established and stocked with the assistance of the local medical facility auxiliary. In the past few years patient resource centers have been established at the Vince Lombardi Cancer Clinic sites in Kenosha, Manitowoc, St. Luke's South Shore, and Lakeland Medical Center.

For many of these clinic sites space is as big an issue as support, and so each patient resource center is as unique as each clinic site. But just as each clinic site achieves and maintains the standards of the Vince Lombardi Cancer Clinics, so too, do all patient resource centers meet a
standard. All centers maintain a collection of patient teaching materials regarding diagnosis by disease sites; treatment options, side effects and anticipated outcomes; local support group listings; a CancerHelp computer; and information on prevention and early detection. Many of the centers also provide book and video tape collections in addition to a comfortable space to go through these materials and view videos.

**Vince Lombardi Cancer Hotline**

The Vince Lombardi Cancer Hotline served as the “call-to-action” for a multi-media campaign promoting prevention and early detection awareness from August 1998 and through early spring of 1999. Beginning with four phone banks held during the evening news on WTMJ - Channel 4 and promoted in statewide newspaper advertisements and through articles in Aurora Health Care publications as “The Game Plan”, a cancer risk assessment questionnaire was offered to callers. This tool can provide risk assessments for nineteen primary cancer sites. Callers who completed their risk assessment tool and returned it in the prepaid envelope for evaluation received the results of their risk assessment and follow-up materials that were customized to their results. By serving as the registration point for callers who wished to participate in this awareness activity, the Hotline was able to provide additional information to callers who had more needs or had already been diagnosed and were looking for treatment options, second opinions and clinical trial information.

The Hotline continues to serve the local, statewide, national and now international communities. With calls received from Germany this past year regarding participation in the Autologous Bone Marrow Transplantation Program by a recurrent lymphoma patient the Vince Lombardi Cancer Hotline has broadened its service horizons. By use of faxes and the Hotline it was possible to cross an ocean and six time zones in order to provide an evaluation and treatment recommendations to this caller.
Regional Tumor Board Report

A wealth of oncology information is provided throughout the metro region each week, through a forum called Tumor Board. These open conferences focus on prospective case review and provide multidisciplinary discussion for the entire spectrum of health care providers. This informal consultation among physicians provides viable options for treatment of cancer patients and subsequently enhances their quality of care.

Physicians who attend tumor board feel the conferences enhance their knowledge and are grateful for the opportunity to solicit recommendations and interactive conversation from colleagues outside their own specialty. The routine attendance of tumor board drastically reduces the need to make lengthy consultative phone calls.

The format of the conferences includes a brief clinical presentation, a summary of diagnostic and pathological findings and a description of any surgical or therapeutic interventions. A multidisciplinary discussion follows with recommendations for further therapy or study. This highly informational and educational conference is recommended for all disciplines, including medical students and residents. Other attendees include, nurses, pharmacists, radiation technicians, cancer registrars, social workers and other allied health professionals.

The Commission on Cancer mandates that approved cancer programs in the “Comprehensive Community Hospital” category meet weekly each year with a minimum of 47 total conferences annually. St. Luke’s Medical Center, Sinai Samaritan Medical Center and West Allis Memorial Hospital all fit into that category and currently meet weekly. Hartford Memorial Hospital with a lower oncology caseload needs to meet only monthly.

The generic tumor board covers an array of sites and types of malignancies from week to week. There are dedicated days and times of the week for the site-specific Breast Conference (see times on facing page). Other services such as pneumonology and otolaryngology have designated weeks to present lung and head and neck cases. See the complete listing of days, locations and times to attend these conferences.
**Tumor Boards**
- St. Luke’s Medical Center: Tumor Board
  Thursdays, 0730 – 0830
  Stiemke Auditorium

- Sinai Samaritan Medical Center: Tumor Board
  Fridays, 1200 – 1300,
  Rapkin Auditorium

- West Allis Memorial Hospital: Tumor Board
  Fridays, 1200 – 1300,
  Conference Room A/B

- Hartford Memorial Hospital: Tumor Board
  Monthly, Contact the Dept. of Pathology for times.

**Specialty Boards**
- Breast Conference
  St. Luke’s Medical Center
  Wednesdays, 0730 – 0900
  Health Science Conference Room #3

- Head & Neck Conference
  St. Luke’s Medical Center
  3rd Monday, 1200 – 1300
  Health Science Conference Room #3

- GI Conference
  St. Luke’s Medical Center
  Tuesdays, 0700 – 0800
  Health Science Conference Room #3

- Endocrine Conference
  St. Luke’s Medical Center
  Tuesdays, 1200 – 1300
  Health Science Conference Room #3

- Radiosurgery/Neurosurgery
  St. Luke’s Medical Center
  Tuesdays, 0730 – 0830
  Radiation Oncology Conference Room
The Cancer Registry is an integral component of the individual hospital cancer program and an even more important element for a networked cancer program. In 1996, the Cancer Registry of each individual hospital became a regional section of the Metro Clinical Information Services Department, called the Regional Clinical Data Registry. Twelve data registrars collect data for a variety of services but focus mainly on maintaining the oncology patient database also known as the Cancer Registry.

The Cancer Registry collects all pertinent information on patients in regards to their cancer diagnosis, staging, treatment and follow-up. This information is obtained from all sources the patient may have utilized for their care (in-house or out of house). The type of information that is collected includes patient demographics, work-up, staging of the disease, first course of treatment, recurrence, subsequent treatment and yearly follow-up for survival. All information is kept strictly confidential and only aggregate information is released.

Currently, each of our hospitals maintains a separate database for oncology data. Due to the comprehensive and seamless network of physicians and services Aurora Health Care provides for its patients, we find that patients more than ever are overlapping between facilities for their care. The American College of Surgeons has also come to this realization and has recently released Network Accreditation Standards, to which the Metro Region hopes to apply in the near future. In the meantime, each hospital has been independently surveyed by the ACoS and has achieved the highest level of accreditation available.

All new cancer cases are reported each year to the State of Wisconsin and the National Cancer Data Base. The standardization and mandated reporting of data to these entities has enabled epidemiologists and researchers the opportunity to benchmark this quality data and look for trends and/or treatment breakthroughs based on what regimens are reported for certain stages of disease.

In addition to collecting data on cancer patients and following them for their lifetime, the registrars are also responsible for conducting in-depth study reviews on preselected sites. In 1998, St. Luke's Medical Center and Sinai Samaritan Medical Center participated in the colorectal and lymphoma PCE study, while West Allis Memorial completed the colorectal study alone.

At SLMC, SSMC and WAMH a respective twenty two, fifteen, and eight requests for data were made in 1998.

Quality control is maintained on 10% of the analytical caseload and is reviewed by physicians for accuracy of abstraction of diagnosis, treatment and staging. Other quality improvement monitors that were spearheaded in
1998 include the Aurora wide breast and cervical screening initiative and at SLMC the DRG 410 project.

Continuing education events attended in 1998 included the Wisconsin Cancer Registrars Association Spring Workshop hosted by our sister facility in Sheboygan, the 29th Annual National Cancer Registrar’s Meeting in Boston, MA, and the 30th Annual Southeastern Wisconsin Cancer Conference.

In October 1998, the clinical data registrars hosted the 23rd Annual Wisconsin Cancer Registrars Association Meeting at the Aurora Hiel Conference Center. The meeting was a tremendous success with rave reviews for our SLMC physicians who spoke on the latest advances in their respective fields. Thanks go out to the following physicians for their time and effort in providing us with such current knowledge and to the registrars, especially Sheri Hackbarth, RHIA for organizing the event.

- Kenneth T. Bastin, MD
- James Bruckman, MD
- Wilhelm G. Doos, MD
- James V. Klas, MD
- James L. Mahoney, MD
- Mohammad I. Malik, MD
- Michael R. Nordstrom, MD
- William J. Pao, MD
- Lawrence A. Sterkin, MD
- Robert F. Taylor, MD
- James E. Williams, MD

Regional Clinical Data Registrars
- Sharon J. Collison, RHIT
- Sheila Davis
- Christine A. Doege
- Cynthia J. Ganzel, RN, RHIT
- Sheril L. Hackbarth, RHIA
- Jamie A. Keen
- Mary B. Kissinger, RHIA, CTR
- Yolanda D. Levy
- Sharon A. Miller (retired)
- Tracy L. Miller
- Ramona Miranda
- Karen L. Pollock
- Marilyn Raciti
- Patricia A. Recely, CTR (Reg. Assist)
- Lisa A. Robinson, RHIA, CTR
- Jane E. Seymour, RHIT, CTR
2,790 new cancer cases were seen in the Metro Region in 1998. The number of new cancer cases has increased at all the facilities from the previous year of 1997. Site numbers include St. Luke's Medical Center 1,910 (include St. Luke's South Shore) with 84% classified as analytical (diagnosed and or treated within the first course of treatment), Sinai Samaritan Medical Center, 321 with 90% analytical, and West Allis Memorial 480 with 94% analytical. For all other graphs in this report St. Luke's South Shore cases will be included in the SLMC numbers. Also note, that due to a lack of formal registry at Hartford Memorial in 1998, specific statistics will not be included in other data summaries. Therefore, for the remainder of the report the total number of cancer cases seen by the approved cancer programs equals 2,715.
### Site distribution 1998 in Aurora's metro region

<table>
<thead>
<tr>
<th>Site Group</th>
<th>SLMC</th>
<th>SSMC</th>
<th>WAMH</th>
<th>TOTALS</th>
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<tr>
<td>Soft Tissue</td>
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<td>27</td>
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<td>Vagina/Vulva</td>
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<td>9</td>
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<td>4</td>
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<td><strong>Total</strong></td>
<td><strong>1914</strong></td>
<td><strong>321</strong></td>
<td><strong>480</strong></td>
<td><strong>2715</strong></td>
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</table>
In 1998, the number of new cancer cases increased at all metro region facilities from the previous year. St. Luke's Medical Center (1,914), Sinai Samaritan Medical Center (321) and West Allis Memorial Medical Center (480).

Review of all (2,715) new cases in 1998 shows the population served at St. Luke's Medical Center and West Allis Memorial Hospital is predominantly white with 97% and 99% respectively. By contrast the central city location of Sinai Samaritan Medical Center serves a more diverse population with the majority being of African American (56%) descent.
1998 data review
in aurora's metro region

The Metro Region hospitals had common top five sites with the exception of SSMC, where cervix surpassed bladder.

When comparing the top five sites in order of decreasing frequency in the Metro region to the incidence of cancer cases reported by the state and the National Cancer Data Base (NCDB), it is noted that the Metro region sees a higher percentage of breast cancer cases (19%), fewer prostate cases (9%) and a relatively equal number of lung (14%), colorectal (12%) and bladder cases (5%).
More women than men were seen at all Metro region sites in 1998. In total, 1,449 or 53% were women with 1,264 or 47% being male. The State of Wisconsin's Cancer Incidence and Mortality Report for 1997, show in contrast more males at 52% and females at 48%.

<table>
<thead>
<tr>
<th>Gender 1998</th>
<th>SLMC</th>
<th>SSMC</th>
<th>WAMH</th>
<th>STATE of WI</th>
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<tbody>
<tr>
<td>male</td>
<td>49%</td>
<td>34%</td>
<td>47%</td>
<td>52%</td>
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<tr>
<td>female</td>
<td>51%</td>
<td>66%</td>
<td>53%</td>
<td>48%</td>
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</table>

When comparing age differences among the Metro Region Hospitals and the State of Wisconsin, we find younger patients being diagnosed at Sinai Samaritan Medical Center with a mean age of 65. At St. Luke's Medical Center and West Allis Memorial the mean age is 75 with St. Luke's Medical Center showing a larger portion of the patients being diagnosed younger than the mean, whereas at West Allis Memorial Hospital, the patients are being diagnosed at ages slightly higher than the mean.

<table>
<thead>
<tr>
<th>Age at Diagnosis by Facility</th>
<th>SLMC</th>
<th>SSMC</th>
<th>WAMH</th>
<th>WAHM</th>
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<td>age groups</td>
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<tr>
<td>0-29</td>
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<td>30-39</td>
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<td>40-49</td>
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<td>50-59</td>
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<td>60-69</td>
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<td>70-79</td>
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<td>90+</td>
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</table>
Aurora Health Care Metro Regional Cancer Committee Members

- Vicki George, RN, Ph.D - Vice President Metro Region
- William Laffey, MBA - Regional Director Cancer Services
- Maury Berger, MD - Chairman WAMH Cancer Committee, Medical Oncology
- Jeffrey Derus, MD - Chairman SLMC Cancer Committee, Urology
- William Donegan, MD - Chairman/ Liaison SSMC Cancer Committee, Surgery
- Terence Roth, MD - Liaison WAMH Cancer Committee, Surgery
- Robert Taylor, MD - Liaison SLMC Cancer Committee, Medical Oncology
- James Bruckman, MD - Radiation Oncology
- William Pao, MD - Radiation Oncology
- Gary Shapiro, MD - Medical Oncology
- A. Craig Evans, MD - OB GYN Surgical Oncology
- Daniel Geenen, MD - Gastroenterology
- Jeffrey Kujadl, MD - Psychiatry
- Jorge Pellegrini, MD - Pathology
- Shelly Underhill, MD - Pathology
- Reuben Eisenstein, MD - Pathology
- John P. Hanson, MD - Medical Oncology
- Ronald Hart, MD - Medical Oncology
- Mitchell Pincus, MD - Radiation Oncology
- Jonathan Treisman, MD - Medical Oncology
- Patty Abella, RN - Regional Manager Oncology
- Laura Burke, RN, Ph.D. - Regional Director Nursing Research
- Grace Jessen, MSW - Social Services Coordinator
- Rev. Raymond Korry, M.DIV, B.C.C. - Regional Director Pastoral Care
- Carolyn MacIver - Regional Director Business and Market Development
- Lisa Robinson, RHIA, CTR - Regional Supervisor Clinical Data Registries
- Mary Runge, RN, MSN - Director Visiting Nurses Association Hospice Program
- Donna Theesfeld, RN - Quality Management Coordinator
- Phil Whitton, RTT - Regional Manager Radiation Oncology
- Mary Kannenberg, RHIA - Director Quality Management
- Gloria Donais - Administrative Assistant