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Aurora Health Care Metro Region Cancer Programs Annual Report, 1998

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Aurora Health Care
Metro Region
Cancer Programs
Annual Report

Special Focus
Breast Cancer

1997 Data Review

St. Luke's Medical Center
Sinai Samaritan Medical Center
West Allis Memorial Hospital

Aurora Health Care®
The postage stamp illustrated on the cover of this annual report is the first “semipostal” stamp ever issued in the United States. The cost of the stamp, 40 cents, includes a surcharge to be donated to breast cancer research.

The idea for the stamp came from Dr. Balasz Bodal, a surgeon in Sacramento, California, who envisioned raising funds for cancer research by charging an extra penny for each first class postage stamp. With the help of Congressman Vic Fazio and Senator Dianne Feinstein of California, a bill permitting the U.S. Postal Service to issue semipostal stamps was introduced in Congress, overwhelmingly passed, and signed into law by President Bill Clinton in August 1997.

The stamp was officially issued on July 29, 1998 in ceremonies at the White House. The Milwaukee Post Office held the unveiling ceremony for the stamp the same day in the Vince Lombardi Cancer Clinic at St. Luke's Medical Center.

The self-adhesive stamp has been printed in a quantity of 200 million. If all the stamps are sold, breast cancer research will receive $18 million (less printing, distribution and publicity costs).

From the article “Breast Cancer Research Stamp Issued” by April G. Fritz, ART, CTR. The article first appeared in the August 1998 issue of Journal of Registry Management and is excerpted here with the author’s permission.
# Table of Contents

About Our Cover “Research Stamp” ......................................................... Inside Front Cover

Metro Region Cancer Services Report .................................................. 2

Cancer Committee Chairpersons Reports
  St. Luke’s Medical Center ................................................................. 3
  Sinai Samaritan Medical Center ......................................................... 4 - 5
  West Allis Memorial Hospital ......................................................... 6

Breast Cancer Experience and Excellence
  Overview ............................................................................................... 7
  Five-Year Comparison of Metro Region Statistics ............................... 8 - 10
  Metro Region Breast Health Task Force ............................................. 11
  Breast Conservation Surgery for Breast Cancer .................................. 12 - 13
  Progress with Male Breast Cancer .................................................... 14 - 15
  Radiation Therapy in Primary Breast Cancer ..................................... 16 - 18
  Breast Cancer in America’s Racial & Ethnic Minorities ..................... 19 - 20
  Sentinel Lymph Node Study .............................................................. 21 - 22
  Autologous Bone Marrow Transplant .............................................. 23 - 25
  Genetic Susceptibility Testing for Breast and Ovarian Cancer .......... 26 - 29
  Pathology and Prognostic Markers in Breast Cancer ....................... 30 - 33
  Wisconsin Women’s Cancer Control Program ................................ 34 - 35
  Breast Cancer Related Research ....................................................... 36 - 39

Regional Activities in Aurora’s Metro Region
  Other Research ..................................................................................... 40 - 41
  Support Groups .................................................................................. 42 - 44
  Special Events .................................................................................... 45
  Cancer Conferences ........................................................................... 46
  Registry Report ................................................................................... 47
  1997 Statistical Summary Review .................................................... 48 - 53
  Cancer Services Directory ................................................................. 54 - 55
  Cancer Committee Members 1997 .................................................... 56 - 57
Since the summer of 1997, Aurora Health Care's administrative team has challenged itself to evaluate, explore and plan how the system should be organized to meet present and future challenges. The first on the list of tasks was the development of a new organizational structure. This new regional structure was built on furthering the development of a system to provide integrated care to support care management, with the overall goal to have a well coordinated seamless system of care that is high quality and cost effective to benefit our patients.

This corporate strategy is especially critical to cancer care in order to support our excellent programs and to compete effectively in today's managed care environment. Costs associated with cancer care currently consume 20% of the U.S. health care dollar and are projected to consume 25% of that same dollar by the year 2010. Capitation and "carve out" contracts are already occurring in the cancer care market. There is also a threat to cancer-related research programs due to lack of reimbursement for "experimental" or "investigational" treatment and off-label drug usage. This also poses a real threat to patients under treatment.

Other health care systems across the country have or are developing cancer care networks and alliances that will compete in their local, regional and national market places. The success of health care reform will be in large part dependent upon the stewardship of cancer care providers. In essence, the challenge will be to provide care for an increasing number of patients, further enhance quality, and reduce costs per case.

In preparation to meet these challenges, the Cancer Services Teams at St. Luke's Medical Center, West Allis Memorial Hospital and Sinai Samaritan Medical Center have begun to come together to discuss: unique disease-specific approaches to patient care coordination; a regional plan to demonstrate quality; the development of a research agenda that will keep Aurora on the forefront of knowledge in cancer; a plan to educate and market proven cost effective prevention and early detection techniques to primary care providers; and the promotion of community-based education and outreach awareness of Aurora cancer care sites as the source for personalized advanced cancer diagnosis and treatment.
As chairperson of the Cancer Committee at St. Luke's Medical Center for almost ten years, and of the Division of Radiation Oncology for even longer, I find myself in a reflective mood, especially since by the time this report is published, I will have moved on to the next stage of my life — retirement. I am grateful to have been present during this exciting time of rapid growth and development of the oncology program at St. Luke’s Medical Center, and am proud that we are now the preeminent program in the city.

I am also pleased that this report is on breast cancer, the most common cancer in American women but fortunately no longer the most frequent cause of death from cancer in the same population. Today the chances for cure are improving for women with this disease. Better methods are available for early detection. More options that are less traumatic are available for primary treatment. And information is being gleaned at the level of the cell that helps us to understand the nature of this disease as documented in this, our first Aurora Metro Region report.

Breast cancer is very important to me for both professional and personal reasons. Not only have I participated as a professional advocate for women in treatment options for early breast cancer, but on the home front, I saw the changes benefit several aunts long after my mother was treated, when I was a teenager, with a radical mastectomy and no adjuvant systemic treatment for a small breast cancer with spread to nodes. She was lucky. She lived to age 82, and died of other causes.

As we look back on the year’s activities of the Cancer Program and Committee, many accomplishments stand out. Some of the highlights of 1997 include:

- Initiation of the radiosurgery program, a joint project of neurosurgery and radiation oncology.
- Initiation of sentinel lymph node mapping and ABBI excisions for breast cancers.
- Regionalization of the cancer program in the Aurora Metro Region.

Educational efforts continued as usual, with four grand rounds focusing on cancer, plus one Schroeder Fellows Program. Research efforts included the usual cooperative group studies and new protocols in areas of St. Luke’s expertise of immunotherapy and autologous bone marrow transplant. Many community outreach efforts also took place. Many of the activities coordinated with the committee’s goals in the areas of research, community outreach and care evaluation.

And so with this final line, I thank my fellow physicians and St. Luke’s Medical Center, its patients and staff, for providing me with many challenging and interesting years. And to those who follow, especially Jeff Derus, MD, the new chair of the Cancer Committee, may you enjoy the same satisfaction through your efforts and involvement to improve the lives of cancer patients in our community.

St. Luke’s Medical Center
Marcia J.S. Richards, MD
Chairperson, Cancer Committee
On behalf of Sinai Samaritan Medical Center, I am pleased to contribute our cancer statistics and cancer program report to this publication, the first combined Aurora Metro Region Cancer Program Report. This collaboration reflects a closer integration of Aurora Health Care cancer activities in the Milwaukee metropolitan area. Closer integration of our registries, tumor conferences and cancer-related services, while building upon the unique capabilities of each institution, should result in greater efficiency, reduced duplication and dependable quality for the public.

Evidence of quality at Sinai Samaritan Medical Center was the four-year approval it received during 1997 by the American College of Surgeons’ Commission on Cancer (COC). A four-year approval demonstrates that all mandatory standards were met or exceeded. All staff are to be congratulated on achieving this highest award for compliance. The COC particularly commended Sinai Samaritan Medical Center for its tumor board and clinical trials participation. Clinical trials are an important part of the research performed at Sinai Samaritan Medical Center. The clinical trials programs include the Eastern Cooperative Oncology Group (ECOG), the Radiation Therapy Oncology Group (RTOG), and the National Surgical Adjuvant Breast and Bowel Project (NSABP). Noteworthy was that our institution was Milwaukee headquarters for the NSABP National Breast Cancer Prevention Trial using the drug tamoxifen which made headline news in early 1998. This trial demonstrated for the first time that breast cancers can be prevented in high risk women.

We are particularly proud of our outreach programs, some of which are implemented through partnership with the Wisconsin Division of the American Cancer Society. Sinai Samaritan Medical Center helps to support the annual Southeastern Wisconsin Cancer Conference. This is an annual educational conference that brings national speakers to Wisconsin and which is free to health care providers in this area. Among our many education projects are the Cancer Education Support Group, the Temkin Foundation Funding for skin cancer programs, and the Breast Health Center with its outreach particularly to minority groups. The hospital conducts smoking cessation groups, community work groups through local churches, and breast self examinations classes. We participated in the “Faces of Breast Cancer,” a program sponsored by the National Breast Cancer Coalition in June 1997. Physicians at Sinai Samaritan Medical Center provide care for individuals screened through the Milwaukee Breast Cancer Awareness Project, the mobile unit that makes free mammograms and breast examinations available to the public. These activities require dedicated physicians, nurses,

Sinai Samaritan Medical Center
William L. Donegan, MD
Chairman, Cancer Committee
administrators and support staff, all of whom are aware that cancer places a major health burden on the public and make that extra effort to reduce it. This army of individuals is turning things around. They provide the helping hands that touch, serve and reach out.

The latest national data show that age-adjusted death rates and incidence rates from cancer in the United States have declined five percent since 1990, and the trend seems to be continuing. Here is solid evidence that our work is beginning to pay off. The public is becoming increasingly aware that much of the cancer problem is self-inflicted. Fewer Americans are smoking, and they are eating healthier diets with less fat and more fruits and cruciferous vegetables. Prevention is becoming a major effort, and screening, particularly with mammography, is detecting cancers when they are earlier and more curable. Treatment in general is becoming more effective and better tolerated. The challenge is to keep those incidence and mortality rates going down. I congratulate the Cancer Committee and all of the individuals at Sinai Samaritan Medical Center who are dedicated to doing so.
I am pleased to report that the Cancer Program of West Allis Memorial Hospital received the highest approval evaluation from the American College of Surgeons through the year 2002. Everyone involved in the agenda and implementation of our programs is commended for a job well done. To receive the highest grade in all areas of review is a tremendous accomplishment.

Special thanks is extended to Priscilla Eckert and Sharon Miller, Clinical Data Registrars, for their efforts in formulating an excellent Cancer Registry and helping to make the Cancer Program what it is today. Priscilla will be greatly missed after recently retiring after 13 years of service to West Allis Memorial Hospital.

I am pleased to report that David VanWinkle, CTR, has transferred from St. Luke's Hospital to assume Priscilla's position as Clinical Data Registrar. He has many years of experience and will be an asset to the registry.

Patient education and awareness were focused in the implementation of several new programs at West Allis Memorial Hospital this year. Expansion of the library as a resource to include Internet access for cancer-related topics has been very successful. Information about area hospice programs, including referral requirements and availability, was prepared by an ad hoc committee and provided to patients and family members.

Management guideline recommendations for treatment of patients with breast cancer were presented to Dr. David Farrell, Chief of Surgery. Diagnostic and breast conservation procedures, new biopsy techniques, and the use of sentinel lymph node imaging for diagnostic and staging procedures will be implemented in the future. A collaboration with St. Luke's Medical Center on National Cancer Survivors Day was very successful. We look forward to joining forces with the other Aurora facilities for future projects. A Tumor Board satisfaction survey indicated that our Friday noon meetings are very well received.

We welcome Dr. Kenneth Bastin and Dr. Rakesh Jagetia and express our appreciation to them for orchestrating a very cohesive transition of radiation therapy care for our patients.

As chairman of the Cancer Committee at West Allis Memorial Hospital, I look forward to a cooperative effort among the hospital staff, the patients, their families and the community in providing the best cancer care and information we can offer.

West Allis Memorial Hospital
Maury Berger, MD
Chairman, Cancer Committee
This year's in-depth site study is dedicated to breast cancer. The articles were written by our physicians and staff and are reflective of the excellent services provided to breast cancer patients throughout Aurora Health Care. Our patient care philosophy revolves around prevention, early detection, comprehensive diagnostic and treatment services and a support system that offers the most comprehensive network of professionals in Southeastern Wisconsin.

In 1997 alone, 464 cases of breast cancer were diagnosed and/or treated in the hospitals of the Aurora Metro Region, which reflects the fact that patients choose our hospitals and physicians as a resource for cost effective, high quality, personalized oncology care. As the home of the Vince Lombardi Cancer Clinic, we share Coach Lombardi's "Commitment to Excellence" in patient care, patient education and cancer research.

The comprehensive breast care programs at St. Luke's Medical Center and Sinai Samaritan Medical Center provide a warm and personal atmosphere in which breast care coordinators work closely with patients and their physicians to plan individualized care. Both programs offer a wide range of services, including education, screening, diagnosis and treatment. The Breast Care Programs assure that a woman is treated as a complete person, addressing emotional, spiritual, psychological and physical needs.

To stay on the cutting edge of breast cancer treatment, Breast Cancer Conferences are held on a regular basis. These conferences give experts a forum to discuss and consult with each other on breast cancer cases. This multidisciplinary approach helps design the best treatment plans for our patients.
A Five-Year Comparison of Breast Cancer Statistics
Aurora Metro Region Hospitals 1993-1997

With the advent of screening mammography and increased education about breast self examination, a greater number of patients within Aurora Health Care and across the nation have their cancers detected at an earlier stage. Breast cancer is no longer a disease that is treated exclusively with surgery. Now, a multidisciplinary team of physicians coordinates an array of treatment modalities to eradicate the disease in the best way possible.

The statistics on the following pages show a comparison of breast cancer data from 1993 to 1997 at Aurora Metro Region Hospitals.

Comparing 1997 to 1993 data, the number of Stage 0, I and II cases increased, while Stages III and IV decreased in number. This favorable trend likely reflects the increased awareness of breast cancer and increased screening.
The percentage of breast conserving surgery in 1997 rose to 56% from 44% in 1993. Numerous studies have shown that for early stage disease, long-term survival rates after lumpectomy plus radiotherapy are similar to survival rates after modified radial mastectomy (MRM).

Patients diagnosed in 1997 were diagnosed at a younger age than those diagnosed in 1993. The 1993 national statistics show a higher number of women diagnosed between the ages of 40-49 and 70-79, but the rest of the numbers are comparable.
Location of cancers within the breast in 1993 and 1997 for Aurora Metro Hospitals. There was no apparent change in distribution of cancers between reporting periods. The overall percentage in comparison to the most recent national statistic reveals that most breast cancers were found in the upper-outer quadrant (UOQ) of the breast.

5-Year Survival Metro Region

Five-year survival for the Aurora Metro Region breast cancer cases. The overall relative survival rate over a five-year period was approximately 72% (compared with 74% for the NCDB 1993 cases). The Metro Region had high five-year survival for local (80%) and regional (77%) disease. The rate at five years for patients with distant disease was 22%.

National Survival at 5 Years

When comparing national survival statistics to the Aurora Metro Region, the Metro Region had a higher survival rate for regional and distant disease and a lower rate for localized disease. The lower rate for local diseases may be due to the older age of women in the Metro Region.
Approximately 25,000 mammograms are performed annually at over 20 Aurora sites in the Metro Region of Southeast Wisconsin. While the range of services provided at each site differs, the goal of high quality mammography is the same.

The Metro Region Breast Health Task Force was formed to examine current practices and formulate a plan for system integration focusing on clinical excellence. The workgroup was comprised of technologists, nurses, administrators, radiologists and representatives from Women's Health Services and the admitting departments from Hartford Memorial Hospital, West Allis Memorial Hospital, Sinai Samaritan Medical Center, Aurora Medical Group clinics and St. Luke's Medical Center and clinics. The purpose of the task force was to define and integrate standards of clinical care and service for breast care screening across the Aurora Metro Region. As a result of the group's meetings, the following initiatives have been implemented:

- All sites throughout the Metro Region will offer correlative clinical breast examinations performed by a nurse or radiology technologist to all patients at every visit. A training policy is being developed to ensure competency to perform the breast examination.
- If after a routine mammogram, additional studies are required to make a final assessment, the patient will be contacted and scheduled for the studies directly by the Radiology Department in a timely manner.
- Considering that they are under great psychological stress, patients with a breast problem such as a lump or discharge will routinely be given the opportunity to speak with the interpreting radiologist about their results and the need for any additional studies or procedures.
- All sites will evaluate the use of standardized terminology in reporting findings to referring physicians so that recommendations for follow-up or biopsy are clear and concise.
- When the breast imaging examination reveals suspicious findings for which biopsy is recommended, the results will be telephoned directly to the referring physician to expedite additional procedures.

Implementation of these and other initiatives at St. Luke's Medical Center has resulted in a decrease in the time from an abnormal mammogram to biopsy, from an average of 35 days to a median of 7 days. Similar improvements are being realized throughout the Aurora Metro Region in large part as a result of changes in Radiology Department protocols.

Metro Region Breast Health Task Force
Mark Wenzel, MD
Co-director, Breast Imaging Services,
St. Luke's Medical Center
While the Halsted mastectomy once provided the best opportunity for curing breast cancer, today there are other options. These options have evolved in part because increasingly sensitive diagnostic techniques are allowing the discovery of breast cancer at earlier stages than ever before. Whenever possible, women should be given treatment choices.

Breast conservation surgery (BCS) is a treatment that removes the cancer and a margin of uninvolved breast tissue surrounding the cancer. Axillary dissection, radiation therapy, hormonal, and standard chemotherapy can be added as indicated to the basic surgery. With the increasing availability of node mapping, patients who would benefit from axillary dissection can be identified.

The term, "partial mastectomy" is properly associated with BCS since this is what in reality is being done. "Segmental mastectomy" is another proper term. Many refer to BCS as a "lumpectomy," but this term does not address the true magnitude of the surgery. Postoperative radiation of the breast is an essential part of the treatment.

The goals of BCS are to achieve local-regional control of the tumor and a cosmetically acceptable breast.

Some situations do not permit BCS:
- The first and second trimesters of pregnancy are absolute contraindications to the use of radiation. Providing it does not delay treatment, BCS may be possible in the third trimester, with radiation after delivery.
- Multiple lesions or diffuse malignant appearing calcifications do not allow the use of BCS. Microscopically involved margins are considered a contraindication. Likewise, patients with an inflammatory cancer are not candidates.
- A history of prior radiation to the breast prevents further radiation. Similarly, a recurrence of cancer to the irradiated breast would not be amenable to BCS.
- A history of collagen vascular disease is a contraindication because these patients tolerate radiation poorly.
- Tumor size is not an absolute contraindication to the use of BCS, but removing a large tumor from a small breast can result in unacceptable distortion of the breast. Large tumors also have a greater chance of local-regional recurrence.
- A large pendulous breast may make adjuvant radiation therapy difficult to deliver with consistency.

Breast Conservation Surgery for Breast Cancer
Terence V. Roth, MD, FACS
Location of the tumor can present problems. A subareolar tumor may result in the removal of all or part of the nipple areolar complex with resultant deformity. However, nipple reconstruction techniques can obviate this objection.

Selection of BCS is not dependent on tumor size. Histopathology and lymph node status are also not determinants. Failure is higher with multicentricity and the younger patient.

The rates for BCS vary widely across the country. It is highest in New England (40.2%) and lowest in the east south central (11.5%) which includes Kentucky, Tennessee, Mississippi and Alabama. The east north central states which include Wisconsin, Michigan, Illinois, Indiana and Ohio had a reported rate of 23.8% in 1992. Note in the graphic below that the rate of BCS at Aurora Metro Region hospitals in 1997 was higher than in 1992.

Mastectomy vs. Conservation Therapy
1992 and 1997

<table>
<thead>
<tr>
<th></th>
<th>1992</th>
<th>1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAMH</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>SLMC</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>SSMC</td>
<td>39</td>
<td>54</td>
</tr>
<tr>
<td>Partial Mastectomy w/ &amp; w/out Nodes</td>
<td>53</td>
<td>53</td>
</tr>
<tr>
<td>Simple Mastectomy w/out Nodes</td>
<td>51</td>
<td>51</td>
</tr>
<tr>
<td>Modified Radical Mastectomy</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>130</td>
<td>130</td>
</tr>
</tbody>
</table>

SUMMARY

Advances in early detection have resulted in the option of breast conservation surgery for more women. The use of BCS should increase in the future as diagnostic procedures become better able to provide even earlier diagnosis. The option of BCS should be available to women of all ages. Professional and public education regarding the efficacy of BCS should help achieve this goal.
Cancer of the breast is not entirely a disease of women. About 0.9% of the 180,300 cases of breast cancer in the United States each year affect males. An estimated 1,600 men per year are surprised to find that they themselves have developed this disease. And how did they get it? Presumably the same way women get it; no one knows.

It is easy to speculate that anyone with breasts can develop this problem, but perhaps the small size of the male breast is relatively protective or, more likely, the hormonal environment that makes the male breast small is protective. Although it is not often possible to demonstrate a hormonal abnormality in men who develop breast cancer, the balance between estrogens and androgens may well be involved. The disease usually appears at an age when testicular function is declining, and epidemiologic studies suggest a higher risk in situations characterized by a relative excess of estrogens, such as in males with Klinefelter's syndrome, characterized by hypogonadism and gynecomastia, and in males with a history of orchitis or testicular damage. Some degree of gynecomastia is often found associated with breast cancers in males, but gynecomastia is a common finding in mature males. Recently a genetic mutation (BRCA2) was found in families with a high frequency of breast cancer that predisposes men to the disease.

The signs and symptoms of breast cancer in men are similar to those in women, i.e. a lump in the breast or a change in the nipple such as discharge, retraction or ulceration. The lump is characteristically firm and painless. The nipple tends to be involved early in males because the tumor almost always develops directly beneath the nipple, and even a small tumor quickly reaches the nipple. These changes in the breast may be associated with enlarged axillary nodes or other signs of tumor spread. The breasts of men are not routinely examined, and men tend to neglect the signs of breast cancer, thinking they are of no consequence, or are possibly embarrassed by them. Regular mammograms are also not recommended for men in view of the low frequency of the disease. Perhaps for all these reasons, men have tended to present with more advanced tumors than women and with a higher frequency of spread to axillary lymph nodes. As might be expected, overall cure rates have not been as high as for women.

Males with breast cancer have not been as intensively studied as have females. In 1998, a study of men with breast cancer was performed at Sirai Samaritan Medical Center in collaboration with 17 other hospitals in Wisconsin. The study involved a review of 217 collected cases diagnosed between 1953 and 1995 and was published in August 1998 in the journal, Cancer. The men varied in age...
from 32-90 years with an average age of 65.4 years, about eight years older than the average age of female patients with breast cancer. The study showed that since 1986, men are being diagnosed at earlier stages of the disease and are showing improved survival. It also showed that men are more often being treated with modified radical mastectomy rather than with the more deforming radical mastectomy, and more men are receiving systemic adjuvant therapy as a part of their initial treatment. The most frequent systemic adjuvant therapy was hormonal, usually tamoxifen, but more men are also receiving adjuvant chemotherapy, often in conjunction with hormonal therapy. Five-year and ten-year survivals were 50.6% and 23.7%, which compare unfavorably with survival of women. The relatively poor survival of male patients, however, is largely a consequence of a high mortality among elderly males from causes unrelated to breast cancer. Unrelated mortality accounted for a third of patient deaths, principally from heart disease. Other reports suggest that with appropriate adjustment for age and stage, the curability of males approaches that of women.

The mystique of male breast cancer is diminishing. The more that is learned about it, the more similar it is to the disease in women. Indications are that favorable changes are occurring relative to male breast cancer, notably earlier diagnosis and improved prognosis. Perhaps these changes can be attributed to heightened public and professional awareness about the breast cancer problem in general, with earlier diagnosis and application to men of the treatment advances that have improved the outlook for women. Early diagnosis is the key to successful treatment. Men should be aware that they can develop breast cancer, should examine their breasts periodically and should seek consultation for any suspicious signs.

![Breast Cancer Sex by Year](chart1.png)

In 1993 and 1997 three cases of male breast cancer were seen each year.

![Breast Cancer Age at Diagnosis by Sex](chart2.png)

Of the newly diagnosed cancer cases, distribution by age and sex shows that a cancer diagnosis is most frequently found in those between the ages of 60-69 for men, and 70-79 for women. The increased frequency of women developing cancer under the age of 50 is reflective of the screenings for women's malignancies at an earlier age than men, i.e. mammograms and pap smears.
Radiation therapy is part of primary breast cancer management in two situations: 1) treating patients with early stage disease who desire breast conservation; and 2) to enhance local disease control as part of combined treatment in patients with more advanced but still localized disease.

**Early Stage Disease**

If a patient is diligent about mammographic screening, and breast cancer is diagnosed at an early stage, she should be rewarded with the least deforming treatment possible. Patients with Stage I or II breast cancer can elect breast conserving surgery and radiation therapy and be assured of results equal to mastectomy. Over the last 15 years, there have been seven controlled studies worldwide involving over 4,500 patients who were randomly assigned to either mastectomy or conservative surgery (i.e. wide tumor excision, lumpectomy, quadrantectomy, or segmental mastectomy) plus radiation therapy (Table 1). These studies all demonstrate no difference between the two treatments for outcome of local control, disease-free survival or overall survival. Furthermore, there are literally hundreds of individual institutions reporting more numerous patients and many with longer follow-up, confirming these results. Therefore, the place of conservative breast management in early stage breast cancer cannot be denied, and patients with early stage disease deserve to be offered this treatment option without physician bias.

As part of the section of Radiation Oncology's continuous quality improvement, and with the aid of each hospital Tumor Registrar, the outcome of conservatively treated patients was reviewed and is summarized in Table 2. This included all patients treated at St. Luke's Medical Center, Sinai Samaritan Medical Center and St. Luke's South Shore from 1991 to 1993. Over that three-year period, 154 patients with Stage 0, I or II breast cancer were treated in the sections of Radiation Oncology. The follow-up time was: minimum 48 months, maximum 84 months, and median 63 months.

Patients who develop a local recurrence after conservative therapy should be treated with a mastectomy. Numerous reports indicate 50-60% disease-free survival at five or more years follow-up. Patients who develop a local recurrence after mastectomy have less than a 25% chance of five-year disease-free survival after retreatment.

Radiation Therapy in Primary Breast Cancer
James Bruckman, MD
### TABLE 1
Controlled Studies of Conservative Surgery and Radiation Therapy for Early Breast Cancer

<table>
<thead>
<tr>
<th>Study</th>
<th>Yrs. of F/U</th>
<th># of Pts.</th>
<th>% Local Control RT S</th>
<th>% Disease-Free Survival RT S</th>
<th>% Overall Survival RT S</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Surgical Adj. Breast Project</td>
<td>10</td>
<td>1219</td>
<td>90 92</td>
<td>76 71</td>
<td>59 58</td>
</tr>
<tr>
<td>NCI - Milan (Italy)</td>
<td>10</td>
<td>702</td>
<td>96 98</td>
<td>79 78</td>
<td>77 76</td>
</tr>
<tr>
<td>Institute Gustave Roussy (France)</td>
<td>15</td>
<td>179</td>
<td>87 82</td>
<td>75 65</td>
<td>55 45</td>
</tr>
<tr>
<td>Danish Breast Cancer Group</td>
<td>6</td>
<td>905</td>
<td>96 97</td>
<td>79 82</td>
<td>70 66</td>
</tr>
<tr>
<td>NCI - USA</td>
<td>10</td>
<td>237</td>
<td>82 90</td>
<td>77 75</td>
<td>72 69</td>
</tr>
<tr>
<td>European Org. for Research and Treatment of Cancer</td>
<td>8</td>
<td>903</td>
<td>no difference</td>
<td>no difference</td>
<td>no difference</td>
</tr>
<tr>
<td>Guys Hosp. Trial (England)</td>
<td>10</td>
<td>399</td>
<td>no difference</td>
<td>no difference</td>
<td>no difference</td>
</tr>
</tbody>
</table>

RT = Conservative Surgery and Radiation Therapy  
S = Mastectomy

### TABLE 2
Metro Aurora Outcome of Conservative Surgery and Radiation Therapy for Early Breast Cancer

<table>
<thead>
<tr>
<th>Stage</th>
<th># of Pts.</th>
<th>% Local Control</th>
<th>% Disease-Free Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (non-invasive)</td>
<td>24</td>
<td>100</td>
<td>96</td>
</tr>
<tr>
<td>I</td>
<td>85</td>
<td>98</td>
<td>95</td>
</tr>
<tr>
<td>IIa</td>
<td>29</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>IIb</td>
<td>16</td>
<td>94</td>
<td>88</td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>98</td>
<td>96</td>
</tr>
</tbody>
</table>

### TABLE 3
Metro Aurora Outcome of Radiation Therapy as part of Combined Management of Advanced but Localized Breast Cancer

<table>
<thead>
<tr>
<th>Stage</th>
<th># of Pts.</th>
<th>% Local Control</th>
<th>% Disease-Free Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>1</td>
<td>100</td>
<td>100</td>
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<tr>
<td>IIa</td>
<td>6</td>
<td>100</td>
<td>67</td>
</tr>
<tr>
<td>IIb</td>
<td>22</td>
<td>95</td>
<td>55</td>
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<tr>
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<td>8</td>
<td>87</td>
<td>63</td>
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<tr>
<td>IIIb</td>
<td>3</td>
<td>100</td>
<td>67</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>95</td>
<td>60</td>
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</tbody>
</table>
Patients eligible for conservative management are those who elect this option, have a primary tumor \( \leq 5 \text{ cm.} \), and have clinical findings where it is technically possible to obtain a good cosmetic result. The technique of treatment should include removal of all mammographic abnormalities with pathologically confirmed tumor-free margins, axillary lymph node excision, and irradiation of the entire breast to a dose of 4800 to 5000 cGy in five to six weeks. Multicentric disease is not a contraindication as long as each tumor can be excised with a clear margin. Some of the relative and absolute contraindications for conservative management of early breast cancer are pregnancy; small breast size where excision with clear margins will result in a poor cosmetic result; prior breast irradiation; and certain collagen vascular diseases. Unanswered questions regarding radiation therapy are: Is a “boost” dose to the primary site necessary? Does the axilla require radiation treatment when lymph nodes are involved? What to do if the excision margins are involved? Are there some patients who may not require radiation therapy after conservative surgery?

The acute effects that may be seen during radiation therapy are skin erythema, tanning, dry or moist desquamation, or infection; breast edema or tenderness; and generalized fatigue. These side effects are usually mild and heal well to result in good to excellent cosmesis in 80% or more patients. Long-term complications are uncommon but may include breast edema (20% of patients); arm edema (5%); breast fibrosis (10%); breast pain (10%); spontaneous rib fracture (1%); pneumonitis (5%) and shoulder tightness (10%). Part of the reward of early diagnosis is an easier psychological adjustment after conservative surgery and radiation therapy. Conservatively treated patients have a positive attitude about their body image and experience fewer changes in their feeling of sexual desirability.

**More Advanced Localized Disease**

Patients with more advanced but still clinically localized disease are at a greater risk of disseminated disease than patients with early stage disease, and therefore require combined modality treatment. The place of radiation therapy is to reduce the risk of locally persistent or recurrent disease. Radiation therapy in this group of patients produces a 50% reduction in locally recurrent disease. A few studies claim a survival improvement with radiation therapy and a recent British meta analysis found a 2.6% reduction in deaths when radiation therapy was part of the treatment. The outcome of patients treated in the section of Radiation Oncology at Aurora facilities are summarized in Table 3.
Although more American women now die from lung cancer than breast cancer, statistics still show breast cancer as the most frequently diagnosed cancer in American women. Because most Americans are white, the leading cancer sites for whites are also the leading cancer sites for the United States as a whole. Although the burden of cancer is high among individuals of all races and ethnicities, striking differences in cancer incidence and mortality do exist between these groups.

According to 1988-1992 data from the National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) program, breast cancer was the most frequently diagnosed cancer among women in all racial and ethnic groups except Vietnamese Americans, where it followed behind cervical cancer. White women had the highest incidence rate.

Despite the lower incidence of breast cancer in African American women, these women have the highest breast cancer mortality rate of all populations studied in the SEER program. Hispanic and Filipino women are the only groups were breast cancer (mortality rates of 15.0 and 11.9, respectively) is still ahead of lung cancer (mortality rates of 10.8 and 10.0, respectively) as the leading cause of cancer deaths.

In America, race and ethnicity are strongly associated with socioeconomic status, and with related factors such as education, poverty, and access to health care. Twelve percent of white Americans report that they have no health care plan. This compares to 33% of Hispanic Americans, 25% of Native Americans, and 21% of African Americans. Fewer women in these minority groups have screening mammograms than white women.

Mammography finds early breast cancer and decreases breast cancer mortality rates among older women. African American women present with more advanced stage breast cancer than white women, and have a decreased five-year survival rate in comparison (69% vs. 83%). This decreased survival rate cannot be accounted for by economic factors alone. Investigators have found that the lower rate of mammography in African American women exists across every level of income. African American women also have lower stage-specific breast cancer survival rates than white women.

Although genetic and dietary factors certainly account for some of the variations in cancer patterns across racial and ethnic populations, other factors are probably involved. Health care systems contain substantial barriers for minority
patients. Values, beliefs and attitudes about cancer vary between racial and ethnic groups, but fear of cancer, a strong sense of fatalism, and distrust of the health care profession are common in most of America’s minority populations. Issues related to spirituality, kinship, language and education may also play a critical role in the interface between ethnic and racial minorities and the medical establishment. Folk beliefs and practices are pervasive in many minority communities. They are poorly understood, and rarely tolerated by cancer care specialists.

To overcome these barriers, bridges must be built between America’s minorities and its health care institutions, professionals, and the cancer research community. Although racial and ethnic minorities are well represented in therapeutic cancer clinical trials, studies that focus on the prevention (i.e. the recently completed tamoxifen breast cancer study) and early detection of cancer have few minority participants. It is precisely these studies that have the greatest likelihood of benefiting America’s racial and ethnic minorities. Toward this end, Sinai Samaritan Medical Center helped the University of Wisconsin Comprehensive Cancer Center sponsor a National Cancer Institute regional conference, held this year in Milwaukee, on Recruitment and Retention of Minorities in Cancer Clinical Trials. A wide range of challenges and issues related to participation in clinical trials, and cancer care in general, were identified. None was more important than the need to develop human connections between health care providers and minority communities.

More African American patients were seen at SSMC than other Aurora Metro Region hospitals.
Although the extent of surgery required to treat breast cancer has decreased over the years, operations to treat breast cancer still have the risk of significant complications. One of the most distressing possible complications is arm lymphedema, which can occur to a significant degree in 5-15% of patients undergoing axillary dissection, either as part of a mastectomy or as breast conservation. Some studies quote even higher incidences of this complication. Because lymphedema can be debilitating, there are those that argue that axillary dissections should not be performed in all women who are diagnosed with invasive breast cancer. At this time, however, it is still important to obtain information regarding the status of axillary lymph nodes not only in giving prognostic information, but also to guide decisions regarding adjuvant therapy.

Tumor size and histology are only general indicators of the risk of developing axillary metastases. A significant percentage (14-37%) of small invasive cancers (less than 1 cm.) are found to have axillary metastases. Physical examination is notoriously inaccurate in determining whether or not metastases are present. If the node status of a woman with breast cancer can be accurately predicted, however, without performing a full axillary lymph node dissection (ALND), then a significant number of women (those without lymph node metastases) can be treated adequately with a decreased risk of lymphedema and other potential complications.

In several trials, lymph node mapping has shown promise as a technique which can be used to intraoperatively identify women who have no nodal metastases without radical dissection. This could enable approximately 60-70% of patients to be spared complete ALND and its potential complications.

The concept of sentinel lymph node identification was first developed with respect to treating melanoma. Morton and other researchers showed that the sentinel node (the first node in the lymphatic basin into which the primary site drains) could be identified accurately in patients with melanoma. Guliano (Annals of Surgery, 1994) investigated the accuracy of using Lymphazurin dye to detect sentinel nodes in women with breast cancer. In his pilot trial of 184 breast cancer patients, sentinel nodes were identified in only 70% of patients. In his last 100 patients, the sentinel node was identified in 93% of patients. There were no false negative nodes, and the sentinel node was 100% predictive of the axillary status. These results suggest that while results of sentinel node biopsies are accurate, there is a definite learning curve in using Lymphazurin dye to detect the sentinel lymph node.

**Sentinel Lymph Node Study**

*Wendy Mikkelson, MD*
Krag published in 1993 his experience using technesium labeled sulfur colloid tracer with a gamma probe to identify the axillary sentinel node in women with breast cancer. A more recent article by Albertini et al (JAMA, 1996) demonstrated that combining the two techniques (vital blue dye and technesium label tracer with a gamma probe) increased the accuracy of identifying sentinel nodes in the axilla. There were no cases of false negative sentinel node identification (i.e. other positive axillary lymph nodes were not found when the sentinel lymph node was negative). Interestingly, although the tracer technique helped to identify more sentinel nodes than the dye technique alone, no sentinel node identified only by tracer was found to contain metastases. Also, some women had tracer going to the axilla, and their lymph nodes were negative.

Lymphatic mapping is technically possible in patients with breast cancer. Previous studies have demonstrated that the SLN is probably reflective of the histological status of the remaining axillary lymph nodes. Further studies are needed to confirm the results previously obtained by Juliano, Krag, Albertini and others. In the future, lymphatic mapping and selective lymphadenectomy could lead to more conservative surgical treatment for a woman with breast cancer, and a decreased risk of lymphedema and other complications.

The Sentinel Node Protocol at St. Luke's Medical Center enrolled its first patient in May 1997. Twenty-one patients participated in 1997, and 16 patients (76%) had sentinel nodes detected. There were no false negatives, where the sentinel node was negative and other axillary nodes had metastases. Two patients (9.5%) had axillary metastases. The rate of positive metastases was low because the vast majority of patients had T1 tumors. In both instances where axillary metastases were found, only the sentinel nodes had metastases; the other nodes were negative. In one patient, the probe detected the sentinel node. In the other patient, the dye led to the node. One patient allowed only sentinel nodes to be removed. Two were found and both were negative for metastases.

These results are very encouraging, but must be considered as preliminary. Hopefully in a year or two, enough patients will have participated so that the technique will be shown to be accurate and reproducible. If sentinel lymph nodes can be located reliably and do not have metastases, then the rest of the axillary dissection will not need to be performed, and the risk of lymphedema will be significantly decreased.
As the practice of high dose chemotherapy for breast cancer approaches medical middle-age, its role in the treatment of this deadly disease remains a topic of active study. Previously accepted truths about the role of dose escalation continue to be challenged, and yet the number of autologous bone marrow transplants (ABMT) for this disease continues to rise almost logarithmically. Advocates who had previously lectured on the importance of early transplant now champion the role of delayed ABMT in prolonging life, while others try to identify pretreatment characteristics of patients that would make them more suitable for transplant early in the course of the disease. As we begin the third decade of ABMT for breast cancer, new challenges and new opportunities continue to present themselves.

The Role of ABMT in Adjuvant Therapy for Breast Cancer

The role of ABMT for high risk breast cancer was first defined by Peters and his group at Duke University. In a historically controlled series, they identified a high risk population of women with breast cancer who demonstrated involvement of more than 10 axillary lymph nodes. In a non-randomized, historically-controlled trial, this group was able to show a substantial improvement in disease-free and overall survival. While widely quoted and criticized, this trial became the basis for a variety of follow-up studies of transplant for high risk patients.

Since the original report, several developments in the field have occurred which may ultimately change the practice of ABMT in this disease. First, standard adjuvant therapy for breast cancer has improved, and while women with ≥10 or more positive lymph nodes remain at high risk for recurrence, the survival statistics have gotten better. Secondly, earlier detection of breast cancer has reduced the number of high risk patients, although the percentage of recurrences has remained relatively constant in the last five years. Third, in what amounts to a rather extensive reversal of their prior publication, Peters et al. have recently published a smaller institution study which purportedly showed a benefit for delayed, as opposed to immediate, transplant for breast cancer. This study, though widely quoted, has not been repeated and remains an uncontrolled study with small numbers of women.

The only published randomized trial of bone marrow transplant versus conventional therapy in the adjuvant setting was published from South Africa a few years ago. This showed a significant improvement in disease-free and overall survival for high dose therapy. This study differed substantially
from current practice in that transplanted patients received relatively little pre-ABMT chemotherapy and moved quickly to transplant after diagnosis. Nonetheless, the study was well randomized, and groups were well controlled for risk factors.

The largest multi-institution randomized controlled trials have recently closed to accrual. Initial review of data is not expected until the year 2002, and it is likely that the data will be difficult to interpret because of selection bias, but the results will be the best way to evaluate this difficult and emotionally-charged subject.

Despite the dearth of large trials, several trends and truths may be gleaned from current available data. First, ABMT remains an extremely effective method of inducing complete remissions (CR). Secondly, high dose therapy can overcome drug resistance in selected patients and may be able to salvage patients with "resistant disease." Finally, ABMT earlier in the course of the disease may be more useful than late transplant in patients with appropriate risk factors, although this needs confirmation in a controlled randomized trial.

**Current Research and Future Strategies**

Our current clinical trials with ABMT at St. Luke's Medical Center involve the use of post-transplant immunomodulation to eradicate microscopic residual disease. While ABMT is highly effective in decreasing bulky disease, it is also destructive to the immune system. Both cell mediated and antibody mediated immune surveillance is suppressed after transplant for variable lengths of time. This effect may paradoxically present a "window of opportunity" for malignant cell proliferation. If one could eliminate this window by adding cytotoxic T cells, immune surveillance might be restored, and assuming appropriately targeted therapy is used, microscopic disease could be eliminated when it is in its lowest volume.

Our clinical protocols are testing this patients with this disease are often in poor clinical condition, and in many cases have been heavily pretreated in the adjuvant setting. This tends to make them poor candidates for high dose therapy for metastatic disease, and in fact the outcome of ABMT is poor in all reported series for this group. However, a high percentage of such patients will obtain a complete remission after transplant, although it may be of limited duration. This suggests that high dose therapy is able to overcome disease resistance, but that microscopic disease remains. Identifying microscopic disease and dealing with it early on may be critical to long-term, disease-free survival after ABMT.

**ABMT for Metastatic Breast Cancer**

Metastatic breast cancer is largely considered an incurable disease. While responses to chemotherapy have been frequently noted, CRs remain elusive and long-term, disease-free survival is rare. In addition to the obvious problems with metastatic disease in multiple sites,
by utilizing activated autologous T lymphocytes and the cytokine Interleukin-2 to reduce or eliminate minimal residual disease in patients with metastatic breast cancer. In this process, activated T cells are produced from samples of blood obtained at the time of stem cell collection for transplant. These are then incubated with cytokines, and their numbers are expanded in vitro. After bone marrow transplant, the cells are reinfused over a matter of several weeks with continuous infusion Interleukin-2. This procedure, done on an ambulatory basis, is well-tolerated and nontoxic. Preliminary data suggests that in addition to being safe, this procedure may extend disease-free survival post ABMT. Final analysis is pending and should be available soon.

Post-transplant manipulation with other agents is being contemplated as well. An upcoming trial will use co-activated T cells which may be more specific and therefore more effective in reducing microscopic malignant cells. The availability of the monoclonal antibody Herceptin, which recognizes the HER2-neu oncogene, will present another approach to post-transplant conditioning. This antibody may be especially useful post AMBT, since it addresses a subset of the breast cancer cells not previously thought to be sensitive to high dose therapy. Using this in combination with cellular therapy could present a powerful combination against this deadly disease.

Conclusions

The role of high dose therapy and autologous bone marrow transplant for breast cancer continues to be actively investigated. New techniques to potentiate the effects of bone marrow transplant and pre- and post-transplant therapies are entering the clinical arena and should be available to patients in the near future. Redefining and refining the use and usefulness of autologous bone marrow transplant remains a critical goal for the next decade and should help in the fight against this disease.
Many factors, both genetic and non-genetic, are involved in the development of cancer. For years, it has been recognized that some families have a clustering of individuals with breast and ovarian cancer. These families have been considered to have a genetic predisposition to develop cancer.

In recent years, two major susceptibility genes, BRCA1 and BRCA2 (BR east CA ncer), have been identified as responsible for approximately 90% of inherited breast cancer. This article will focus on these two major genes, discussing some of the molecular diagnostic and genetic counseling issues associated with BRCA1 and BRCA2 genetic testing. Since hundreds of the approximately 50,000-100,000 genes that make up the human genome must code for the formation and function of the breast and ovary, it is likely that many other, yet to be identified genes also play a role in the development of these cancers. It has been estimated that seven percent of all (inherited and non-inherited) breast cancer and 10% of all ovarian cancer are associated with inherited mutations in the BRCA1 or BRCA2 genes. BRCA1, located on the long arm of chromosome 17, was the first major breast cancer gene to be mapped. The gene was discovered in 1990, and by 1994 scientists had fully determined its DNA sequence. BRCA2, located on the long arm of chromosome 13, was the second major breast cancer gene to be identified. The complete sequence of this gene was determined in 1996.

In addition to breast and ovarian cancer, individuals who have BRCA mutations are at increased risk for developing other cancers such as colorectal and prostate cancer. Additionally, women who carry a BRCA mutation are at increased risk to develop a second cancer. Men with BRCA2 mutations have an increased risk to develop breast cancer and other types of cancer as well.

Genetic Susceptibility Testing for Breast and Ovarian Cancer; BRCA1, BRCA2 Testing

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The BRCA1 and BRCA2 genes are tumor-suppressor genes that play an important role in the regulation of cell growth. Males and females normally possess two copies of each of these genes. Individuals who have hereditary breast or ovarian cancer, or have an increased risk to develop cancer secondary to these genes, have a single germline mutation in either BRCA1 or BRCA2. The development of cancer results from a "two hit" process. The first hit is the germline mutation the individual was born with. The second hit is a somatic or acquired mutation in the other gene of the pair. Once both genes of the BRCA pair are mutated, the gene will allow uncontrolled cell growth and thus, cancer will develop.

Germline mutations in the BRCA1 and BRCA2 genes are passed from parent to child in a dominant pattern of inheritance. Therefore, there is a 50% chance for a person who has a germline BRCA1 or BRCA2 mutation to pass this gene on to each of his/her children. Women may inherit a BRCA gene from either their mother or their father. We often think of breast cancer as being inherited from a woman's mother's side of the family. However, the gene has an equal chance of being inherited from either parent.

A mutation in a gene results when DNA base pairs have been substituted for one another, are missing, or are otherwise rearranged. Some genes have one specific mutation that causes a disease. For example, the A to T substitution in codon 6 of the beta globin gene produces 100% of sickle cell anemia. There are other genes that have one common mutation that is responsible for a large proportion of the cases of a particular disease. An example of this is the delta F508 three base pair deletion in the CFTR gene which accounts for approximately 70% of cystic fibrosis gene mutations. Most genes, however, have numerous different mutations that cause a particular disease. The more disease-producing mutations a gene has, the more complex the molecular testing is to identify an abnormality in that gene. This, unfortunately, is the case for the BRCA genes.

Hundreds of deleterious gene mutations have been identified in BRCA1 and BRCA2. Both are large genes, with BRCA2 twice the size of BRCA1. A mutation in either of these genes often leads to premature truncation of the BRCA1 or BRCA2 protein product, leading to a protein that cannot function normally to suppress cell growth. Mutations have also been identified which do not adversely affect protein structure but may affect the stability of the protein. To confidently rule in or exclude the presence of a cancer-producing mutation in the BRCA genes, the entire sequence of both genes must be analyzed. Due to the large size of these genes, especially BRCA2, the analytical strategy depends upon dividing up the genes into many small sections that can be examined by current DNA sequencing robotics.

Three specific BRCA mutations have been found in high frequency in women with breast cancer who have Ashkenazi ancestry. BRCA gene testing for individuals in this population often starts with the simpler process of excluding these mutations. If no mutation is identified, then the full BRCA1 and BRCA2 gene sequencing is performed.
At the present time, full sequence BRCA analysis is commercially available and costs approximately $2,400. The test most often is run on blood samples, but can be performed on any tissue, sometimes even autopsy tissue in paraffin blocks. The cost is high due to the technical complexities of sequencing two large genes. If a BRCA mutation is identified in an affected family member, then targeted mutation analysis looking for that specific mutation can be performed for other risk relatives. The cost of this rather straightforward molecular testing is approximately $250. The cost of the three BRCA mutation panel for Ashkenazi Jewish women is intermediate in price between the full sequencing analysis and the specific mutation analysis.

Occasionally, a BRCA gene DNA change will be found in a patient that has not been previously associated with breast or ovarian cancer. In these cases it may not be entirely clear whether the base pair alteration is disease-producing or is a benign change in the DNA base pair sequence. Thus, genetic testing will not always be able to definitively determine whether or not a breast cancer patient has a mutation in one of the BRCA genes. At the present time, a listing of identified BRCA1 and BRCA2 mutations is being maintained through the Breast Cancer Information Core (BIC). This database is essential for the correlation of clinical data with mutational analysis.

Although BRCA gene sequencing analysis can be performed for anyone concerned about their risk for developing familial breast or ovarian cancer, the testing is most informative if an affected family member is tested first. If a BRCA mutation is found in the affected individual, it can be looked for in other family members. Relatives who are also found to possess the mutation will have a significantly increased risk to develop breast or ovarian cancer. Most individuals, but not everyone, who possesses the mutant BRCA gene will develop cancer. These individuals can then have close medical follow-up for possible tumor development. This way, the familial tumors can hopefully be discovered early when they can most effectively be treated. Family members who are found not to have the BRCA mutation will be relieved to not have a significantly increased risk for the familial tumors. They will not need the aggressive tumor surveillance required by affected family members, family members who are found to have the gene, and other family members who have not had genetic testing.

In some families, an affected family member(s) is not available or is not interested in BRCA testing. In these situations, BRCA testing can be offered to an unaffected individual. However, if no BRCA mutation is identified, this may be falsely reassuring. One could not be sure that the unaffected person and the affected relative(s) do not share one of the many other genes responsible for breast cancer. There are also cases where an affected family member has BRCA testing and no mutation is identified. Therefore, BRCA testing in an unaffected individual in the family would be uninformative. In both of these above situations, risk assessment can best be determined based on the family history data. Close tumor surveillance would still be indicated given the individual's family history information.
Over the last several years, research studies have been performed in an effort to identify families at an increased risk to have BRCA mutations. Modeled probabilities have been established in categories of 1) clinical diagnosis (breast or ovarian cancer); 2) age of onset with breast cancer less than age of 50 considered early onset and ovarian cancer at any age; 3) number of affected relatives (with breast cancer only, or breast and ovarian cancer on both mother’s and father’s side); and 4) ancestry of the individual. A number of studies have found an increased risk of BRCA mutations in individuals of Ashkenazi Jewish ancestry.

Based on the above categories, a recent study has determined that individuals who themselves have been diagnosed with both premenopausal breast cancer and ovarian cancer have an approximately 88% chance of identifying a BRCA mutation, while individuals who develop breast cancer prior to the age of 50 and have at least one relative with breast cancer or ovarian cancer (at any age) have at least a 20% probability of carrying a BRCA mutation.

In general, the following histories indicate that there may be a high risk of identifying a BRCA gene mutation in the family:
- Individuals who have two or more close family members (mother, sister, daughter, aunt or cousin, maternal or paternal side) with premenopausal breast cancer or ovarian cancer at any age.
- Women with a diagnosis of premenopausal breast cancer and any relative with premenopausal breast cancer or ovarian cancer at any age.
- Women with a diagnosis of ovarian cancer and any relative with premenopausal breast cancer or ovarian cancer at any age.
- Individuals who have a relative with a known BRCA mutation.

Individuals who are considering genetic susceptibility testing for breast cancer frequently have many questions. They often include: What is my risk for developing cancer? What is the probability of identifying a BRCA mutation in me? What are the treatment options if a BRCA mutation is identified? What are the limitations, risks and benefits of BRCA testing?

They also want to know about the cost of the test, insurance coverage, and if there is the possibility for insurance (health, life and disability) discrimination. All of these concerns can be addressed in genetic counseling prior to testing. In fact, it is strongly recommended that anyone undergoing genetic testing for cancer gene susceptibility testing have genetic counseling first. A counseling session usually begins with the genetic counselor obtaining a detailed three-generation pedigree from the patient. Using this family history, the counselor then estimates the patient’s risk to be carrying a BRCA cancer gene. Sometimes, medical records of family members need to be reviewed to determine exactly what type of cancer a relative had, and what the age of onset was.

Some individuals who consider BRCA testing may discover through genetic counseling that their risk of developing cancer or identifying a BRCA mutation may actually be lower than they anticipated. Genetic counseling is a time when issues and misconceptions regarding genetic testing are addressed. The service should be provided by a board certified genetic counselor or other health care provider who has a good understanding of genetics, molecular testing, and the clinical and personal issues related to cancer.
More and more frequently women's breast cancers are identified early with routine screening mammography. Because these women usually have node-negative disease and small tumors, physicians currently have no way of knowing which women should receive adjuvant systemic drug therapy after surgery.

In addition to reporting the presence of infiltrating ductal carcinoma, the diagnostic pathologist has the responsibility of providing the physician with additional morphologic information needed for estimating prognosis and selecting treatment. The prognostic discriminates that have been proposed for invasive ductal carcinoma are numerous. Prognostic markers can be important aids to physicians in identifying patients suitable for adjuvant treatment. An NIH consensus development conference held in June, 1990 concluded that “Prognostic factors should be used to provide an estimate of risk of recurrence in women with early-stage breast cancer.” A useful prognostic factor is one that has been shown to have a significant and independent predictive value in clinical trials. A number of prognostic factors for breast cancer, mainly histopathological or clinical, have been developed and widely used over the last 20 years. More recently, biochemical and molecular markers have been proposed which could be used for prognosis, either alone or in combination.

**Lymph Node Status**

Lymph node status is the most powerful prognostic indicator for breast cancer, and has the strongest influence on treatment failure rates. Recently, with the advent of better diagnostic and screening tools, only about 30% - 35% of women have metastatic disease to the axillary lymph nodes at diagnosis. Axillary lymph node status is a strong predictor of patient survival in that the greater the number of positive lymph nodes, the more likely the patient is to die within five years. The most useful groupings have been found to be those patients with a) negative nodes; b) one to three involved nodes; c) four to nine involved nodes; d) ten or more involved nodes. The percent of overall survival by nodal status varies according to how many lymph nodes are involved with metastatic carcinoma. Clinical and pathological findings can also be used to estimate the risk of lymph node metastases for patients where carcinoma is less than 2 centimeters. A recent study utilizing multivariate analysis found that vascular invasion, tumor palpability, nuclear grade and tumor size are all independent predictors of axillary lymph node metastases for patients with T1 breast carcinoma. These features may be particularly helpful in conjunction with sentinel lymph node status.

**Tumor Size**

Although lymph node status has been established as an important predictor of treatment failure, the size of an infiltrating carcinoma is independently significant with patient groups stratified by the number of...
positive nodes. The National Surgical Adjuvant Breast Project (NSABP) data at 5 and 10 years of follow-up has continued to show the importance of tumor size, with lesions less than 2 centimeters faring significantly better (when controlled for nodal status). It is particularly important to identify invasive carcinomas that are less than 1 centimeter in greatest dimension since patients with such carcinomas and negative lymph nodes have an excellent prognosis. In addition, microinvasive carcinoma (invasion limited to no more than 5 millimeters) has a survival rate of greater than 99%. Survival decreases with increasing tumor size, and there is a coincidental rise in the rate of axillary node metastases.

**Histologic Grade**

Many studies have documented the prognostic importance of the grade of invasive carcinoma independent of nodal status. All invasive carcinomas should be graded and identified as to the special type of carcinoma by name. The Association of Directors of Anatomic and Surgical Pathology recommend the grading scheme of Scarff-Bloom-Richardson for grading invasive breast carcinomas. This grading scheme is based on tubule formation, nuclear grade and mitotic rate. This system is easy to use, reasonably reproducible and has been clinically validated. Moreover, it has been proven to provide significant prognostic and therapeutic information. As recent report indicates that a higher histologic grade predicts an increased incidence of distant metastasis but not axillary metastasis or local recurrence.

**Extent of Ductal Carcinoma In Situ Associated with Invasive Ductal Carcinoma**

In a 1994 report, it was found that extensive intraductal carcinoma did not predict a high recurrence rate if the margins were negative for both in situ and invasive carcinoma.

**Angiolymphatic Invasion**

Some but not all studies have shown an increased risk for distant metastases when intralymphatic or vascular tumor emboli are present in vessels outside the main tumor mass. Investigators at the Institute Curie in Paris have reported a strong trend for lymphatic invasion to be correlated with local recurrence in patients treated by lumpectomy.

**Margins of Resection**

Recent reports from Stanford and the Joint Center in Boston as well as others have shown that attainment of negative surgical margins initially or at re-resection is the most significant predictor of local control after breast conserving therapy by means of lumpectomy and radiation therapy. Schnitt and colleagues have also shown that margins are highly correlated with recurrence for patients treated with breast conserving procedures and extensive intraductal carcinoma does not predict a significant risk for recurrence when margins are negative.

**BIOLOGICAL MARKERS OF PROGNOSIS**

Over the last decade, more than 100 potential biologic prognostic and predictive factors have been touted in medical literature, but practically none of these discriminate risk categories independent of morphologic predictors or have been characterized well enough to be used routinely by clinicians. Guidelines for evaluating these molecular biologic factors have been published and there is basic agreement that for a factor to be used in patient care it should be technically and clinically validated and influence clinical decision making. The only factors which come close to meeting these guidelines are the size of the tumor, histopathologic grade and lymph node status (for prognosis) and ER/PR determinations (for predicting response to therapy). In spite of these, three
markers have emerged as the most likely to meet the guidelines outlined above. These markers are HER2/neu(CerbB2), DNA and S-phase. As in the past, grade, size, and nodal status outperform any other prognostic indicators and ER/PR is the best predictive factor.

Hormone Receptors

These proteins bind and mediate the cellular effects of circulating hormones. The most extensively studied receptors in breast carcinoma bind estrogen and progesterone receptors (ER and PR). Among infiltrating duct carcinomas there is an inverse relationship between grade (nuclear or histological) and ER/PR positivity. ER and PR are highly associated with age at diagnosis being positive significantly more often in tumors from postmenopausal than in tumors from premenopausal women.

Since the expression of PR is estrogen regulated, most PR-positive carcinomas are also ER-positive. Less than 10% of carcinomas are ER-negative and PR-positive. Patients with ER- or PR-positive carcinomas tend to have a significantly longer disease-free survival rate than women with receptor negative tumors. The impact of the ER status of the primary tumor on prognosis is greatest in patients with axillary lymph node metastases especially when multiple lymph nodes are affected and substantially less important in node-negative patients. Similar results have been reported for PR.

ER is an important determinant of response to hormone therapy in patients with recurrent carcinoma. If possible, the analysis should be performed on a recurrent lesion since variation in ER expression between the primary tumor and metastases occurs in about 25% of cases.

Oncogenes

Insight into genetic changes involved in the development and progression of malignant neoplasms has been gained from the study of oncogenes. In human tissues, amplification of HER2 was found to be associated with adenocarcinomas especially mammary carcinoma. Some authors have found that HER2 is present more often in tumors larger than 2 centimeters when compared to smaller tumors. A similar trend was observed in a comparison of tumors larger and smaller than 5 centimeters. Most investigators have found no association between HER2 and axillary lymph node status. In one report, positive lymph nodes were more often present when the primary tumor had three or more copies of the HER2 gene than when there were fewer copies. Other investigators did not detect an association between copy number and nodal status. Another study found HER2 more often in carcinomas with poorly differentiated nuclear grade. Several studies reported a statistically significant trend for more frequent detection of HER2 in tumors with poorly differentiated histological grade, whereas others found no significant association with histologic grade. Four studies reported a greater frequency of HER2 in hormone receptor-negative tumors, but others found no significant association between HER2 and the detection of estrogen or progesterone receptors in the carcinoma.

One group found that greater than twofold amplification occurred significantly more frequently in women with metastases in three axillary nodes than in those with fewer than three or no lymph nodes involved. Amplification found in 40% of these patients was more frequent in women with four or more than in those with one to three involved nodes. Analysis of recurrence free and overall survival revealed a significantly less favorable outcome among the node-positive women with fivefold or greater amplification.
The relationship of HER2 expression to prognosis in patients without axillary lymph node metastases has been extensively investigated. A substantial majority of studies found no significant association with recurrence or with survival. On the basis of this data, it is reasonable to conclude that HER2 expression as currently determined is not a significant prognostic factor in node-negative patients. Multivariate analysis revealed that amplification of HER2 was a statistically significant prognostic factor, second in importance only to axillary lymph node status. Other studies have found amplification of HER2/neu oncogene in about 20% to 30% of breast and ovarian tumors and suggested that these tumors belong to patients with shortened disease-free and overall survival. Another study suggested that CerbB2 may be a marker for identifying patients who are most likely to benefit from adjuvant chemotherapy.

Flow Cytometry and Growth Rate

In 1979, Atkin and Kay described the relationship of modal DNA values to prognosis in 1,465 diverse malignant tumors, including some breast carcinomas. DNA ploidy distributions in breast carcinomas measured by flow cytometry have shown that tumors with diploid DNA distribution tend to be estrogen and progesterone receptor-positive whereas receptor negativity has been associated with aneuploidy. Pathological studies have shown a close correlation between cytological grading of tumor nuclei and DNA ploidy analyzed by flow cytometry. Low-grade tumors typically exhibit near-diploid DNA whereas aneuploidy is most pronounced in tumors with high grade nuclei.

Flow cytometry also provides a simple method of determining the proliferative fraction (S-phase fraction or SPF). It has been observed that proliferative activity reflected in the SPF is correlated with ploidy to the extent that diploid carcinomas tend to have a lower SPF than aneuploid lesions. Tumors with a high SPF tend to be ER-negative. SPF has been found to correlate with the histological differentiation of duct carcinomas and with nuclear differentiation. While some investigators have reported that ploidy and/or SPF did not correlate with nodal status at the time of initial treatment, others found a high SPF in node-positive compared with node-negative patients.

Several reviews of the prognostic significance of ploidy and SPF have been published recently. Because of the close correlation between tumor grade, SPF, and ploidy, the significance of any one of these features as an independent prognostic factor is difficult to ascertain. Whereas patients with tumors that have a diploid DNA index tend to have a more favorable prognosis, the magnitude of this advantage compared to tumors showing aneuploidy is small. An association between high SPF and increased risk for recurrence has been documented in most studies, but others have failed to detect this relationship.

CONCLUSIONS

It is safe to predict that the current menu of traditional prognostic markers will expand further with the addition of new protein and molecular prognostic markers. Since the analysis of many markers per patient is costly, appropriate clinical trials should be designed to select the ones that carry independent value and to design panels that would improve the markers' prognostic power. The prognostic value of an individual marker tends to be low; however, the proper use of optimal panels will most likely result in better patient survival outcomes through subgrouping and selection of the appropriate time and type of postsurgery adjuvant therapy.
The Wisconsin Women's Cancer Control Program (WWCCP) is a partnership among 13 suburban public health departments in Milwaukee County and West Allis Memorial Hospital to reach under-insured and uninsured women for mammography and cervical screening. The City of Milwaukee also has a WWCCP project, and we work collaboratively to avoid duplication of services.

The West Allis Health Department is the lead agency and fiscal agent for the suburban project. Funding is from a grant through the State of Wisconsin WWCCP, which is part of the Center For Disease Control National Breast and Cervical Screening Program. The West Allis Health Department has contracted with West Allis Memorial Hospital to conduct outreach and provide service in the 18 community areas of Milwaukee County; organize the health care community into a network of providers; and provide a staff person to function as project coordinator.

This project has been operational since April 1994 and began screening services in October 1994. The program's target group is women 50 and older, whose income is at 200% of poverty or less. Outreach efforts in each community, providing essential screening support, referral and follow-up support services to residents, are the key components of the program. Aurora providers for the WWCCP program include St. Luke's South Shore, St. Luke's Medical Center, Sinai Samaritan Medical Center, West Allis Memorial Hospital, Mobile Testing, Aurora Medical Group-Wauwatosa, St. Luke's New Berlin Health Care Center, Franklin Family Medical Clinic, and Clarke Square Family Health Center. Some of the facilities offer both mammography and Pap services. If not, other providers such as Planned Parenthood are also used. Providers are reimbursed at Medicare rates for screening and diagnostic mammography, ultrasound and fine needle aspiration. Specific office visits are also reimbursable. Pap tests and colposcopy are also covered services.

In 1997, 308 women were screened as WWCCP clients - a 44% increase over 1996, although the goal was to screen 500.

Re-screening previously eligible women and recruitment of new eligible women is a continuous process. Eligibility is based on age and income, and participants must be re-qualified each year. In 1997, the target was women 50 and older, with a small amount of funding available for women 40-49 years. Previously screened women are telephoned to be re-qualified for their next mammogram and are advised to make an appointment. If the woman does not respond, at least two letters are sent as a follow-up reminder. Re-screening rates for 1997 averaged 59%.

Wisconsin Women's Cancer Control Program
Nancy Rhodes, RN, BSN
Follow-up for women who need additional services is the responsibility of the provider. The WWCCP coordinator assists in this area in cooperation with the local health department. The coordinator provides assistance in helping a patient with follow-up services as needed. No treatment services are covered under this program. Aurora facilities have been cooperative in assisting patients with treatment when disease is found. To the coordinator's knowledge, no patient has gone without treatment.

A small fund was established in September 1996 to assist under- and uninsured women with some expenses. Revenue for the fund is generated through the sale of breast cancer awareness pins and a quilt raffle for two handmade quilts at the WWCCP booth at the Wisconsin State Fair. This fund is available to underserved women throughout the state by referral from the local WWCCP coordinator. In 1997, we assisted with partial payment of bills for 39 women at an average of $88 per bill.

Although we have the ability and payment source to screen more women, a major challenge has been locating the target group of women in the 50-65 year age range who are at 200% of poverty. Each health department has tried a variety of approaches i.e. working with community organizations like the Salvation Army, articles in community newsletters, direct mail, flyers, health fairs, letters to physicians in one community, mobile mammography, Pink Ribbon Month in October which targets churches, meal sites and beauty shops, and most recently, presentations at selected employers.

Our challenge continues as Medicare began to pay for annual mammograms in 1998, and the target age group will be 50-64 years of age. Our goal for 1998 is to provide screening services to 500 women in suburban Milwaukee County.
Clinical Trials ECOG, RTOG and BCPT

Aurora Health Care hospitals offer patients a wide range of clinical protocols. Patients are eligible to be enrolled in major cooperative study groups dedicated to increasing the survival and improving the quality of life of patients with cancer. Studies conducted in 1997/1998 directed at breast cancer are as follows.

Eastern Cooperative Oncology Group Trials (ECOG)

Nancy Briggs, RN, MSN, OCN - Coordinator
Gary Shapiro, MD - Principal Investigator

Enrollment of women and minorities has continued to be an area of strength for the research program at Sinai Samaritan Medical Center. The Medical Oncology Clinic at SSMC is an affiliate of the University of Wisconsin's Comprehensive Cancer Center. In conjunction with the Eastern Cooperative Oncology Group (ECOG), more than 60 clinical trials are available to patients, addressing a wide variety of cancers and symptom management. In 1997, the following breast cancer studies were available:

- A four-arm study comparing two- or three-week scheduling of chemotherapy drugs in Stage II/IIIA breast cancer (Phase III trial);
- A two-arm study of chemotherapy drugs given in three-week intervals for node positive or high risk node negative patients (Phase III trial);
- A three-arm study comparing three chemotherapy drugs followed by a comparison of weekly vs. three weekly doses of chemotherapy for metastatic breast cancer.
- Other research studies have made drug treatments that are not currently commercially available including suramin, marimastat, PSC 833, and oral 5-FU accessible to patients. Symptom management studies address mucositis, pleural effusions, diarrhea and pain management.

An ongoing priority has been raising patient/family awareness of the availability of clinical trials and the opportunities they provide to receive state of the art care. Increasing numbers of patients and family members have recognized the benefits of participating in clinical research. ECOG's web site, an educational resource for patients and families, has been expanded to include more information for the general public, explaining what clinical trials are and what ECOG is all about. Internet access is available in the Medical Oncology Clinic.

Radiation Therapy Oncology Group Trials (RTOG)

Monique Swiechowski, RN, BSN - Coordinator
Mitchell Pincus, MD - Principal Investigator

The Radiation Therapy Oncology Group (RTOG) was initially organized in 1968 as a national clinical cooperative group for the purpose of conducting radiation therapy research and cooperative clinical investigations. It is now a multi-center cooperative organization that includes 27 full member institutions and more than 180 affiliate institutions in the United States and Canada.

The RTOG is dedicated to increasing the survival and improving the quality of life of patients with malignant diseases; preventing second and subsequent malignant tumors; demonstrating the contributions of new modalities to the therapy of cancer; and seeking greater...
understanding of the biology of several types of cancer. Since its inception, the RTOG has activated 350 protocols and accrued a total of about 60,000 patients to help meet these goals. In January 1997, RTOG activated the first breast protocol in 14 years. RTOG 97-02 is designed to determine the net value of radiation therapy in patients 70 years or older who have carcinoma of the breast that is ≤2 cm; are without palpable axillary nodes; and who all receive tamoxifen. This intergroup trial originated in the Cancer and Leukemia Group B (CA LGB), and has been available to St. Luke's Medical Center patients since May 1996.

Palliative treatment is a significant portion of cancer care, with an estimated $900 million spent each year, mostly for painful osseous metastases. Radiation therapy will provide almost 90% of these patients with at least some improvement in their pain and half with complete pain relief. However, there is disagreement as to the most effective treatment schedule and total dose. RTOG 97-14 compares a single fraction (8 Gy) to 10 fractions (30 Gy total) for breast (and prostate) cancer patients with bone metastases. Frequency and duration of pain relief, quality of life, cost-effectiveness, and incidence of secondary pathologic fractures will be compared.

Another study which was available to St. Luke's radiation therapy patients this year, was a Phase III randomized study comparing prophylactic topical agents for radiation-induced skin toxicity. RTOG 97-13 was made available to many women with newly diagnosed breast cancer who had breast-conserving surgery only, as prior treatment. This study hoped to determine whether Biafine was most effective in preventing dermatitis; to determine maximum reported severity, time to occurrence, and duration of dermatitis; to compare patients' quality of life between interventions; and to assess product toxicities.

St. Luke's Radiation Oncology also participated in a national study on estrogen replacement therapy coordinated by the University of Texas M.D. Anderson Cancer Center. This study will examine the benefit of postmenopausal administration of estrogen related to quality of life, reduction in cardiovascular morbidity/mortality, and reduction in the morbidity/mortality associated with osteoporosis. Due to the benefits and the lack of any available data regarding estrogen in women with a background of breast cancer, a prospective randomized control trial is needed. Any woman, in or out of the Aurora system, with Stage I or II breast cancer (ER negative and disease free for two years or ER unknown and disease free for 10 years) who has documented menopause could have participated in protocol DM 90-063. This study will determine the influence of estrogen replacement on a patient's clinical course and the efficiency of Premarin in the treatment of metabolic bone disease.

Breast Cancer Prevention Trial (BCPT)

Julie Jensen, RN, MSN, CANP, APNP - Coordinator
William Donegan, MD - Principal Investigator

An important landmark against cancer in 1998 was the report of the National Breast Cancer Prevention Trial (BCPT) which showed that the drug tamoxifen could prevent 49% of breast cancers in women at high risk for this disease. The study involved 300 centers nationwide and 13,388 volunteers who by reason of their age or other risk factors were considered at unusually high risk to develop breast cancer.
The participants were assigned randomly to take tamoxifen or an inactive placebo orally each day for five years. To eliminate any potential bias, neither the participants nor the physicians conducting the trial knew which medication was assigned. The study ran from April 1992 until the spring of 1998, when the trial was concluded and the results made known.

After less than four years on study, women taking placebo had developed 175 invasive breast cancers while those taking tamoxifen had developed only 89, a highly significant reduction. A similar reduction in non-invasive breast cancers was also seen.

An additional benefit of tamoxifen therapy was the occurrence of fewer bone fractures. The gains, however, were at a price. Hot flashes were a frequent side effect of tamoxifen, and women over 50 years of age who took it had a higher rate of endometrial cancer, cataracts and potentially dangerous blood clots in leg veins.

Women in the older age group with a prior hysterectomy derived the greatest net benefit.

The second national breast cancer prevention trial, due to begin in January of 1999, will compare tamoxifen with raloxifene, a promising alternative that may be even more effective and have fewer side effects.

The BCPT was conducted by the National Surgical Adjuvant Breast and Bowel Project (NSABP) headquartered in Pittsburgh, PA, and was funded by the National Cancer Institute.

Sinai Samaritan Medical Center was the coordinating site in Milwaukee for the BCPT. Other Milwaukee participants included St. Luke's Medical Center and Froedtert Hospital.

Vince Lombardi Cancer Clinic
In-House Research

Combination Immunotherapy and Peripheral Blood Stem Cell Transplantation (PBSCT) for Women with Stage IIIb and Metastatic Breast Cancer

Kristin Gleesing, RN, BSN - Coordinator
Lawrence Lum, MD - Principal Investigator

The incidence of breast cancer among US women is one in eight. Therapeutic options for women with metastatic breast cancer include high dose chemotherapy with peripheral blood stem cell transplantation. However, even with PBSCT, the long-term cures rates after PBSCT are poor with recurrence rates of over 85%. Low cure rates are likely due to tumor cells that are reinfused in the PBSCT and/or persist in the patient after doses of chemotherapy. Since higher doses of chemotherapy may lead to organ dysfunction, non-toxic approaches are needed to “mop up” breast cancer cells that are reinfused or persist in the body. For this reason, the Autologous Bone Marrow Transplant (ABMT) program at St. Luke's Medical Center pioneered a new cancer treatment: protocol for women with advanced breast cancer to decrease relapse after PBSCT by using adoptive immunotherapy to provide an additional anti-tumor therapeutic modality that is non-toxic to the patient.
The active clinical treatment protocol included very high doses of chemotherapy to maximize the killing breast cancer cells prior to stem cell rescue; PBSCT to rescue the patient's bone marrow function from high dose chemotherapy; and immunotherapy involving multiple infusions of the patient's own activated killer T cells and interleukin 2 (an immune protein that has anti-tumor activity) to accelerate immune recovery and enhance anti-tumor effects. The T cells are triggered to grow and kill by stimulation with monoclonal antibody. The clinical trial has both FDA and St. Luke's Medical Center Human Research Committee approvals. This is the only clinical trial using activated T cells, IL-2, and PBSCT in the world for breast cancer.

The clinical trial has promising results with 20 patients entered into the study. The updated survival curves show that 75% of these patients are alive and 60% remain free of recurrent disease at the 28-month point in the study. In contrast, only 50% of the women who received PBSCT for metastatic breast cancer without adoptive immunotherapy are alive at the same time after PBSCT and 85% have relapse with breast cancer. Although it is too early to form conclusions, infusions of activated T cells have gone smoothly without any major side effects to the patients. There were no deaths related to the transplant or cell infusions. If the current trend continues, the study may be able show that adoptive immunotherapy with activated T cells will provide a major benefit in the treatment of breast cancer. It is very gratifying and encouraging that this non-toxic immunotherapy treatment combination with PBSCT can be provided as an alternative to women with advanced breast cancer.
NON-RELATED BREAST CANCER PREVENTION TRIALS

_Cancer and Leukemia Group B (CALGB) Trials_

Carol Tutino, RN, CCRC - Coordinator
John P. Hanson, MD and Jonathon Treisman, MD - Principal Investigators

In late 1997, St. Luke’s Medical Center received permission to participate in the CALGB Clinical Trials, which are sponsored by the National Cancer Institute for these studies. St. Luke’s is affiliated with Mt. Sinai Hospital in New York City. John P. Hanson, MD, is the principal investigator at St. Luke’s.

Early in 1998, three CALGB protocols were reviewed and approved by the St. Luke’s IRB for patient accrual. These three studies focus on GI malignancies. They are:
- Using a monoclonal antibody to treat Stage II colon cancer (Modified Astler-Coller B2). These patients have undergone total resection of their tumor. Typically these patients do not receive any type of therapy after surgery.
- Comparing different ways of giving 5FU for colon cancer patients who are at high risk of recurrence, despite surgical resection of the tumor. These patients must be a Stage B2 with obstruction or perforation, or be a Stage C1 or C2.
- The third study will be comparing high dose vs. conventional dose octreotide acetate vs. loperamide in the treatment of chemotherapy induced diarrhea in patients with colorectal cancer.

_Radiation Therapy Oncology Group Trials (RTOG)_

Monique Swiecichowski, RN, BSN - Coordinator
Mitchell Pincus, MD - Principal Investigator

In 1997, the Radiation Therapy Oncology Group (RTOG) offered four new protocols in three disease sites to St. Luke’s Medical Center radiation therapy patients:
- RTOG 96-08 was designed to test the results and toxicity of the addition of pelvic radiation to total androgen suppression (TAS) in patients with lymph-node positive adenocarcinoma of the prostate. All patients have their choice of Orchiectomy plus Flutamide or Casodex or a LHRH analog plus Flutamide or Casodex. Randomization determines the addition of whole pelvis irradiation.
- RTOG 97-13 as previously mentioned, was made available to many women with newly diagnosed breast cancer who had breast-conserving surgery only, as prior treatment.
- RTOG 97-14 compares a single fraction (8 Gy) to 10 fractions (30 Gy total) for palliative treatment of prostate cancer (and breast) patients with painful bone metastases. Frequency and duration of pain relief, quality of life, cost-effectiveness, and incidence of secondary pathologic fractures will be compared.
- RTOG 97-01 is a Phase III randomized trial of radiation alone versus concurrent chemotherapy (Carboplatin and VP-16) plus radiation therapy for poor-risk Stage III non-small-cell lung carcinoma patients. This study will evaluate whether the survival rate is improved, quality of life affected, and treatment-related morbidity is increased by adding con-current chemotherapy to radiation therapy.
The RTOG continues to explore the use of "new modality" treatment in varying disease sites. Brachytherapy, stereotactic radiosurgery, and dose escalation using 3D conformal radiation therapy are currently being explored for use in breast, brain, prostate and lung cancers. Specifically, we eagerly await the activation of an RTOG prostate protocol utilizing radioactive seed implants – a procedure we have quite a bit of experience in and a huge patient demand for. RTOG 9805 will be made available to patients as soon as the RTOG implant credentialing is completed.

Eastern Cooperative Oncology Group Trials (ECOG)

Nancy Briggs, RN, MSN, OCN - Coordinator
Gary Shapiro, MD - Principal Investigator

Sinai Samaritan Medical Center is an affiliate of the University of Wisconsin's Comprehensive Cancer Center. In conjunction with the Eastern Cooperative Oncology Group (ECOG) more than 60 clinical trials are available to patients, addressing a wide variety of cancers and symptom management. In conjunction with the Eastern Cooperative Oncology Group (ECOG), research studies in breast, lung, colon and prostate cancer have continued to generate the highest numbers of patient accrual. Enrollment of women and minorities has continued to be an area of strength for the research program.

Through its relationship with the University of Wisconsin Comprehensive Cancer Center (UWCCC), Sinai Samaritan Medical Center is a charter member of the Wisconsin Oncology Network (WON). This new statewide network of UWCCC affiliated hospitals and clinics will provide Wisconsin's cancer patients greater accessibility to innovative investigational cancer treatments.

VINCE LOMBARDI CANCER CLINIC IN-HOUSE PROTOCOLS

The Vince Lombardi Cancer Clinic at St. Luke's Medical Center is continuing to accrue patients in a number of in-house clinical research studies.

Antiemetic (Anti-nausea) Protocol Study for Patients Undergoing Autologous Bone Marrow Transplant

Kristine Gleesing, RN, BSN - Coordinator
Sol Yoder, PharmD
Robert Taylor, MD - Principal Investigator

The hypothesis in this study is that antiemetic protocol utilizing an algorithm of nausea and vomiting associated with high-dose chemotherapy in bone marrow transplantation is more cost effective than the method in which antiemetics are currently prescribed by the physician.

Value of Flexible Sigmoidoscopic Screenings in Detecting Colorectal Cancer In Younger Adults

Carol Tutino, RN, CCRC - Coordinator
Daniel Geenen, MD - Principal Investigator

The study offers free flexible sigmoidoscopic examinations for eligible 35-50 year olds and hopes to answer the following questions: What is the incidence of polyp detection in three non-identified high risk asymptomatic age groups? What are the characteristics of polyps removed from each age group? What is the incidence of specific risk factors for colon cancer in each of these age groups? And, how does the incidence of these risk factors differ between patient who have polyps vs. those who do not?
Breast Cancer Support Groups

Education, inspiration and a sharing of experiences for people whose lives have been touched by cancer

The following support groups offer women the opportunity to share experiences, grieve and celebrate while maintaining their privacy. The groups offer education as well as support. Expert speakers on various topics are brought in to have discussions with the members. Topics include chemotherapy, lymphedema, music therapy, spirituality, meditation/visualization, nutrition and alternative therapies. The members of the groups determine what topics they are most interested in learning about.

Breast Friends - Breast Cancer Support Group
Breast Friends is for women who have been diagnosed with breast cancer, their families and friends. Sessions are facilitated by the coordinator of St. Luke's comprehensive breast care program, and are open to all women with breast cancer and their husbands, sisters, friends, daughters and others.
- Meets the last Tuesday of each month from 6:00 to 8:00 p.m. in the Vince Lombardi Cancer Clinic at St. Luke's Medical Center.

Women Supporting Women
Women Supporting Women is a group of African American women who have survived cancer. Their mission is to be concerned and committed to providing education, support and enhancement to women of color challenged by breast cancer. Jestene McCord, Director of Urban Affairs, is the facilitator and can be reached at 647-3344 for more information.
- Meets the third Saturday of each month at the House of Peace, 17th and Walnut, from 11:00 a.m. to 12:30 p.m.

Jewish Community Center (JCC) Breast Cancer Support Group
The JCC breast cancer support group is offered by the Jewish Community Center and Sinai Samaritan Medical Center and is open to all interested women. For information contact Oza Mae Homes, RN, BSN, OCN at 219-7360.
- Meets every other Thursday from 1:00 a.m. to 12:00 p.m. Sessions run from September through May.
Other Cancer Support Groups

The following support groups were organized specifically to support people with cancer and their families and friends. There is no charge for attending these groups. Patients and families are encouraged to attend as many sessions as they wish.

For more information about cancer support groups within the Metro Region of Aurora Health Care, please call the Vince Lombardi Cancer Hotline at 649-7200 in Milwaukee or 1-800-252-2990 outside Milwaukee.

Your Caring Connection

For people who have experienced cancer, their families and friends. Topics of discussion focus on many aspects of cancer education, with presentations given by St. Luke’s Medical Center doctors, nurses, social workers, psychologists, chaplains, and other health care professionals.

- Meets the second and fourth Monday of each month from 6:30 to 8 p.m. in the Radiation Oncology Conference Room at St. Luke’s Medical Center. Registration is not required.

Make Today Count

For people with cancer or other life-threatening illnesses. Co-sponsored by St. Luke’s and the American Cancer Society, the group helps improve the quality of life for people with serious illness through positive support and open communication.

- Meets the fourth Thursday of each month from 7:00 to 8:30 p.m. at St. Luke’s South Shore, 5900 South Lake Drive.

Positive People

For people with cancer, their families and friends. By sharing experiences, gaining insight and information, participants strive to find a new and positive attitude.

- Meets the second Wednesday of each month from 7:00 to 8:30 p.m. at West Allis Memorial Hospital. For more information, call 328-6220.

US TOO

Prostate Cancer Support Group

For men who have experienced prostate cancer, their families and friends. Sessions are facilitated by a clinical nurse specialist, chaplain, physician and/or other health care professionals.

- Meets the first Thursday of each month from 1:00 to 2:30 p.m. or 7:00 to 8:30 p.m. at St. Luke’s Medical Center.

- Meets the first Wednesday of each month from 7:00 to 8:30 p.m. at St. Luke’s New Berlin Health Care Center, 14555 West National Avenue.

- Meets the first Wednesday of each month from 9:00 to 11:30 a.m. at Aurora Medical Group Northshore, 8706 North Port Washington Road.

Ovarian Cancer Awareness Group

For women who are at risk for or who have been diagnosed with ovarian cancer. Health care professionals offer educational information on risk factors and the latest treatment options, and provide an opportunity for communication and emotional support.

- Meets the first Tuesday of each month from 6:30 to 8:00 p.m. in the Vince Lombardi Cancer Clinic at St. Luke’s Medical Center.
The Kid’s Connection
For children ages 5 through 18 whose parent or loved one has cancer. Participation helps children learn about cancer, express their feelings and discuss their experiences with other children. Sessions are facilitated by St. Luke's child life and cancer nursing specialists.
- **Meets for four weekly sessions at St. Luke’s Medical Center. Registration is required. For more information, call the Vince Lombardi Cancer Hotline at 649-7200 or 1-800-252-2990.**

The ABMT Support Group
For people who have undergone an autologous bone marrow transplant (ABMT). Facilitated by members of St. Luke's ABMT team, the group offers support and educational information in a nurturing environment.
- **Meets in the Vince Lombardi Cancer Clinic at St. Luke’s Medical Center. For information on dates and times, call the Vince Lombardi Cancer Hotline at 649-7200 or 1-800-252-2990.**

Look Good . . . Feel Better
For people who are undergoing cancer treatment. This program presents techniques to help people gain control and ever triumph over the cosmetic side effects of treatment. Topics of discussion and demonstration include hair styling, wigs, scarves, nails, skin care and make-up. This program is sponsored by St. Luke's Medical Center and the American Cancer Society in affiliation with experts from the cosmetics industry.
- **Meets six Mondays per year from 1:00 to 4:00 p.m. Call 649-7200 or 1-800-252-2990 for specific dates and locations.**

Refocusing on Hope
For people with primary brain tumors. Sessions are facilitated by nurses who work directly with people who have brain tumors.
- **Meets the second Wednesday of each month from 7:00 to 8:30 p.m. in the Radiation Oncology area at St. Luke’s Medical Center.**
Special Events

Aurora Health Care was involved in several special events in 1997 to help raise awareness of certain types of cancer and to educate individuals about their risk and the importance of early detection.

Two special events were held at Sinai Samaritan Medical Center in April. The Breast Self Examination Group met April 8 to hold Breast Health Facilitator Training and on April 30, Oncology Nursing Day was celebrated by having nurses familiarize themselves with all aspects of outpatient and inpatient oncology care through participation in a "treasure hunt."

On May 4, an 88-member team, comprised of staff, patients, family and friends walked in the Strides Against Breast Cancer, a five-mile walk along the lakefront sponsored by the American Cancer Society. The Aurora team raised $2,710 in support of breast cancer research.

In June, St. Luke’s Breast Care Program organized the local portion of the BMW Drive For The Cure, an event designed to increase awareness for early detection of breast cancer as well as to raise money to further the mission of the Susan G. Komen Foundation, a national organization for breast cancer research and awareness. Two caravans of specially-marked BMW vehicles simultaneously drove across the United States, stopping in more than 90 cities where local dealerships hosted special activities. Each leg of the journey required volunteer drivers for the cars. BMW donated one dollar for each mile driven in each car during the tour and in test drives. The national goal of one million miles/dollars was surpassed.

In November the hospitals in the Aurora Metro Region endorsed the Great American Smoke Out by displaying posters and flyers encouraging patients to quit smoking. The project was in conjunction with the NICO Free Teens Project in which St. Luke's Medical Center partnered with the American Cancer Society, the West Allis Health Department and Nathan Hale High School in creating a youth smoking cessation pilot program during the Fall 1997. This was a peer led program mentored by the Cancer Services staff from St. Luke's Medical Center.

In recognition of Breast Cancer Awareness Month in October, Aurora Health Care and WTMJ-TV formed a community partnership to promote breast health to women in the Channel 4 viewing area. Throughout the month, promotional spots and news stories highlighted patients and promoted breast care. Breast health experts manned a telephone bank to answer callers’ questions and take requests for a free breast health kit from Aurora Health Care. The kit included information on breast self exam, the location of Aurora mammography sites in southeastern Wisconsin and a coupon for a discounted mammogram.

Cancer Conferences in the Aurora Metro Region

Tumor Board cancer conferences are held weekly at St. Luke's Medical Center, Sinai Samaritan Medical Center and West Allis Memorial Hospital and twice each month at Hartford Memorial Hospital. These oncology-specific conferences represent a team approach to care for Aurora Health Care cancer patients, as well as being an educational tool for the entire spectrum of health care providers. Pathology slides and pertinent radiology films are reviewed, and opinions on treatment options are rendered by specialists from medical oncology, radiation oncology, surgery and other disciplines. This enables the managing physicians to better advise patients of their treatment choices and allows patients to make informed decisions regarding their care. Each facility presents at least 10 percent of its analytic caseload with an average of three cases presented each week. The majority of the discussion focuses on prospective cancer cases with a limited number of didactic lectures for educational purposes of new treatment approaches and techniques. Video conferencing capability is being experimented with for broadcasting didactic type lectures across the region.

As referred to previously in this report, Breast Cancer Conferences are another prospective multidisciplinary conference held on a regular basis at St. Luke's Medical Center and Sinai Samaritan Medical Center.

AURORA METRO REGION CANCER CONFERENCES

- St. Luke's Medical Center holds Tumor Board Conferences on Mondays at 12:00 p.m. in HS3.
- St. Luke's Medical Center holds Breast Conferences on the first and third Wednesdays of the month at 7:30 a.m. in HS3.
- St. Luke's Medical Center dedicates the third Monday of each month to Head and Neck Tumor Conferences.
- Sinai Samaritan Medical Center's Tumor Board Conferences are on Fridays at 12:00 p.m. in Rapkin Auditorium.
- Sinai Samaritan Medical Center's Breast Conference is dedicated to the fourth Friday of the month.
- West Allis Memorial Hospital holds conferences on Fridays at 12:00 p.m. in conference room A/B.
- Hartford Memorial Hospital holds conferences during the fourth week of each month. Contact the Department of Pathology for dates and times.
- St. Luke's South Shore holds conferences every other month. Contact the clinical data registry for dates and times.

Each facility is accredited by the State Medical Society of Wisconsin to sponsor continuing medical education for physicians and designates these continuing medical education programs for 1 credit hour in category 1 of the physician's recognition award of the American Medical Association.
Regional Cancer Registry Report
Lisa Robinson, RRA, CTR

In 1997, regionalization plans were underway to promote unity among the Aurora Health Care facilities in Southeastern Wisconsin. One of the regional plans for the Clinical Information Services (CIS) Department, headed by Catherine Ptak, RRA, Director, was to unify the registries at St. Luke's Medical Center, Sinai Samaritan Medical Center and West Allis Memorial Hospital.

The tumor registry of the past would take on new responsibilities and a new name. The cancer registrars at each facility are now called "Clinical Data Registrars." Still highly skilled at collecting cancer data, the registrars also collect cardiac, perinatal, protocol and outcome data. Between the three facilities, Aurora Health Care employs seven certified tumor registrars (CTRs), with others credentialed as Registered Record Administrators (RRA) or Accredited Record Technicians (ART). To maintain a high level of knowledge, employees are required to attend a variety of continuing educational activities on a yearly basis, including weekly tumor board meetings, the National Cancer Registrars Association (NCRA) Meetings, the Wisconsin Cancer Registrars Association (WCRA) Meetings, the Southeastern Wisconsin Cancer Conference (SEWCC), and the Annual Commission on Cancer (COC) meeting held in Chicago.

The Cancer Programs at Sinai Samaritan Medical Center, St. Luke's Medical Center and West Allis Memorial Hospital are all approved cancer programs and follow the guidelines set forth by the American College of Surgeons "Commission on Cancer." The Aurora Health Care Metro Region is well on its way to accomplishing the goal of becoming one of the first networked-approved cancer programs in the country. In striving toward that goal, each of our cancer programs has been, or is expected to receive, full four-year approval, the highest award a cancer program can receive. By achieving excellence first as individual institutions, we can then lead the way for being the best health care provider network of cancer programs in the country.

As with any approved cancer program, the cancer registries of our hospitals are essential in bringing together all the pieces of the cancer program. Registrars are responsible for the components listed below, which ultimately reflect the care our facilities provide to patients.

The registries in the Metro Region of Aurora Health Care take pride in providing timely, consistent and quality data to our customers. The following statistical data are provided by each of our hospitals. If you would like more information on how the clinical data registries can provide data, please call (414) 649-7290.

REGISTRARS

- Casefind and abstract cancer patient demographics, workup, treatment and outcome.
- Provide survival statistics by conducting annual surveillance of accessioned cancer patients.
- Plan, organize and promote educational multidisciplinary cancer conferences.
- Participate in hospital and ACOS recommended quality improvement studies.
- Submit required data to the State and the National Cancer Data Bases (NCDB).
- Respond to requests for information, and distribute yearly statistics for administrative planning.
- Initiate and evaluate the quality control review of 10% of the abstracted analytical cases.
- Actively participate in cancer committee and cancer care service meetings.
Statistical Summary Review of 1997 Data

January 1, 1985 is the reference year for which the cancer registries at St. Luke's Medical Center (SLMC) and Sinai Samaritan Medical Center (SSMC) have been actively accessioning and following cancer cases. West Allis Memorial Hospital's (WAMH) reference date is 1978. The number of new cancer cases continues to increase at St. Luke's Medical Center (1,868) while the number of cases at Sinai Samaritan Medical Center (316) and West Allis Memorial Hospital (464) has decreased. This change in distribution coincided with changes in contracts with managed care providers and regionalization of services throughout the Metro Region of Aurora Health Care.

The Cancer Registries in the approved cancer programs of the Metro Region of Aurora Health Care accessioned a total of 2,666 new cancer cases in 1997. Of these cases, 2,298 were analytical (newly diagnosed and/or treated at a Metro facility) and 368 cases were non-analytical (previously diagnosed and/or treated elsewhere). Currently, cases are entered into separate databases at each hospital. Future plans include integrating the disparate systems into one multi-hospital networked software for all sites.
This figure compares the top five cancer sites at each facility. All hospitals had the same common sites with the exception of Sinai Samaritan Medical Center, where cervix surpassed bladder in part due to the Women’s Health Center. Each site was comparable to the state and national statistics with the exception of prostate. National statistics reflect the increased incidence of prostate cancer being diagnosed and treated outside of hospitals.
A grouped comparison of diagnosis according to general summary stage is graphed by site above for a combined look at the Metro Region. Bladder, breast and prostate are three sites that are diagnosed at a relatively early stage of disease, whereas lung and colorectal had a higher percentage of patients that were diagnosed during a later stage of disease.

The hospitals in the Metro Region of Aurora Health Care compare favorably to the incidence by stage from the state statistics. Bladder, breast and prostate cancer cases are diagnosed at an earlier stage than lung and colorectal cancers. Aurora's colorectal cases are diagnosed at an earlier stage than is the trend at the state level.
Race Distribution
Aurora Metro Region Hospitals 1997

<table>
<thead>
<tr>
<th></th>
<th>White</th>
<th>African-American</th>
<th>Native American</th>
<th>Asian</th>
<th>Other</th>
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</thead>
<tbody>
<tr>
<td>SLMC</td>
<td>97%</td>
<td>2%</td>
<td>.25%</td>
<td>.25%</td>
<td>.5%</td>
</tr>
<tr>
<td>SSMC</td>
<td>40%</td>
<td>56%</td>
<td>.6%</td>
<td>1.2%</td>
<td>2.2%</td>
</tr>
<tr>
<td>WAMH</td>
<td>99%</td>
<td>.05%</td>
<td>0</td>
<td>.05%</td>
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</table>

Ethnicity of the 2,666 cases accrued in 1997 is shown in Table 1. The population served at SLMC and WAMH is predominately white. By contrast, the central city location of SSMC serves a more diverse multicultural population.

Gender 1997 by Facility

Of the newly diagnosed cancer cases, distribution by age and sex shows that a cancer diagnosis is most frequently found in those between the ages of 60-69 for men, and 70-79 for women. The increased frequency of women developing cancer under the age of 50 is reflective of the screenings for women's malignancies at an earlier age than men, i.e. mammograms and pap smears.
Follow-up is maintained on all patients in the registries excluding basal and squamous cell carcinomas of the skin (T0-T1), carcinoma in situ of the cervix and foreign residents. Lifetime follow-up provides a continuous prospective of the results of treatment and survival outcome, as well as serving as a reminder to physicians and patients about the importance of yearly follow-up. The follow-up success rate is maintained above the ACoS standard at all of our facilities on a regular basis.
<table>
<thead>
<tr>
<th>Tumor Site</th>
<th>SLMC</th>
<th>SSMC</th>
<th>WAMH</th>
<th>TOTAL</th>
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<tr>
<td>BREAST</td>
<td>296</td>
<td>90</td>
<td>78</td>
<td>464</td>
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<tr>
<td>LUNG</td>
<td>240</td>
<td>33</td>
<td>65</td>
<td>338</td>
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<tr>
<td>PROSTATE</td>
<td>260</td>
<td>17</td>
<td>58</td>
<td>335</td>
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<td>COLORECTAL</td>
<td>208</td>
<td>45</td>
<td>72</td>
<td>325</td>
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<td>BLADDER/URETER</td>
<td>92</td>
<td>5</td>
<td>32</td>
<td>129</td>
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<td>LYMPHOMA</td>
<td>62</td>
<td>7</td>
<td>23</td>
<td>92</td>
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<td>11</td>
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<tr>
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<td>66</td>
<td>5</td>
<td>9</td>
<td>80</td>
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<td>SKIN*</td>
<td>52</td>
<td>9</td>
<td>8</td>
<td>69</td>
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<tr>
<td>ENDOMETRIUM</td>
<td>39</td>
<td>11</td>
<td>20</td>
<td>70</td>
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<td>5</td>
<td>36</td>
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<td>LARYNX</td>
<td>26</td>
<td>2</td>
<td>8</td>
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<td>LIVER</td>
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<td>PLEURA</td>
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<td>BONE</td>
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<td>EYE/ADNEXA</td>
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<td>1</td>
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<td>ANUS</td>
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<td>6</td>
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<td>BASAL AND TI SCC OF SKIN</td>
<td>158</td>
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<td><strong>TOTALS</strong></td>
<td><strong>1886</strong></td>
<td><strong>315</strong></td>
<td><strong>464</strong></td>
<td><strong>2666</strong></td>
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*Excludes Basal and T1 SCC of skin*
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<tr>
<th>Departments &amp; Clinics</th>
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<tbody>
<tr>
<td>8 GHJK (Inpatient Unit)</td>
<td>Clinical Nurse Specialist</td>
</tr>
<tr>
<td>(414) 649-6477</td>
<td>(Vince Lombardi Cancer Clinic)</td>
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<tr>
<td>Radiation Therapy</td>
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<td>(414) 649-6420</td>
<td>Communicare Express Van (Transportation)</td>
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<td>Vince Lombardi Cancer Clinic</td>
<td>(414) 649-6123</td>
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<td>St. Luke's Medical Center</td>
<td>Dietitian (Nutritional Services)</td>
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<tr>
<td>(414) 649-6380</td>
<td>(414) 649-7672</td>
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<tr>
<td>Vince Lombardi Cancer Clinic-Slinger</td>
<td>Outpatient Cancer Services Pharmacist</td>
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<tr>
<td>(414) 644-2960</td>
<td>(414) 649-6468</td>
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<td>Women's Health Unit</td>
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<tr>
<td>(414) 649-6521</td>
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<tr>
<td>Treatment Programs</td>
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<td>Autologous Bone Marrow Transplant Program</td>
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<td>Breast Care Program Coordinator</td>
<td>(414) 649-7200</td>
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<tr>
<td>(414) 649-7605</td>
<td>Education/Resources</td>
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<tr>
<td>GYN Cancer Surgical Services</td>
<td>Financial Counseling</td>
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<td>(414) 649-6380</td>
<td>(414) 649-7939</td>
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<td>Head and Neck Cancer Services Coordinator</td>
<td>Clinical Data Registry</td>
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<tr>
<td>(414) 649-7823</td>
<td>(414) 649-7290</td>
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<td>Immunotherapy/Gene Therapy Program</td>
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<tr>
<td>(414) 649-7823</td>
<td>(414) 649-7356</td>
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<tr>
<td>Musculoskeletal Cancer Program Coordinator</td>
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<td>(414) 649-6178</td>
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<td>Neurosurgical Services</td>
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<tr>
<td>1-888-50-Brain</td>
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<td>Radiation Therapy</td>
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<td>(414) 649-6420</td>
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</table>
ST. LUKE'S SOUTH SHORE

Outpatient Oncology
(414) 489-4051

SINAI SAMARITAN MEDICAL CENTER

Departments and Clinics
4 South (Inpatient Unit)
(414) 219-6399

Medical Oncology Clinic
(414) 219-7370

Radiation Therapy
(414) 219-7140

Women's Care Center
(414) 219-5727

Treatment Programs
Breast Health Center
(414) 219-7360

Support Services
Clinical Nurse Specialist
(414) 219-7321

Freedom 55/65 Courtesy Van Services
(Transportation)
(414) 219-5444

Pastoral Care Department
(414) 219-6080

Social Services
(414) 219-7562

Education/Resources
Clinical Data Registry
(414) 219-6039

Medical Library
(414) 219-6710

WEST ALLIS MEMORIAL HOSPITAL

Departments
4 South (Inpatient Unit)
(414) 328-6545

Medical Oncology Clinic
(414) 328-8850

Radiation Therapy
(414) 328-6460

Treatment Programs
Breast Care Program Coordinator
Nancy Rhodes
(414) 328-7407

Support Services
Clinical Nurse Specialist
(414) 328-6281

Freedom 55/65
(414) 328-7410

Pastoral Care Department
(414) 328-6845

Social Services
(414) 328-6188

West Allis Memorial Hospital Van Service (Transportation)
(414) 328-7433

Education/Resources
Clinical Data Registry
(414) 328-7122

Medical Library
(414) 328-7910
Cancer Committee Membership 1997
By Aurora Metro Region Hospitals

St. Luke's Medical Center
Marcia Richards, MD - Chairman, Radiation Oncology
Marc Catalano, MD - Gastroenterology
Aileen Denny, MD - Medical Oncology
Jeffrey Derus, MD - Urology
William Deshur, MD - Surgery
Ajit Divgi, MD - Medical Oncology
John Hanson, MD - Medical Oncology
Ronald Hart, MD - Medical Oncology
Elmer Lehman, MD - Gynecologic Oncology
Howard Lewis - Radiation Oncology
Mahmood Mirhoseini, MD - Cardiothoracic Surgery
Gordon Mortensen, MD - Anesthesiology
David Munoz, MD - Family Practice
Michael Nordstrom, MD - Otolaryngology
William Pao, MD - Radiation Oncology
Jorge Pellegreni, MD - Pathology
Nancy Petro, MD - Surgery
Elaine Thomas, MD - Pediatrics
Jonathon Treisman, MD - Medical Oncology
Mark Wenzel, MD - Radiology
Vicky George, RN - Administration
Patty Ahella, RN - Oncology Nursing
Marija Bjegovich Weidman, RN - Cancer Services
Sandy Blixt, RRA - Cancer Registry
Mary Fields - Business and Market Development
Sheri Hackbarth, RRA - Cancer Registry
Elizabeth Hansen, RN - Research
Kristine Hegmann - Quality Management
Vicky Koceja - RN, OCN - Inpatient Nursing
Pam Lyon, RN, OCN - ABMT Program
Marica Marino - Pastoral Care
Grace Jessen, CICSW - Social Work
JoAnn Paulson, RN - Visiting Nurse Association
Mary Schmidt, RN, MS, AOCN - CNS 8GHJK
Ellen Toth - Information Systems
Kerry Twite, RN, OCN - CNS - Vince Lombardi Cancer Clinic
Phil Whitton, RTT - Manager Radiation Oncology
Sol Yoder, PharmD - Pharmacy
Sinai Samaritan Medical Center
William Donegan, MD - Chairman, Surgery
Betty Amuzu, MD - OB/GYN
Reuben Eisenstein, MD - Pathology
Howard Johnson, MD - Radiology
Thomas Kinney, MD - Plastic Surgery
Scott Levin, DDS - Oral Surgery
Mitchell Pincus, MD - Radiation Oncology
Gary Shapiro, MD - Medical Oncology
Marjorie Strack, MD - Medical Oncology
Len Wilk, FACHE - Administration
Marija Bjegovich Weidman, RN - Cancer Services
Nancy Briggs, RN, OCN - Research
Oza Holmes, RN - OCN - Breast Health Center
Julie Jensen, RN, OCN - Nursing
Janet Lotegeluaki, RN, OCN - CNS
Pam Maier, RN - Inpatient Nursing
Mary Mavraganis, MSW - Social Services
Lisa Robinson, RRA, CTR - Cancer Registry
Joan Sagan, RN, OCN - Medical Oncology
Peg Schmidt, RRA - Clinical Information Services
Judy Zillman, RN - Quality Management

West Allis Memorial Hospital
Maury Berger, MD - Chairman, Medical Oncology
Linda Barrows, MD - Physical Medicine & Rehab
Kenneth Bastin, MD - Radiation Oncology
James Dolan, MD - OB/GYN
Donald Feinsilver, MD - Psychiatry
John Hanson, Jr., MD - Medical Oncology
Ronald Hart, MD - Medical Oncology
Rakesh Jagetia, MD - Radiation Oncology
John Kelly, MD - Otolaryngology
Thoms Lass, MD - Anesthesiology
Samuel Otto, MD - Urology
Terrance Roth, MD - Surgery
Steven Sperling, MD - Radiology
Rodolfo Suaverde, MD - Family Practice
Shelly Underhill, MD - Pathology
Rick Kellar - Administration
Marija Bjegovich Weidman, RN - Cancer Services
Priscilla Eckert, ART, CTR - Cancer Registry
Pat Kadic, RN - OPD Nursing
Dale Miller, RPH - Pharmacy
Becky Pogacz, MSN - Inpatient Oncology
Blanch Schearer, RN - Oncology Nursing
Vicky Shackley, RN - Quality Management
Patricia Stoll, MSW - Social Services
Phil Whitton - Radiation Oncology