NORTHWEST HOSPITAL & MEDICAL CENTER

2005
CANCER PROGRAM ANNUAL REPORT

With Statistical Data from 2004

Photo by Nichole DeMent

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NORTHWEST HOSPITAL & MEDICAL CENTER

Mission

Our Mission is to raise the long-term health status of our community by providing personalized quality care with compassion, dignity, and respect.

Vision

Northwest Hospital is a community of caring health professionals, valued and recognized for promoting wellness through early detection and prevention, minimally invasive interventions, and innovative clinical practices.

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CANCER COMMITTEE CHAIRMAN'S REPORT

Welcome. I present to you Northwest Hospital & Medical Center's 2005 Cancer Annual Report with annualized data from 2004. As always, data is from the previous year, allowing us to project for the coming year.

New progress in cancer treatment has extended lives, nearly doubling some as in those with colorectal cancer. New treatments for breast cancer with targeted therapies offer hope for chronicity instead of a short-term survival, and hope for pancreatic and renal cell cancers in the near future. New therapies for lung cancer along with new radiation modalities offer new avenues of treatment. In short, there are new innovations around the corner for all different forms of cancer types.

With new treatments and hope, we also face new challenges ahead for cancer care in 2006. This will be the year that Congress has set to start the new Medicare Modernization Act or MMA, resulting in changes in cancer care with substantial funding cuts in the range of $300 to 400 million dollars. I raise this point since it will have a major impact in the way care will be provided to our seniors, and followed by other insurances. Although Congress has set aside monies to help with prescription drug with the Drug Prescription card, monies have been shifted from cancer care. The hospital and free standing clinics will be facing new challenges in care and funding for the coming years unless Congress notes the radical changes that they have imparted to cancer care for this country. The many new therapies that have been developed may never be realized by some, given the sheer cost of these novel treatments. One way that you can have a part in changing this is by writing your Senators and Congressmen and let your concerns be heard.

On October 29, 2005, the biennial hospital Gala occurred. This was the second gala event focused on cancer care at Northwest Hospital & Medical Center and was a blockbuster event. Monies raised at this fundraiser will be used for a dedicated oncology unit. The Seattle Breast Center has used the funds raised during the 2003 gala wisely, adding one of only two premier breast MRI units in the Pacific Northwest with biopsy capabilities. They have improved the Center to provide for higher capacity and services to the community. It is also home to the largest donated wig bank in the Northwest. We thank all who were previous donors, as well as continued supporters. Although the Gala is over, it is never too late to donate funds for the oncology unit. For those with a loved one with cancer, this goes unspoken in what it means to have a dedicated unit with specialized care from qualified doctors, nurses and aids.

A reminder to all, as of January 1, 2006, Northwest Hospital is a NO SMOKING campus. The cancer committee and the hospital had been preparing for this date for over a year. All employees have been given an incentive to stop smoking or given assistance in ways to stop. Signs have been posted throughout the campus. Smokers identified on campus will be asked to move off campus and encouraged to stop smoking. This has been a huge undertaking with lots of accolades to Gayle Ward and her team for their perseverance and accomplishment of this goal for the hospital and patients.

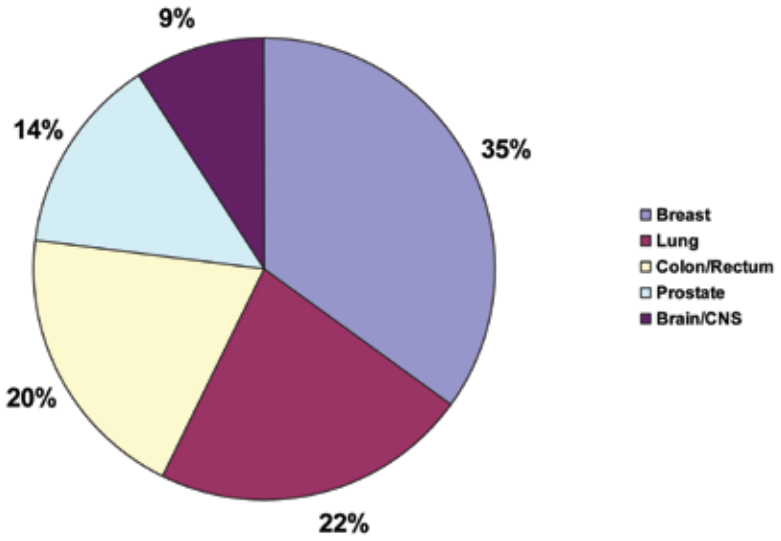
I can say again with pride, that Northwest Hospital & Medical Center again passed our 3 year survey and attained the recognition of "Comprehensive Community Cancer Center". This was our 4th survey since attaining this level of accomplishment in 1995. Accolades to the team for their hard work.

Finally, as always, I thank everyone on the committee for their dedication and time to making Northwest Hospital a great place to be treated for cancer now and continually better in the future.

Sincerely

David E. Dong, MD

TOP FIVE SITES FOR 2004



MESSAGE FROM ACoS PHYSICIAN LIAISON

The cancer committee at Northwest Hospital & Medical Center (NWHMC) represents the full spectrum of individuals involved in the care of cancer patients at Northwest Hospital. The committee provides evaluation, oversight, and guidance to the greater cancer program at NWHMC with the goal of ongoing improvement in cancer research, education, prevention, and treatment. The committee also overseas the cancer registry, which gathers and analyzes cancer data, insuring continued quality improvement in all aspects of cancer care.

Mark H. Kimmins, MD
ACoS Physician Liaison

Our mission at Northwest Hospital & Medical Center is to accurately, expertly, and compassionately help the patient with cancer through all phases of illness, including diagnosis, treatment, rehabilitation, and management of symptoms. Our vision is to provide our patients and community with the best cancer prevention and care available by expert, caring, and skilled professionals in an environment of respect and dignity. We take this role seriously and continuously strive to improve.

As demonstrated in this Annual Report, many meaningful improvements and accomplishments took place in 2005. After more than a year of preparation, Northwest Hospital & Medical Center went completely smoke free on January 1, 2006. The 2005 Northwest Hospital Gala successfully raised money for a new cancer care unit. Significant improvements in breast cancer care included: more accurate preoperative staging and neoadjuvant chemotherapy; advances in whole breast and partial breast radiotherapy; and development of post surgical nutritional and rehabilitation programs. A great example of these innovative programs was the development of Northwest Hospital's "Northwest Casting Call," a fly-fishing program to help breast cancer patients both physically and spiritually. Overall, there has been increased attention to multidisciplinary and multimodality approach to treating patients with cancer. This is now leading to significant improvements in survival in malignancies such as colon and rectal cancer.

Breast Cancer Treatment at Northwest: A Patient Story

by Richelle Kerns, Media/Public Relations Coordinator

Gloria Rigby has always been diligent about having her mammograms every year. However, shortly before her regularly scheduled mammogram in April 2002, she made a startling discovery on her own – a lump in her breast.

"If I had to go through having breast cancer, I'm glad that I went through it at a place where I received such excellent care."
- Gloria Rigby

She immediately scheduled an appointment with her gynecologist who referred her to the Seattle Breast Center (SBC) where further testing confirmed that she had a 2-centimeter tumor. Under the guidance of her physicians at the Seattle Breast Center, the Puget Sound Cancer Center and the Swedish Tumor Institute at Northwest Hospital, Gloria underwent chemotherapy, surgery, and radiation treatment. Today, Gloria has been cancer free for more than three years, and says that she is very grateful for the quality of patient care that she received while at Northwest Hospital.

"I can't say enough great things about the doctors and nurses at Northwest Hospital," she says. "Every stone was overturned when it came to monitoring and treating my cancer. If I had to go through having breast cancer, I'm glad that I went through it at a place where I received such excellent care."

The comprehensive cancer care that Gloria received at Northwest Hospital included monitoring through Northwest Hospital's Lymphedema Management Program. The program works with patients to treat and prevent lymphedema, or swelling in the arms or legs caused by excess fluid buildup in the lymphatic system, a condition that can occur post-mastectomy or during radiation therapy.

Today, she continues to meet with her Medical Oncologist, Dr. Doug Lee at Puget Sound Cancer Center every six months for follow up care. Eventually, she will meet with Dr. Lee just once a year to continue to monitor her health.

"I felt like all of the bases were covered and monitored," Gloria says. "It's comforting to know that we are following it closely in case something comes up in the future."

In addition to regular follow-up care with her physicians, Gloria is also following a low-fat diet and exercising regularly to help prevent a future recurrence of breast cancer.

"I am taking better care of myself and in the best shape I've ever been in my life," Gloria says. "In that aspect, having breast cancer has had a positive impact on my life."

• HIGHLIGHTS OF 2005 ACCOMPLISHMENTS •

Cancer Registry

The Cancer Registry and Cancer Program at Northwest Hospital & Medical Center underwent their American College of Surgeons Commission on Cancer Reaccreditation Survey on May 18, 2005, and were granted a three-year approval. During that survey, the program received five commendation ratings, the first ever since its inception. This honor would not have been possible were it not for the hardworking, inspiring leadership of a dedicated administration, physicians, and ancillary personnel who are committed to providing excellence in cancer care throughout our community.

In 2004, 558 analytic cases were accessioned into the Cancer Registry database, and Cancer Registry staff works closely with the Cancer Surveillance System at the Fred Hutchinson Cancer Research Center in submitting cases to the Washington State Cancer Registry. The top five sites are breast, lung, colon and rectum, prostate, and brain/CNS. In addition, throughout 2005, the cancer registrar maintained an impressive 7-9% five year lost-to-follow-up rate on approximately 4,000 patients. The Cancer Registry was instrumental in implementing a new procedure for AJCC stage form placement, which increased stage form placement by 42%.

Cancer Registry data is an invaluable tool, not only to cancer programs, but to the overall strategic plan of its institution in general. The cancer registry staff is not only relegated to data collection, but also, the staff assists in whatever avenue necessary to ensure a high quality of life for cancer patients and their families. In times of outsourcing, tight budgets, and increased workloads, cancer registrars can raise the bar of excellence with continual quality improvement monitoring in all aspects of data collection and registry operations. Information can also be analyzed to assist in program development for meeting patient needs.

Cancer Conference/Tumor Board Activities

Tumor Board, Breast, and Chest Conferences continue to play a vital role in the high standard of staging, treatment planning, and care for cancer patients, and their families at Northwest Hospital. Each conference is comprised of a multidisciplinary team of physicians, nurses, and other hospital-wide ancillary personnel. Breast Conference and Tumor Board meet each Wednesday from 7:00 to 8:00 a.m. and 12:30 to 1:30 p.m., respectively, and Chest Conference meets on the 2nd and 4th Tuesdays of each month from 7:00 to 8:00 a.m. All meetings are held in the Cancer Center Conference Room. One hour of Category I CME Credit is granted to attendees at each of the three meetings.

Photo by Nichole DeMent

During 2005, approximately 446 (80%) of our 558 newly diagnosed cases were discussed, prospectively, at one of the 120 meetings held throughout the year. Primary site discussion included not only the top five sites diagnosed at Northwest Hospital such as breast, lung, colon and rectum, prostate, and brain, but also sites of kidney, bladder, pancreas, lymphoid neoplasms, GYN, skin/melanoma, carcinoids, oral cancers, and metastatic cancers. In addition, a wide range of related topics such as the new NCCN Lung Cancer Guidelines, Gene Testing, Updates in Early Stage Breast Cancer, Columnar Cell Lesion of the Breast, Stage I ER/PR Negative Low-Fat Diet Effects on Survival, Tumor Marker Study, and Cyberknife Treatment in Lung Cancers were also discussed at various intervals during the year. The ongoing case management discussions and didactic conferences serve as a monitoring tool in our perpetual goal of providing a standard of excellence in cancer care in our community.

Lymphedema Update

The Lymphedema Management and Awareness Program at Northwest Hospital & Medical Center continues to grow to meet the needs of patients who suffer from or may be at risk of lymphedema. Our numbers indicate that 46% of patients seen in the Lymphedema Management Program had diagnosis of breast cancer. Fifty-four percent of the patients were referred for other cancer-related diagnosis, neurological or orthopedic conditions affecting the lymphatic system. Forty-nine percent of all patients participated in the comprehensive treatment program including massage, bandaging, exercise, and fitting for a compression garment, as necessary. The remaining 51% learned techniques and strategies to prevent lymphedema as part of our early intervention Lymphedema Awareness Program. Eighty-two percent of patients seen were female and 18% were male.

We are pleased to report that overall patient satisfaction has been positive. Occupational & Physical Therapy achieved an overall 4.5 rating on a scale of 1-5 with 5 being very satisfied. Markers include teaching explanations given to patients and/or family members, skill in care delivery, and treatment progress.

In addition, the lymphedema therapists participated in and were instrumental in developing Northwest Hospital's "Northwest Casting Call" fly-fishing program. Therapists instructed participants in safe warm up and cool down range of motion as well as stretching exercises. Participants were also provided with energy conservation and pacing techniques to use during the actual fly-fishing trip.

Elna Prothero, 65, practices tying a fly in preparation for "Northwest Casting Call - A Fly-Fishing Adventure For Life."

"Northwest Casting Call, A Fly-Fishing Adventure For Life," is a dynamic new program for breast cancer survivors that features a guided fly-fishing trip down the Yakima River. The program was developed by Dr. Sandra Vermeulen, Radiation Oncologist at Northwest Hospital in conjunction with Northwest Hospital's Center for Medical Rehabilitation and Cancer Lifeline. Fly-fishing, with its emphasis on arm and shoulder motion can help women who have had breast cancer avoid a common side effect of treatment, lymphedema, a painful condition, causing swelling in the arms and upper body and can lead to loss of mobility.

"It really isn't about catching a fish, or about the float trip on the river," Dr. Vermeulen said. "It's the idea of taking these women out of the hospital, out of their community, back to a more basic look at life. And, at the same time, you can give them a skill that's good for promoting their arm health."

During this 3-day event, women who had been affected by breast cancer had the opportunity to learn the art of fly-fishing, experience the beauty and calm of nature, and leave their everyday concerns behind them. In it's debut, eight charismatic breast cancer survivors and three Northwest Hospital physicians gathered on the beautiful Northwest Hospital campus to learn about the basics of fly-fishing, equipment, float boats, and casting techniques. Program participants were also encouraged to take part in pre- and post-trip journal writing classes taught by Cancer Lifeline. The grand finale was a guided float trip and fishing adventure with some of the state's most respected fly-fishing guides down the beautiful Yakima River. The program concluded with a celebration dinner and reflection at Lombardi's Neighborhood Italian Grill in Ballard.

Another Casting Call adventure was scheduled for April 2006, for a new group of breast cancer survivors to experience the emotional and physical benefits of fly-fishing.

Sentinel Lymph Node *by Mark T. Brakstad, MD*

Invasive breast cancer usually spreads first to lymph nodes in the area under the arm called the axilla. Knowing whether the cancer has spread to these lymph nodes is important to the prognosis and treatment of breast cancer. For the last 25 years, the standard surgical treatment for breast cancer has been mastectomy or lumpectomy and an axillary lymph node dissection. The axillary dissection removes approximately 10-15 lymph nodes for examination by a pathologist. The biggest concern with axillary lymph node removal is the possible development of lymphedema, which causes swelling of the arm. There is a 15-20% chance of lymphedema following an axillary lymph node dissection. The resulting arm swelling can be a life-long condition.

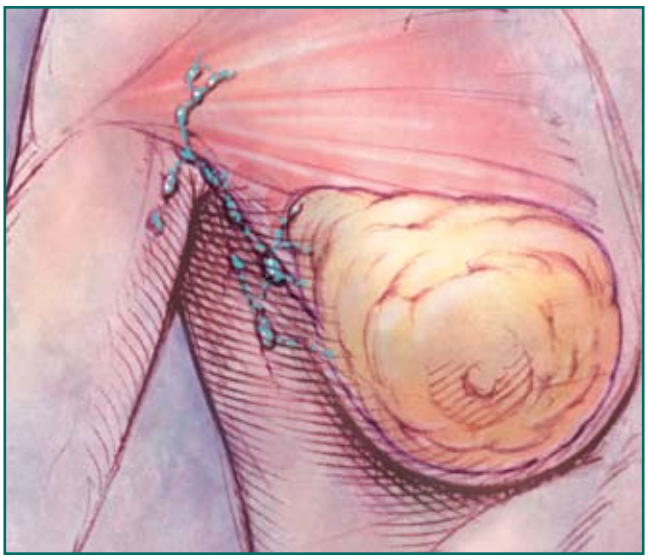
The first lymph node in the axilla where invasive breast cancer spreads is called the **sentinel node**. The abilty to identify, remove, and analyze the sentinel node can spare some patients from an axillary node dissection; therefore, decreasing the risk of lymphedema.

To find the sentinel node, a blue-dye or a radioactive colloid is used. Some centers use one or both. The dye or radioactive colloid is injected around the tumor or the areola at the time of surgery. A small incision is made in the axilla to look for the node. If the blue dye is used, the surgeon would see a "blue" lymphatic and trace it to the "blue" sentinel lymph node. If a radioactive colloid is used, a Geiger counter probe will direct the dissection to the "hot" sentinel lymph node. Usually one lymph node is removed, but at times a cluster of "blue" or "hot" nodes could be found and removed. The sentinel node is immediately analyzed by the pathologist. If no cancer is found, no further surgery is needed. If cancer is found in the node, then the patient needs axillary dissection. The sentinel node undergoes further studies and stains that take several days. Sometimes small tumor nests are found. The surgeon and oncologist will discuss further options with the patient.

The accuracy for the sentinel node procedure in detecting invasive breast cancer ranges from 85-95%. Some patients are not candidates for the sentinel node. If the sentinel node cannot be found, the patient needs an axillary dissection.

The analysis of the sentinel node has become a valuable procedure in determining the spread of breast cancer. It can help many patients avoid an axillary dissection, reducing the risk of lymphedema.

Northwest Hospital is one of the first centers utilizing sentinel node analysis. The sentinel node procedure has been performed at Northwest Hospital for many years.



Clues for the Treatment of Breast Cancer from the Pathology Examination

by Elizabeth Schmidt, MD

The widespread use of mammogram screening has resulted in earlier diagnosis of breast cancers, with an increase in the proportion of smaller invasive tumors and in situ (non-invasive) carcinomas. Decisions about how to treat breast cancer are becoming more individualized, with more options for patients and their doctors. Treatment alternatives often include a variety of surgical procedures ranging from partial mastectomy (lumpectomy) to total mastectomy and limited node sampling to complete axillary dissections as well as a variety of chemotherapy and radiotherapy options.

Information that can be obtained by pathologic examination of breast cancer tissue has also evolved. In addition to traditional diagnostic features such as tumor size and surgical margins, additional prognostic and predictive information can be determined by newer-technology methods, including evaluation of molecular and genetic characteristics of tumors. Following is a discussion of diagnostic information obtained by pathologic examination of the breast cancer tissue that can help guide treatment decisions.

Traditional Predictive and Prognostic Characteristics of Tumors:

1. ***Tumor Size***

Tumor size is the single most important predictor of disease-free and breast cancer-specific survival for patients with invasive breast carcinoma. The size of a tumor may determine decisions about appropriateness of breast-conserving surgical procedures and limited node sampling such as the sentinel node procedure. It can influence whether the patient would benefit from chemotherapy, either the traditional post-operative adjuvant therapy or the more recently introduced neo-adjuvant chemotherapy (administered before the definitive surgical procedure).

2. ***Histologic Grade***

The most widely used system for grading breast cancer is the Nottingham (modified Bloom Richardson) Scoring System. This system analyzes three characteristics of tumors (tubule formation, nuclear grade, and mitotic rate) and yields a score that translates into low, intermediate, and high grades. Tumor grade predicts survival (higher grade correlates with lower long-term survival rates) and may influence decisions regarding the use of chemotherapy and radiotherapy.

3. ***Surgical Margins***

The amount of benign tissue between the tumor and the surgical excision margin is a strong predictor of local recurrence risk. Some types of tumors, such as lobular carcinoma and ductal carcinoma in situ, are often more extensive than suggested by imaging studies and thus make it more difficult to obtain clear surgical margins with the initial surgical procedure. The size of the margin influences the need for additional surgery or radiotherapy for local control management.

4. ***Axillary Lymph Nodes***

Axillary lymph node metastases predict survival, based on the number of nodes involved and size of metastases, and can help determine the need for or type of adjuvant chemotherapy. Extracapsular extension of tumor (spread of carcinoma beyond the lymph node capsule) predicts increased risk of axillary recurrence and may require radiotherapy of the axilla. The significance of micrometastases in axillary lymph nodes is controversial at this time.

5. ***Hormone Receptors***

The presence of estrogen and progesterone receptors in the nuclei of breast cancer cells is associated with longer disease-free survival than when those receptors are absent. They also predict the likelihood of benefiting from adjuvant hormonal therapy such as tamoxifen.

Clues for the Treatment of Breast Cancer *(continued)*

Newer Methods for Evaluation of Breast Cancers:

1. *Sentinel Node Procedure*

The sentinel lymph node procedure is a relatively recent surgical innovation that has been welcomed by patients and their physicians as a method for evaluating spread of breast cancer to the axilla. Northwest Hospital physicians pioneered this technique in the Puget Sound area. The sentinel node is the first lymph node drained by the tumor and thus, in most cases, the first to be involved by metastases. It is identified by a combination of dye and radioisotope at the time of surgery and is subsequently studied more extensively than a non-sentinel node in the pathology laboratory with the use of immunohistochemical techniques (antibody-based tissue stains) and multiple microscopic sections. The status of the sentinel node predicts the status of the remaining axillary nodes. A negative sentinel node examination may obviate the need for a complete axillary dissection with the associated potential morbidity of lymphedema. A review of the sentinel lymph node cases at Northwest Hospital Pathology department from September 2003 to August 2004 showed that 13% of the 73 patients who underwent the procedure were positive for metastatic carcinoma in the sentinel node. Of those cases, more than half had metastases that were 2mm or less. Greater than 90% of the patients who underwent the sentinel node procedure were spared a complete axillary dissection.

2. *HER2/Neu Expression*

The HER2/neu gene codes for a transmembrane epidermal growth factor receptor protein that is involved in regulating the physiology, growth, and differentiation of cells. It is markedly overexpressed on the surface of tumor cells in approximately 15-20% of invasive human breast cancers. Overexpression of this protein is associated with a greater risk of recurrence than for tumors without HER2/neu overexpression. It also predicts relative resistance to certain types of chemotherapy and the potential benefit of anthracycline-based chemotherapy. Most importantly, it predicts response to a novel humanized monoclonal antibody treatment (Trastuzumab (Herceptin)) designed against this protein. Recent studies have shown an impressive increase in disease-free survival in patients with HER2/neu-positive breast cancers when treated with trastuzumab following conventional surgery, radiation, and adjuvant chemotherapy.

Testing for HER2/neu overexpression is usually done using immunohistochemical techniques, followed by Fluorescence in Situ Hybridization (FISH) technique for those tumors that have indeterminate results by immunohistochemistry.

3. *Microarray Genetic Analysis*

On the horizon are molecular biology techniques such as DNA microarray analysis that simultaneously analyzes the expression of thousands of genes to provide a gene-expression profile of an individual tumor. Such techniques have been reported to identify subgroups of poor prognosis patients with an increased risk of distant metastases. These techniques are in the early stages of clinical evaluation but will likely become more widely used in the future.

2004 NEW CANCER CASES
Site Distribution Report

PRIMARY SITE	TOTAL	SEX		CLASS		DOMINANT AJCC STAGE GROUP						
		Male	Female	Analyt	Nonan	0	I	II	III	IV	None	Unkown
Oral	7	6	1	7	0	0	0	0	2	4	0	1
Esophagus	5	2	3	5	0	0	0	0	0	3	0	2
Stomach	5	2	3	5	0	0	2	0	2	1	0	0
Colon	46	19	27	46	0	1	11	11	11	11	0	1
Rectum	15	10	5	15	0	1	4	5	4	1	0	0
Liver/Biliar	7	4	3	7	0	0	0	2	1	2	0	2
Pancreas	16	8	8	16	0	0	2	4	2	5	0	3
Larynx	1	0	1	1	0	0	0	0	1	0	0	0
Lung	82	36	46	82	0	1	19	7	13	44	0	4
Connective	0	0	0	0	0	0	0	0	0	0	0	0
Skin/Melanoma	7	4	3	7	0	0	4	1	0	1	0	1
Breast	125	2	123	124	1	31	43	32	8	5	1	5
Cervix Uteri	3	0	3	3	0	0	3	0	0	0	0	0
Corpus Uteri	10	0	10	10	0	0	4	0	3	0	0	3
Ovary	5	0	5	5	0	0	1	0	1	3	0	0
Prostate	42	42	0	41	1	0	0	28	6	7	0	1
Testis	3	3	0	3	0	0	1	1	1	0	0	0
Bladder	30	20	10	30	0	22	5	1	0	2	0	0
Kidney/Other	16	9	7	16	0	2	10	1	0	3	0	0
Brain/CNS	35	9	26	35	0	0	0	0	0	0	35	0
Thyroid	4	0	4	4	0	0	1	1	0	1	0	1
Leukemia	12	6	6	11	0	0	0	0	0	0	12	0
Lymphoma	27	12	15	27	1	0	5	1	6	1	1	1
Other	55	25	30	55	0	1	4	1	1	3	45	0
Total	**558**	**219**	**339**	**555**	**3**	**59**	**113**	**96**	**62**	**109**	**94**	**25**

(c) ONCO, Inc. 1997

STAGE OF DISEASE: The extent to which the tumor has progressed as indicated by all diagnostic and therapeutic e
extent of disease for all tumors using the AJCC TNM staging guide.

N/A: Certain tumors, including carcinoid tumors, non-malignant brain tumors, and GI NOS have no staging assign

STUDY GROUP: 124 BREAST CANCER CASES
Stage Grouping - Cases by Category

Treatment Combination	0	I	II	III	IV	Unknown	Total
Surgery (S)	15	8	12	2	0	0	37
Radiation (R)	0	1	0	0	1	0	2
Chemo (C)	0	2	3	2	0	0	7
Hormone (H)	0	1	0	0	0	0	1
BRM (B)	0	0	0	0	0	0	0
Other (O)	0	0	0	0	0	0	0
S + R	9	13	8	0	0	0	30
S + C	0	1	0	1	1	0	3
S + H	0	2	0	0	0	0	2
S + B	0	0	0	0	0	0	0
S + O	0	0	0	0	0	0	0
R + C	0	0	0	0	0	0	0
R + H	0	0	0	0	0	0	0
R + B	0	0	0	0	0	0	0
C + H	0	0	1	0	1	0	2
C + B	0	0	0	0	0	0	0
S + R + C	0	0	1	0	1	0	2
S + R + H	0	1	1	0	0	0	2
S + C + H	0	0	0	0	0	0	0
R + C + H	0	0	0	0	0	0	0
S + R + C + H	0	0	0	0	0	0	0
Other Combo	0	0	0	0	0	0	0
Treated	24	29	26	5	4	0	88
Not Treated	7	14	6	3	1	5	36

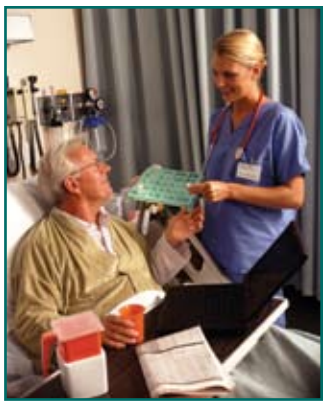
(c) ONCO, Inc. 1997

evidence obtained during the time of the first course of treatment. The Cancer Registry records stage and anatomic

ed but are followed as analytic cases in the registry.

• HIGHLIGHTS OF 2005 ACCOMPLISHMENTS •

Nursing at the Bedside *by Mary Jo Sarver, MN, ARNP, AOCN*



Nursing at the bedside continues to play a paramount role in the Cancer Program at Northwest Hospital. In order to meet the high demands of inpatient and outpatient chemotherapy and biotherapy, over thirty nurses hospital wide have attended and completed the chemotherapy administration course. These nurses not only specialize in the safe handling of chemo/biologic agents but also provide expertise on continual patient assessment, dosage safety, patient education, treatment planning and work on program development to assist with home care on discharge. One of the major focuses this year has been development of guidelines for oral agents, which are being seen more frequently throughout the hospital including geropsych and rehab.

The hospital's oncology unit has also committed to heighten new employee awareness in the outpatient and inpatient setting by sending new staff to the Puget Sound Oncology Nursing Society's four-day CEU course on the "Fundamentals of Oncology." Whether planning on learning to administer chemotherapy or not, all RNs on the unit learn basic assessment skills, monitoring parameters, pathology/disease progression based on cancer type, side effect treatment and guidelines of care and standards of practice. To date, over 35 nurses have attended.

On a larger scale, all nurses at Northwest Hospital are working hard to make Northwest Hospital a smoke free campus. A hospital wide effort has been made to train every staff nurse on: the benefits of smoking cessation; assessment of patients; tools to assist them with patient education; and training on how to approach the topic with patients. Prevention of lung cancer by early assessment, repeated intervention, and education is the overall goal along with prevention of multiple other health problems as well.

These are just a few of the countless contributions from nursing that enhance care for cancer patients and their families. Northwest Hospital staff always "go the extra mile" to make Northwest Hospital a great place to receive cancer care for patients and families.

Breast Cancer Occurrence

RIGHT BREAST	TOTAL	%	LEFT BREAST	TOTAL	%
C50.0 Nipple	0	0.0%	C50.0 Nipple	0	0.0%
C50.1 Central	3	2.4%	C50.1 Central	3	2.4%
C50.2 Upper-Inner	9	7.3%	C50.2 Upper-Inner	8	6.5%
C50.3 Lower-Inner	1	0.8%	C50.3 Lower-Inner	1	0.8%
C50.4 Upper-Outer	13	10.5%	C50.4 Upper-Outer	23	18.5%
C50.5 Lower-Outer	7	5.6%	C50.5 Lower-Outer	5	4.0%
C50.6 Axillary Tail	0	0.0%	C50.6 Axillary Tail	0	0.0%
C50.8 Overlapping	7	5.6%	C50.8 Overlapping	8	6.5%
C50.9 Breast, NOS	19	15.3%	C50.9 Breast, NOS	17	13.7%

Bilateral NOS - 0 (0.0%) Unspecified – 0 (0.0%)

HISTOLOGY	TOTAL	%	HISTOLOGY	TOTAL	%
DCIS (insitu/papillary)	29	23.4%	Comedocarcinoma in situ	0	0.0%
Intraductal	0	0.0%	Scirrhous	0	0.0%
Invasive ductal	76	61.3%	Tubular	0	0.0%
Comedo	0	0.0%	Lobular in situ	3	2.4%
Inflammatory	0	0.0%	Lobular invasive	10	0.0%
Medullary	0	0.0%	Paget's disease	0	0.0%
Mucinous	0	0.0%	Undifferentiated	0	0.0%
Adenocarcinoma	1	0.8%	Other	5	4.0%

• HIGHLIGHTS OF 2005 ACCOMPLISHMENTS •

Breast Cancer Risk Stratification Surveillance/Prevention *by Robert Lane, MD*

There is, perhaps, no health concern for women that captures their imagination and attention more than breast cancer. Accordingly, its surveillance, diagnosis, and treatment have become an ever-enlarging concern for primary care doctors and specialists alike. Studies in recent years now enable us to stratify a woman's risk for developing breast cancer much more effectively, to tailor surveillance programs to those risks, and, ultimately, to provide prevention strategies for the highest risk groups. Risk factors include:

- Age
- Number of first degree female relatives with history of breast cancer
- Age at first live birth or multiparity
- Number of breast biopsies
- History of atypical hyperplasia
- Age of menarche
- Race
- Breast parenchymal density on mammogram
- Exposure to progestin's particularly in combination with estrogens
- Ashkenazi ancestry
- Chest radiation – such as for treatment of Hodgkin's disease
- Family history of breast cancer in a male
- Personal history of ovarian cancer

Discussion of management options for those at high-risk should be added to yearly routine, yearly physician exam, mammography, and routine self-examination. These options, including twice yearly physician breast exams, breast MRI, genetic testing, oophorectomy, and treatment for Tamoxifen or Aromatase inhibitor or bilateral prophylactic mastectomies.

How to match the risks to the management options is beyond the scope of this article, but it is the primary interest of several physicians on the Seattle Breast Center (SBC) Multidisciplinary Team. It is true that genetic testing is available for detecting BRCA I and II mutations which dramatically increase an individuals risk of getting breast cancer; however, these mutations are only present in a small subset of women who get breast cancer – approximately 5%. While there are "rules of thumb" in deciding whether it is prudent to undertake this testing, such testing plays only a minor role among high-risk women who will someday develop breast cancer. There are clearly genetic syndromes for development of breast cancer for which we have not yet developed a gene testing capability and there are other non-genetically transmitted mechanisms, which while not at yet understood, can be inferred or suspected from constellations of various risk factors.

It is the belief of SBC physicians that every female patient deserves a personalized risk assessment, appropriate medical management aimed at reducing that risk, and education of all family members who may be impacted by a patient's risk. Accomplishing these will alleviate uncertainty in our patients and build confidence in the comprehensiveness of their healthcare systems. Primary care physicians can achieve much of this and when needed, SBC physicians are available to consult.

Insurance guidelines for genetic testing are in place with every national carrier, as they are with Medicare. The Health Insurance Portability and Accountability Act (HIPAA) makes genetic discrimination illlegal. To date, there have been no documented cases of health insurance discriminations due to genetic testing or counseling. Our commission as physicians is clear: stratify everyone's risk, institute a tailored surveillance program and where indicated offer prevention strategies.

Breast Cancer Imaging *by Craig Hansen, MD*

Over the last decade breast imaging has evolved to become the cornerstone for the evaluation and management of most breast diseases. Most importantly, its role in breast cancer care has become paramount to achieving the best outcome with as little morbidity as possible.

Breast Cancer Screening

Mammography remains the mainstay and only proven modality for breast cancer screening of the general population, although its greatest weakness is in finding cancer in women who have dense breasts, which directly correlates with the amount of fibroglandular tissue relative to fatty tissue in the breast. In women less than 50 years of age with dense breasts and a family history of breast cancer, mammographic sensitivity has been shown to be only 69%. This compares to an average sensitivity of 80% to 85% and a sensitivity of 98% in postmenopausal women with fatty breasts.

Recently, the long awaited results of the Digital Mammographic Imaging Screening Trial, or DMIST, were published in the New England Journal of Medicine. This randomized, controlled trial, which enrolled 49,528 women presenting for screening mammography at 33 sites in the United States and Canada, is the first of its kind with enough statistical power to show a significantly increased breast cancer detection rate in three subgroups of women. These subgroups were: women under the age of 50, women with heterogeneously or extremely dense breast tissue on mammography, and premenopausal or perimenopausal women. The common denominator in all three groups is increased breast density. Through the use of software manipulation of the acquired image data, digital mammography was able to increase the ability of radiologists to detect subtle differences in tissue contrast between malignant tumors and dense fibroglandular tissue. There was no statistically significant difference in cancer detection rate in women with fatty or mildly dense breast tissue, women 50 years of age or older, and postmenopausal women.

Of note, five different digital mammography systems from various manufacturers were used in DMIST, each with different digital detector systems, somewhat analogous to differences in digital video and camera systems. Although the manufacturers were required to meet minimum specifications, the published data did not reveal which system(s), if any, was the most accurate.

The major impediment to implementation of digital mammography will be its cost, as much as 4 times that of conventional systems, not taking into consideration the considerable cost of transitioning from film to digital systems and the additional time required on the part of radiologists to interpret the images. In keeping with its long history of providing leading-edge technology, the Seattle Breast Center is committed to acquiring the technologically best and most cost effective digital mammography system available.

Despite the aforementioned increased detection rate with digital mammography, there are still a significant number of cancers that are not detected in women with dense breasts. Methods to supplement mammography, such as ultrasound and MRI, are being evaluated with ongoing multi-institutional clinical trials, particularly in an enriched (high-risk, dense breast) population.

While some studies have demonstrated that breast cancer can be detected by sonography when not found by mammography, there are as yet no randomized controlled trials to prove a mortality reduction. Because of the cost and time needed for results, studies similar to past mammography screening trials will not be done. However, trials using surrogate end-points, such as tumor size at detection, may be used to infer mortality reduction. An NIH-sponsored multi-institutional trial that will determine the contribution of sonography alone in detecting cancer in patients at high-risk and with dense breasts is underway.

Given issues related to proof of benefit, operator dependence and skill level, shortage of specialized breast radiologists, length of the examination, lack of third party reimbursement, costs associated with false positives, and limited detection of ductal carcinoma in situ, much work remains to be done before breast ultrasound may be recommended for screening of

Breast Cancer Imaging *(continued)*

Breast Center is to not recommend breast ultrasound for screening and, in fact, to discourage its use until these issues are adequately addressed.

Currently, breast MRI has been shown to be the best modality available for screening of the high-risk, dense breast population, with sensitivities approaching 100% for invasive cancers as small as 3mm. Women considered to be at high-risk include those with a personal history of breast cancer, who have a 2 - 6 fold increased risk of cancer in the contralateral breast, and those with known genetic mutations (BRCA1/BRCA2) and/or a strong family history (first degree relatives, premenopausal onset). Given the high cost and relatively low specificity of MRI, it must be used judiciously. Fortunately, many third party payers currently provide reimbursement for its use in this high-risk population.

While no national guidelines have been recommended to date, based on currently available data the Seattle Breast Center recommends a screening strategy in the high-risk, dense breast population consisting of annual mammography and breast MRI, alternating between these two modalities every 6 months.

Role of Imaging in Breast Cancer Treatment

Breast MRI has become integral in the management of patients newly diagnosed with breast cancer. Studies comparing mammography, ultrasound, and MRI have shown MRI to be superior to the other two modalities in determining the size of the primary tumor and in identifying additional sites of malignancy. By detecting more extensive primary tumor than was previously suspected, by identifying otherwise occult multifocal, multicentric or contralateral tumor, or by showing less tumor burden or no residual tumor after initial excision, surgical management has been shown to change in 7 - 51% of cases. Furthermore, a recently published study has shown that there is a significant reduction in the local recurrence rate in women who are evaluated pre-operatively with MRI.

Additionally, as more women undergo neoadjuvant chemotherapy, MRI has shown its superiority in monitoring the response to therapy and for identifying residual tumor at the end of treatment. Other indications for breast MRI include detection of local recurrence after breast conservation treatment, identification of an occult breast primary in a patient presenting with metastatic axillary lymphadenopathy, and the occasional "problem" or inconclusive mammogram with negative ultrasound.

PET scanning is currently reserved primarily for the evaluation of patients with locally advanced breast cancer who are at high-risk for distant metastatic disease and in some situations it may be the best modality to monitor response to treatment. More recently available integrated PET/CT scanners have been shown to improve accuracy over PET only scanners by as much as 25%.

Image-guided Breast Interventions

Image-guided minimally invasive breast biopsy techniques have evolved to the point that it is uncommon for a patient to undergo a surgical biopsy for definitive diagnosis.

Small benign, symptomatic lesions, such as some fibroadenomas, can now be safely and accurately removed percutaneously using the Mammotome vacuum-assisted device under ultrasound guidance.

Research protocols are underway to evaluate the feasibility of image-guided minimally invasive techniques, such as cryoablation and radiofrequency ablation, for the treatment of small malignant lesions. Preliminary studies appear promising.

Breast Lumps *by Alison Perrin, MD*

A breast lump detected by the patient or primary care provider warrants different work-up and treatment depending on the situation. For the young (<30 year old) patient with no significant family history of breast cancer, a follow-up visit is recommended in 2-3 months mid-cycle. If the mass is gone, no other follow up is necessary except a routine one year check-up. If the mass is still present, an ultrasound can help define cystic, solid, or ill-defined/ other lesions. If the mass is cystic, it can be aspirated by ultrasound if it is symptomatic or appears complex; otherwise follow up exam +/- ultrasound in approximately six months is reasonable. As long as the cyst stays stable or shrinks, no further workup is required. If it does grow or become tender, aspiration is recommended. Surgical excision is reserved for those cysts that continue to recur after aspiration.

If the lesion is solid and appears benign, follow up ultrasound is recommended in six months if the patient desires a non-operative approach. If the patient would like to consider excision or if the lesion is large or growing, referral to a surgeon is recommended. This is particularly appropriate for young women in their teens or twenties who will be facing many years of worry and imaging for a mass which is probably benign. Also, women considering child-bearing in the near future should consider excision to avoid worries if the mass then grows during the hormonal changes associated with pregnancy and lactation.

Any young woman with a breast mass that appears suspicious needs a needle-core biopsy. If this is readily palpable, a surgeon can do this in the office, so referral is indicated. For ill-defined lesions, the biopsy should be done under ultrasound guidance by radiology. If the pathology is benign, close follow up by surgery or radiology is still warranted in the event of a false negative biopsy result. For a young woman with a breast mass and a strong family history of breast cancer, consideration should be made for mammogram and MRI and earlier referral to a surgeon.

As a woman goes past the age of thirty and has a breast mass, a mammogram and ultrasound should be performed. Even if a woman has had a recent negative screening mammogram, it is recommended that she undergo unilateral diagnostic mammography and ultrasonagraphy to evaluate a new mass. A positive imaging study warrants core-needle biopsy. Equivocal cases can be followed with re-examination in three months, but a surgical referral should be made for persistent lesions. Negative imaging with a persistent palpable mass should also generate a surgical referral.

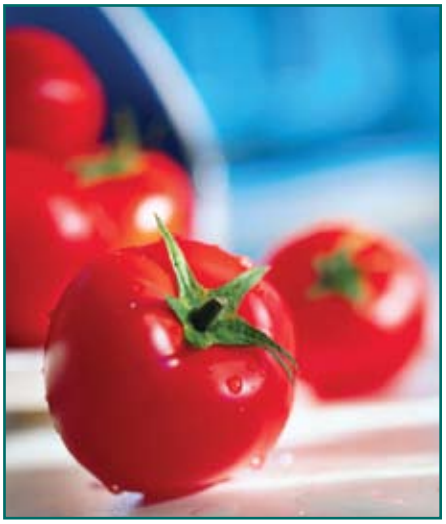
Consideration can also be made for oncology referral if there is a strong family history of breast or ovarian cancer in order to consider genetic tests and an appropriate screening regimen. If the patient has two first degree relatives with breast or ovarian cancer and dense breast tissue by mammography, a breast MRI is probably warranted. When in doubt, discuss the case with (or refer the case to) a surgeon.

New Opportunity to Reduce Recurrence of Breast Cancer *by Robert A. Kanter, MD*

In June 2005 at the American Society of Clinical Oncology meetings, the Women's Intervention Nutrition Study (WINS) reported that estrogen-receptor-negative breast cancer survivors who followed a very low-fat diet experienced a 42% relative reduction in recurrence of their cancer over five years. The absolute risk reduction was 8% at five years and 11% at six years.

Researchers at 37 hospitals enrolled 2,437 women, ages 48 to 79, who were successfully treated for early stage breast cancer. The control group was told to follow their usual diet. The study group was given intensive nutritional counseling in a very low-fat diet. The diet in the control group averaged 51.3 grams of fat per day while the study group averaged 33.3 grams per day (20% of total calories from fat) Analysis of the results showed that virtually all of the improvement had gone to the women whose tumors were not sensitive to estrogen while those whose tumors were hormone sensitive did not have a statistically significant reduction in recurrences.

To help Seattle women with early stage estrogen-receptor-negative breast cancer, take advantage of this research; the Puget Sound Cancer Center has teamed up with the Northwest Clinical Nutrition Center to offer a formal very low-fat intervention program. The Northwest Clinical Nutrition Center, directed by Robert A. Kanter, M.D., has been providing multidisciplinary nutrition services on the Northwest Hospital campus since 1982.



Separate research on dietary and lifestyle change has shown that success requires having "stick to it" behavioral skills in addition to nutrition education. It is for this reason that the WINS study provided a support group along with individual nutritional counseling. In the WINS program, the study group met individually with a dietitian biweekly for eight sessions, then monthly, and also attended a monthly support group.

To offer a more cost effective program, the Northwest Clinical Nutrition Center has chosen to have patients first see a registered dietitian individually to set up a very low-fat nutrition plan. Participants will then attend eight weekly lifestyle classes led by both a Master's level behavioral counselor and a registered dietitian to learn the behavioral skills that help patients stick with a nutritional plan. Additional individual dietitian and behavioral counseling sessions will be available as needed.

Medical insurance plans vary, but most should provide some coverage for the individual dietitian and behavioral counseling sessions. Medical insurance does not often cover group sessions.

Estrogen-receptor-negative patients account for a third of all breast cancer patients. Following a very low-fat diet provides a benefit for these patients similar in magnitude to the benefits of using Tamoxifen in hormone sensitive patients. Many breast cancer survivors are looking for things they can do to improve their chances. We now have evidence that a very low-fat diet can provide that benefit to hormone insensitive patients.

Overview of Adjuvant Therapy of Breast Cancer *by Douglas J. Lee, MD*

Conceptually, early breast cancer refers to those cases in which the cancer is confined to the breast and regional lymph nodes under the armpit (axillary lymph nodes). Patients with early breast cancer are considered curable, although the cure rate is not 100%. Administering drugs to such patients in order to increase the chance of cure is termed "adjuvant therapy". Such adjuvant therapy is commonly given after surgery and before radiation therapy.

There are three types of available adjuvant therapy: hormonal, chemotherapy, and targeted biological therapy. Patients meet with their medical oncologist during their treatment course in order to determine what combination of adjuvant therapy is best suited to them.

Tests performed directly on the cancer tissue determine whether hormonal and/or targeted biological therapy is appropriate. Estrogen and progesterone receptors are easily assessed on cancer tissue, and if present, confer a high statistical chance that anti-hormone drugs such as Anastrozole (Arimidex) or Tamoxifen will increase the patient's cure rate. If lab tests indicate that extremely high levels of a specific gene named Her-2-neu are present, it is likely that the antibody which targets the gene's products in the cancer cell, Trastuzumab (Herceptin), will increase the cure rate of the patient.

Chemotherapy is often a recommended choice for premenopausal women and less so for postmenopausal women, however, each specific patient should carefully consider the benefits and risks of chemotherapy for her individual case before deciding on chemotherapy. The decrease in the risk of relapse can vary from absolute values of 1% up to approximately 15%, and the side-effects of chemotherapy, while probably less severe than those of 10 years ago, still include nausea, hair loss, increased infection rate, heart muscle damage, numbness and anemia. There is now a biological test called Oncotype Dx which allows patients in the best prognostic group (normal axillary nodes and small cancers less than 2 cm diameter) to see what gain chemotherapy will bring them, and if small, choose to take hormone therapy without chemotherapy. Web-based programs such as the Adjuvant! Website help estimate the benefit given by hormone therapy, chemotherapy, and combined chemohormonal therapy for any given breast cancer based on size, hormone receptors, degree of node involvement, and general patient health.

Some patients wish to see for themselves if the adjuvant therapy they have chosen is actually effective. For such individuals, giving the chemotherapy or hormonal therapy prior to surgery (so-called "neoadjuvant therapy") allows documentation of cancer shrinkage while chemotherapy or hormonal therapy is being given. So far there is compelling evidence that such treatment has at least the same cure rate as traditional postoperative adjuvant therapy. In a minority of patients, growth of their cancer occurs while on a neo-adjuvant program, but even these patients may be rapidly switched to another, more successful program of therapy which will obviously be more successful in raising the cure rate. Such patients would not have had the opportunity to switch therapies if it was begun after surgery when no cancer mass was left to assess. The other benefit of neoadjuvant therapy is that it allows patients with large breast cancers felt initially to require mastectomy to shrink the cancer mass sufficiently to allow breast preservation.

Future developments will probably include a wider array of biological targeted therapy options to choose from, as well as newer chemotherapy and hormonal agents. Newer agents will be selected not only because of greater anti-cancer effects, but also because of decreased severity of side-effects. Determinants of risk of relapse and determinants of response to chemotherapy, hormonal therapy, and biological targeted therapy will continue to be refined even to the genetic and molecular level. The highest priority continues to be a higher rate of cure for all breast cancer patients.

Adjuvant Hormonal Therapy in Breast Cancer *by David E. Dong, MD*

Hormonal therapy for breast cancer has been an ongoing development since the early 1960's. Therapeutic interventions of true benefit developed in the late 1970's when Tamoxifen was shown to have an excellent benefit in advanced breast cancer patients in clinical trials. The use of Tamoxifen as a truly effective hormonal therapy changed the horizon for long-term maintenance therapy in breast cancer to this day.

Hormonal interventions as adjuvant therapy has continued to be evaluated with new agents in hopes of continually maintaining breast cancer in a state of remission or quiescence for years. Currently, there are three different mechanisms of attack with hormonal agents, all aiming at interfering with estrogen as the presumed breast cancer agonist. Tamoxifen, as stated above, acts as a modulator of the estrogen receptor. It is thought

Adjuvant Hormonal Therapy *(continued)*

that Tamoxifen mimics estrogen to bind the estrogen receptor, thereby removing the true effects of estrogen. The newest agents are the aromatase inhibitors (AIs). There are currently three commercially available (Letrozole, Anastrozole, and Exemestane), acting by blocking the peripheral conversion of androgens and estrogenic precursors to estrogen via inhibiting the enzymatic process. The newest class of drug is a variation of estrogen modulation with a higher specificity for the estrogen receptor resulting in pure estrogen blockage (Fluvestrant). I will reserve this discussion to Tamoxifen and the AIs. Tamoxifen and the AIs are taken orally daily to promote their effect, whereas Fluvestrant is administered intramuscular on a monthly basis.

There are currently several dilemmas that are being resolved in the use of hormonal agents for therapy of adjuvant breast cancer. This includes which hormonal agent to use first, how long to continue treatment using a particular agent, and when to start hormonal agents in conjunction with chemotherapy.

Tamoxifen has been the longest studied and most widely used in the world. The Early Breast Cancer Trialist Collaborative Group reported in 1992 in a meta-analysis in Lancet (updates in 1998 and 2000), across 63 worldwide randomized studies, the benefit of Tamoxifen in 42,000 pre and post-menopausal estrogen receptor positive breast cancer patients. Recurrence proportional reduction and mortality proportional reduction at 5 years was 50% and 28%, respectively. In addition, benefit was seen initially in women taking only 1 and 3 years, with lasting benefits evident at 15 years follow up. This was also evident at 5 years, but not significantly beneficial in studies at 10 years of therapy.

There have now been several trials along with several ongoing international trials comparing the benefit of the aromatase inhibitors against Tamoxifen. Most of these studies have been in advanced disease, but recent studies also substantiate the benefit in the adjuvant setting. The recently completed ATAC adjuvant trial was recently finalized and updated. This trial was a comparison of Anastrozole alone versus Tamoxifen alone versus the combination in an upfront setting. The combination arm was dropped early showing a worse outcome than either arm alone. The recent update at 4 years favored Anastrozole over Tamoxifen with a 2.9% improvement in disease free survival and 2.6% reduction in recurrence. Other studies have raised the question of switching after several years of Tamoxifen to an AI, as documented in the recent "Intergroup Exemestane Study Group." This documented a 32% reduction in recurrence risk and a 4.7% absolute benefit in 3 year disease free survival after switching from Tamoxifen to Exemestane for the remaining 2.5 of 5 years. The MA-17 study addressed the benefit of an AI in years 6-10 after completion of 5 years of Tamoxifen. As addressed above, 10 years of Tamoxifen in node negative women has shown no additional benefit except increased toxicity, whereas in node positive women the study has never been reported. The study was closed early by the data monitoring committee due to its substantial improvement in goals and unethical nature to have continued to its enrollment goals. The study examined the benefit of adding Letrozole for an additional 5 years from completion of Tamoxifen versus observation. The results at 2.4 years lowered the risk of recurrence by 43% and improved estimated 4 year DFS by 6% and estimated 4 year overall survival by 2%. Long term follow up is currently pending to substantiate these findings.

Currently, there are several international trials that are ongoing to confirm the current trends in favor of AIs and published studies. The BIGFEMTA trial is randomized to 4 arms comparing Letrozole alone, Tamoxifen followed by Letrozole after 2.5 years, or Letrozole followed by Tamoxifen after 2.5 years. The ARNO study is comparing Tamoxifen for 5 years versus switching to Anastrozole after 2.5 years. The ICCG trial is comparing 5 years of Tamoxifen versus switching to Exemestane after 3 years.

The original trials in the 1970's and 1980's used hormonal therapy in conjunction with chemotherapy. The recent Intergroup Trial 0100 has now clarified and changed the standard of approach. Women randomized to chemotherapy alone followed by hormonal therapy versus chemotherapy concurrent with hormonal therapy followed by continued hormonal therapy were found to have a 5% improvement in DFS and 2% improvement in OS at 8 years. Whether this holds true for all hormonal agents ill respective of mechanism of action likely will never be defined in a trial.

The current acceptable standard of care suggest that all receptor positive women with breast cancer should be a candidate for Tamoxifen for 3 to 5 years. A switch to an AI in postmenopausal women is acceptable after Tamoxifen or considering an AI upfront is acceptable in high-risk women. An AI is considered now standard for all postmenopausal women after 5 years of Tamoxifen. Discussion with patients regarding the risk benefit of continuing therapy is appropriate as well. And finally, it is now standard to consider sequential hormonal therapy as opposed to concurrent treatment with chemotherapy. Offering to and enrolling patients in clinical trials should be another option for patients in answering the many unanswered questions of the best approach and best therapies for patients now and in the future.

Neoadjuvant Chemotherapy *by George R. Birchfield, MD*

When chemotherapy is given in hopes of improving patient survival and after definitive surgery, it is known as adjuvant chemotherapy. For the great majority of medical oncology practices throughout the United States and the world, this traditional approach is still adhered to. However, at Northwest Hospital, for almost the past decade, the use of neoadjuvant chemotherapy has been felt to be the most useful in providing breast cancer patients with the best chance of a successful outcome. The neoadjuvant approach differs from traditional adjuvant chemotherapy in that chemotherapy or hormonal therapy is initiated prior to definitive surgery. Therefore, the tumor within the breast of the living patient acts as a drug assay. While the patient is receiving neoadjuvant chemotherapy, the breast cancer team can closely monitor tumor response to ensure that the tumor is not progressing and thus resistant to the chemotherapy being administered. Studies of neoadjuvant chemotherapy have consistently demonstrated that tumor progression on commonly used cytotoxic chemotherapy programs is rare. These studies have also documented that in individuals whose tumors have a complete pathological response; that is, after surgery the pathologist can find no signs of viable cancer, there is an excellent chance of long-term survival. Furthermore, studies have demonstrated that patients, who unfortunately do not achieve a pathological complete response, may be switched to other agents that are felt to work by different mechanisms and still gain improvement in outcome. Such information is not obtainable by the old method of adjuvant chemotherapy. With the neoadjuvant approach both the patient and physician are provided with a greater level of comfort in believing that distant micrometastases are being effectively eradicated when the larger primary tumor of the breast has demonstrated a wonderful

response to the chemotherapeutic agents. Neoadjuvant chemotherapy has also provided a useful avenue of treatment that affords women with initially too large a tumor to allow for breast conservation therapy by shrinking of the tumor. With shrinkage, these women can undergo breast conservation therapy with as good an outcome as those women who are initially eligible, because of smaller breast cancer tumors.

Much attention has been focused on the developing area of Micro-arrays. Micro-arrays are genetic databases of tumors that help allow physicians to more accurately predict which chemotherapy programs and other treatment strategies may be of benefit to a particular individual. However, these Micro-arrays are not yet 100% accurate. Therefore, it appears there will always be a role for neoadjuvant chemotherapy. If a woman with breast cancer is destined to receive chemotherapy, whether it be cytotoxic agents or hormonal therapy, it is very reasonable for her and her physician team to discuss the pros and cons of the neoadjuvant approach since she will be getting chemotherapy to help improve her chances of survival.

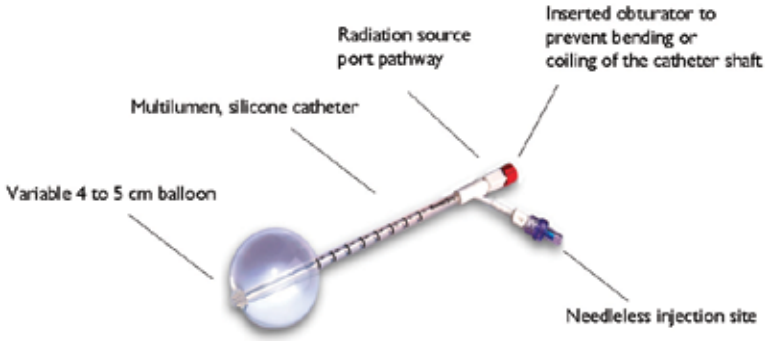
Another advantage of the neoadjuvant approach is that it allows for studies regarding new chemotherapy programs in the treatment of breast cancer to arrive at useful conclusions much earlier than those done in the adjuvant chemotherapy fashion. Since pathological complete response is a surrogate for long-term, overall survival, this information can be rapidly obtained at the end of a chemotherapy program rather than waiting for a decade to obtain survival data, which is a common course in adjuvant chemotherapy studies. Therefore, greater and quicker progress can be made in the treatment of women with breast cancer if neoadjuvant chemotherapy is employed in clinical trials in increasing numbers of women with this disease.

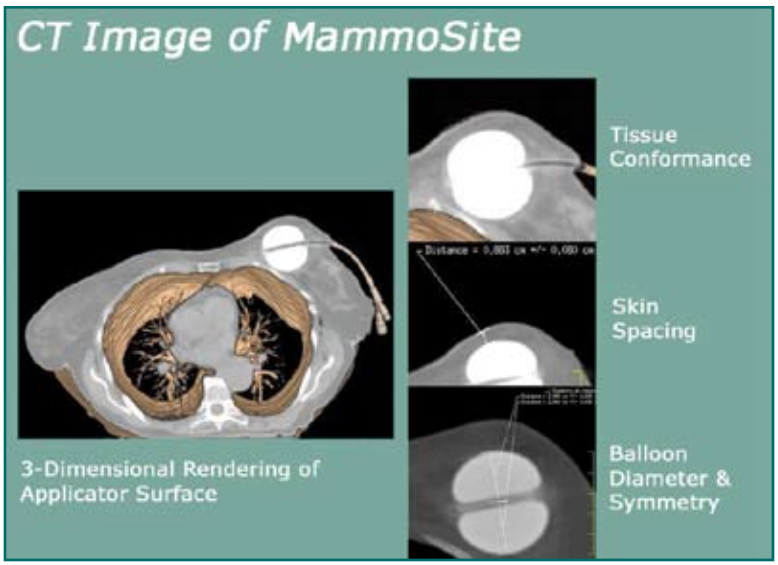
Radiation Oncology *by Vivek K. Mehta, MD*

Radiation therapy has had a long and established role in the management of breast cancer. Multiple studies have demonstrated that a lumpectomy followed by radiation to the whole breast has equivalent overall survival to patients treated with a mastectomy. In addition, a number of studies have demonstrated that omitting the radiotherapy after a limited breast surgery results in an unacceptably high rate of the cancer returning in the breast. Physicians at the Swedish Cancer Institute at Northwest Hospital have been among the leaders in bringing improvements in radiotherapy to patients with breast cancer.

Whole breast radiotherapy remains the primary treatment after breast conserving surgery for most women. At the Swedish Cancer Institute at Northwest Hospital, patients are treated with sophisticated machines that employ software to develop individualized and customized treatment plans for each patient. The treatment delivered results in the dose of radiotherapy being more accurately delivered, and for many women the skin reaction is considerably less. For certain women, an even more advanced method of treatment planning is employed termed intensity modulated radiotherapy. The results of research on these techniques on this campus have been presented at national meetings.

Partial breast radiotherapy is a relatively new concept that is currently being studied nationally for women with certain types of breast cancer. Partial breast radiotherapy refers to the treatment of the tissue immediately around where the surgeon operated to remove the cancerous tumor. This treatment can typically be given in a period of a week rather than the conventional radiotherapy that lasts 6 weeks. There are two different techniques that are being offered at the Swedish Cancer Institute at Northwest Hospital. The first technique is balloon breast brachytherapy, also known as MammoSite. This procedure involves the implantation of a catheter with a balloon on the end of the catheter into the surgical cavity created after the tumor is removed. Then a small radioactive seed is delivered through the catheter to the center of the balloon where it emits radiation around the edges of the balloon which is in contact with the breast tissue. After the treatment, the radiation is removed. Following all of the treatments the balloon device is also removed. The treatment is generally very well tolerated. The second technique, three dimensional conformal radiotherapy, delivers the treatment without any surgical procedures and instead, utilizes sophisticated computer planning systems to carefully focus multiple x-ray beams on the tissues immediately around the where the tumor used to be. These state-of-the-art techniques are not available at every facility, and are not appropriate for every patient, but are available for certain patients on this campus.





The radiation oncologists at the Swedish Cancer Institute at Northwest Hospital are committed to improving the care of patients undergoing breast radiotherapy.

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