

St. John's Cancer Institute 2009 Annual Report



Directory

For more information about cancer services and programs at St. John's Hospital, call (217) 544-6464. Extensions for the Cancer Institute are below.

You can also reach St. John's Cancer Institute by calling (217) 525-5666 or (800) 524-0575, or on the Internet at www.st-johns.org.

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2009 Cancer Committee

St. John's Cancer Committee monitors the cancer program and recommends changes on various aspects of the expanding program. Representatives from all medical specialties are involved in the treatment and care of St. John's cancer patients. The Cancer Institute's Cancer Conference meets regularly to review various cases. The Cancer Committee oversees the quality assurance studies performed at the Institute.

St. John's Hospital cancer program received full approval from the American College of Surgeons Commission on Cancer (ACoS/CoC) in 2008. The three-year approval by the ACoS/CoC, which is granted through 2010, ensures quality care, close to home, for cancer patients. Commendations were awarded for prevention and early detection programs, clinical trial enrollment, quality improvements, documentation of outcomes analysis in the annual report and compliance with patient guidelines.

2009 Cancer Committee Members

John Godwin, MD	Committee Chair
James Malone, MD	Otolaryngologist/Physician Liaison
Craig Backs, MD	Chief Medical Officer, St. John's Hospital
K. Thomas Robbins, MD	Otolaryngologist
Elizabeth Peralta, MD	General Surgeon
Bruce Shevlin, MD	Radiation Oncologist
– Cate Clausen, MD	Designated Alternate, Radiation Oncologist
Edem Agamah, MD	Medical Oncologist
Onsi Kamel, MD	Pathologist
Donald Ross, MD	General Surgeon
Theodore Gleason, MD	Radiologist
– Lara Dennis, MD	Designated Alternate, Radiologist
Rhonda Johnson, PhD	Psycho-Oncology
Bryan Finn, MBA	Director, Cancer Care Services
Diana Weyhenmeyer, RN, MA, OCN	Clinical Research Nurse/Outreach Coordinator
Pat Lucas, RN, MS	Interim Nursing Director Oncology Unit/Day Hospital
Dee Dee Golden, RN	Oncology Unit Nurse Manager
Carol Peterson, RN, CCRP	Pediatric Clinical Research Nurse
Debbie Woodford, RN, BS	Director, Outcomes Management/Quality Improvement Coordinator
Roxanne Harling, RN	Hospice
Denise Withrow, CTR	Cancer Registrar
Kim Pitchford, RN, BSN	Pediatrics Representative
Barb Reagan, MSW, LSW	Social Worker
Mindy Young, CTR	Cancer Registrar/Cancer Conference Coordinator
Nancy Young, RN, BSN, OCN	Education
Sandra Potter, PA (ASCP)	Pathology/Quality of Cancer Registry Coordinator
Heidi Hochstetler, MA, CCC-SLP	Speech
Jill Sullivan, MD	Radiologist, Breast Tumor Board
Dean Collette, MD	Radiologist
Heather Shankland, MBA, RHIA	Director, Health Information Management
Steven Wang, PhD	Medical Physics Manager/Chief Medical Physicist
Tamra Davidson, RPh	Pharmacy
Kevin Torgerson, BCC	Pastoral Care
Jenna Hogan, RD	Dietary
Janette Johnson	Community Representative
Katherine Howerter, LSW	American Cancer Society



A Message from St. John's Hospital President/CEO



Bob Ritz
President/CEO

St. John's Hospital continues its commitment to provide the residents of Springfield and Central Illinois with the latest technology and medical advancements in the fight against cancer.

This past year we added a new radiation therapy machine called RapidArc™. RapidArc delivers powerful tumor-destroying radiation with remarkable precision. This radiotherapy technology represents an advanced form of image-guided, intensity-modulated radiation therapy (IMRT). This new technology enables clinicians to program a linear accelerator to deliver precise forms of radiation therapy up to eight times faster than other IMRT systems. As a result, patients' tumors receive the full radiation dose in less than two minutes.

St. John's was the first hospital in the world to combine

RapidArc technology with a computer-based radiation therapy data server called Mosaic™. This ground-breaking advancement attracted the attention of the cancer team at Mayo Clinic who conducted a site visit to learn how to incorporate this treatment advancement into its clinic offerings.

Additionally, St. John's added a Bioptics PiXarray digital breast specimen unit. Located in our Surgery Department, this new technology improves our imaging capability for breast specimens.

St. John's Children's Hospital, the region's only designated Children's Hospital, takes special care of kids with cancer, too. Pediatric oncologists at the Cancer Institute participate in nationwide clinical trial protocols from the Children's Oncology Group to give our patients access to the same clinical research tri-

als as other major children's research hospitals. Our physicians and researchers receive assistance from scores of pediatric specialists, including specially trained nurses, technicians and child life specialists to ensure children receive the specialized care they need and deserve.

In addition, the Cancer Institute sponsors cancer support groups and partners with the American Cancer Society to bring its resources to patients and families through the Patient Resource Center located on the 1st Floor of the Pavilion building, and events such as the annual Cancer Survivors Picnic.

Through research, technology and compassionate care, St. John's Hospital is dedicated to providing exceptional care to our patients and family members in Central Illinois.



A Message from the Chairman St. John's Hospital Cancer Committee

To quote a sometimes overly used statement, "In health care it matters where you get your care." All members of the multidisciplinary Cancer Committee at St. John's Hospital have a particular interest in the cancer care provided at our institution and all have made strides to ensure the continued growth in the quality of cancer care here.

Cancer services are constantly reviewed and assessed by our Committee with an eye to the national standards set by our accrediting organization, the American College of Surgeons Commission on Cancer. We have consistently met and exceeded these national standards of quality performance, and our target for the next review in 2010 is to achieve a commendation status which is the highest

scoring possible. This is a high mark, but achievable for the cancer program at St. John's Hospital. To do this requires effective leadership that asks the question, "What needs to be done in our cancer program to enhance services and outcomes for cancer patients from our communities and referral base?" I am proud to say our Cancer Committee has taken on this challenge.

Enclosed in this report are a series of articles highlighting the local expertise we have in breast cancer care. These articles come from physicians and caregivers serving cancer patients at St. John's Hospital and include a statistical discussion of our breast cancer cases seen in 2008.

In addition, we have reviews of, "The Molecular Classification of Breast Cancer," "On-

colytic Treatment of Breast Cancer," a "Review of the Newest Developments in Breast Cancer Care" and "Options for Breast Reconstruction."

One particular article dealing with the stress and psychosocial issues of a breast cancer diagnosis comes from Rhonda Johnson, PhD, Chair of the Division of Psycho-Oncology at SIU School of Medicine. She directs the "Side-by-Side Program" whose mission is to help cancer patients deal with these issues during and after treatment. This report will give the reader a small insight into the wealth of knowledge and expertise that constitutes our vital cancer services at St. John's Hospital.



John Godwin, MD
Hematologist
Oncologist



2008 Cancer Registry



James Malone, MD
Cancer Liaison

In 2008, a total of 1,092 cases consisting of 1,021 analytic cases and 71 non-analytic cases, were entered into the Cancer Registry at St. John's Hospital Cancer Institute. More than 90 percent of the patients entered into the Cancer Registry this year received their diagnosis and/or initial course of treatment at St. John's Hospital, which is reflective of the comprehensive cancer care provided through our Cancer

Institute in collaboration with our physician partners.

The demographics of our patient population remain constant. There is an almost equal percentage of males and females (53 percent and 47 percent respectively). The racial backgrounds of our patient population are 93 percent Caucasian, 6 percent African-American and 1 percent from other races. While patients of all age ranges were entered into the Cancer Registry, the majority of patients ranged from age 50 years to 79 years.

In 2008, 62 percent of patients presented to our Cancer Institute with disease confined to the initial tumor site and/or extending to the regional lymph nodes or surrounding soft tissues. An additional 22 percent of patients presented with spread of disease to distant sites or organs. Figure 1 provides a summary and additional details of the patient demographics for new cancer

cases at the Cancer Institute for the year 2008.

The top five primary cancer sites diagnosed and/or treated at St. John's Hospital for 2008 were lung, breast, kidney/renal pelvis, prostate and colon. These accounted for more than 50 percent of all cancers at our institution. This year, the number of lung cancer cases surpassed breast cancer cases, and the combined incidence of lung and breast cancer alone accounted for 32 percent of all cancer cases entered into the Cancer Registry. Figure 2 depicts the incidence of the top 10 cancer sites seen at St. John's Cancer Institute in 2008.

The Cancer Registry maintains continuing follow-up of patients entered into the registry. This is essential for assessing patient outcomes to treatment, participating in national studies and cancer databases and providing information on cancer surveillance and survival.

Class	No.	%
Analytic cases	1,021	93
Non-analytic cases	71	7
Sex		
Female	508	47
Male	584	53
Race		
Caucasian	1,020	93
African-American	63	6
Asian & other	9	1
Age		
0-19	25	2
20-29	7	1
30-39	30	3
40-49	120	11
50-59	214	20
60-69	298	27
70-79	240	22
80-89	139	13
90+	19	2
Stage		
In Situ	74	7
Local	343	31
Regional	263	24
Distant	240	22
Unknown	140	13
NA	32	3

Figure 1:
2008 Patient Data Summary
1,092 cases

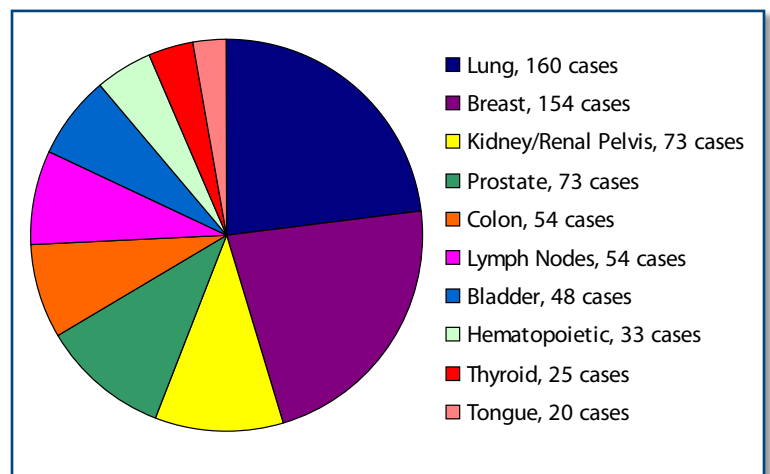


Figure 2:
2008 Incidence by Site
Top 10 most common



Comparisons of the top five primary cancer sites based on patient gender are illustrated in Figures 3 & 4. For male patients entered into the Cancer Registry in 2008, the top five primary cancer sites were lung, prostate, kidney/renal pelvis, bladder and colon in descending order. These top five sites are identical to last year's data.

Similarly, there continues to be a higher frequency of lung cancer observed at St. John's Hospital than the national average, and the frequency of prostate cancer cases is lower than the national average (Figure 3). This is not unusual as a single hospital referral pattern may not reflect population cancer incidence. This trend is consistent with our previous data.

In women, cancers of the breast, lung, colon, kidney/renal pelvis and thyroid gland constitute the top five primary cancer sites at St. John's Hospital. For women, the frequencies of breast cancer and cancer of the kidney/renal pelvis diagnosed and/or treated at St. John's Hospital are slightly higher than the national average while the frequency of colon cancer is slightly lower than the national average. The incidence of thyroid cancer is similar to the national average. A comparison of the frequencies of our top five primary cancer sites at St. John's Hospital compared to national population based averages is illustrated in Figure 4.

At St. John's Hospital Cancer Institute, we are committed to providing our patients with the highest quality, most

comprehensive cancer treatments available. Access to national clinical trials is provided through our affiliation with the Radiation Therapy Oncology Group (RTOG), and the Children's Oncology Group (COG).

In addition, we offer new drugs to our cancer patients via our affiliation with Southern Illinois University School of Medicine and the University of Chicago Phase II network. Industry-sponsored and investigator-initiated clinical trials conducted in collaboration with our cancer physician partners also allow us to provide our patients with the latest in cutting-edge cancer treatment.

This year's annual report includes a special focus on cancer of the breast. While this disease occurs in both sexes, the majority of cases are in women. In fact, breast cancer is the most common cancer in women. One in eight women will be affected by breast cancer during her lifetime. There were an estimated 182,460 new cases of breast cancer diagnosed in women in 2008 and 40,480 women lost their lives to breast cancer. It is the second leading cause of cancer-related death for women in the United States.

While the exact cause of breast cancer is not clearly understood, risk factors such as age, genetic risk factors, a family history of breast cancer and certain lifestyle behaviors can increase the chances of getting breast cancer. Positive lifestyle changes and screening examinations such as a mammogram and self-breast examination are important measures for

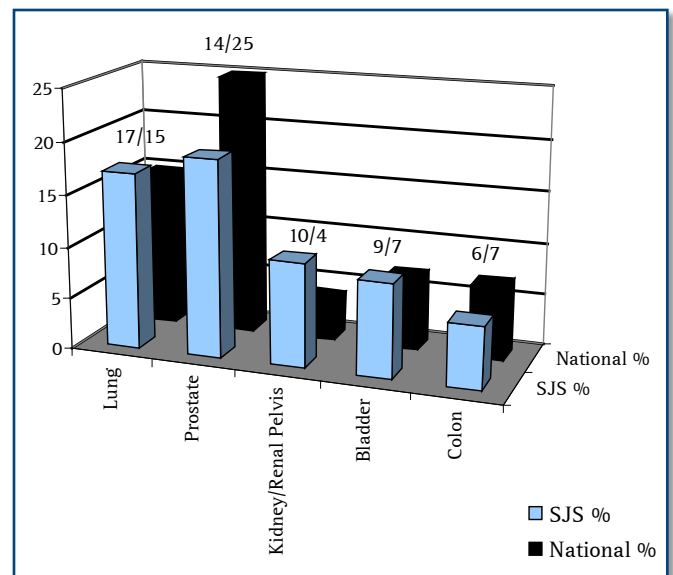


Figure 3: 2008 Analytic Male Cases

Comparison of top 5 primary sites

Source for national data: American Cancer Society, Cancer Facts & Figures 2008

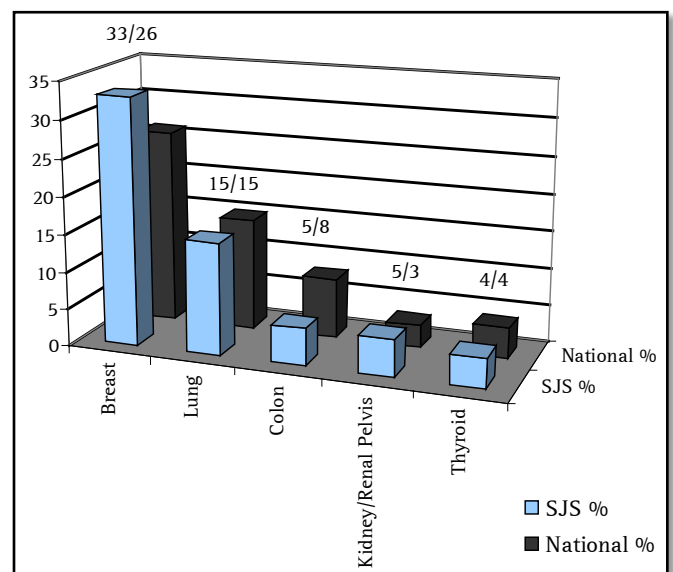


Figure 4: 2008 Analytic Female Cases

Comparison of top 5 primary sites

Source for national data: American Cancer Society, Cancer Facts & Figures 2008

prevention and early detection.

Continued on page 8.

At St. John's Cancer Institute, a total of 154 new cases of breast cancer were entered into the Cancer Registry in 2008. The incidence of breast cancer increases with age and similar to national trends, the majority (76 percent) of patients diagnosed with breast cancer at St. John's



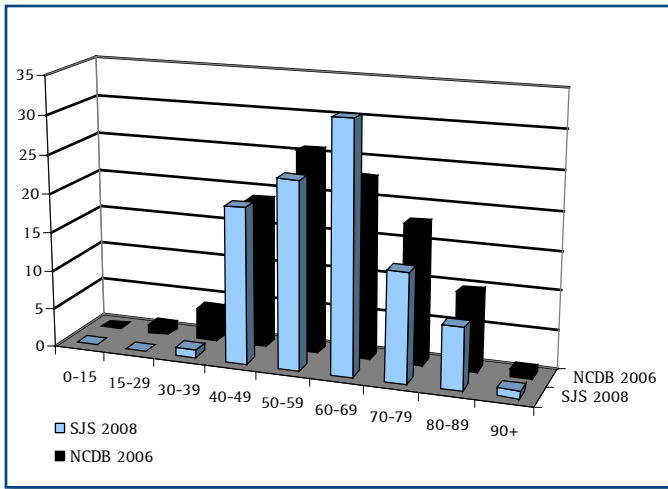


Figure 5: Age at Diagnosis
Breast Cancer
SJS 2008 vs. NCDB 2006

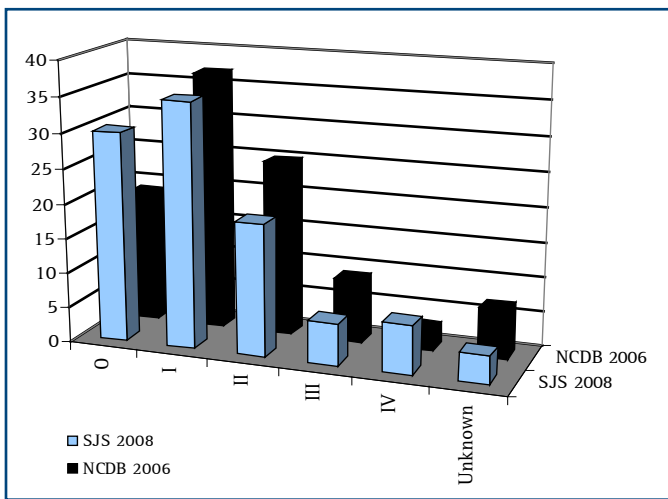


Figure 6: Stage at Diagnosis
Breast Cancer
SJS 2008 vs. NCDB 2006

is between the ages of 30 - 69 years. Figure 5 compares the age at diagnosis for patients with breast cancer entered into the Cancer Registry at St. John's Hospital for the year 2008 compared to national data from the National Cancer Data Base (NCDB).

With increased efforts on public awareness and preventative breast cancer screening, the majority of cases of breast cancer are diagnosed at an early stage.

Of the patients with breast cancer entered into the Cancer Registry, 84 percent had early (stage 0 - 2) disease. Figure 6 provides a comparison of the stage at diagnosis for patients with breast cancer entered into the Cancer Registry at St. John's Hospital for the year 2008 compared to national data from the National Cancer Data Base (NCDB). The percentage of patients diagnosed with Stage 0 disease at St. John's is significantly higher than the national average. This finding is likely due to

the demographics of our patient population, but also due to our efforts directed at breast cancer screening and early detection.

Patient survival data from St. John's Hospital for patients with breast cancer are comparable with national data derived from the NCDB according to tumor stage (Figure 7). Only minor variations in survival rates are noted between St. John's Hospital and the NCDB and can be mostly attributed to the smaller sample sizes at single institutions compared to collective national data. A review of the survival data reveals that early stage breast cancer has an excellent prognosis. The overall five-year survival for Stage 0 - Stage II disease ranges from 82 percent to 95 percent. Advanced stage disease (Stage III & IV) portends a much poorer prognosis with a five-year overall survival of 18 percent to 56 percent. These data emphasize the importance of routine breast cancer screening for early detection, raising public awareness and access to screening services.

Stage	Nat'l Cases	St. John's Cases	Nat'l 1 year	St. John's 1 year	Nat'l 2 year	St. John's 2 year	Nat'l 3 year	St. John's 3 year	Nat'l 4 year	St. John's 4 year	Nat'l 5 year	St. John's 5 year
0	96,811	159	99.4	99.4	98.6	98.7	97.6	94.9	96.4	92.2	95.1	90.9
I	222,257	297	98.9	98.3	97.3	95.9	95.4	93.2	93.2	91.2	90.9	89.1
II	178,441	176	97.9	97.7	94.0	93.1	89.8	90.8	85.9	86.8	82.2	82.1
III	36,831	54	92.3	100.0	80.3	87.0	70.5	77.8	62.6	70.4	56.4	60.9
IV	19,911	20	62.0	70.0	44.1	50.0	32.0	40.0	24.1	35.0	18.6	35.0
N/A	0	3	0.0	66.7	0.0	66.7	0.0	66.7	0.0	66.7	0.0	66.7
UNKN	0	38	0.0	92.1	0.0	92.1	0.0	76.3	0.0	65.8	0.0	60.5

Figure 7: Breast Cancer
Observed five-year survival (by percentage). St. John's Hospital vs. NCDB (1998 - 2000). Computed by actuarial method.



Update on Diagnosis and Imaging of Breast Cancer

The Breast Care Center at St. John's Hospital continues to serve Springfield and the surrounding areas by providing the earliest possible diagnosis of breast cancer. Randomized clinical trials have shown that widespread use of screening mammography decreases the mortality rate from breast cancer. Between July 2008 and June 2009, we performed approximately 13,300 mammograms, including 9,200 screening and 4,100 diagnostic studies.

In September 2007, St. John's made the transition from film-screen to digital mammography. Our imaging systems include two Lorad Selenia machines from Hologic and a radiologists' work station. The digital system allows the radiologist to manipulate the image after it is obtained. Additionally, digital mammography has been shown to decrease the number of patients called back for additional imaging. It eliminates the problem of lost films and significantly improves the efficiency of the mammography department. Digital mammography has been shown to be more sensitive in women with dense breast tissue. We continue to use computer-aided detection to reduce the rate of false-negative interpretations.

Breast ultrasound is mostly utilized as an adjunct to mammography and physical examination. It allows for a more specific noninvasive diagnosis in patients with mammographic and/or clinical abnormalities.

It can be used for guidance in cyst aspirations, core needle biopsies (the minimally invasive procedure of choice for diagnosis) or preoperative needle localizations. We performed approximately 2,400 breast ultrasounds in the last fiscal year. Additionally, about 200 ultrasound guided core needle biopsies were performed during the same time period.

In 2008, we updated our stereotactic biopsy table and imaging system. The biopsy table is a Lorad Multicare Platinum, a system where the patient is placed prone on the table with the breast in compression. A Mammotome vacuum-assisted system from Ethicon is used to perform core needle biopsies. We performed approximately 300 stereotactic breast biopsies during the 2008-2009 fiscal year.

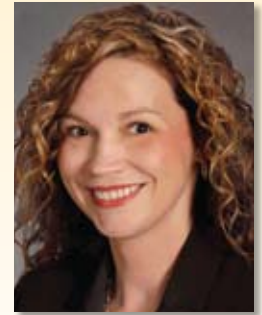
In 2007, the American College of Radiology made the recommendation that women with a 20 - 25 percent lifetime risk of breast cancer undergo screening breast MRIs. This will usually include women with a strong family history of breast or ovarian cancer and some women who were treated with radiation therapy for Hodgkin disease. Patients with premalignant breast lesions, personal history of breast cancer or breasts which are extremely dense mammographically may also be candidates for screening breast MR. At St. John's we performed more than 200 MRIs of the breast in the last fiscal year. While

some are performed for screening high risk patients, most are performed for evaluation of the extent of disease or other foci of disease in patients with a biopsy proven malignancy.

In May 2007, St. John's obtained the ability to perform MR guided core needle biopsies. An ATEC Emerald unit from Suros Surgical Systems was purchased. This technique is crucial as some lesions are only identified by MRI. We have performed approximately a dozen of these procedures to date and hope to be able to provide the service to more patients in the future.

Nuclear medicine imaging, specifically positron emission tomography (PET) combined with CT imaging (PET/CT) is used in breast cancer patients (as well as other cancer patients) to evaluate the extent of disease and response to treatment. At St. John's Hospital, we have had a Seimans PET/CT Biograph imaging system since 2004. Other imaging modalities are based upon imaging of anatomy. Nuclear medicine is unique in its ability to image disease in tissues with abnormal function, even if the anatomic appearance is normal.

We continue to look to the future regarding new imaging and interventional techniques. It is our commitment to the patients of St. John's Hospital that we will provide the best possible radiologic diagnosis, image-guided intervention and radiologic follow-up available.



Lara Dennis, MD
Radiologist



Molecular Classification of Breast Cancer



Onsi Kamel, MD
Pathologist



Stephen Bell, MD
Pathologist

The prognosis of breast cancer is currently based primarily on the pathologic examination of tissues removed at biopsy or surgery. This approach provides important information for the categorization of patients with breast cancer. Because breast cancer is a heterogeneous disease, features utilized by oncologists to categorize patients and determine therapy include assessment of the histologic tumor type and grade, lymph node status, tumor size, estrogen and progesterone receptor status and HER2 status.

Recent gene expression profiling studies have provided a classification scheme for breast cancer that validates and may also enhance the traditional approach to breast cancer classification and prognosis. Over the last several years, studies using gene expression profiling methods have identified four categories of breast cancer: luminal A, luminal B, HER2 and basal-like. Interestingly, these molecular subtypes correlate well with patterns of hormone receptor and HER2 expression in the cancer tissue.

The luminal A and B subtypes comprise approximately 70 percent of all invasive breast cancers. As a group, they express estrogen and progesterone receptors. While, in general, the luminal types are associated with a favorable prognosis, it has been shown that luminal B cancers, as a group, tend to be higher grade and have a less favorable prognosis than luminal A cancers.

Luminal type breast cancers respond to endocrine therapy, although the response may differ for the luminal A and B subtypes.

The HER2 subtype (also called HER2-array subtype) comprises approximately 15 percent of all invasive breast cancers. This includes tumors that over-express HER2 protein without the expression of estrogen or progesterone receptors. HER2-array genetic subtype tumors do not strictly correlate with tumors that over-express HER2 protein in the cancer tissue since HER2 protein over-expression is also seen in the luminal B group of tumors. The HER2-array subtype is an aggressive cancer group, although these tumors respond to anthracycline and taxane-based adjuvant chemotherapy as well as targeted therapy with Herceptin (trastuzumab).

Basal-like cancers are characteristically hormone receptor negative and do not over-express HER2 protein (so-called “triple-negative” cancers). They are referred to as “basal-like” because the tumor cells express keratin types typically seen in basal epithelial cells. Triple-negative cancers comprise approximately 15 percent of all invasive breast cancers. They are frequently associated with aggressive features such as *TP53* mutations and high-grade histology. They are also the cancer type that frequently occurs in women with *BRCA1* mutations. Premenopausal African-American women have

twice the likelihood of developing this cancer subtype than any other group of women.

Basal-like triple-negative cancers carry a poor prognosis but they show a significantly higher rate of pathologic complete response to neoadjuvant chemotherapy compared to hormone receptor-positive tumors. Although basal-like breast cancers appear to be more sensitive to neoadjuvant chemotherapy than hormone-receptor positive tumors, higher and earlier rates of relapse are seen in basal-like tumors not completely eradicated by chemotherapy. This observation underscores the need to develop targeted therapies for this tumor type.

Recent molecular gene expression profiling studies confirm what has been known for many years based on clinical and pathologic experience: breast cancers are a heterogeneous group of diseases. As our understanding of the molecular differences in breast cancer increases, this information will likely provide guidance for more specific treatment decisions with novel targeted therapies.

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1. Brenton JD, Carey LA, Ahmed AA, Caldas C. Molecular classification and molecular forecasting of breast cancer: Ready for clinical application? *J Clin Oncol* 23:7350-7360, 2005.
2. Fan C, Oh DS, Wessels L, et. al. Concordance among gene-expression-based predictors for breast cancer. *N Engl J Med* 355:560-569, 2006.



2009 Breast Cancer Update

Progress in the treatment and diagnosis of breast cancer continues to reduce the death toll for this most frequent cancer in women. While the long-term survival rate of breast cancer patients has been improving, the actual number of breast cancers diagnosed in the United States has also decreased in recent years. The decline in the incidence of breast cancer in the USA has been attributed to a number of factors: the significant drop in the use of estrogen and progesterone as hormone replacement therapy in post-menopausal women, the rapid rise and then stabilization in the diagnosis of in situ breast cancer (DCIS) and a saturation effect of screening¹.

Obesity is a known risk factor for breast and other cancers. Several reports have shown a significant decrease in breast, endometrial and colon cancer rates among patients who lose a large portion of their excess weight through surgery². Studies are ongoing to evaluate whether exercise can reduce the risk of recurrence of breast cancer.

One development that can benefit the broadest population of women is digital screening mammography, which is in its second year of routine use at the Carol Jo Vecchie Women and Children's Center. The examination is performed in the same manner as the older film technique, but the images are processed and analyzed using computer-aided diagnosis. The enhanced contrast and magni-

fication enables radiologists to identify smaller, earlier stage breast cancers. A large, multi-institutional trial in the United States that compared digital and film mammography found the digital technique significantly improved the sensitivity of detection of cancer in women with dense breasts or who were pre- or peri-menopausal³.

Reconstructive options for women who undergo mastectomy have been enhanced by the increasing experience with the DIEP (deep inferior epigastric perforator) flap. This flap is created by excising the skin and subcutaneous fat of the lower abdominal wall while preserving the blood vessels that originate from the groin and perforate the rectus abdominus muscle on their way to the superficial fat layer.

An advantage of this approach is that the rectus abdominus muscle is preserved, decreasing the potential donor site complications of abdominal wall weakness or hernia. "The critical part of this type of reconstruction is reconnecting the vessels, which can be microscopic," said Dr. Nicole Sommer, Assistant Professor of Plastic Surgery at SIU School of Medicine. Springfield is the only city in Central and Southern Illinois where the DIEP flap breast reconstruction is available.

The new era of "personalized medicine" is being explored in evaluating whether chemotherapy is needed for the treatment of Stage I breast cancer. Al-

though the ten year disease-free survival rate is close to 90 percent in Stage I breast cancers that express receptors for estrogen, the fact that the other 10 percent of women experience recurrent cancer has led to a practice of treating all cancers over 10 mm in size with chemotherapy. The TAILORx study is a clinical trial in progress that utilizes the ONCOTYPE Dx gene expression profiling to identify whether the tumor has a low, high or intermediate risk of recurrence. Patients with a low-risk tumor receive only hormonal therapy, those at high risk receive chemotherapy plus hormone therapy and patients with intermediate-risk tumors are assigned on a random basis to one or the other treatment regimens.

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Courtesy JHarker SIU SOM

Elizabeth Peralta, MD
Surgeon



Information is key in fight against breast cancer



Karen Hoelzer, MD
Oncologist

Breast cancer is the type of tumor that starts from cells in the breast. Most commonly it is found in women, but it rarely occurs in men. There are many types of breast cancers. Non-invasive breast cancers include ductal carcinoma in situ and lobular carcinoma in situ. Some breast cancer experts consider these types to be pre-malignant. The most common types of invasive breast cancer include infiltrating ductal carcinoma and infiltrating lobular carcinoma. Inflammatory breast cancer accounts for about 1 percent to 3 percent of breast cancers. This rare type of breast cancer is sometimes mistaken for a breast infection.

It is estimated there will be 192,370 new cases of breast cancer in the United States in 2009. It is the most common cancer among American women other than skin cancer. It is second to lung cancer in leading causes of cancer death.

One in eight American women will develop an invasive breast cancer in her lifetime. The chance of dying from breast cancer is about one in 35. The risk of dying from breast cancer is diminishing, likely a result of earlier detection and better treatment. There are more survivors than ever from breast cancer.

There are many risk factors for breast cancer which we have no control over such as age, gender, family history, personal history of breast cancer, race, breast density, menstrual history and early

breast radiation usually as a treatment for childhood cancer.

Some risk factors for breast cancer are related to lifestyle choices such as delayed child-bearing, recent use of birth control pills, post menopausal hormone replacement therapy, lack of breast feeding, alcohol usage more than one drink per day, obesity and lack of exercise.

Genetic testing may be considered for women with a strong family history of breast cancer/ovarian cancer or a personal history of breast cancer at a young age (under 40). Women who carry a gene mutation are at very high risk for developing breast cancer. These women may be candidates for closer surveillance, chemoprevention, prophylactic mastectomies and possible removal of the ovaries. Most women with breast cancer do not have a detectable gene mutation.

For the general population, breast cancer risk may be lowered through limiting alcohol usage, regular exercise and maintaining a healthy weight. Women who choose to breast feed for several months may also reduce the risk of breast cancer. Women should avoid long-term usage of hormone replacement therapy.

Breast cancer is most curable when detected early. All women should have a screening mammogram yearly beginning at the age of 40 and continue to do so as long as they are in good health. Women should have a clinical breast exam

by a healthcare professional at least every three years beginning in their 20s and 30s. After the age of 40, women should have a breast exam performed by a health professional yearly.

Breast self-exam should begin monthly for women in their 20s. The important part of breast self-exam is to learn what your own breasts feel like and watch for changes. If you detect a new lump or enlarging lump, it is best to see your doctor right away. Also watch for any breast swelling, breast pain, skin dimpling, redness of the breast or nipple, nipple discharge, retraction of the nipple or a lump in the underarm area.

A breast MRI may be helpful for high risk women. This is not a screening test for average risk women.

Breast cancer treatment may include local therapy such as surgery and radiation, as well as systemic treatment such as hormonal therapy, chemotherapy and targeted therapies.

Adjuvant Online is an Internet-based computer program that is helpful for assessing prognosis of newly diagnosed patients with breast cancer and colon cancer. It helps to determine the expected benefit from adjuvant therapy. Adjuvant therapy as treatment is intended to reduce the risk of recurrence. A more personal recurrence risk tool for patients who have hormone receptor-positive and lymph node-negative breast cancer is called OncotypeDx. This is a test done on the resected tumor tissue. It



helps to determine the aggressiveness of the tumor. Results may be helpful in making treatment decisions on whether or not to take chemotherapy. You should check with your physician to see if these tools are appropriate in your situation.

We are lucky in Springfield to have the availability of many national clinical trials and some pharmaceutical trials for cancer patients. We have both treatment trials aimed at

treating the cancer itself and cancer control trials meant to help with symptom management. It is through clinical trials that we are able to find new and better treatment for cancer.

It is always a good idea to look at all options, including clinical trial participation, before starting a new treatment or therapy. Participation in clinical trials may provide an opportunity for helping others as well as the chance to receive

high quality, cutting edge treatment previously available only at larger centers. Talk with your healthcare provider to find out if a clinical trial is a reasonable option for you.

Informed women have the opportunity to take control of some breast cancer risks. Informed women are the best advocates for their own health. Women should ask their healthcare provider for a mammogram and clinical breast exam if these are not suggested. Knowledge is power.

St. John's Radiation Oncology Department provides state-of-the-art treatment

Breast cancer continues to be the most common cancer among women. It has been estimated that roughly one out of eight women will be afflicted with breast cancer in her lifetime. As such, breast cancer continues to be at the forefront of the Cancer Institute's efforts to improve outcomes and quality of life.

This involves a commitment of energies and resources to the health of all women in Springfield and the Central Illinois region. It begins with awareness and outreach, mainly through the efforts of Oncology Facilitator Diana Weyhenmeyer, RN, and extends through screening with the most advanced breast imaging equipment – digital mammography, breast ultrasound and magnetic resonance imaging (MRI) – available. A dedicated team of committed breast imaging physicians in the Carol Jo Vecchie Women & Children's Center are also part of the team.

When necessary, biopsy via stereotactic imaging is performed. Nuclear medicine provides sentinel node biopsy support. When necessary, plastic surgery reconstruction is available.

Breast conservation is the norm. Genetic testing and counseling is available when appropriate. Research studies through the Radiation Therapy Oncology Group (RTOG) and National Surgical Adjuvant Breast and Bowel Project (NSABP) and other collaborative groups are also available to bring the latest treatment options to our patients.

St. John's Radiation Oncology Department routinely offers three-dimensional conformal therapy with electronic compensation to maximize dose homogeneity. Accelerated partial breast irradiation is available on study using either external beam radiotherapy or brachytherapy. St. John's Radiation Oncology Department is accredited through the RTOG to provide such state-of-the-art treatment.

St. John's collaborates with all healthcare providers in the community – surgeons, medical oncologists, radiation oncologists, primary care physicians, radiologists, pathologists, nurses and other hospitals in our region – to provide the finest breast care to all of our patients.



Bruce Shevlin, MD, FACR
Radiation Oncologist



Understanding the psychological impact of a breast cancer diagnosis



Rhonda Johnson, PhD
Psycho Oncology

Understanding the psychological impact associated with a diagnosis of any type of cancer is complex. Among the contributing factors associated with psychological distress are: stigma, loneliness, physical changes that occur as a result of treatment, loss of sexual desire or other sexual dysfunction, coping with treatment-related side effects, sleep disturbance, facing one's mortality and, of course, any preexisting depression or anxiety. However, each individual faces unique stresses that are, in a general sense, framed by the life tasks she may be facing.

For many women, the stress of a breast cancer diagnosis and treatment does not occur in a vacuum. Most women diagnosed report they had significant, non-cancer related stress prior to receiving their diagnosis. Adding the challenges that come with a cancer diagnosis and associated treatment sometimes can be overwhelming. This seems to be especially true for younger women. Several studies have indicated younger women experience distress related to breast cancer treatment more frequently and at a greater degree than do their older counterparts.

For example, tasks that are common for women in their 20s include developing intimate relationships and then partnerships as well as initiating or considering childbearing. These women are also likely to be beginning their work years and

developing careers. Women who are 60 or older, however, most likely have, or have had, a partner, had children and probably are evaluating winding down their working years.

The younger the woman when she is diagnosed, the more likely she is to be establishing work, so she has fewer economic resources, including access to medical insurance. Therefore, diagnosis at an early age is more likely to compromise family income and lead to financial strain. Many younger women have not had time to build financial reserves to help with medical bills. Often they worry they are draining reserves that were earmarked for children's education and/or long-term goals, including retirement.

The younger the patient, the more likely she is to report psychological distress due to treatment-related side effects such as "chemo brain," lymphedema and scarring. Younger women may have had less illness experience, thus less opportunity to develop skills helpful in interacting with the medical community to manage symptoms.

For younger women, particularly those who do not have children, fertility is a potential source of distress. They are often faced with choosing between aggressive and conservative fertility-sparing management of their cancer. With that decision there are either real or potential losses for the individual no matter her choice.

For those women with children, parenting responsibilities and concerns they may not be able to take care of their children and/or survive to see their children grow up put them at greater risk for psychological morbidity.

All women, but perhaps especially younger women, worry about how their cancer impacts their partners, their young children, their parents, their friends. This worry can lead to strain in relationships, which then leads to decreased levels of social support.

Existential issues, particularly the idea of facing one's mortality, are likely to be processed differently depending on the age of an individual. As we age it is more the norm to expect the experience of illness; breast cancer is not expected in the prime of life. Our mental model of what our future looks like usually does not include significant illness early in life – especially not the idea of possible end of life. Her legacy is threatened, which can lead to an inability to find meaning in life and then depression.

It seems overwhelmingly clear there is a need to be aware of the increased risk for distress in all individuals treated for cancer – but particularly so for those who are younger.

As members of a community who seek to support all women with breast cancer, we can try to be especially cognizant of ways to acknowledge and validate their struggle.



Options for breast reconstruction

When a woman receives the diagnosis of breast cancer, it is a stressful and emotional time. Within a matter of days, often she is seen by several doctors including a surgeon, a medical oncologist, a radiation oncologist and possibly a plastic surgeon. Although this is often overwhelming, it is important the woman has all the information necessary to make an informed decision about her treatment.

If breast conservation is chosen, plastic surgery consultation is usually not necessary right away. However, breast conservation and subsequent radiation can occasionally produce enough scarring and deformity to necessitate partial breast reconstruction at a later date.

When a mastectomy is recommended, following consultation with a surgeon, it is important for the woman to have the opportunity to talk to a plastic surgeon prior to her surgery so she can be informed of the possible options for breast reconstruction.

Timing of Reconstruction

Breast reconstruction can be initiated at the time of the mastectomy or later once the surgery and any subsequent adjuvant medical or radiation treatment is completed. Immediate reconstruction provides the obvious psychological benefit of not having to undergo a period of time with a flat chest. However, the ultimate

outcome of her reconstruction can be affected by a need for adjuvant radiation. In addition, any complications from the reconstruction, such as delayed wound healing, can delay potentially needed postoperative adjuvant treatment.

Delayed reconstruction allows the patient to undergo any needed radiation or chemotherapy in a timely fashion but obviously necessitates a period of time when the woman is without one or both breasts. In addition, delayed reconstruction can negate the advantage of a skin-sparing mastectomy (discussed later).

Alternative options, such as delayed immediate reconstruction or the use of tissue expanders to avoid contraction of the skin preserved in a skin-sparing mastectomy during subsequent radiation, are newer techniques available that can be discussed with the plastic surgeon. These options can provide the benefits of both immediate and delayed reconstruction.

Implant Reconstruction

Breast reconstruction with implants is a good option for the woman who does not want to undergo a more complicated reconstruction with her own tissue (autologous) and for the woman who is not a good candidate for autologous breast reconstruction. Implant reconstruction usually involves placement of a tissue expander either at the time of the

mastectomy or later as noted above.

A tissue expander is a silicone balloon like device that can be slowly filled up over a period of several weeks to stretch the chest wall skin to allow placement of a permanent breast implant. The expander is usually placed under the pectoralis muscle or possibly under a muscle flap from the back called the latissimus dorsi. Expansion is done in the office starting around two weeks after placement. The fluid is added via a port in the expander usually at weekly intervals. The permanent implant (either saline or silicone) is placed one to two months following completion of the expansion.

Advantages of implant reconstruction include shorter operative times, shorter hospitalization and possibly less discomfort from surgery. Disadvantages include less natural feel to the breast, possible implant complications such as rupture or contracture, difficulty in matching the opposite natural breast if unilateral and possible need for replacement at some point in the future.

Autologous Reconstruction

Breast reconstruction can also be achieved using a woman's own tissue without an implant. The transverse rectus abdominus myocutaneous (TRAM) flap is probably the



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most common flap used to reconstruct a breast using a woman's own tissue. This flap uses the lower abdominal tissue normally discarded in a 'tummy tuck' to reconstruct the breast. It may be tunneled up to the chest or disconnected and microsurgically reattached to blood vessels up on the chest wall.

A more recent variation of the TRAM flap is called the deep inferior epigastric perforator flap or DIEP flap. This flap uses the fat and skin of the lower abdomen similar to the TRAM flap but preserves the rectus abdominis muscle. Other flaps can be used in certain circumstances but are less common.

Advantages of autologous reconstruction include a more natural feel to the breast, possible improved symmetry in unilateral breast reconstruction and improved tolerance to irradiation. Disadvantages include prolonged surgery,

possible flap complications such as partial or complete loss and weakness of the abdominal wall if the muscle is taken.

Nipple-areolar Reconstruction

Nipple-areolar reconstruction, along with any touch-up procedures, finishes the breast reconstruction. The nipple is reconstructed from the local tissue of the new breast and the areola is either tattooed or reconstructed with a skin graft.

Conclusion

Breast reconstruction is available to most women following mastectomy. Whether to have reconstruction, as well as the type of reconstruction, is a personal decision best made by the individual woman following consultation with a plastic surgeon.