Contents

Comprehensive Services .................................................. 2
Legacy Cancer Services Medical Directors Report ...................... 5
2006 LHS: Breast Cancer Site Analysis ............................... 6
Legacy Cancer Services Overview .................................... 9
Targeted Drug Therapy for Breast Cancer ............................ 13
Legacy Breast Cancer Imaging Overview ................................. 14
The Next Step in Breast Cancer Management .......................... 16
Surgical Therapy of Breast Cancer ..................................... 19
Legacy Cancer Risk Assessment Program ............................. 20
Legacy Tumor Bank ......................................................... 22
Legacy Breast Cancer Rehabilitation Program .......................... 24
Oncology Nurse Navigators .............................................. 25
Home Grown Clinical Research ........................................... 25
Highlights of Legacy Cancer Services for 2006 ....................... 27
Community Involvement ..................................................... 29
2006 Publications .......................................................... 29
Cancer Data Management Overview ................................. 30
Legacy Health System Network Cancer Committee Members .......... 32
Comprehensive Services

Legacy Health System

Legacy Cancer Services provides a multidisciplinary, comprehensive range of services designed to help people with cancer through the diagnosis, treatment and recovery of their cancer. Legacy Cancer Services and its affiliated physicians provide easily accessed, efficient, and cost-effective care to both adult and pediatric patients. This is accomplished by making the entire spectrum of cancer services available to all patients and their referring physicians. The following services comprise the cancer program.

Autologous Blood Stem Cell Transplant

Autologous (moving from one’s own) blood stem cell transplantation is performed at Legacy Good Samaritan Hospital as part of a nationally acclaimed program. Physicians, nurses, and other healthcare team members are specially trained to provide high quality, personalized care to patients and families undergoing this intensive form of cancer treatment. Patients with specific malignancies including lymphoma, leukemia, multiple myeloma, HIV disease, acute leukemia, multiple myeloma and primary amyloidosis may benefit from autologous blood stem cell transplantation.

Northwest Marrow Transplant Program

Legacy Health System and Oregon Health & Science University (OHSU) have led the way in the development and advancement of research in marrow and stem cell transplantation.

Marrow and Blood Stem Cell Donation

Legacy Health System and OHSU joined their clinical and research activities related to blood and bone marrow transplant to form the Northwest Marrow Transplant Program which is dedicated to enhancing patient care and to consistent research in marrow and stem cell transplantation.

Breast Health Centers

The goals of the Legacy Breast Health Centers are to offer women comprehensive, compassionate care - all in one convenient location – and to provide each and every patient with prompt personalized care. The Breast Health Centers, located at Good Samaritan Hospital, Mt. Hood Park Hospital, and Salmon Creek Hospital, provide expertise in routine and diagnostic mammograms, breast ultrasound and breast biopsies. The latest technology, the GE ImageChecker®, provides a computerized double check of breast x-ray images to assist radiologists in reviewing mammograms. If changes in the breast are seen following a screening mammogram, it is important that further diagnostic tests can occur promptly. The Breast Health Centers have a multidisciplinary team available, including radiologists, surgeons, nurses, technologists and counselors. Legacy Breast Health Centers nurses help guide women through the diagnostic process by providing necessary support, education and answers to questions or concerns.

Cancer Care Conferences

Multidisciplinary cancer care conferences offer opportunities to discuss diagnosis, pre-treatment planning, staging, treatment strategy, and rehabilitation of a broad spectrum of cancer patients. Physicists present current cases for discussion. These conferences also provide education for medical staff, students and other cancer-related personnel. Legacy offers a regular schedule of conferences for cancers of breast, thoracic, central nervous system, head and neck, gastrointestinal organs, intractable lymphomas, and for pediatric cancer. General cancer “grand rounds” are also presented.

Cancer Care Unit

The Cancer Care Unit on the Legacy Good Samaritan Hospital campus is a focused medical-surgical center for Legacy Health System. The specially trained staff on the Cancer Care Unit provide state-of-the-art clinical treatments, thorough patient education, and family support, while delivering compassionate care. The unit has 12 beds and most are private. This includes nine rooms for stem cell transplant. The unit has flexibile visiting hours and houses the John Stanwood Family Room.

Cancer Data Management/ Registry

Cancer Data Management employs a team of registrars to collect data on every patient diagnosed with cancer and/or initially treated in the Legacy System. Their responsibilities include case identification, data abstraction, and follow-up of cancer patients and submission of data to the National Cancer Data Base and the Oregon State Cancer Registry, quality monitoring of registry data, and responding to data requests. The data collected by the registrars is vital to Legacy’s approved Cancer Program.

Cancer Genetics and Risk Assessment Program

A unique community-oriented program at Legacy Good Samaritan combines genetic risk assessment and counseling for breast, ovarian, colon and other cancers pre-symptomatic detection, development of personalized screening recommendations, and discussion of prevention strategies. Genetic risk service includes diagnosis of cancer syndromes, patient education about the inherited components of cancer, evaluation of families to identify cancer history and, if appropriate, genetic testing.

Cancer Rehabilitation, Support Services and Integrative Care

Cancer Rehabilitation, Support Services and Integrative Care work together to help individuals and their families adjust to the impact of cancer through:

- Psychosocial counseling: identifies emotional needs and stressors, and assists in the development of coping skills.
- Physical therapy: maximizes the level of independence within the limits of the individual’s disabilities and abilities through use of exercise, ambulation, assessment of equipment needs, family training, and assistance with pain management.
- Occupational therapy: educates and helps in the adjustment to possible limitations of endurance, self-care skills or other activities of daily living.
- Speech therapy: provides instruction, training and therapy for those with speech, swallowing and communication difficulties.
- Dietitian: provides guidance in achieving a healthy lifestyle through individualized nutritional counseling.
- Stress management: assists an individual’s adjustment to illness, disability and treatment through psychological education training and guided imagery.
- Art therapy: uses various artistic media to assist patients in expressing themselves through creative as well as verbal art. Art therapy assists adults and offers individual and group counseling to patients in addressing issues related to issues for childhood and adolescents.

Cancer Services include chemotherapy, radiation therapy, comprehensive nursing services, home infusion, nursing service, pediatrics, surgical care, intensive care unit, and palliative care.

Palliative care, often called “comfort care,” is provided in any hospital patient nearing the end of life. Consultation is offered specifically at Legacy Good Samaritan and Legacy Emmanuel Hospitals. Hospice is a special program that focuses on quality of life for adults and children with terminal illness. Care is provided in the patient’s place of residence whether it be their home, assisted living, or care facility. Legacy Hopewell House Hospice is a special program that focuses on radiation oncology patients needing acute pain and symptom management, or experiencing caring crisis who have found Hopewell House to be the next best thing to home. Regardless of when the care is provided, hospice focuses on providing a full range of physical, emotional, social, and spiritual comfort to both the patient and family. The interdisciplinary care team includes the medical director; registered nurses, medical social workers, home health aides, physical therapy, occupational therapy, pastoral services, dieticians, music therapists and volunteers. Bereavement support is provided to family/significant others of the deceased for 13 months following the death of the patient.

Gastrointestinal Tumor Services

Legacy’s Gastrointestinal (GI) Tumor Program brings together a wide variety of treatment and support services related to the care of those with esophageal, colorectal, and other GI malignancies. Elements of the program also include clinical research, genetics and educational offerings for physicians, patients and the community including our annual Genes in GI Oncology Conference each Spring. The multidisciplinary team meets monthly to discuss diagnoses, treatment plans and follow-up of current patients.

consultation service provides information and referrals to patients and families seeking another opinion regarding their cancer diagnosis or cancer care. We offer individualized referrals to appropriate cancer care physicians.

Cancer Prevention and Early Detection

Legacy’s employment staff also plays an active role in community education by providing information on cancer prevention and early detection at community events, health fairs, and upon request. Periodically, free or low-cost cancer screens are offered, often in conjunction with other community organizations.

healing Gardens – provides therapeutic gardens accessible to patients and families for renewal and reflection.

Managed care – applies a range of treatments includ- ing manual massage therapy to positively affect the individuals health & well being.

These services are available to individuals with all types and stages of cancer, providing a continuum of care and support throughout the course of treatment.

Children’s Cancer Program

The Children’s Cancer Program staff at Legacy Emanuel Children’s Hospital have been specially trained in caring for children and adolescents with cancer. Focusing on the treatment and care of childhood cancer, our inpatient and outpatient oncology teams provide medical management, family education, help with reintegration into the community, and long-term follow-up care.

Patients have access to the most up-to-date and progressive treatments through participation in the Children’s Oncology Group, a national consortium of children’s hospitals that treat cancer. Services include chemotherapy, radiation therapy, supportive care and hospice.

End of Life Care/Hospice/ Palliative Care

Palliative care, often called “comfort care,” is provided in any hospital patient nearing the end of life. Consultation is offered specifically at Legacy Good Samaritan and Legacy Emmanuel Hospitals. Hospice is a special program that focuses on quality of life for adults and children with terminal illness. Care is provided in the patient’s place of residence whether it be their home, assisted living, or care facility. Legacy Hopewell House Hospice is a special program that focuses on radiation oncology patients needing acute pain and symptom management, or experiencing caring crisis who have found Hopewell House to be the next best thing to home. Regardless of when the care is provided, hospice focuses on providing a full range of physical, emotional, social, and spiritual comfort to both the patient and family. The interdisciplinary care team includes the medical director; registered nurses, medical social workers, home health aides, physical therapy, occupational therapy, pastoral services, dieticians, music therapists and volunteers. Bereavement support is provided to family/significant others of the deceased for 13 months following the death of the patient.
Green Gables Guest House
Green Gables Guest House, on the Legacy Good Samaritan Hospital campus, provides affordable lodging for out-of-town Legacy patients and their families. The house accommodates up to 10 people; guests may stay as long as they are receiving treatment. Hospitable and caring volunteers help make the house seem like home away from home for its guests.

Hepatic Biliary and Pancreatic Program
Legacy Health System is a leading regional center for treatment of liver, bile duct and pancreatic tumors, offering a full range of treatment options. Legacy offers specialized techniques, treatments, and procedures, such as liver resection, radiofrequency ablation, hepatic artery pump-chemotherapy, and chemo- and radio-embolization for liver tumors. The primary goal is to improve the survival and quality of life for patients. The Hepatic Biliary and Pancreatic Program is a collaboration between cancer services, medical and surgical oncology, gastroenterology, radiation oncology, and interventional radiology. Components include basic and clinical research, a prospectively maintained database to track outcomes and outcomes, and stimulate clinical research, and education programs for physicians and patients.

Lymphedema Management
Lymphedema management is a service that treats swelling of the arm, leg or other body part caused by an abnormal build-up of protein and excess water in the tissue space. The goals of this therapy are to reduce the swelling, minimize recurrence, decrease pain and discomfort, provide education and minimize psychological distress. The services are provided by nationally certified and trained physical and occupational therapists.

Oncology Nurse Navigator
Good Samaritan Hospital offers the services of an Oncology Nurse Navigator, a registered nurse trained in cancer care, to help patients “navigate” through their cancer diagnosis and treatment. Currently focused on patients with breast, colorectal or prostate cancer, the nurse navigator guides, supports and educates patients and their families and helps coordinate the efforts of the medical team.

Radiation Oncology
Radiation Oncology consists of the application of high-energy X-rays to particles to the body for the purpose of treating disease including cancer. Legacy Cancer Services provides radiation therapy at all hospital locations except Meridian Park Hospital. The treatment process includes consultation, treatment planning, on-going clinical evaluation, education and support services. Several types of radiation therapy are available, depending on the needs of a specific patient:

- Image Guided Radiation Therapy (IGRT) – an advancement in precision for targeting and treating tumors. The technology works by combining and integrating X-ray scanning with the use of precise radiation therapy during the actual time of treatment. This allows the radiation team to deliver the treatment with a high degree of accuracy while minimizing damage to the surrounding healthy tissue. IGRT may be used on many types of cancers and is especially suited for cancers of the prostate, head, neck and lung.

- Intensity Modulated Radiation Therapy (IMRT) – a powerful new tool that delivers radiation more accurately and effectively to tumors located in the head, neck, prostate, chest and other locations. IMRT confirms the radiation beams to the irregular shapes of tumors, but also can change the shape of each beam and modulate the dose intensity during treatment.

- Varilite-shaped Beam Surgery - an advanced form of radiosurgery treatment. The Varilite technology allowed at Legacy Emanuel, in use at only a handful of centers nationwide, is “surgey without a scalpel”-shaping beams of radiation to mirror the exact size and shape of a tumor, treating only the tumor and sparing healthy tissue. With recent upgrades, the accuracy and reliability of Varilite has been improved. This allows its use on medically inoperable tumors in the spine, head and neck, lungs, liver, breast, prostate and other areas in the body.

- Brachytherapy - a form of radiation therapy in which radioactive material is placed within the body in direct contact with the affected area, allowing more radiation to be given safely and resulting in a much shorter and more convenient course of treatment. Cancer types in which brachytherapy is particularly useful include prostate, breast, gynecologic and soft tissue sarcomas.

- Conformal External Beam Therapy – uses computerized technology to map the tumor’s location and optimize the radiation dose delivered to the tumor while minimizing side effects to the surrounding tissues.

Surgery
Legacy Surgical Services offers comprehensive state-of-the-art surgical services at Legacy’s five hospitals. Legacy’s surgical capabilities comprise virtually every medical specialty and feature many of the region’s preeminent surgeons. Programs in robotics, minimally invasive surgery, general surgery, thoracic surgery, and gastroenterology combine advanced technology and experienced professional staff.

Support and Education Groups
Support and education groups provide emotional support and ongoing education to individuals whose lives are touched by cancer. Some groups are open to family and friends, and are offered at a variety of times and locations. See the Legacy Cancer Services website at www.legacyhealth.org/cancer for a current listing.

Tumor Bank
The Legacy Oncology Laboratory opened its Tumor Bank in April of 2006. The bank collects and preserves tumor samples removed during surgery. Researchers are studying the relationships between tumor characteristics, treatment alternatives, and patient outcomes. Consent from patients is required before banking the tumor specimens. Samples from the Tumor Bank have already led to several new, exciting discoveries in our research laboratories.

Volunteer Program
Legacy Cancer Services appreciates the support of an active and energetic volunteer staff. They assist with numerous rewarding activities such as helping with Survivors’ Day, mailings, making phone calls, maintaining a patient library and remembering work. Volunteers help keep Green Gables Guest House in ready condition for guests and provide support for the guests while staying there.


A tradition of excellence – coming together with science and a group of professionals who are passionate about improving cancer care. That I think perfectly describes the programs at Legacy Cancer Services and is especially descriptive of our breast cancer programs. Unfortunately, the North- west is home to some of the highest incidences of breast cancer in the nation and breast is our highest tumor site, with 529 new cases treated in our system annually. Legacy Cancer Services has been a leader in the realm of breast cancer therapy in Oregon, bringing new technology and service to improve the diagnosis and treatment of breast cancer for over 20 years. I’d like to share some of the history of our program with you.

1975 Dr. Stanwood established Cancer Rehabilitation Program - A national landmark
1992 First Stereotactic Breast biopsy unit in Portland established at Legacy Good Samaritan
1995 Comprehensive Genetic Risk Assessment Program established
1996 First Sentinel Node in Breast Cancer Research Trial and Training Courses
1998 Comprehensive Breast Health Center at Legacy Good Samaritan (First in Portland)
1999 Comprehensive Breast Health Center at Legacy Meridian Park.

1999 Complementary Therapy Research Projects in Breast Cancer begins
• Black Cohosh versus Efector for Management of Hot Flashes in Breast Cancer Survivors
• Horsechestnut versus Placebo as an Adjunctive Therapy in Lymphedema
• RayGel versus Placebo for Skin Protection during Whole Breast Irradiation
• Acupuncture
• Blue Citrus

1999 First Computer Assisted R2 mammography reading devices installed with the breast center opening
2003 Oregon’s First Partial Breast Irradiation: both interstitial catheter and Intracavitary therapy (Mammosite)
2005 Tumor Bank-Bench research in breast cancer
2006 First Breast Specific Gamma Imaging in Oregon

As you can see, we have been working diligently to keep pace with the changes and improvement in breast imaging and therapy. As we go forward, we are aiming ourselves to be part of the solutions. New research occurring in our research labs and clinicians with a commitment to help their patients are key to the future. Look for new and exciting developments as we continue to work towards the common goal of improved outcomes.

As you read through this year’s report, I think you will be as elated as I am about the work being done in surgery, radiation, medical oncology, rehabilitation, integrative therapies and research. You will feel the passion and energy for the future of care and discoveries in the world of Breast cancer.

Nathalie Johnson, M.D., FACS
Medical Director – Legacy Cancer Services and Breast Health Centers
Legacy Health System
LHS Breast Cancer Site Analysis, 2006

Background

Breast cancer is one of the most common malignancies affecting women in the Western countries. We are learning that breast cancer is clinically and pathologically heterogeneous. Clinical factors, such as histology, tumor size, lymph node involvement, age at diagnosis, distant metastasis, etc., affect response to therapy and overall survival. Great strides have been made in discovering the molecular markers in breast malignancies, and this knowledge has already led to development of targeted therapies that can alter patient prognosis (for example, Her2/neu protein over-expression in breast tumors and the use of trastuzumab, a Her2/neu targeting monoclonal antibody)[2].

Since breast cancer is a significant public health issue, collecting data regarding its impact is important on the national and local level. Based on data from the National Cancer Institute (NCI) and the National Center for Health Statistics (NCHS), the American Cancer Society (ACS) has reported estimated data on breast cancer cases in the United States in 2006[3]. In females, breast cancer accounts for the most new cases of cancer and is the second leading cause of death. Among women, breast cancer was expected by ACS to account for over 30 percent of all new cancer cases in 2006.

LHS Data

For 2006, in the Legacy Health System (LHS), Table 1 shows the age distribution of breast cancer cases. Breast cancer has several histological types, and an important distinction is between invasive (in situ) and invasive breast cancer. Table 2 shows the breakdown in terms of histology of our LHS patients. Pathologic evaluation of breast tumors for expression of hormone receptors and the Her2/neu over-expression impact prognosis and therapy options. Table 3 shows the estrogen receptor (ER), progesterone receptor (PR) and Her2/neu expression in LHS breast cancers.

Breast cancer staging with the use of size of tumor (T), regional lymph node involvement (N) and distant metastasis (M) is classified based on American Joint Committee on Cancer (AJCC) criteria[1]. Figure 1 shows the proportions of the clinical stages for LHS patients in 2006. Treatment for breast malignancies continues to evolve rapidly. The approach depends on many factors, including clinical stage, the biology of the tumor, prognosis, patient health status, etc. It requires a multidisciplinary approach with diagnostic imaging, surgery, radiation therapy, hormonal therapy, chemotherapy and targeted biological therapies. This is a complex process, and Table 4 summarizes the initial treatment approach for most LHS patients. We also now have 10-year survival data on our patients diagnosed between 1995 – 2001 (Figure 2).

Conclusion

As novel diagnostic, prognostic and therapeutic technologies continue to emerge, our evaluation of the data may become more complex. It will be important to understand these changes, and use evidence-based medicine in our approach.

Anupama Kurup, M.D.

Medical Oncologist

Table 1

<table>
<thead>
<tr>
<th>Age</th>
<th>Pts</th>
<th>%</th>
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<tbody>
<tr>
<td>20-29</td>
<td>9</td>
<td>4.4</td>
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<tr>
<td>30-39</td>
<td>20</td>
<td>3.8</td>
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<tr>
<td>40-49</td>
<td>92</td>
<td>17.6</td>
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<tr>
<td>50-59</td>
<td>148</td>
<td>28.2</td>
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<tr>
<td>60-69</td>
<td>127</td>
<td>24.2</td>
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<tr>
<td>70-79</td>
<td>86</td>
<td>16.4</td>
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<tr>
<td>80-89</td>
<td>41</td>
<td>7.8</td>
</tr>
<tr>
<td>90+</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>Grand Total</td>
<td>524</td>
<td>99.9</td>
</tr>
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</table>

Table 2

<table>
<thead>
<tr>
<th>Histology</th>
<th>Total</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCIS (in situ/papillary)</td>
<td>33</td>
<td>(6.3%)</td>
</tr>
<tr>
<td>Invasive ductal</td>
<td>299</td>
<td>(55.5%)</td>
</tr>
<tr>
<td>Lobular</td>
<td>17</td>
<td>(3.2%)</td>
</tr>
<tr>
<td>Tubulocystic</td>
<td>8</td>
<td>(0.1%)</td>
</tr>
<tr>
<td>Medullary</td>
<td>3</td>
<td>(0.0%)</td>
</tr>
<tr>
<td>Micropapillary</td>
<td>8</td>
<td>(0.0%)</td>
</tr>
<tr>
<td>Adenoacanthoma</td>
<td>5</td>
<td>(0.1%)</td>
</tr>
<tr>
<td>Tubular</td>
<td>2</td>
<td>(0.0%)</td>
</tr>
<tr>
<td>Medullar in situ</td>
<td>15</td>
<td>(0.0%)</td>
</tr>
<tr>
<td>Medullar invasive</td>
<td>64</td>
<td>(12.2%)</td>
</tr>
<tr>
<td>Paget’s disease</td>
<td>1</td>
<td>(0.0%)</td>
</tr>
<tr>
<td>Other</td>
<td>76</td>
<td>(14.5%)</td>
</tr>
</tbody>
</table>

Table 3

| Hormone Receptor and Her2/neu Status in LHS Breast Cancer Cases, 2006 |
|--------------------------|--------------------------|
| ER Status | PR Status | HER2 Status | Total |
| 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | Total | 01-06 |
| Negative | 64 | 69 | 60 | 66 | 73 | 78 | 408 |
| Positive | 21 | 1 | 2 | 7 | 9 | 3 | 120 |
| Grand Total | 85 | 71 | 62 | 73 | 82 | 81 | 530 |

Table 4

<table>
<thead>
<tr>
<th>1st Course Treatment Summary Total</th>
</tr>
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<tbody>
<tr>
<td>Surgery(S)</td>
</tr>
<tr>
<td>Hormone(H)</td>
</tr>
<tr>
<td>S + R</td>
</tr>
<tr>
<td>S + C</td>
</tr>
<tr>
<td>S + H</td>
</tr>
<tr>
<td>S + R + C</td>
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<td>S + R + H</td>
</tr>
<tr>
<td>S + C + R</td>
</tr>
<tr>
<td>S + R + C + H</td>
</tr>
<tr>
<td>Other Cancer</td>
</tr>
<tr>
<td>Not Treated</td>
</tr>
<tr>
<td>Treated</td>
</tr>
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</table>

References

2006 brought many technological advances to Legacy Cancer Services. These have included a state-of-the-art upgrade to the Novalis Shaped Beam Surgery unit at Emanuel Radiation Oncology. The sophisticated ExacTrac upgrade and software now allow the high precision and reproducibility that previously benefited cranial stereotactic patients, to be extended to extracranial sites. At the core of this system is a micro-multileaf collimator that provides continuous shaping of the treatment beam to match the size and shape of a patient’s tumor from all angles. Novalis ensures that the tumor receives the full prescription dose of radiation while protecting adjacent healthy tissue.

Legacy has also added the da Vinci Robotic Surgical system, which is designed to mimic the dexterity of the human hand and wrist. This allows surgeons to perform minimally invasive prostate surgical procedures that result in considerably less pain and a shorter recovery period. The robotic “arms”, which are capable of achieving seven degrees of motion, are programmed to respond to movements the surgeon makes and translates these into the micro-movement of an instrument, eliminating even the slightest tremor of a surgeon’s hand.

Finally, Legacy Good Samaritan Breast Health Center was the first breast-imaging center in Oregon to add Breast-Specific Gamma Imaging (BSGI) to its breast cancer detection armamentarium. BSGI is an imaging modality that detects breast cancer in women where traditional mammography does not provide adequate information. This includes patients who have a questionable finding on their mammogram, who have dense breast tissue, and women with scar tissue from previous surgery or with breast implants. Because BSGI detects metabolic differences between breast cancer cells and normal breast tissue, it can be a more sensitive method of detecting tumors than imaging that relies solely on the anatomical structure of the breast.

While technological advances are important in providing patients with the best care, Legacy Cancer Services is also committed to assisting patients to achieve the highest quality of life during and after treatment. With this in mind, Legacy formed the Integrative Medicine Advisory Committee to ensure we meet the emotional, psychological and physical needs of the patients and their families. The areas of focus for this committee include mind-body therapy, exercise/movement, music/chantology, support groups, psychosocial counseling, art therapy, lymphedema management, and social work. The goal of these complementary therapies is to help alleviate stress, reduce pain and anxiety, manage symptoms, and promote a feeling of well-being for the patient.

Legacy has continued to strive for excellence in all of its cancer treatment programs, research, and support systems. Highlights of this year’s accomplishments include:

Clinical Research:
Legacy participated in many cooperative clinical and laboratory research programs including Columbia River Oncology Program (CROP) and the Northwest Marrow Transplant Program (NWMTP), as well as institu-
Community Outreach:

Legacy worked to meet the needs of the community for medical education, cancer screening, and in the provision of support and exercise programs.

In February, Legacy held its annual Men’s Wellness and Screening Event which focused on prostate screening, heart health and stroke risk factors. Fecal occult blood testing kits were also provided for colorectal screening. In May, Legacy participated in the city-wide skin cancer screening program.

Legacy has also partnered with a number of national and regional organizations, including the Oregon Partnership for Cancer Control. These organizations included:

- American Cancer Society (ACS)
- American College of Surgeons (ACoS)
- Centers for Disease Control & Prevention (CDC)
- Intercultural Cancer Council
- National Association of Central Cancer Registries
- National Dialogue on Cancer
- National Cancer Institute (NCI)
- Lance Armstrong Foundation
- Centers for Disease Control & Prevention (CDC)
- American College of Surgeons (ACoS)
- American Cancer Society (ACS)
- NA Association of Central Cancer Registries
- National Governors Association
- National Dialogue on Cancer
- National Association of Central Cancer Registries

The Oregon Partnership for Cancer Control and its Comprehensive Cancer Plan provide a number of national and regional organizations, including the Oregon Partnership for Cancer Control. These organizations included:

- American Cancer Society (ACS)
- American College of Surgeons (ACoS)
- Centers for Disease Control & Prevention (CDC)
- Intercultural Cancer Council
- National Association of Central Cancer Registries
- National Dialogue on Cancer
- National Cancer Institute (NCI)
- Lance Armstrong Foundation
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- American College of Surgeons (ACoS)
- American Cancer Society (ACS)
- NA Association of Central Cancer Registries
- National Governors Association
- National Dialogue on Cancer
- National Association of Central Cancer Registries

Legacy Foundation grants were instrumental in supporting the growth of many of these research projects.

- Testing osteoprotegerins in multiple myeloma
- Oral glutamine supplementation to decrease oral mucositis in transplant patients
- Ongoing trials of Raygel for reducing acute skin toxicity of radiation in breast cancer patients
- TNFerade trial utilizing biologic therapy in pancreatic cancer
- Testing Xerecept as an alternative treatment to reduce cerebral edema in patients with brain tumors
- Quality of Life studies in 3 subpopulations – breast brachytherapy, liver tumor and lymphedema patients

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<table>
<thead>
<tr>
<th>Primary Site</th>
<th>EH %</th>
<th>GS %</th>
<th>MH %</th>
<th>MP %</th>
<th>SC %</th>
<th>LHS %</th>
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<tr>
<td>Amp Of Vater</td>
<td>0.0</td>
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<td>1.0</td>
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<td>Anal Canal</td>
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<td>0.0</td>
<td>1.0</td>
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<td>Bile Ducts</td>
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<td>0.0</td>
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<td>1.0</td>
</tr>
<tr>
<td>Bladder</td>
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<td>27.0</td>
<td>24.0</td>
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<td>Bone</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Brain/CNS</td>
<td>85.0</td>
<td>73.0</td>
<td>7.0</td>
<td>4.0</td>
<td>1.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Breast</td>
<td>19.0</td>
<td>33.0</td>
<td>46.0</td>
<td>21.0</td>
<td>12.0</td>
<td>26.0</td>
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</tbody>
</table>

| Grand Total | 390  | 100% | 949  | 100% | 211 | 100% |

2006 Five Most Common Sites/National Comparison

- Breast
- Lung
- Colon/Rectum
- Brain/CNS
- Bladder
Legacy staff participated in the Angel Adventure walk to raise awareness and funding for brain tumor research and support. Legacy Cancer Services was also proud to continue participation and sponsorship of community events such as Race for the Cure, Relay for Life, National Cancer Survivors’ Day, Celebration of Courage, and the Northwest Marrow Transplant Reunion.

Professional Education:
In addition to the monthly Oncology Grand Rounds and various site-specific tumor conferences, Legacy was proud to offer a variety of educational opportunities for physicians and allied healthcare staff. These events included:
- Lunch and Learn programs focused on colorectal cancer
- The 2nd Annual Pacific Northwest Excellence in Breast Cancer Conference
- The 23rd Annual Seminar for Radiation Oncology Professionals
- The 6th Annual Stem Cell Transplantation Conference
- Stanwood Rehabilitation Conference

Quality Improvement/Data Management:
The Hospital Consumer Assessment of Healthcare Providers and System (HCAHPS) survey was started in April, focusing on communication with doctors and nurses, responsiveness of hospital staff, cleanliness and quietness of the hospital environment, pain management, communication with doctors and nurses, responsiveness of hospital staff, cleanliness and quietness of the hospital environment, pain management, and reduced use of post menopausal estrogen.

The Cancer Tumor Registrars had 2,321 analytic cases abstracted, which was down slightly from last year due to the internalization of the Kaiser Radiation Oncology patient treatment. 214 Cancer Conferences were held throughout the legacy system including many tumor site-specific multidisciplinary prospective conferences.

<table>
<thead>
<tr>
<th>Cancer Conferences 2006</th>
<th>Number of Meetings</th>
<th>Total Cases Presented</th>
<th>Prospective Cases</th>
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<tr>
<td>ER Head&amp;Neck</td>
<td>30</td>
<td>35</td>
<td>31</td>
</tr>
<tr>
<td>ER Pediatric</td>
<td>24</td>
<td>270</td>
<td>206</td>
</tr>
<tr>
<td>GC Breast</td>
<td>20</td>
<td>78</td>
<td>78</td>
</tr>
<tr>
<td>GC/OG</td>
<td>31</td>
<td>169</td>
<td>169</td>
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<tr>
<td>GC General</td>
<td>5</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>GC Gastrointestinal</td>
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<td>79</td>
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<tr>
<td>GC Gynecologic/Oncologic</td>
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<td>2</td>
<td>2</td>
</tr>
<tr>
<td>GC Thoracic</td>
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<td>103</td>
<td>124</td>
</tr>
<tr>
<td>MM Breast</td>
<td>8</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>MM General</td>
<td>21</td>
<td>80</td>
<td>85</td>
</tr>
<tr>
<td>MM Breast</td>
<td>9</td>
<td>24</td>
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<tr>
<td>MM Thoracic</td>
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<td>85</td>
<td>85</td>
</tr>
<tr>
<td>GC General</td>
<td>20</td>
<td>79</td>
<td>74</td>
</tr>
<tr>
<td>LLS TOTAL</td>
<td>214</td>
<td>1,667</td>
<td>961</td>
</tr>
</tbody>
</table>

The Cancer Tumor Registrars had 2,321 analytic cases abstracted, which was down slightly from last year due to the internalization of the Kaiser Radiation Oncology patient treatment. 214 Cancer Conferences were held throughout the legacy system including many tumor site-specific multidisciplinary prospective conferences.

Through Good Samaritan Hospital & Medical Center, Emanuel Hospital & Health Center, Meridian Park Hospital, Mount Hood Medical Center, and Salmon Creek Hospital, the Legacy system has brought the highest level of comprehensive cancer care to the region. Our programs have strived to encompass all aspects of cancer care including screening and early detection, providing the latest technologies and advancement, and meeting the emotional and personal needs of our patients. As we look forward, our plan is to build on our successes, keeping in mind the ultimate goal of providing quality and compassionate care to those in need.

Kathryn Panwala, M.D.
Radiation Oncologist

Targeted Drug Therapy for Patients with Breast Cancer

Treatment of breast cancer has long been a complicated and dynamic challenge, both for those patients who appear free of disease after surgery and for those who have recurrent or metastatic disease. Improvements in survival after breast cancer diagnosis are becoming more apparent in our population as we identify disease in a more timely fashion via broader use of mammography and new techniques such as MRI and reduced use of post menopausal estrogen. However improved outcomes are also a result of more refined treatment decision making due to our improved ability to target breast cancer drug therapy more appropriately.

For years oncologists have recognized that breast cancer behavior varies from patient to patient even when comparing tumors with similar histologic appearance and stage. Without data to guide us, our systemic treatment strategies have been homogeneously applied to a group of patients with heterogeneous tumors, leading to over treatment in some patients and under treatment in others. Research into biologic differences that lead to heterogeneous behavior has resulted in the ability to target breast cancer drug therapy more appropriately.

With the advent of targeted therapy for breast cancer, the landscape has changed dramatically, allowing for more refined and personalized treatment approaches. Targeted therapy has been shown to improve survival and quality of life for patients with breast cancer.

Targeted therapy for breast cancer includes a variety of agents that act on specific pathways or molecules involved in the development and progression of breast cancer.

- **Herceptin** (Trastuzumab): This monoclonal antibody targets the HER2/neu receptor, which is overexpressed in about 20% of breast cancer cases. It works by blocking the HER2 signaling pathways, which are involved in the growth and survival of cancer cells. It is most effective in patients whose cancer over-expresses the HER-2 oncoprotein.

  - **Mechanism of Action:** Herceptin inhibits the HER2 receptor, which is overexpressed in some breast cancer cells. This leads to decreased cell growth and increased apoptosis (cell death).
  - **Clinical Studies:** Clinical trials have shown that Herceptin improves overall survival in patients with HER2-positive breast cancer, particularly in combination with chemotherapy.
  - **Side Effects:** Common side effects include fatigue and inflammation. More severe side effects can include fluid retention, anemia, and infections.

- **Endocrine Therapy:** This includes drugs like tamoxifen, aromatase inhibitors, and others that interfere with hormone production or block hormones from binding to receptors on cancer cells.

  - **Mechanism of Action:** These drugs work by blocking the production or action of estrogen, which can stimulate tumor growth in hormone-sensitive breast cancer.
  - **Clinical Studies:** Endocrine therapy is effective in patients whose breast cancer cells express estrogen receptors. It is often used as initial treatment or following chemotherapy.
  - **Side Effects:** Common side effects include hot flashes, vaginal dryness, and increased risk of osteoporosis.

- **Herceptin Therapy:** This includes targeted immune antibodies that specifically target cancer cells.

  - **Mechanism of Action:** Herceptin is a monoclonal antibody that specifically binds to the HER2 receptor. It then triggers the death of cancer cells through a process called apoptosis.
  - **Clinical Studies:** Clinical trials have shown that Herceptin can improve survival and quality of life in patients with HER2-positive breast cancer.
  - **Side Effects:** Common side effects include fatigue, diarrhea, and nausea.

- **Other Targeted Therapies:** These include chemotherapy, endocrine therapy, and immunotherapy.

  - **Chemotherapy:** Chemotherapy drugs work by killing rapidly dividing cells, which can be effective against breast cancer.
  - **Endocrine Therapy:** This includes drugs that interfere with hormone production or block hormones from binding to receptors on cancer cells.
  - **Immunotherapy:** This includes drugs that help your immune system fight cancer.

Through Good Samaritan Hospital & Medical Center, Emanuel Hospital & Health Center, Meridian Park Hospital, Mount Hood Medical Center, and Salmon Creek Hospital, the Legacy system has brought the highest level of comprehensive breast cancer care to the region. Our programs have strived to encompass all aspects of cancer care including screening and early detection, providing the latest technologies and advancement, and meeting the emotional and personal needs of our patients. As we look forward, our plan is to build on our successes, keeping in mind the ultimate goal of providing quality and compassionate care to those in need.

Kathryn Panwala, M.D.
Radiation Oncologist

Legacy Health System

2006 Annual Report
tumors for women with breast cancer. While it has long been recognized that different genetic disruptions in tumor cells result in different behavior in tumors from patient to patient, only recently has testing for those genetic variations become available. Retrospective studies have shown that the gene mutation patterns may predict which patients benefit from chemotherapy and which do not. This is another dynamic area of cancer treatment decision making that is changing rapidly. Prospective trials utilizing this technology are open at Legacy and will help refine exactly how this new technology will be best utilized in our patients. Undoubtedly this technology will help us advise patients more effectively in their treatment decisions with regard to systemic therapy.

Kevin Olson, M.D.
Medical Oncologist

Legacy Breast Cancer Imaging Services Overview

The cornerstone of improved breast cancer treatment outcomes is early detection using state of the art mammographic screening for breast cancer. The Legacy Health System offers convenient, comprehensive, MQSA accredited breast cancer screening interpreted by specialized radiologists at multiple sites throughout the greater Portland area. Screening is available at all of the following sites:

- Legacy St. Helens Clinic in St. Helens
- Legacy Emanuel Hospital and Health Center in North Portland
- Legacy Good Samaritan Hospital and Medical Center in Northwest Portland
- Legacy Mt. Hood Medical Center in Gresham
- Legacy Salmon Creek Hospital in Vancouver
- Legacy Meridian Park Hospital in Tualatin

An integral part of any screening program is additional diagnostic evaluations. Legacy Health System recognizes that these are optimally provided only at a comprehensive multi-modality specialized breast-imaging centers staffed by specialized radiologists. Two of the first Comprehensive Breast Health Centers in Portland were established at Legacy Good Samaritan Hospital (1998) and at Legacy Meridian Park Hospital (1999). A third center was introduced in Vancouver with the opening of the new Legacy Salmon Creek Hospital. These centers allow specialized radiologists to use the full range of breast imaging modalities and percutaneous biopsy techniques to resolve abnormal screening mammograms, evaluate clinically identified breast abnormalities, help stage local extent of new breast cancers prior to treatment and assess response to treatment. At Mount Hood Medical Center, breast MR and stereotactic breast biopsies are not yet available but specialized radiologists provide the bulk of diagnostic evaluations and biopsies that require only mammography and sonography.

These comprehensive Breast Health Centers provide the full range of state of the art breast diagnostic modalities including digital mammography, dedicated breast sonography, dedicated breast MRI and, at Legacy Good Samaritan, breast sestamibi scans using a new breast specific gamma camera.

A complete range of percutaneous biopsy techniques is available and each center has a staff of specialized nurses to guide and support women through the complexities of the diagnostic process. Nurses dedicated to the process are a key element in minimizing the inconvenience and anxiety associated with an abnormal mammogram. In addition to providing emotional support and a readily available source of information, the nurses are able to streamline the process so that women can have an abnormal screening mammogram resolved with additional imaging and/or biopsy within three days in the vast majority of cases.

Probably the most significant new challenges in breast imaging arise from attempts to address the old perennial challenge of increasing sensitivity for detection of early breast cancers while avoiding decreased specificity that can lead to large numbers of false alarms. Breast MR has matured significantly and is now generally regarded to be clinically useful because of its ability to identify many cancers occult to mammography or non-targeted sonography. However, because of its cost and the need for extensive interpretative experience to avoid unacceptably low specificity, consensus regarding which particular indications are appropriate is still developing.

In the diagnostic, as distinct from screening, setting there is still consensus that complete evaluation with conventional modalities should precede further evaluation with MR. Indications for diagnostic MR are most secure when evaluating the extent of known carcinoma in the ipsilateral or contralateral breast, particularly for lobular carcinoma. MR can be very helpful for assessing surgical margins, for distinguishing tumor recurrence from scar and is ideal for evaluating the breast in a woman with malignant axillary lymph nodes without a known carcinoma in the breast. However, using breast MR for additional evaluation of the problematic or dense mammogram may lead to additional fruitless expensive procedures with a low yield of cancers. This becomes similar to using MR for breast cancer screening.

Earlier this year the American Cancer Society Breast Cancer Advisory Group published its American Cancer Society Guidelines for Breast Screening with MRI as an Adjunct to Mammography (CA Cancer J Clin 2007; 57; 75-89). This is available at http://caonline.amcancersoc.org/cgi/content/full/57/2/75 and the recommendations are summarized in Table 1, on page 76. This is well worth reviewing but is too lengthy to include here. The recommendations include 1) against using MR for breast screening in women with an estimated lifetime risk of <15%, 2) still equivocal for many sub-groups of women, and 3) strongly recommend screening MR only for a relatively small number of women with well defined markedly increased lifetime risk of breast cancer. It is clear that the relatively small number of women for whom MR screening is recommended is still quite large compared to the capacity of MR scanners and quite small relative to the amount of anxiety in our patients. This nascent evolving consensus struggles to accommodate these latter issues and will likely have to evolve over time.
The Next Step in Breast Cancer Management • Accelerated Partial Breast Irradiation

Over the last 40 years, there has been a steady reduction in the extent of treatment for local-regional management of breast carcinoma. Coincident with this development, we have seen a trend to earlier diagnosis and greater utilization of more aggressive adjuvant systemic therapy. The reduction in local-regional treatment has been marked by radical mastectomy, which has been found to be no better than tumor removal (lumpectomy) followed by adjuvant whole breast irradiation. Recently, axillary node dissection has been replaced, for most patients, by sentinel lymph node removal. This reduction in the extent of surgery has been associated with decreased morbidity and improved cosmetic results, while retaining excellent disease control.

There have been a number of long-term studies in breast preservation looking at the value of adjuvant irradiation and patterns of breast recurrence. The overall impression from this analysis is that adjuvant irradiation provides a meaningful reduction of breast recurrence for all patients. The absolute value of this reduction in elderly, node negative, < 1 cm tumors that are receptor-positive and treated with adjuvant hormone therapy is small enough to consider observation. All other breast preservation patients benefit significantly from irradiation. Also demonstrated in these studies is that the major reduction in breast recurrence occurs in the first five years and is a reduction in “true” recurrences that occur at or near the original primary tumor location. The subsequent development of new primary cancers that occur infrequently elsewhere in the treated or contralateral breast are not reduced nor increased by radiation therapy directed at the entire breast.

This information led to the concept that radiation treatment directed only at the lumpectomy region would provide the benefit of adjuvant radiation while reducing the scope and potential morbidity of treatment. Brachytherapy, the placement of radioactive material within an applicator in direct proximity to the tumor or tumor bed, had been used for two decades as a boost to the tumor bed following whole breast irradiation and was ideally suited for such localized treatment. The technique involves the placement of multiple planes of thin nylon tubes in and around the lumpectomy region (Figure 1).

In 1991, Dr. Kunase at the Ochsner Clinic and, shortly thereafter, investigators at William Beaumont Hospital in Detroit began to treat patients in such a manner. This brachytherapy treatment program, by virtue of treating a much smaller tissue volume, could be shortened to two treatments per day for 5 days compared with the standard 5-6½ week programs. Accelerated partial breast irradiation (APBI) was born. A few other institutions joined them in the mid to late 90’s but the radiation oncology community was very skeptical. Multicatheter, multiplane interstitial brachytherapy requires considerable subspecialty training and technical expertise not widely available, which further limited its acceptance. A limited Radiation Therapy Oncology Group phase II protocol was accomplished in 1998-2000 and favorable but limited 5-year data began to be published.

In 2003, the MammoSite® balloon radiation therapy system (Cytec Corporation) was introduced (Figure 2). As a single catheter brachytherapy delivery system, placement and treatment planning were markedly simplified. With limited but very positive 5 year data and a user-friendly brachytherapy system, accelerated partial breast irradiation has greatly increased in popularity.

In March of 2003, Legacy was the first in the region to begin to treat patients with accelerated partial breast irradiation and our experience continues to be the largest. Initially, this was with the multicatheter interstitial approach but, shortly afterwards, added the MammoSite® system, and eventually an external beam 3D conformal approach. This treatment program is based at Legacy Good Samaritan Hospital, which is the system’s brachytherapy referral center. Our experience over time is summarized in Table 1. The frequent use of the MammoSite® device reflects its convenience for physicians and patients alike but not all patients are suitable candidates, and the multicatheter approach is more adaptable to lumpectomy cavities that are irregular, near the periphery of the breast or close to the skin. We remain the only facility in the region to offer the multicatheter approach. Because there is no follow-up data for the external beam 3D approach and it treats a greater amount of tissue, we use it only rarely.

Treatment can utilize applicator placement at the time of lumpectomy and sentinel lymph node removal. This requires preoperative radiation oncology consultation and treatment must await final pathology results to confirm a patient’s appropriateness for treatment. This typically requires 24-36 hours in our institution but can be longer elsewhere. This has the great advantages of completing treatment sooner and requiring
only a single procedure. As a result, this is our preferred approach. Alternatively, applicator placement can be performed at a second procedure after final pathology results have been obtained and this is preferred by some investigators. For most patients there is little discomfort associated with the applicator or its removal. We routinely employ prophylactic antibiotics and the risk of infection is very low with meticulous nursing care. Long-term cosmetic result is good to excellent in >90% of patients which is comparable to that achieved with standard whole breast irradiation therapy.

The published 5-year breast recurrence rates for APBI are 1.1 – 4.4%. We have experienced no breast recurrences to date in our 166 patients. The proof of the value of a new treatment approach requires validation in a randomized clinical trial. In 2005, a joint National Surgical Adjuvant Breast Project and Radiation Therapy Oncology Group randomized phase III protocol was launched comparing standard external beam whole breast irradiation to APBI. The technique of APBI used is left to the discretion of the investigator. Unfortunately, the vast majority of patients randomized to APBI have been treated using the 3D conformal technique for which outcome data does not exist and for which the poorest cosmetic result is anticipated. Nationally, accrual has been excellent and accrual goals for the most favorable subsets have been met. It is hoped that 3900 patients will be randomized. Legacy participates in this study, but for logistical reasons patients in this study, but for logistical reasons, we have randomized few patients. A Hungarian study randomized much smaller numbers between whole breast irradiation and multicatheter brachytherapy and showed no difference. A larger ongoing multicatheter European study asking the same question has been ongoing since 2004.

Other techniques of APBI have been and are being developed including intraoperative electron beam irradiation and variations on the MammoSite® concept using brachytherapy or low voltage radiation sources. The suitability of these techniques remains to be proven but several are being used in European randomized trials.

In 2007, APBI is an additional alternative in the comprehensive management of women with early stage breast cancer. It is particularly useful for women who live at a distance from a radiation treatment facility and wish breast preservation, and for whom standard whole breast irradiation represents a hardship. Additionally, larger breasted women tend to have poorer cosmetic results with whole breast irradiation and better results with APBI. The major question of long-term disease control will be determined in the next 5 to 10 years as the results of large clinical experiences and randomized phase III studies are published. At this time, Legacy continues to offer carefully selected, well-informed patients the widest array of APBI treatment options with the largest clinical experience in the region.

Mark Schray, M.D.
Radiation Oncologist

### Table 2: Patient Selection Criteria

<table>
<thead>
<tr>
<th>Age</th>
<th>Diagnosis</th>
<th>Tumor size</th>
<th>Surgical margin</th>
<th>Metastatic status</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 45</td>
<td>Skin, invasive ductal carcinoma</td>
<td>≥ 3 cm</td>
<td>Negative microscopic surgical margins</td>
<td>0 vs 10</td>
</tr>
</tbody>
</table>

*American Brachytherapy Society, American Society of Breast Surgeons

### Surgical Therapy of Breast Cancer

A surgeon’s involvement in the care of the patient with breast cancer has changed tremendously over the twenty-five years that I have been in practice in Portland. The biggest difference is the wider array of options that surgeons need to discuss with their patients before surgery! No longer do women go into an operating room prepared to lose a breast, if the surgical biopsy is positive on frozen section.

Most patients come to the surgeon’s office with a needle biopsy diagnosis and much internet-derived data. The discussion centers on the two main operative interests: breast treatments and nodal evaluations; but first further testing such as MRI, BSGLI or US needs to be addressed. The clinical estimate of stage leads to possible neoadjuvant chemotherapy for downstaging before surgery. Advanced cancers require preoperative staging studies, such as PET scans, which may change the procedure to a palliative operation.

Simple mastectomy versus lumpectomy and radiation therapy is the major choice for most patients, with no difference in cure between them. Sentinel node (SN) biopsy is added for invasive cancers in patients who would accept further therapy. Lower level (levels 1 and 2) axillary node dissection is done for patients with clinically positive nodes or positive SN biopsy. Clear margins are vital for prevention of recurrence. Special techniques, such as oncoplastic procedures, may improve the appearance of the breast after lumpectomy, by decreasing deformity and using uplifting incisions.

Radiation therapy has changed over the years and offers partial breast irradiation either with interstitial catheters or a MammoSite device placed at surgery for shortened treatment. Many patients with lymph node involvement also receive axillary radiation and chest wall treatments, if mastectomy is done, which may interfere with reconstruction options, causing delay or change of procedure. Plastic surgery information is frequently helpful for patients who may need ipsilateral reduction surgery, to complement lumpec-
The expanse of knowledge regarding the role of genetics in cancer has been growing at an astonishing rate since the completion of the human genome project. This rapid advance in knowledge has demonstrated the complexity of information regarding the interaction between these genes, the role of specific genes in tumorigenesis, and the role of specific genes in familial cancer syndromes.

There are a host of Cancer Syndromes that have been linked to specific gene mutations. The most common of the cancer syndromes are the hereditary breast and ovarian cancer syndrome and the colon cancer syndromes that can be divided into two categories, colon cancer syndromes that exhibit polyposis and syndromes that do not, but these are just a few of the possible cancer syndromes. Examples of other cancer syndromes that involve breast cancer are Cowden's syndrome, Li-Fraumeni syndrome, and mutations in the CHEK2 gene. Then there are cancer syndromes that involve other organ systems such as melanoma, pancreas, bladder, and the endocrine system to name a few. It is estimated that hereditary cancer syndromes account for between 5-10% of cancers.

There are multiple clues that can help when evaluating a patient to determine if their cancer could be linked to a hereditary cancer syndrome. Obviously the first clue is going to be a family history of cancer. Generally, we look for three generations affected with cancer and, depending on the size of the family, multiple individuals in a generation being affected. It is important to remember that some hereditary cancer syndromes have a high de novo or new mutation rate, so these individuals will not display a family history of the disease. For example, it is estimated that 1/3 of all Familial Adenomatous Polyposis (FAP) patients are from de novo mutations.

Other clues include cancers that appear at a younger age than expected in the general population, multiple primary cancers in a single individual (ex. colon and uterine), bilateral cancer in an individual, rare cancers appearing multiple times in a family, or the spectrum of cancer in the family that fits a hereditary cancer syndrome. Ethnic background also needs to be considered when evaluating the family history due to the increased prevalence of specific mutations in certain populations. For example, it is estimated that 1 in 40 individuals of Ashkenazi Jewish ancestry will carry a mutation in either BRCA1 or BRCA2. Furthermore, 90% of these will be 1 of 3 founder mutations common in these individuals.

It is imperative that genetic counseling be provided for individuals that are considering testing for a hereditary cancer syndrome. This is due not only to the complexity of interpreting the results of the test but also because of the other socioeconomic issues that genetic testing can create and the ramifications not only for the patient but their entire family.

Cancer Genetic Services have been available at Legacy since 1995 but a dedicated Cancer Genetic Clinic was not formalized until the creation of Legacy's Cancer Risk Assessment Program in 1998 from a Legacy Foundation Grant. This grant provided for the employment of a Medical Geneticist, a Genetic Counselor, a Nurse Practitioner, and support staff with the goal of providing Comprehensive Cancer Genetic Services to the Portland community.

The Legacy Cancer Prevention and Risk Assessment Program provides a comprehensive service to help patients navigate through the confusing and complex information associated with a hereditary cancer syndrome. This includes collecting and analyzing multi-generational family histories, assessing pedigrees and recognizing cancer syndromes, educating patients about genetics and cancer, individualized cancer risk information based on genetic and non-genetic risk factors, presenting the advantages and disadvantages of genetic testing, and identifying family members who may be candidates for testing. The program is essential in informing informed consent for genetic testing in compliance with Oregon's Genetic Privacy Act, verifying the correct ordering and interpreting of appropriate DNA tests as well as interpretation of cancer genetic test results. The program provides a secure forum for discussing issues relating to confidentiality, potential insurance discrimination, the Oregon Genetic Privacy Act and Federal Legislation, and individualized cancer screening recommendations and risk management strategies for the patient.

When a patient is referred to our Program, the patient is contacted to discuss the reason for the referral, and the patient's concerns regarding cancer risk are determined. Detailed family, medical and screening history forms are sent to the patient for completion. Once received, an appointment is scheduled.

At the time of the first office visit, a gene mutation risk assessment is provided based on the pattern, age of onset of cancer, and other factors within a family. This is followed...
by a review of the appropriateness of available testing, as well as the pros and cons of testing. Medical release of information forms are provided for confirmation of reported cancers and to examine pathology for indicators that will influence the assessment. The patient is provided with a letter containing the information covered during the appointment. This includes a suggested cancer screening and risk reduction plan. Should testing be desired, a second visit is arranged to review the possible results of testing and to discuss the issues of informed consent. If the patient decides to proceed with testing, an appropriate specimen is obtained and sent to the appropriate laboratory.

A third visit is scheduled to discuss results as they become available. The patient will be provided with a final letter, which either reinforces or adjusts the recommended risk reduction plan according to results. The patient always has the option to decline further involvement with our program, and to decide with whom to share results of evaluation and testing. To protect the patient’s privacy, he or she will be asked to decide who may receive a notification or summary of the visits, but it is our policy to encourage the patient to consider sharing the information with their physician.

Since the inception of the Cancer Risk Assessment Program, we have seen a steady increase in our patient referrals. When comparing our most recent numbers, 1998 to 2006, our patient caseload has increased by 266%. In addition, the staff at the Cancer Risk Assessment program now handles all Adult Hereditary Syndromes such as Huntington’s Disease and Hereditary Hemochromatosis. Furthermore, the program has coordinated research studies including the Microsatellite Instability (MSI+) as an Independent Prognostic Factor in Colon Cancer Research Study which has shown the importance of MSI as a prognostic indicator as well as its role in determining the best course for treatment in colon cancer that exhibits this trait.

Paul Dorsey M.S.
Legacy Cancer Prevention & Risk Assessment Program

Legacy Tumor Bank

In April of 2006 the Legacy Tumor Bank received its first donation! The bank was started as a collaborative project between Legacy Cancer Research and Legacy Cancer Surgeons and is funded by the Legacy Foundation. Tumor banks save specimens from cancer patients that are available after the pathology laboratory has performed all the necessary diagnostic tests on the cancer. This is done only when the patient has given written consent for tumor banking. Currently, there is no NIH funding available to start up free-standing tumor banks despite a widespread call for their development. This makes the Legacy Foundation’s foresight in supporting this project so important.

As of December of 2007, 116 patients have donated their tumors to the Legacy Tumor Bank. These specimens have been used in several projects, and have provided preliminary data for 3 NIH grant submissions, and three grant submissions for breast cancer research to the Komen Foundation from two different Legacy Research Laboratories. Another 2 NIH grants are in preparation, one from each lab.

The Legacy Cancer Research Laboratory is led by Dr. Juhua Chen and is currently investigating the role of dendritic cells (DC) in malignant angiogenesis and their potential regulation by Akt, a key cell cycle regulating protein. DC is one type of stem or bone marrow cell-derived cells that are potential candidates for modulating angiogenesis in primary and metastatic cancer. Dr. Chen’s group is working on defining the regulatory role of Akt on the activity of DC, to find out whether or not the Akt in DCs plays a critical role in the malignant angiogenesis. The human cancer samples from the Legacy Tumor Bank have been used to test the number and activity of DC in breast, colon, brain, and head and neck cancers. Interesting tumor specific correlations between DC and vascular density have emerged. Her laboratory is in the process of analyzing this data and correlating it with the patient’s stage at diagnosis, tumor grade, response to therapy, and outcome.

Dr. Robert Meller’s research group, within the R.S. Dow Neurobiology Laboratories at Legacy, has used tumor bank specimens to research the ways in which cancer escapes apoptosis. Specifically, his research has focused on the protein that initiates the endogenous degradation of a pro-apoptotic (anti tumor) protein, Bim. Bim is a pro-apoptotic member of the Bcl-2 family of proteins that regulate cell death and survival. Using proteomic methods, his group has identified the enzyme that regulates the degradation of the Bim anti-tumor signal in cells. Analysis of breast tumor samples from the tumor bank reveals inverse correlation of Bim and its degradation enzyme. Interestingly, Dr. Meller’s lab has found that expression of the enzyme increases in patients with a high Her-2/neu expression, with a correspondingly low Bim level. His data suggest that counter-Bim mechanisms are a potential way in which tumor cells survive in breast cancer. In addition this data suggests another potential explanation behind the aggressive nature of Her2neu over-expressing cancers.

Both these laboratories’ projects are aimed at developing new, more easily tolerated, and more effective anti-cancer treatments. This important work was possible, in part, because Legacy patients donated their specimens and the Legacy Foundation has supported this important endeavor.

If you have any questions about the Legacy Tumor Bank, please call the project’s Principal Investigator, Dr. Katherine Morris, at 503-413-5409.

Katherine Morris, M.D., FACS
Surgical Oncologist
Legacy Health System Breast Cancer Rehabilitation Program

The LHS Breast Cancer Rehabilitation Program empowers patients to take an active role in their recovery through exercise, functional training and education through the guidance of physical and occupational therapists who specialize in oncology rehab. Currently Legacy has 4 oncology therapists. Three are lymphedema certified by the Lymphology Association of North American (LANA), which requires 135 hours of Complete Decongestive Therapy (CDT) education. These specialized therapists design individualized treatment programs based on each patient’s unique needs including the stage of disease, prognosis, extent of treatment, previous health issues, and coping skills. In the outpatient setting, these therapists assist patients to reach optimal levels of function throughout the continuum of care, whether currently undergoing treatment, in survivorship or palliative care.

Specific screening questions to determine if patients would benefit from these services include:
• Is it difficult to: perform daily activities including personal care or household tasks? sleep without arm and/or chest wall pain? reach due to stiffness in one or both arms?
• For the arm on the operated side: does it appear more swollen? is it more difficult to use?
• Does it feel like: bands or cords in the underarm, down the arm, in the elbow and/or wrist that restrict arm movement? heaviness and/or discomfort in the arm, underarm or chest wall?

Treatment goals include:
• Restore associated loss of strength, range of motion, and function of the shoulder.
• Minimize cancer or treatment related weakness and fatigue.
• Educate in comprehensive management of arm lymphedema.
• Reduce pain and soft tissue tightness.

In CY 2006, there were 139 patients with a breast cancer diagnosis that were treated by Legacy Cancer Rehabilitation Therapists in the outpatient setting, with 105 patients receiving lymphedema services.

Therapists are available throughout the Legacy Health System. You can reach them at the following sites:
• Legacy Good Samaritan  (503) 413-7753
• Legacy Meridian Park  (503) 692-7416
• Legacy Mount Hood  (503) 674 -1123
• Legacy Salmon Creek  (360) 487-3750

Oncology Nurse Navigators

In 2007, Legacy Good Samaritan added nurse navigation to its comprehensive cancer services. It is often difficult to understand the specific care and treatment options when feeling overwhelmed with a cancer diagnosis. Our Oncology Nurse Navigators are registered nurses specially trained in oncology and surgical outcomes, who help patients ‘navigate’ through each aspect of cancer treatment. Legacy Good Samaritan Nurse Navigators work closely with physicians and Cancer Services staff to ensure cancer patients understand both diagnosis and treatment.

Our nurse navigators serve as a primary care partner by connecting patients with the right resources when coping with family support, port issues, financial concerns, work-related and employment issues, treatment referrals and appointment schedules. Understanding cancer diagnosis and treatment can be complicated. Legacy Good Samaritan Nurse Navigators provide education to patients, answering questions throughout the treatment journey. Helping our patients overcome hurdles along the way ensures each case has an easily accessible multidisciplinary, team-based approach to care.

Home Grown Clinical Research Around Breast Cancer

At Legacy Cancer Services we have for several years been involved in exciting projects around breast cancer. In fact, many of our clinical research projects have helped usher into the greater Portland community advances in clinical breast cancer therapies. For example, Legacy Cancer Services opened the first sentinel node clinical trial in 1997 with a gamma probe provided by the Good Samaritan Foundation and a grant from the Portland branch of the Komen Foundation. We went on to sponsor courses for surgeons in the community to become familiar with the technique and provided data to regional and national meetings. In a similar fashion, through a generous grant from the Legacy Foundation, we brought interstitial breast brachytherapy to Portland. We also sponsored a course to help lead the way, making Partial Breast Irradiation more widely available to women in Oregon.

Since that time there have been several interesting projects. Inquiries evaluating quality of life concerns have taken the form...
of surveys. Using mailed questionnaires we have learned about our patients’ outcomes and the impact of some of our cancer therapies on survivors’ lives. For example, we did a survey of patients with lymphedema and found that for those affected, there was a significant impact on their feeling of well-being. This led to the formation of a clinical trial using Horsechensut (an herb that is touted to reduce swelling and inflammation). We were not able to accrue the number of patients we had hoped to but we still learned a great deal about the psychosocial impact of this sequela. Out of the study grew our lymphedema support group.

Along the same lines, we did a survey of our estrogen-positive breast cancer patients around symptoms experienced with Tamoxifen and the Aromatase inhibitors. We found that significant numbers of those on aromatase inhibitors were experiencing joint and muscular side effects. In some it was enough to cause them to switch therapy or stop it all together. We reported our findings and there have since been additional studies confirming these findings. We are now in the process of designing a clinical trial using an herbal formula, Blue Citrus, that has anecdotally shown benefit in reducing the symptoms experienced with the aromatase inhibitors.

More to come on that!

We have also done an active study to reduce side effects to the skin of those undergoing adjuvant whole breast radiation after lumpectomy. Raygel (reduced glutathione and anthocyanins) was anecdotally reported going adjuvant whole breast radiation after lumpectomy. Raygel (reduced glutathione and anthocyanins) was anecdotally reported to reduce radiation dermatitis. In collaboration with a local naturopath, we designed a clinical trial using an herbal formula, Blue Citrus, that has anecdotally shown benefit in reducing the symptoms experienced with the aromatase inhibitors.

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We have also done an active study to reduce side effects to the skin of those undergoing adjuvant whole breast radiation after lumpectomy. Raygel (reduced glutathione and anthocyanins) was anecdotally reported to reduce radiation dermatitis. In collaboration with a local naturopath, we designed a prospective study comparing Raygel to a placebo. The placebo was designed to look and smell just like the Raygel but contained no active ingredients. On this study, all patients used traditional skin care but randomized to receive either placebo or Raygel. In a pilot study of 30 participants the Raygel outperformed the placebo by 24 percent. Since we had small numbers initially, this did not reach statistical significance. We have just completed a larger study of 130 participants which confirms our pilot with more convincing data. We are excited about sharing our findings. (See photos.)

We have had another exciting collaboration with the College of Oriental Medicine in the form of a clinical study on acupuncture after axillary node dissection. In the study, patients who undergo a formal axillary node dissection randomize to placebo (sham acupuncture) or acupuncture. The study is blinded and an independent observer records arm range of motion, pain indices, neurosensory changes and quality of life parameters. This study is currently ongoing and we look forward to what we hope will be exciting results.

And last but not least, we currently have opened a study on the Androgen Receptor and its role in Estrogen/Progesterone receptor negative breast cancer. This study grew out of work initiated by Dr. Pomnier in their lab where they noted the demise of Estrogen and Progesterone negative breast cancer cell lines with the addition of DHEA-sulfate (a weak androgen). Further study showed this cell line to have an androgen receptor and that confirmed that this behavior was being mediated via the androgen receptor. Interestingly enough, Dr. MelaRagno, our research chief, recalled a time when testosterone was used to treat metastatic breast cancer and breast cancer on testosterone. We hope to show that we can manipulate this subgroup of breast cancer via the androgen receptor. If that proves to be the case then it opens the door to the possibility of adjuvant hormonal therapy for this group of patients with high risk breast cancer who currently only have chemotherapy as an option.

I could go on and on about the exciting programs that are homegrown at Legacy Cancer Services but I’ll stop at this juncture. If you have questions or would like more detailed information about any of our studies, please call 503-413-8050.

Nathalie Johnson, M.D., FACS
Medical Director –
Legacy Cancer Services and Breast Health Centers
Legacy Health System
treatment for a 5-week period. Both groups applied standard skin care of vitamin E oil and Aloe vera. Breast volumes were calculated using CT dosimetry. Comfort surveys were obtained at the end of treatment. Total breast scores and worst site breast scores were computed and compared. Statistical analysis was performed using student’s t-test.

Results: One hundred thirty-one patients enrolled, 14 patients withdrew for a total of 117 evaluable. 60 assigned to the placebo group and 57 to the RayGel group. Scores were calculated by percent of skin involved and grade of skin reaction. The placebo group had a higher mean discomfort score of 2.47 versus 2.22 for the RayGel group.

Conclusion: Raygel provides superior skin protection during radiation therapy than that observed with standard skin care and placebo. RayGel averaged better comfort scores than placebo. Application of combined glutathione/anthocyanins results in lower severity radiodermatitis at completion of whole breast therapy.

Title: Evaluating the utility of post-operative FDG-PET scans for patients who undergo radiofrequency ablation of colorectal metastases to the liver.


Background: Radiofrequency ablation (RFA) has been shown to be a safe and effective method of eradicating hepatic tumors. The optimal method of surveillance following RFA of colorectal liver metastases, with respect to identification of recurrence, has not been determined.

Purpose: The purpose was to examine whether routine postoperative PET scanning was as effective, or more effective than standard follow-up CT scans in identifying recurrent disease following RFA.

Hypothesis: We hypothesize that PET scanning will identify recurrent disease sooner than CT scanning, allowing for earlier re-evaluation of a patient’s treatment plan.

Methods: The study is a prospective, self-control comparison between CT and PET scans after RFA of colorectal hepatic metastases. Following RFA, routine abdominal CT and PET scans were obtained at 3, 6, 9, and 12 months. All scans were reviewed by two independent radiologists. The primary endpoint was to determine if PET scan results identified lesions which led to an earlier alteration in the patient’s clinical care.

Results: Twenty-six patients were enrolled into the study and 24 were considered to have completed the study. While no patient had persistent disease after RFA, 20 of 24 developed recurrent disease during follow up.

Conclusion: The agreement between CT and PET for identification of recurrent disease following RFA of liver colorectal metastases is high. (see Figure 1) Neither PET, nor CT gives an obvious advantage in either identification or timing of identification of new disease. The sensitivity of both tests is high enough to preclude justification for using both tests. The choice of PET versus CT will likely be made by cost, availability, or expertise in a given community.

Deb Walts, R.N., BSN Quality Improvement Specialist Legacy Cancer Services
Cancer Data Management Overview

The Legacy Health System’s Cancer Data Management Department is a key component of the cancer program, and continues with an excellent performance. The Commission on Cancer has approved our network cancer program for three years. Data on all Legacy patients, either initially diagnosed in a Legacy facility and/or receiving initial treatment for that diagnosis, is entered in the registry. Strict guidelines for data entry are prescribed by the Commission on Cancer (CoC) and the North American Association of Central Cancer Registries (NAACCR).

Cancer Data Management 2006

Cancer Data Management (CDM) collects over 200 data fields on every cancer patient identified as an eligible case seen with Legacy. To maintain Legacy’s approved Network Cancer Program status, Cancer Data Management is responsible for:

- Case identification
- Data collection systems
- Lifetime follow-up of cancer patients
- Submission of data to:
  - National Cancer Database
  - Oregon State Cancer Registry
  - Washington State Cancer Registry
- Supporting Legacy Cancer Conferences
- Quality monitoring of registry data
- Responding to data requests
- Representation on the Network Cancer Committee and Quality Assurance Committee
- Providing data for the Cancer Services Annual Report
- Preparations and ongoing discussion with the American College of Surgeons regarding survey expectations

Data Report

The registry data is collected from several Legacy information systems as well as from information provided by physician practices. There are over 33,110 cases in the database since its reference (start) date of 1993.

The data from 2006 demonstrated 15% of the new cases were patients who had had a previous cancer diagnosis. Over one-half (59%) of the patients in the database are still alive and followed annually. Our patient population covers the entire state of Oregon and some Washington residents.

Data Requests

The Cancer Registry responded to 102 data requests in 2006, which include requests from Cancer Administration, for administrative planning, physician requests for planning, and requests needing data for research.

Accomplishments

- Implemented Pediatric staging in cooperation with Pediatric Hematology Oncology
- Provided externship hours for Portland Community College student
- Created a home-based work opportunity with Pediatric Hematology Oncology
- Supported attendance at the National Cancer Registrars Association Executive Committee
- Supported attendance at the National Cancer Registrars Association conference in Washington, DC
- Supported attendance at state conferences and workshops
- Implemented an on-line registrar trainee program to prepare new staff for the Certified Tumor Registrar exam
- Coordination and support of 217 cancer conferences, where 1046 patients were presented system-wide in 2006:
  - 37 Breast Care Conferences
  - 23 Central Nervous System Conferences
  - 24 Gastrointestinal Cancer Conferences
  - 66 General Cancer Conferences
  - 10 Head and Neck Cancer Conferences
  - 1 Leukemia and Lymphoma Conference
  - 24 Pediatric Cancer Conferences
  - 32 Thoracic Cancer Conferences
- Entered 2321 new cancer cases into the database
- Followed over 18,640 patients during the year and maintained a 90% follow-up rate
- Completed review of 230 abstracts for quality and accuracy through physician review

Legacy Cancer Data Management employees:

- Hollis Brown, RHIT, Manager
- Diana Mahin, CTR, RHIT, Lead Registrar – Legacy Good Samaritan
- Karen Mazzuca, CTR, RHIT – Legacy Good Samaritan
- Syd Waskey, CTR – Legacy Good Samaritan
- Gail Coleman, CTR, RHIT, Lead Registrar – Legacy Meridian Park
- Donna Gilbo, CTR, RHIT – Legacy Emanuel
- Leah Kiesow – Legacy Emanuel
- Catherine Telford – Legacy Emanuel
- Elly Hayes, CTR – Legacy Mt. Hood
- Janel McNally, CTR – Legacy Salmon Creek

Support Staff:

- Susan Myers
- Sandi Potrue

Front L to R: Donna Gilbo, Janel McNally, Elly Hayes
Back L to R: Catherine Telford, Hollis Brown, Leah Kiesow, Gail Coleman
Legacy Health System 2006
Network Cancer Committee Members

Selma Annala, Supervisor, Integrative Medicine
R. Bryon Bell, DDS, M.D., FACS, Head & Neck Surgery
Tim Bock, Manager, Medical/Oncology LSC
Holli Brown, Manager, Cancer Data Management
Andrew Cox, M.D., Radiology
Kelly Doebert, Manager, Radiation Oncology
Paul Dorsey, M.S., Genetics Program
Carol Drayton, Manager, Medical/Oncology LSC
Barbara Farmer, Manager, Hospice Services
Lauren Foote-Christensen, Manager, Marketing
Leah Grotzing, PharmD, Pharmacy
Daniel Grunberg, M.D., Hematology/Oncology
Keith Hansen, M.D., FACP, Hematology/Oncology
Lisa Hansen, RN, Coordinator, Bone Marrow Transplant
Paul Hansen, M.D., FACS, General Surgeon
Bryce Helgerson, Vice President, Administration
Virginia Hendrickson, Manager, Social Services
Katherine Jaramillo, Chaplain, Pastoral Services
Nathalie Johnson, M.D., FACS, General Surgeon, Medical Director, Legacy Cancer Services
Michael Kaempf, M.D., FACS, Urology
Pamela Kilmurray, Director, Legacy Cancer Services
Lam Nguyen, PharmD, Pharmacy
Keith Lanier, M.D., Hematology/Oncology
Alayne Lehman, Manager, Research
Katherine Leonard, Ph.D., Psychology
Richard Lee, R.N., Manager, Legacy Cancer Services
Diana Mahin, R.N.T., C.T., Lead Registrar
Leslie McMillister, M.D., Neurology/Oncology
Anthony Melaragno, M.D., Vice President, Legacy Research
Katherine Morris, M.D., FACS, Oncology Surgeon
Dane Moseen, M.D., FACS, General Surgeon
Joanne Nelson, M.D., FACS, General Surgeon, Physician Liaison
Janice Olson, M.D., Pediatric Hematology/Oncology
June Olson, M.D., Pathology
Legacy Network Cancer Committee Chairman

Russ Omizo, M.D., Radiation Oncology
Michael Owens, M.D., Gastroenterology
Carol Purdy, RN, Supervisor, Research
Sally Quimby, R.N., Manager, Legacy Cancer Services
Marc Reed, Dietitian, Cancer Services
Mark Schray, M.D., Radiation Oncology
Michael Sheahan, Vice President, Administration
Susan Swanson, L.C.S.W., Social Services
Marie Valleroy, M.D., Physical Medicine and Rehabilitation
Terry Wajig, R.N., Clinical Nurse Specialist, Legacy Cancer Services
Deb Walts, R.N., QI Specialist, Legacy Cancer Services
Jocelyn White, M.D., FACP, Hospice/Palliative Medicine
Mark Whiteford, M.D., FACS, Colorectal Surgeon
Charlyn Wilson, R.N., Clinical Coordinator, Legacy Cancer Services
Vina Winters, R.N., Supervisor, Day Treatment Infusion Clinic

Legacy Cancer Services 2007 Leadership Team

Interim Chief Administrative Officer - Tony Melaragno, MD
Medical Director, Cancer Services and Breast Health Centers - Nathalie Johnson, MD, FACS
Medical Director, Cancer Research - Katherine Morris, MD, FACS
Medical Director, ABMT/Stem Cell Program - Keith Hansen, MD, FACP
Medical Director, Palliative and Hospice Care - Jocelyn White, MD, FACP, FAAPP
Medical Director, Radiation Oncology - Mark Schray, MD
Medical Director, Children’s Cancer & Hematology Program - Janice Olson, MD
Director, Adult Cancer, Rehab and Hospice Services - Pamela Kilmurray
Director, Children’s Cancer and Hematology Program - Bronwyn Houston
Manager, Cancer Data Management - Hollis Brown
Manager, Cancer Research - Alayne Lehman
Manager, Adult Cancer Inpatient Unit, Day Treatment - Richard Lex, RN
Manager, Radiation Oncology - Kelly Doebert
Clinical Nurse Specialist, Cancer Services - Terry Wajig, RN, CNS
For more information about Legacy Cancer Services, please call 503-413-8050.

www.legacyhealth.org/cancer