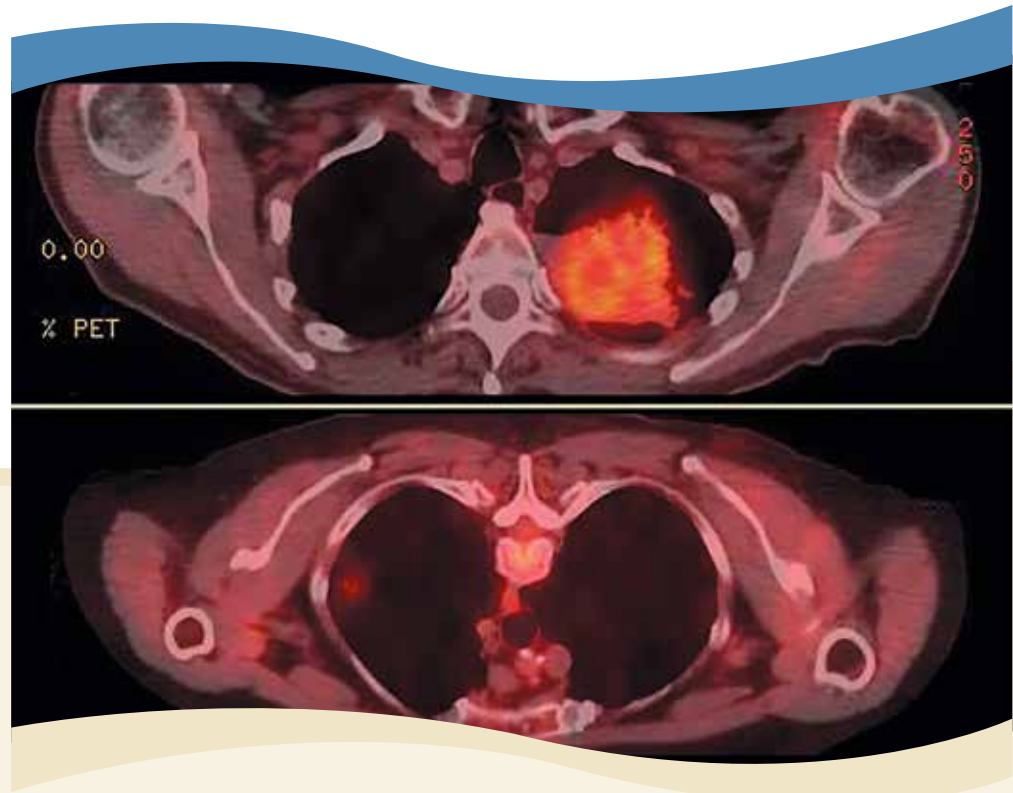


Legacy Cancer Institute Annual Report 2014 Lung cancer



Legacy Cancer Institute



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Legacy Cancer Institute benefits from the generous participation of individuals and organizations that are also dedicated to finding cures for cancer, helping the less fortunate receive care and improving treatment, equipment and facilities at each of our medical centers. To learn how you can support Legacy Cancer Institute, please contact the Office of Philanthropy at 503-415-4700 or visit www.legacyhealth.org/giving.

About the cover image: The PET image on the top shows a large cancer in left upper lobe. The bottom PET image shows a smaller cancer detected in the Legacy Lung Cancer Screening Program.

Look at those lungs! Legacy Cancer Institute's Lung Program

By Nathalie Johnson, M.D., FACS, medical director, Legacy Cancer Institute and Legacy Breast Health Centers

Yes, that's the theme this year: Let's look at those lungs! The background work for the Legacy Lung Cancer Screening Program began several years ago but has come to full fruition.



The controversy around CT scanning for lung cancer brewed over time but the data would support screening in a selected population. Our team has been diligent in moving this effort forward carefully.

In a multidisciplinary manner, pulmonologist and medical director of the Legacy Lung Cancer Screening Program, Jordon Fein, M.D., with support from thoracic radiologist Phillip Baker, M.D., devised a quality program. Candidates who are appropriate for screening are evaluated and the team makes informed decisions about moving forward with imaging CT.

In addition, Legacy Cancer Institute (LCI) was instrumental in the development of a tool called PenLung to ensure long-term follow-up is performed at the appointed intervals.

We are very proud of the work this team has done to achieve a program that ranks in the top tier nationally.

Personalized therapy and cancer genomics have steadily become a major focus in many tumor types, including lung. We are working in collaboration with our pathology colleagues to expand our knowledge of tumor genetics. Understanding genetic aberrations is important as newer therapies can target certain defects. In this way, we are able to focus therapies to those with the highest likelihood of success or spare patients the toxicity of a therapy that will probably be ineffective.

Although the focus of this year's report is lung cancer, there have been many other exciting developments this year that I would like to share. One is the improvements in our 3-D tomosynthesis for breast cancer screening. It is available at all five

Legacy Health hospitals. The new technology is called C-view and lowers the radiation exposure by taking 3-D pictures and then digitally reconstructing them into 2-D pictures. This allows us to obtain superior quality pictures with less radiation exposure for patients. Since converting to 3-D, we have increased the yield on cancer screening with more cancer detected and fewer callbacks for benign image changes.

Another wonderful addition to Legacy Cancer Institute was the onboarding of Chet Hammill, M.D., FACS, as medical director of Legacy's Liver and Pancreas Cancer Program. Dr. Hammill comes with strong experience in pancreas and hepatic surgery. He also brings innovative ideas and a warm personal touch in caring for his patients. We look forward to reporting on the growth of this program in the near future.

Another accomplishment in 2014 was the successful first year of the OHSU Knight-Legacy Health Cancer Collaborative, which allows both Legacy and OHSU adult cancer patients access to the highest quality clinical care and research in their own community. The collaborative consists of radiation oncology, medical oncology and infusion services. These services can be accessed at the Legacy Comprehensive Cancer Center at Legacy Good Samaritan, Legacy Meridian Park, Legacy Mount Hood and Legacy Salmon Creek medical centers, OHSU Knight Cancer Institute Beaverton Cancer Clinic and at OHSU Knight Radiation Medicine on Marquam Hill.

Finally, we would like to thank the many patients, families and corporate donors for their generous gifts and support that enable us to help people during cancer treatment. In addition, we are able to expand technology and continue studies that improve the health and outcomes of those undergoing treatment for cancer in our facilities and in the greater community.

These are active links. Click to open the relevant page on the Legacy Health website.

Comprehensive cancer services

For more information about our services, please visit legacyhealth.org/cancer.

Cancer care and treatment

Cancer care conferences/tumor boards
 Cancer Care Unit
 Cancer data management/cancer registry
 Cancer Rehabilitation Services
 Cancer screening and prevention
 Day treatment/Infusion clinics
 Interventional radiology
 Legacy Breast Health Centers
 Legacy Cancer Healing Center
 Legacy Genetics Services
 Legacy Hospice/Legacy Hopewell House Hospice
 Legacy Medical Group—Gastrointestinal Surgery
 Legacy Medical Group—Gynecologic Oncology
 Legacy Medical Group—Pulmonary
 Legacy Medical Group—Radiation Oncology
 Legacy Medical Group—Reconstructive Surgery
 Legacy Medical Group—Surgical Oncology
 Legacy Pain Management Centers
 Legacy Palliative Care Services
 Pathology
 Wound and ostomy care

Cancer programs and specialty areas

Autologous stem cell transplant program
 Bladder cancer
 Blood cancers
 Brain and central nervous system cancers
 Breast cancer services
 Children's Cancer and Blood Disorders Program
 Colorectal cancer services
 Esophageal cancer
 Gynecologic cancers
 Head and neck cancer
 Hepatobiliary and pancreatic cancer
 Kidney cancer
 Lung cancer
 Prostate cancer
 Stomach cancer

Clinical trials and research

Current clinical trials
 Oncology clinical research
 Tumor bank

Support services — Adult

American Cancer Society gift closet
 Cancer support groups and classes
 Cancer survivorship
 Green Gables Guest House
 Integrative Care
 Oncology nurse navigator/American Cancer Society patient navigator
 Volunteer program

Support services — Pediatric

Child Life Therapy
 Family Lantern Lounge
 Family Wellness Center
 Music Rx® Program
 Pediatric development and rehabilitation
 Ronald McDonald House
 School program
 Survivorship Services
 Volunteer program

Legacy Cancer Institute overview: Highlights from 2014

By Brent Evetts, M.D., colorectal surgeon, chair, Integrated Network Cancer Committee, Legacy Cancer Institute

To maintain the level of performance commensurate with the Outstanding Achievement Award received from the Commission on Cancer (CoC),



Legacy Cancer Institute set goals and quality metrics for our Integrated Network Cancer Program. Let me review the goals for 2014.

The first programmatic goal we set for the year was to improve the genetic patient referral and screening process to improve access for cancer patients and those at high risk across all Legacy sites.

We are currently evaluating our rates of genetic referrals for colon cancer patients whose tumors are positive for MSI (associated with the HNPCC genetic mutation). We hope to get close to 100 percent in the next year. It is truly important for good patient and extended family care.

In addition, we set a goal to improve education to providers and patients on the indications for testing. This is especially true for colon and rectal cancer. Recent data showed that families aware of a mutation had better rates of colonoscopy screening with decreased polyps progressing to cancer. To that end, we undertook several projects.

In addition to Legacy Genetic Services, we onboarded a process for connecting patients/providers with InformedDNA, a national company that provides phone genetic counseling with testing performed at Legacy Laboratory Services. This is now available via Legacy Genetic Services, and allows patients the option to have counseling at Legacy or via the phone at home.

Our next goal was to institute a comprehensive treatment summary and survivorship plan. The CoC would like every patient to receive a summary of all their treatment including expected follow-up regimen. This includes guideline-driven recommendations for ongoing screening and evaluation. This allows the patient to become vested in their own care and makes it easier for another physician to assume their care should they need to switch

to another care team. We now have a live document in the EMR that can be accessed by all the members of the treatment team and printed for the patient. We have started with breast cancer patients in our survivorship clinic, but this is just the beginning. The ultimate goal is to have > 90 percent of patients receive a treatment summary and survivorship plan at the end of active treatment.

Another goal included establishing an on-site monthly support group at Legacy Salmon Creek Medical Center that was accomplished by implementing Expressions of Healing, which helps patients and their families explore feelings through the use of art.

Another programmatic goal was to expand oncology nurse navigation for patients at all five Legacy hospitals, which was partially met in 2014 and continued into 2015.

New clinical goals during 2014 included making the Hughes Risk Assessment as a Web-based program available to patients in their homes. Providers email patients to complete the risk assessment, then the clinician would review and determine whether the patient would be referred for genetic counseling and potential testing. Transitioning the Legacy Lung Cancer Screening Program from the Legacy Good Samaritan Pulmonary Clinic to Legacy Cancer Services under the direction of a medical director working with an ANP due to program growth, as well as developing a plan to educate referring physicians, was also achieved in 2014.

Lastly, two clinical goals related to starting new tumor boards were also completed in 2014. First, a hybrid radiology/pathology correlation breast conference was established at Legacy Meridian Park Medical Center to review patients with a BIRADS 4 diagnosis with a benign diagnosis. In addition, a breast-specific tumor board was initiated at Legacy Salmon Creek Medical Center, beginning at the end of April 2014.

As our goals are achieved, we aim ever higher to increase the patient's overall experience and provide the highest level of quality care to those with a cancer diagnosis in our communities.

Legacy Health 2014 site analysis: Lung cancer

By Jordan Fein, M.D., pulmonologist, medical director, lung cancer program, Legacy Medical Group—Pulmonary

Data compiled from the National Cancer Institute show that one in two men and one in three women will develop cancer in their lifetime. Legacy Cancer



Institute (LCI) continues to be a leader in cancer management and care in our local community. Nationally, LCI has been recognized for the outstanding outcomes and coordinated cancer care that occurs throughout our health system. The primary

tumor sites remain breast, prostate, lung, colon/rectum, bladder and kidney/renal pelvis/ureter (see Table 1, Top six cancer sites 2014, below).

In this year's report we focus on lung cancer. Lung cancer is the leading cause of cancer death in the United States and comprises 160,000 deaths annually—more than breast, prostate, colorectal and pancreatic cancer combined. In 2014 we had 264 analytic lung cancer cases (see Table 2, Legacy Health primary sites 2014, all ages, page 5).

The majority of lung cancer patients diagnosed and/or treated at Legacy Cancer Institute were between 70 and 79 years of age (36 percent), which is consistent with the most recent data from other CoC programs nationwide (32 percent in 2013) (see Table 3, Lung malignancies by age at diagnosis, page 6). The histologic pattern in our lung cancer

patient population parallels that seen nationally, with adenocarcinoma being the most common subtype (see Table 4, Histology distribution of lung cancer cases, Legacy Health vs. Commission on Cancer, page 6). For all lung cancer diagnoses of adenocarcinoma or non-small cell lung cancer with mixed adenosquamous features, reflexive molecular testing is performed to test for EGFR and ALK mutations that if present can guide targeted therapies. Legacy was an early adopter of reflexive molecular testing in lung cancer to ensure appropriate treatment.

Most lung cancer diagnoses have unfortunately been made at an advanced stage of the disease only after the presence of symptoms, because until recently there was no proven way to screen for lung cancer. Consistent with national statistics the majority of patients diagnosed at Legacy in 2014, or 43 percent, had stage IV disease (see Table 5, American Joint Committee on Cancer major stage groups, page 7). Through lung cancer screening we expect a stage shift in upcoming years, with more early stage lung cancers detected and cured. As discussed elsewhere in this publication, LCI is a leader in this arena.

Similar to other CoC-accredited programs across the country, the majority, 26.5 percent, of lung cancer cases treated at Legacy are treated with

TABLE 1 Top six cancer sites 2014

Primary site	Legacy Emanuel	Legacy Good Samaritan	Legacy Meridian Park	Legacy Mount Hood	Legacy Salmon Creek	Legacy Health	American Cancer Society*
Breast	2	393	111	39	96	641	235,030
Prostate	55	154	38	24	35	306	233,000
Lung	14	119	57	32	42	264	224,210
Colon/rectum	8	75	55	27	40	205	136,830
Bladder	22	47	22	12	31	134	74,690
Kidney/renal pelvis/ureter	15	61	15	15	17	123	66,920
Total top six sites	116	849	298	149	261	1673	970,680
Percentage of total analytic cases (2,596 cases)	4%	33%	11%	6%	10%	64%	58%

*American Cancer Society 2014 estimated new U.S. cancer cases

TABLE 2 Legacy Health primary sites 2014, all ages

Primary site	Emanuel		Good Samaritan		Meridian Park		Mount Hood		Salmon Creek		Legacy Health	
	Patient count	Percentage of total	Patient count	Percentage of total	Patient count	Percentage of total	Patient count	Percentage of total	Patient count	Percentage of total	Patient count	Percentage of total
Anus/anal canal	—	—	1	0.1%	6	1.4%	3	1.3%	2	0.5%	12	0.5%
Bladder/urethra	22	6.7%	47	4.0%	22	5.0%	12	5.1%	31	7.3%	134	5.2%
Bone/joints/articular cartilage	3	0.9%	—	—	—	—	—	—	1	0.2%	4	0.5%
Brain/other nervous system	36	11.0%	12	1.0%	7	1.6%	11	4.7%	26	6.1%	92	3.5%
Breast	2	0.6%	393	33.5%	111	25.3%	39	16.7%	96	22.7%	641	24.7%
Cervix	1	0.3%	18	1.5%	3	0.7%	—	—	1	0.2%	23	0.9%
Colon	6	1.8%	49	4.2%	43	9.8%	20	8.5%	30	7.1%	148	5.7%
Corpus uteri	5	1.5%	67	5.7%	5	1.1%	3	1.3%	10	2.4%	90	3.5%
Esophagus	—	—	3	0.3%	2	0.5%	5	2.1%	3	0.7%	13	0.5%
Eye/orbit	—	—	1	0.1%	—	—	—	—	—	—	1	0.04%
Gallbladder	—	—	1	0.1%	—	—	2	0.9%	1	0.2%	4	0.2%
Hodgkin's lymphoma	6	1.8%	4	0.3%	2	0.5%	2	0.9%	2	0.5%	16	0.6%
Kidney/renal pelvis/ureter	15	4.6%	61	5.2%	15	3.4%	15	6.4%	17	4.0%	123	4.7%
Larynx	8	2.4%	2	0.2%	—	—	5	2.1%	3	0.7%	18	0.7%
Leukemia	29	8.8%	13	1.1%	6	1.4%	4	1.7%	7	1.7%	59	2.3%
Liver/Intrahepatic bile duct	7	2.1%	7	0.6%	4	0.9%	2	0.9%	7	1.7%	27	1.0%
Lung/bronchus	14	4.3%	119	10.2%	57	13.0%	32	13.7%	42	9.9%	264	10.2%
Melanoma (in situ and malignant)	1	0.3%	52	4.3%	8	1.8%	4	1.7%	8	1.9%	73	2.8%
Mesothelioma	—	—	1	0.1%	—	—	—	—	—	—	1	0.04%
Myeloma	—	—	4	0.3%	8	1.8%	1	0.4%	1	0.2%	14	0.5%
Non-Hodgkin's Lymphoma	14	4.3%	33	2.8%	23	5.2%	9	3.8%	17	4.0%	96	3.7%
Nose/nasal cavity/middle ear	—	—	1	0.1%	—	—	—	—	—	—	1	0.04%
Oral cavity/pharynx	25	7.6%	2	0.2%	3	0.7%	5	2.1%	7	1.7%	42	1.6%
Other biliary	1	0.3%	2	0.2%	1	0.2%	2	0.9%	1	0.2%	7	0.3%
Other digestive organs	—	—	2	0.2%	—	—	1	0.4%	—	—	3	0.1%
Other female genital organs	1	0.3%	3	0.3%	—	—	2	0.9%	1	0.2%	7	0.3%
Ovary	3	0.9%	13	1.1%	3	0.7%	1	0.4%	3	0.7%	23	0.9%
Pancreas	5	1.5%	17	1.5%	16	3.6%	8	3.4%	17	4.0%	63	2.4%
Penis	—	—	1	0.1%	—	—	0	—	—	—	1	0.04%
Prostate gland	55	16.7%	154	13.1%	38	8.7%	24	10.3%	35	8.3%	306	11.8%
Rectum/rectosigmoid junction	2	0.6%	26	2.2%	12	2.7%	7	3.0%	10	2.4%	57	2.2%
Retroperitoneum/peritoneum	1	0.3%	3	0.3%	—	—	—	—	—	—	4	0.2%
Skin (basal/squamous cell)	1	0.3%	—	—	2	0.5%	1	0.4%	1	0.2%	5	0.2%
Small intestine	1	0.3%	1	0.1%	5	1.1%	3	1.3%	—	—	9	0.3%
Soft tissue	7	2.1%	5	0.4%	1	0.2%	2	0.9%	4	0.9%	19	0.7%
Stomach	3	0.9%	13	1.1%	7	1.6%	4	1.7%	2	0.5%	29	1.1%
Testis/spermatic cord	6	1.8%	7	0.6%	3	0.7%	—	—	6	1.4%	22	0.8%
Thyroid/other endocrine glands	34	10.4%	9	0.8%	8	1.8%	1	0.4%	20	4.7%	72	2.8%
Trachea/mediastinum	—	—	—	—	1	0.2%	—	—	—	—	1	0.04%
Vulva/vagina	—	—	7	0.6%	—	—	—	—	—	—	7	0.3%
Other/ill-defined sites	15	4.6%	18	1.5%	17	3.9%	4	1.7%	11	2.8%	65	2.1%
Grand total	328	100%	1,172	100%	439	100%	234	100%	423	100%	2,596	100%

a combination of chemotherapy and radiation therapy (see Table 6, Legacy lung malignancies 2014 — First course of treatment by stage, page 7). This is consistent with other CoC-accredited programs nationally (see Table 7, All CoC lung malignancies 2013 — First course of treatment by stage, page 7).

In 2014 more than half of all Legacy analytic lung cases were diagnosed at Legacy and received all or part of first course treatment at Legacy (52 percent), or were diagnosed elsewhere and received all or part of first course treatment at Legacy (12 percent) (see Table 8, Total lung analytic cases by class of cases, page 8).

Over half of the lung cancer patients diagnosed in 2014 were female (57 percent), compared to 43 percent for males (see Table 9, Lung cases by gender, Legacy vs. Commission on Cancer, page 8).

The best means of continuing to improve cancer care and survival is through research. The number of patients on clinical trials and research projects is tracked and Legacy continues to enroll patients in multiple tumor studies as well as specifically lung. More information about cancer research at Legacy Cancer Institute can be found in this report.

TABLE 3 Lung malignancies by age at diagnosis

Age	Legacy Health, 2014		All COC, 2013*	
	Lung cases	Percentage of total	Lung cases	Percentage of total
< 29	0	0	209	0.1%
30-39	1	0.4%	702	0.4%
40-49	5	1.8%	5,314	3.3%
50-59	37	14.0%	26,639	16.5%
60-69	68	25.8%	49,087	30.3%
70-79	95	36.0%	52,132	32.2%
80-89	52	19.7%	25,342	15.7%
>90	6	2.3%	2,496	1.5%
Total	264	100%	161,921	100%

*Last complete year of data available from the Commission on Cancer

TABLE 4 Histology distribution of lung cancer cases, Legacy Health vs. Commission on Cancer

Histology	Legacy Health, 2014		Commission on Cancer, 2013*	
	Total	Percentage	Total	Percentage
Malignant neoplasm	26	9.8%	0	0.0%
Small cell carcinoma	34	12.9%	21,438	13.2%
Non-small cell carcinoma	26	9.8%	33,442	20.7%
Squamous cell carcinoma	44	16.7%	35,169	21.7%
Adenocarcinoma, nos	93	35.3%	60,608	37.4%
Other specified types	41	15.5%	11,264	7.0%
Total	264	100%	161,921	100%

*Last complete year of data available from the Commission on Cancer

TABLE 5 American Joint Committee on Cancer (AJCC) major stage groups — Lung

	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage N/A or unknown	Total
Legacy Health lung cases	0	32	16	66	114	36	264
Percentage of total lung malignancies	0	12.1%	6.1%	25.0%	43.2%	13.6%	100%
All CoC diagnosed, CY 2013*	646	37,658	13,762	31,469	70,655	7,731	161,921
Percentage of total lung malignancies	0.4%	23.3%	8.5%	19.4%	43.6%	4.8%	100%

*Last complete year of data available from the Commission on Cancer; excludes age < 20

TABLE 6 Legacy lung malignancies 2014 — First course of treatment by stage (264 cases)

Treatment combination	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage N/A or unknown	Total	Percentage of total
Surgery only	0	17	6	5	0	0	28	10.6%
Surgery and chemotherapy	0	0	8	1	0	0	9	3.4%
Surgery and radiation	0	0	0	0	1	0	1	0.38%
Surgery, chemotherapy and radiation	0	0	2	3	0	0	5	1.9%
Chemotherapy only	0	0	0	4	23	2	29	11.0%
Chemotherapy and radiation	0	2	8	34	26	0	70	26.5%
Radiation only	0	23	4	5	19	1	52	19.7%
Treated	0	42	28	52	69	3	194	73.5%
Other treatment options, or no first course of treatment	0	0	0	18	45	7	70	26.5%
Total	4	42	28	70	114	10	264	100%

TABLE 7 All CoC lung malignancies 2013* — First course of treatment by stage (161,921 cases)

Treatment combination	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage N/A or unknown	Total	Percentage of total
Surgery only	279	20,226	3,447	1,298	471	496	26,217	16.2%
Surgery and chemotherapy	11	1,372	2,838	1,550	488	107	6,366	3.9%
Surgery and radiation	4	387	202	173	195	26	987	0.6%
Surgery, chemotherapy and radiation	33	479	791	1,774	412	69	3,558	2.2%
Chemotherapy only	41	630	584	3,289	17,390	965	22,899	14.1%
Chemotherapy and radiation	41	1,331	2,314	14,291	17,032	1,071	36,080	22.3%
Radiation only	65	8,639	1,406	2,556	9,814	738	23,218	14.3%
Treated	474	33,064	11,582	24,931	45,802	3,472	119,325	73.6%
Other treatment options, or no first course of treatment	172	4,594	2,180	6,538	24,853	4,259	42,596	26.4%
Total	646	37,658	13,762	31,469	70,655	7,731	161,921	100%

*Last complete year of data available from the Commission on Cancer

TABLE 8 Total lung analytic cases by class of cases

Class of case (CoC)	Legacy Health, 2014		Commission on Cancer, 2013*	
	Cases	Percentage of total	Cases	Percentage of total
CoC 00: Diagnosed at Legacy; all of first course treatment or the decision not to treat was done elsewhere.	96	36.4%	20,013	12.4%
CoC 10–14: Diagnosed at Legacy or in a staff physician’s office; all or part of first course treatment or the decision not to treat was done at Legacy.	137	51.9%	106,765	65.9%
CoC 20–22: Diagnosed elsewhere; all or part of first course treatment was done at Legacy.	31	11.7%	35,143	21.7%
Total	264	100%	161,921	100%

*Last complete year of data available from the Commission on Cancer

TABLE 9 Lung cases by gender, Legacy vs. Commission on Cancer

	Legacy Health, 2014		CoC, 2013*	
	Cases	Percentage of total	Cases	Percentage of total
Male	114	43.2%	85,107	53%
Female	150	56.8%	76,814	47%
Total	264	100%	161,921	100%

*Last complete year of data available from the Commission on Cancer

Cancer data management

By Susan Malone, B.S., CDM technician, Legacy Cancer Data Management

Cancer

Cancer begins with a DNA mutation, causing abnormal cells to divide uncontrollably, destroying normal body tissue and potentially spreading throughout the body. It is the second-leading cause of death in the U.S., a statistic that prompted the National Cancer Act of 1971 "War on Cancer" and its reportable disease status per the Cancer Registries Amendment Act of 1992.



Cancer registries exist to track the etiology, management and survival of cancer patients. This collective data allows state and national public health services to monitor the cancer burden in the U.S. population and also provides statistical information that influences ongoing research into cancer prevention, diagnosis, treatment and survival.

Data

At Legacy Cancer Institute (LCI), the Cancer Data Management (CDM) department collects, analyzes, manages and reports data on all cancer patients newly diagnosed and/or receiving their first course of treatment at all five Legacy hospitals. As an accredited system with commendation, Integrated Network Cancer Program (INCP) from the American College of Surgeons (ACS) Commission on Cancer (CoC), our data is reported to the CoC National Cancer Data Base (NCDB) annually to contribute to studies of cancer incidence, treatment and outcomes nationally. In 2014, we submitted all required data error-free. That is 22,534 living patients for which we have performed long-term follow-up since our program reference date of 1997. We proudly maintain a 93 percent successful follow-up rate for patients diagnosed within the last five years and 88 percent for patients followed since 1997. We are also mandatory reporters to the Oregon State Cancer Registry (OSCaR) and Washington State Cancer Registry (WSCR), where our data is integrated into population-based data systems to

study trends of cancer incidence, diagnosis and treatment patterns, survival rates and possible cancer clusters within Oregon and Washington. In 2014, the CDM team accessioned 2,596 newly analytic cases into the cancer registry database.

We continue to utilize the CoC Rapid Quality Reporting System (RQRS) we adopted in 2012, which is a voluntary Web-based reporting and quality improvement tool that promotes and facilitates evidence-based cancer care at CoC-accredited cancer programs, like LCI. RQRS provides real clinical-time assessment of hospital-level adherence to National Quality Forum (NQF)-endorsed accountability, performance and quality improvement measures for breast and colorectal cancers. This real-time feedback mechanism prompts us to follow up on patient care throughout the entire treatment period and allows LCI to compare its performance with state, regional or other similar types of RQRS participating cancer programs.

Management

Legacy Health has an outstanding team of experts who follow strict guidelines of data entry prescribed by the CoC and North American Association of Central Cancer Registries (NAACCR).

Attendance at various local, regional and national educational conferences and webinars are required to stay current with the latest changes in the cancer and cancer registry worlds.

Our team has active memberships in collaborative organizations, such as Catherine Gunn, CTR, voted 2015 president-elect and 2016 president of the Oregon Cancer Registrars Association (OCRA); Mel Tolan-Hudson, CTR, RHIT, who is an active OCRA Education Committee member; and Lorraine Colwell, CTR, who recently gained her CTR certification and is an active member of the National Cancer Registrar Association (NCRA) Advanced Education Committee.

On top of performing regular follow-up on all cancer cases diagnosed since 1997 and capturing newly diagnosed cases at Legacy Cancer Institute,

the CDM department coordinates more than 30 multidisciplinary cancer conferences (tumor boards) per month across all five Legacy hospitals. These conferences review complex cases to provide an expert “second opinion” on diagnosis, pre-treatment evaluation, staging, treatment strategy and

rehabilitation. The team includes medical oncologists, pathologists, radiation oncologists, radiologists, surgeons, nurses, research coordinators and other cancer care staff. We discussed approximately 1,821 cases system-wide in 2014 alone.

Legacy Lung Cancer Screening Program

By Jordan Fein, M.D., pulmonologist, medical director, lung cancer program, Legacy Medical Group–Pulmonary

Fewer than 30 percent of patients with lung cancer are candidates for curable surgical resection at the time of diagnosis. The high mortality associated



with lung cancer is due primarily to the advanced stage that many patients are diagnosed with when they seek medical attention after becoming symptomatic. This fact has long been recognized and there has been a lot of historical interest in

screening for lung cancer. Several large clinical trials evaluated screening with regular chest X-rays; however, there proved to be no reduction in lung cancer mortality. In August 2011, however, the results of a large National Cancer Institute-funded study, the National Lung Screening Trial (NLST), were published. This trial demonstrated a 20 percent reduction in lung cancer mortality and almost 7 percent reduction in overall mortality with annual low-dose CT chest screening of current and former smokers.

Legacy Health was an early adopter of lung cancer screening. Shortly after the NCCN published guidelines recommending lung cancer screening, we began a pilot project in November 2012 and screened our first patients in February 2013. The people screened in the pilot program were all established patients in the Legacy Medical Group–Pulmonary practice who met NLST criteria of age 55–74, current or former smoker who had quit within 15 years, with a 30-pack-year or greater smoking history. We utilized screening algorithms published by the NCCN for management of findings on the screening CT exams. We implemented

quality indicators to ensure timely patient and provider notification of results, follow-up and tracking of results. The pilot was very successful and the Legacy Lung Cancer Screening Program was formally established and moved to the Legacy Cancer Institute in March 2014.

The Legacy Lung Cancer Screening Program incorporates NCCN guidelines, including shared patient/provider decision-making and smoking cessation as integral components of the screening experience. The program has a full-time nurse practitioner and is overseen by a pulmonologist. Low-dose screening CT studies are read by only two dedicated fellowship-trained radiologists, and results are reported utilizing the American College of Radiology Lung-RADS reporting system. The program utilizes the Pen-Lung software application for reporting and tracking results, as well as automated patient notification similar to mammography for annual screening exams. Patients may self-refer or be referred by a provider.

To date, the Legacy Lung Cancer Screening Program has screened 196 patients, totaling 269 screening CT exams. Eight patients have had Lung-RADS Category 4 findings (lesions suspicious for malignancy). All patients with Lung-RADS Category 4 findings were referred to Pulmonary Medicine for evaluation. Four PET/CTs have been obtained. One CT-guided biopsy has been obtained, and one diagnosed lung cancer made (stage IA).

Lung cancer screening is now a covered benefit from private insurers under the Affordable Care Act. CMS announced as well that screening will be a preventive services benefit under the Medicare

program when completed in a center that meets required elements that CMS has designated and as outlined above. We maintain grant funding so that all those who meet screening criteria can receive screening regardless of the ability to pay. The Legacy Lung Cancer Screening Program is certified

by the American College of Radiology as a screening center, and is recognized by the Lung Cancer Alliance as a Screening Center of Excellence. Our program will continue to grow and be a leader in the early diagnosis and treatment of lung cancer.

Legacy Health CT lung cancer screening

By Phillip Baker, M.D., Ph.D., diagnostic radiologist, Diagnostic Imaging Northwest, Legacy Imaging Services

Risk factors for developing lung cancer are well known, smoking being the most common cause at 90 percent. Due to late detection, lung cancer is often advanced at the time of diagnosis and consequently the mortality rate has historically been very high at 90 percent.



Given the opportunity for reducing mortality, attempts have been made to identify or develop a test or exam for early

detection of lung cancer. For example, the Chest Radiograph (X-ray) has been repeatedly evaluated as a screening exam; however, pulmonary nodules, including early lung cancers less than 1 cm in size, cannot be reliably detected by radiograph.

In contrast, computed tomography (CT or CAT scan) of the chest allows for the detection of lung nodules as small as 2 mm. Although used in lung cancer screening trials for decades, a large, definitive study had not been performed to confirm CT as a useful screening exam until the publication in 2011 of findings from the National Lung Screening Trial (NLST). The NLST was a very large (55,000 patients), multicenter study that demonstrated an almost 20 percent reduction in lung cancer mortality rate with annual CT screening. The NLST consisted of highly standardized protocols for performing exams using very low radiation doses, interpretation of exams by dedicated radiologists, and multidisciplinary teams experienced in providing care and treatment to patients with lung cancer.

Following the NLST publication, the American College of Radiology (ACR), working with other

societies and organizations, established a detailed set of standards and guidelines for not only performing CT lung cancer screening exams and reporting results, but also for administering a comprehensive screening program. The ACR standards and guidelines include the use of specific criteria for determining who is most likely to receive benefit from screening, very low radiation dose CT exams, and ACR-developed Lung-RADS lexicon for describing the size and appearance of lung nodules and guidelines for follow-up and further evaluation of nodules. Risk stratification of nodules based on size, density and growth is an integral part of Lung-RADS and is particularly important, as very few lung nodules are lung cancer.

The ACR standards and guidelines for CT lung cancer screening are analogous to the long established and universally accepted ACR mammography standards and guidelines that have been responsible for providing a high standard of quality and performance in breast cancer screening in the United States for decades.

At Legacy Good Samaritan Medical Center, we are fortunate to have state-of-the-art CT scanners (Siemens) with radiation dose-reduction features that limit the patient's radiation exposure, experienced CT technologists performing exams, and dedicated radiologists interpreting and reporting the results of exams. We are also fortunate to have had the opportunity to work with PenRad, a medical software company, in adapting their mammography tracking and notification software for use in CT lung cancer screening. The new software, Pen-Lung, has become integral to our assuring accurate reporting of results, timely notification of referring

physicians and patients, tracking follow-up and care, and providing a database for quality assurance and program performance evaluation.

Through the efforts of our team, we have developed a standards-based CT screening program at

Legacy Good Samaritan Medical Center that has achieved ACR-designated Lung Cancer Screening Center status. We believe this program will provide our at-risk patients with earlier detection and fewer lives lost to lung cancer.

Developments in lung cancer pathology

By Mitchell Ryan, M.D., pathologist, Cascade Pathology Services, Legacy Laboratory Services

Lung cancer classification schemes have been slow to change, and because of once-limited therapeutic options, separating small-cell carcinoma from



non-small cell carcinoma (NSLC) used to be the most important distinction made by the pathologist. Recent advances in treatment and in understanding molecular pathogenesis now require more precise classification of NSLC (squamous cell carcinoma, adenocarcinoma, large cell carcinoma), and when applicable, molecular testing of tumors.

The most recent major development in lung cancer classification is the International Association for the Study of Lung Cancer (IASLC)/American Thoracic Society (ATS)/European Respiratory Society (ERS) Lung Adenocarcinoma Classification, published in 2011, recommending major revisions for the structured classification of pulmonary adenocarcinomas. This classification — in addition to revising pulmonary adenocarcinoma classification — provides an approach for handling and reporting small pulmonary biopsy and cytology specimens, moving beyond adenocarcinoma to consider all types of pulmonary carcinoma. This is important since pulmonary cancers often present at advanced stages, precluding resection and in turn necessitating the acquisition of large amounts of information from scant biopsy material.

With the IASLC small biopsy/cytology recommendations there is an emphasis on separating squamous cell carcinoma from adenocarcinoma,

and in determining whether there is squamous and/or glandular, i.e. adenocarcinoma, differentiation, even in the most poorly differentiated NSLC (large cell carcinoma). This follows from the fact that a diagnosis of squamous cell carcinoma contraindicates the use of certain drugs due to safety and efficacy concerns, and excludes a tumor from molecular testing given the lack of drugs targeting genetic alterations of squamous cell carcinoma.

Alternatively, a diagnosis of adenocarcinoma is an indication for molecular testing to determine whether an advanced stage tumor has EGFR activating mutations, an ALK rearrangement, or a ROS1 rearrangement, with tumors testing positive being candidates for treatment with TKI inhibitors, ALK inhibitors, or crizotinib, respectively. Testing EGFR and ALK status are now considered routine clinical tests (as opposed to research tests) for lung cancer treatment. With rapid advances in molecular testing, in particular next-generation sequencing, we will likely see complete molecular profiles of patient's tumors (as opposed to targeted tests such as EGFR or ALK) become routine practice, regardless of histologic subtype.

Among the IASLC adenocarcinoma classification highlights are:

- The recognition of a new pre-invasive lesion, adenocarcinoma in situ (AIS)
- A minimally invasive adenocarcinoma (MIA) category defined as a lepidic predominant tumor, < 3 cm, with < 5 mm invasion
- Recognition of the micropapillary pattern as a distinct subtype with poorer prognosis

- Deletion of the bronchioloalveolar (BAC) adenocarcinoma subtype (the non-mucinous BAC pattern being re-classified as adenocarcinoma in situ, and the mucinous BAC pattern as in situ or invasive mucinous adenocarcinoma)
- A recommendation against using the term “mixed-subtype” for tumors with more than one pattern of invasive adenocarcinoma, and instead to name the predominant subtype and record percentage estimates (to the nearest 5 percent) for each minor subtype additionally present.

These changes in adenocarcinoma classification reflect (sometimes limited) evidence that certain histologic subtypes of adenocarcinoma carry different prognostic implications, albeit not necessarily different therapeutic implications, given our current level of understanding and treatment. But also importantly, the new classification provides an evidence-based framework to stratify and guide future studies in lung cancer treatment and pathogenesis.

Genetic susceptibility to lung cancer in never-smokers

By Yasmine Akkari, Ph.D., FACMG, scientific director, Cytogenetics Services and Molecular Pathology FISH Laboratory, Legacy Laboratory Services

Lung cancer is the most common form of cancer death worldwide (Parkin, et al., 2002). Based on histological evaluation and clinical presentation, it is generally divided into two broad categories:



1. Small cell lung cancer (SCLC), a highly malignant and undifferentiated neoplasm, consisting of primitive-appearing cells with a high propensity to metastasis, and

2. Non-small cell lung cancer (NSCLC), representing all other subtypes and commonly divided into three pathological presentations — squamous cell carcinoma, adenocarcinoma and large cell carcinoma.

While SCLC is usually very responsive to chemotherapy and radiotherapy, NSCLC is resistant to conventional chemotherapy and is treated primarily with surgery (reviewed in Popper, et al., 2014).

In never-smokers, lung cancer is almost universally NSCLC, with the majority being adenocarcinoma. In this article, we will focus exclusively on the genetic predisposition to NSCLC in never-smokers, defined as individuals who have had a lifetime exposure of less than 100 cigarettes. When considered a separate category, lung cancer in

never-smokers would rank as the seventh most common cause of cancer death worldwide, before that of the cervix, pancreas and prostate (Parkin, et al., 2002). Although it is estimated that 80–90 percent of NSCLC incidence can be attributed to cigarette smoking, 10–20 percent of lung cancer cases occur in never-smokers (Schwartz, et al., 2007). Moreover, this percentage is expected to increase as smoking cessation and prevention programs are successfully implemented.

Lung cancer in never-smokers presents with gender, pathological and molecular differences, and has been recognized more recently as a disease different from lung cancer in smokers. Familial aggregation has provided indirect evidence for a genetic role in lung cancer susceptibility, even when adjusted for shared environmental factors (Matakidou, et al., 2005). This has prompted a worldwide effort to search for genes and genetic regions (loci) associated with predisposition to this disease. In addition, past epidemiological studies have demonstrated a two- to three-fold increase in the risk of lung cancer in relatives of patients. Genome-wide association studies have identified several susceptibility loci influencing lung cancer risk, such as the one on 6q23-25, where the search of the culprit gene is still ongoing (Bailey-Wilson, et al., 2004) and on 13q31.3, where transcription levels

of the GPC5 gene were shown to be decreased in patient samples (Li, et al., 2010). In addition, several hypotheses were put forth for the increased risk of lung cancer in never-smokers, including differences in DNA repair capacity or oxidation pathways. To this end, polymorphisms in genes involved in both excision repair (ERCC1 and XRCC1) and oxidation-induced damage (CYP1A1 and GSTM1) have been shown to increase disease risk in carriers (Schwartz, et al., 2007). However, the identification of specific genes in lung carcinogenesis, and the availability of accurate family segregation data have remained elusive.

With the advent of whole genome and whole exome (protein-coding region of the genome) sequencing, and protein expression array technologies, however, and the ability to compare sequence information between somatic and germline tissue in affected patients, information about lung cancer predisposition in never-smokers has seen a successful surge of promising clues. Pathways that lead to lung tumorigenesis are being dissected, and evidence is rapidly accumulating about the role of the EGFR gene in this disease. The EGFR protein belongs to a family of receptor tyrosine kinases that are mutated in 50 percent of lung cancers and initiate an anti-apoptotic and invasion-signaling cascade.

These studies, in turn, led to the development of tyrosine kinase inhibitors (TKIs) and showed measurable success in a subset of never-smoker patients later found to carry activating EGFR gene alterations. In particular, a specific, highly conserved, somatic mutation, p.Thr790Met, was reported in some cases of NSCLC that recur after an initial response to TKIs. This suggested a proliferative advantage of cells carrying this variant and

prompted investigators to screen several families in which multiple never-smoker individuals developed lung adenocarcinoma. Testing of affected individuals and comparison to their non-affected relatives showed the presence of the p.Thr790Met variant in both germline and normal lung tissue. Conversely, analysis of tumor tissue showed the presence of other pathogenic variants most often occurring in carcinoma in situ (cis) with the Thr790Met variant. The implication of this finding may help explain the mechanism of tumor progression in these individuals and its relatively late occurrence (~ age 50) in these families (Bell, et al., 2005). This emphasizes the need for EGFR gene testing in families with strong aggregation of lung cancer.

The discovery of germline EGFR mutations in familial lung cancer stimulated a wide interest in the identification of inherited variants in high-penetrance but low-frequency genes similar to what was achieved in breast and ovarian, e.g., BRCA1/2, or colorectal cancers, e.g., APC. These studies, using families with several affected individuals from multiple generations, are ongoing. The goals of these studies are to provide such families with appropriate screening guidelines and to understand the molecular pathways in the development of this disease.

At Legacy Health, families with multiple affected individuals are referred to Legacy Genetic Services for a comprehensive evaluation of family history, risk assessment for both the patients and their family members, and referral to appropriate specialties for clinical management. For questions regarding these services, contact Legacy Genetic Services, George Anadiotis, D.O., (ganadiotis@lhs.org), or Yasmine Akkari, Ph.D., FACMGG, (yakkari@lhs.org).

Bibliography

- Parkin, D. M. et al. Global cancer statistics, 2002. (2005) *CA Cancer J. Clin.* 55, 74–108.
- Popper H. H. et al. Molecular testing in lung cancer in the era of precision medicine. (2014) *Transl. Lung Cancer Res.* 3(5), 291–300.
- Schwartz A. G. et al. The molecular epidemiology of lung cancer. (2007) *Carcinogenesis* vol.28(3), 507–518.
- Matakidou, A. et al. Systematic review of the relationship between family history and lung cancer risk. (2005) *Br. J. Cancer* 93, 825–833.
- Bailey-Wilson, J. E. et al. A major lung cancer susceptibility locus maps to chromosome 6q23–25. (2004) *Am. J. Hum. Genet.* 75, 460–474.
- Li, Y. et al. Genetic variants and risk of lung cancer in never smokers: A genome-wide association study. (2010) *Lancet Oncol.* 11, 321–330.
- Bell D. W. et al. Inherited susceptibility to lung cancer may be associated with the T790M drug resistance mutation in EGFR. (2005) *Nat. Genet.* 37(12), 1315–1316.

Lung cancer surgical treatment

By Andrew Tsen, M.D., cardiothoracic surgeon, medical director, Legacy Medical Group—Cardiothoracic Surgery

The epidemiology surrounding lung cancer has caused a lot of dynamism in the field, but the surgical arena has remained largely unchanged.



Surgery is the mainstay of treatment for early stage non-small cell carcinomas of the lung and there is mounting surgical literature to support similar therapy for small cell carcinomas.

Accurate staging is an important part of appropriate treatment of lung cancer patients and having a multidisciplinary approach to these patients has been essential.

At Legacy Health, we have seen the clinical synergy of endobronchial ultrasound (EBUS) and mediastinoscopy in the evaluation for N2 or mediastinal disease, which is the gray dividing line between surgical and nonsurgical therapy. The combined validity of CT-PET with or without EBUS has allowed us to develop a more selective approach toward mediastinoscopy. Video-assisted thoracic surgery (VATS) has also allowed us to better evaluate for pleural disease, malignant effusion or periaortic lymphadenopathy, which is hard to evaluate by other means.

Stage I–II lung cancer is best addressed surgically in those patients who are physiologically able. Stereotactic ablative body radiotherapy (SBRT) has arisen as an option in early stage lung cancer patients who are not candidates for lung resection.

A major area of current focus in surgery has been the sublobar anatomic and nonanatomic resections in lung cancer patients who have limited pulmonary reserve. Patients who are borderline for surgery are usually not only presented at a multidisciplinary tumor board, but also evaluated separately by Legacy Medical Group—Radiation Oncology and Legacy Medical Group—Cardiothoracic Surgery.

For patients who are fit for surgery, VATS resection has become the mainstay of the surgical approach at Legacy; exceptions would be patients with large or central tumors and those invading the chest wall.

As part of our collaboration with CoC Cancer Program Practice Profile Report (CP3R) lung quality indicators, we have made an effort in conjunction with Pathology to make sure that adequate numbers of lymph nodes are harvested at the time of surgery and we are considering the addition of robotic lobectomy to our surgical armamentarium as there appears to be better ability to harvest lymph nodes.

Microscopic stage IIIA cancer found at surgery and certain patients with localized AP window nodal disease may also be candidates for lung resection. We have maintained an aggressive surgical approach to patients when warranted, including surgery after chemoradiation and tumors needing complex airway and pulmonary artery reconstruction.

For stage IV disease, VATS decortication, pleurodesis and long-term tunneled catheter placements are often options.

An area of interest will be the impact of the Legacy Lung Cancer Screening Program. We anticipate the increased need for preoperative localization of lesions seen by screening CT chest as well as increased debate about the extent of resection needed for the smaller lesions, reflecting a trend also seen nationally. In this next year, we are in the process of hiring new surgeons with a specific interest in thoracic surgery to accommodate the increasing volume of lung surgery within the Legacy system.

Overall, the surgical program continues to strive for quality outcomes in what is the gold standard in the treatment of early lung cancer. We will continue to be flexible and responsive to the needs of the multidisciplinary team in the treatment of a cancer where much progress still has to be made.

Medical oncology treatment for lung cancer

By Eric Anderson, M.D., Ph.D., medical oncologist, OHSU Knight-Legacy Health Cancer Collaborative, Community Hematology Oncology—Northwest Portland

More than 220,000 people were diagnosed with lung cancer in the U.S. in 2014 and more than 160,000 died of their disease, making lung cancer



the leading cause of cancer-related death in America.

Risk factors for the development of lung cancer are well known, with smoking being the primary modifiable risk factor.

Great strides have been made in early detection of lung cancer, and 2014 ushered in a lung cancer screening program at Legacy Cancer Institute. Furthermore, advances in local therapy, including minimally invasive lung cancer surgery, and radio-surgery, have improved outcomes in early stage lung cancers.

Despite these advances, there remains a significant challenge in the treatment of advanced and metastatic lung cancer. The identification of targeted therapies for lung cancers with EGFR mutations and ALK rearrangements has improved survival for the 10–15 percent of patients with these specific mutations. Legacy Cancer Institute is currently participating in a clinical trial to determine whether using targeted therapies improves survival for our patients with locally advanced lung cancer.

The complexity of modern lung cancer treatment requires a multidisciplinary approach, including input from pulmonologists, thoracic surgeons, radiologists, pathologists and medical and radiation

oncologists. At Legacy Cancer Institute, newly diagnosed and other complicated lung cancer cases are reviewed at a weekly tumor board, which includes these various experts, to develop a treatment plan for each specific patient.

The landscape of lung cancer therapy is constantly changing, and immunotherapy is an emerging and exciting area in the treatment of lung cancer.

Ongoing clinical trials at Legacy Cancer Institute and through our collaboration with the OHSU Knight Cancer Institute seek to advance the treatment of patients with lung cancer and to improve survival in this common disease. Currently open studies include a large, multi-institution study of targeted therapy in squamous cell lung cancer, a particularly treatment-resistant form of the disease. Another study seeks to determine the best chemotherapy option for lung cancer patients older than 70, which can be a difficult population to treat due to comorbidities and chemotherapy toxicities. Finally, an expanded research effort as part of the Legacy-Knight Cancer Institute will soon result in several additional clinical trials for patients with both early stage and advanced/metastatic lung cancer using targeted therapies, immunotherapies and novel chemotherapy combinations.

Legacy Cancer Institute, with its multidisciplinary approach, state-of-the-art therapies, cross-institutional collaborations, and rapidly expanding clinical trial opportunities, provides our patients with the best available therapies for lung cancer.

Radiation oncology treatment

By Andrew Kee, M.D., radiation oncologist, Legacy Medical Group—Radiation Oncology, Legacy Cancer Institute

Despite improvements over several decades in reducing lung cancer-related mortality, this disease continues to be the most common cause of cancer-related death in this country¹.



With advances in multiple medical disciplines, including implementation of screening, advances in molecular pathology and various surgical and non-surgical therapies, there are encouraging improvements in

the therapy of patients stricken with lung cancer.

As the technology of our diagnostic and radiation delivery machines has improved, we are now able to accurately deliver radiation to the target better and faster than ever before. We use a 4-D wide-bore CT simulator for all stages of lung cancer patients who undergo the various forms of radiotherapy in our department. The radiotherapy planning CT acquires images of the lung cancer while patients are breathing. This allows accurate delineation of the tumor(s) throughout the respiratory cycle, improving the delivery of the desired dose to the target. Because we are able to appreciate tumor motion during the breathing cycle, a smaller margin around the tumor is irradiated, leading to lower doses to surrounding normal tissue.

Advances in radiation delivery technique have also helped improve accuracy. Many lung cancer patients in our clinic are treated with either volumetric modulated arcs or dynamic conformal arcs, which have reduced the time patients are on the treatment table. This technique involves radiation delivery to the tumor while the machine head completes a full rotation around the patient. As a result, the time it takes to deliver the desired dose has been reduced significantly, with most patients receiving the desired dose in between three and six minutes. This allows less opportunity for patients to move while the radiation is being

delivered. In addition, our machines are capable of obtaining 3-D and 4-D conebeam CT images of the patient and target, which allow adjustments of the patient's position with a robotic table prior to each radiotherapy session.

This has led to more accurate radiation delivery. In patients with medically inoperable node negative stage I and II disease, stereotactic ablative body radiotherapy (SABR) is considered standard of care. This is a curative nonsurgical radiation therapy technique in which patients are in a rigid immobilization device to minimize movement during radiotherapy with all of the technology mentioned above. Most patients are treated for three to five consecutive days in which a very large amount of radiation is delivered accurately to the tumor. Dose to the tumor is equivalent to five to six weeks of standard dose radiotherapy, but is delivered in three to five sessions. This has proven to be superior to standard radiotherapy treatments in early stage lung cancer patients. By using SABR, it is possible to achieve local control rates over 90 percent.²

Unfortunately, the majority of patients diagnosed with lung cancer present with either stage III or IV disease, which involves local regional lymph node involvement or distant metastatic spread. This patient population is very heterogeneous with each patient's treatment individualized with both traditional forms of fractionated radiation as well as newer techniques and technologies. Gamma Knife Perfexion is one of many new acquisitions in our radiation department. This is a stereotactic radiosurgery (SRS) device used to deliver very high doses of radiation in a single session. It is used to treat many types of brain tumors, using 192 radioactive cobalt sources to deliver radiation in the shape of the tumor. Patients with brain metastasis from lung cancer can be treated with this machine as a substitute to whole brain radiation, which for many years has been the standard. Not only is

¹Siegel, R.L., K.D. Miller, and A. Jemal, Cancer statistics, 2015. *CA Cancer J Clin.* 65(1): p. 5–29.

²Timmerman, R., et al., Stereotactic body radiation therapy for inoperable early stage lung cancer, 2010, *JAMA.* 303(11): p. 1070–6.

single-session Gamma Knife radiosurgery more convenient than daily sessions for two weeks with whole brain RT, there is evidence of patients having better retention of neurocognitive function with Gamma Knife SRS, as it minimizes radiotherapy exposure to the unaffected brain. The Gamma Knife can treat many intracranial metastases in a single session with no physical limitations to the number of metastasis treated.

As participating members of NRG research consortium, studies that are opening, or have opened,

for our lung cancer patients include: using hippocampal avoidance technique in patients receiving whole brain radiotherapy; targeted chemotherapy with radiation for patients with specific gene mutations; dose escalation radiotherapy to the primary lung tumors; and the use of novel chemotherapy agents to increase cure rates.

Given the complexities of lung cancer therapy, a cooperative, integrated, multispecialty evaluation will ensure the highest quality of care for our patients.

Cancer Liaison Physician report

By Alizah Rotramel, M.D., gastrointestinal surgeon, Legacy Medical Group—Gastrointestinal Surgery

The Cancer Liaison Physician (CLP) serves a leadership role within Legacy Cancer Institute and is responsible for evaluating, interpreting and reporting our program's performance using the National Cancer Database (NCDB) data to the Legacy Network Cancer Committee at least four times per year. I have the privilege of serving Legacy as CLP and Quality Improvement Coordinator.



ing our program's performance using the National Cancer Database (NCDB) data to the Legacy Network Cancer Committee at least four times per year. I have the privilege of serving Legacy as CLP and Quality Improvement Coordinator.

Cancer Program Practice Profile Reports (CP3Rs) are reporting tools released annually by the American College of Surgeons Committee on Cancer (CoC). The CP3R was designed to promote practice improvement and quality of care at the local level, as well as to permit hospitals to compare their care for patients with that of other institutions. The goal of the program is to unify the staff, clinicians and administrators in a collaborative effort to identify opportunities for improvement in care, implement best practices, optimize quality and diminish disparities in care across CoC-accredited programs.

CP3Rs report system data regarding patient treatment and outcomes for patients with breast, cervical, colon, gastric, lung and rectal cancers. Starting in August 2013, three additional breast cancer measures were added to the CP3R:

- Rate of breast-conserving surgery for AJCC Stage 0, I or II breast cancers
- Rate of consideration/administration of radiation treatment within one year of diagnosis for women undergoing mastectomy with ≥ 4 lymph nodes
- Rate of performance of needle biopsy prior to surgical treatment of breast cancer

For patients diagnosed in 2012, the latest available data set, Legacy exceeded the local and regional rates in all of the breast cancer benchmarks, ranging from 91.7 to 100 percent, with breast conservation rates for earlier stage cancers at 57.5 percent.

New measures for non-small cell lung cancer patients are being collected; target benchmarks have not yet been established. However, we are seeing improved results, with removal and evaluation of at least 10 lymph nodes with the resection specimen increasing from 70.6 percent to 77.3 percent between 2010 and 2012. One hundred percent of lung cancer patients were considered for chemotherapy.

The latest CP3R also measures performance rates for two colon and one rectal measure. Legacy Health continues to outperform other CoC programs in Oregon, our Pacific Northwest region and the nation.

(continued)

TABLE 9 Commission on Cancer National Cancer Database (NCDB) Cancer Program Practice Profile Report (CP3R), Legacy Health

	Select measures	CoC Standard	Legacy Health estimated performance rates		
			2010	2011	2012
Breast	Breast conservation surgery rate for women with AJCC clinical stage 0, I or II breast cancer (Surveillance)	NA	56.5%	53.4%	57.6%
	Image or palpation-guided needle bx (core or FNA) is performed to establish diagnosis of breast cancer (Quality Improvement)	4.5/80%	96.9%	98.6%	99.7%
	Radiation therapy is considered or administered following any mastectomy within one year (365 days) of diagnosis of breast cancer for women with ≥ 4 positive regional lymph nodes (Accountability)	4.4/90%	95.5%	94.7%	91.7%
	Radiation is administered within one year (365 days) of diagnosis for women under the age of 70 receiving breast conserving surgery for breast cancer (Accountability)	4.4/90%	94.3%	99.0%	94.9%
	Combination chemo is considered or administered within four months (120 days) of diagnosis for women under 70 with AJCC T1cN0, or stage IB-III hormone receptor negative breast cancer (Accountability)	4.4/90%	100%	95.2%	100%
	Tamoxifen or third generation aromatase inhibitor is considered or administered within one year (365 days) of diagnosis for women with AJCC T1c or stage IB-III hormone receptor positive breast cancer (Accountability)	4.4/90%	99.5%	100%	99.5%
Colon	Adjuvant chemotherapy is considered or administered with 4 months (120 days) of diagnosis for patients under the age of 80 with AJCC stage III (LN positive) colon cancer (Accountability)	4.4/90%	90.5%	100%	100%
Colon	At least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer (Quality Improvement)	4.5/85%	92.3%	94.7%	93.5%
Rectum	Radiation therapy is considered or administered within 6 months (180 days) of diagnosis for patients under the age of 80 with clinical or pathologic AJCC T4N0M0 or stage III receiving surgical resection for rectal cancer (Surveillance)	NA	100%	100%	100%
Gastric	At least 15 regional lymph nodes are removed and pathologically examined for resected gastric cancer (Quality Improvement)	NA	100%	50%	NA
Lung	At least 10 regional lymph nodes are removed and pathologically examined for AJCC stage IA, IB, IIA and IIB resection NSCLC (Surveillance)	NA	70.6%	70.8%	77.3%
Lung	Systemic chemotherapy is administered within 4 months to day perioperatively or day of surgery to 6 months postoperatively, or it is considered for surgically resected cases with pathologic lymph node positive (pN1) and (pN2) NSCLC (Quality Improvement)	NA	100%	100%	100%

Cervical and gastric cancer measures are also now being recorded but no benchmarks have been established.

The NCDB also provides information for the ACS Cancer Quality Improvement Program (CQIP). CQIP is a data-driven, process and outcomes-based cancer quality improvement initiative that confidentially reports to 1,500 individual CoC-accredited hospitals their data as entered in NCDB, including comparisons with national data from all CoC-accredited programs. Measures include those

captured in the CP3R. Updated Legacy breast, colon and rectal cancer quality outcomes percentages are consistently higher than average rates across Oregon and the nation.

Legacy Cancer Institute's comprehensive, community-based cancer program reflects an integrated team of physicians, staff and administrators dedicated to serving our patients. We again meet or exceed the cancer care quality benchmarks and will continue working to identify opportunities to optimize patient care through our partnership with the CoC.

Quality metrics for lung cancer

By Amy Carl, CPHQ, quality improvement consultant, Legacy Cancer Institute

In 2011, Legacy Cancer Institute's (LCI) lung cancer program development committee began tracking quality indicators. The Advisory Board's Oncology Roundtable lung cancer quality indicators served as a starting point for the thoracic quality indicator dashboard. As the program has grown, quality indicators specific to the LCI lung cancer program and indicators from the Commission on Cancer (CoC) were added to the dashboard. The quality indicators are monitored and shared at each site, and in aggregate, and reviewed regularly by the program development committee.



The most recent four quarters of data illustrate that the Legacy Lung Cancer Program meets or exceeds its own targets and benchmarks as well as national averages.

The most recent four quarters of data illustrate that the Legacy Lung Cancer Program meets or exceeds its own targets and benchmarks as well as national averages.

- 96.7 percent (120/124) of LCI lung cancer patients have complete TNM staging in the medical record, which exceeds the national average of 88 percent and the benchmark of 95 percent.
- Patients undergoing mediastinoscopy or other surgical resection had lymph nodes harvested in all cases (31/31).

- All patients are treated within 30 days of presentation with an average time to treatment of 13.8 days.
- 83.3 percent (100/120) of lung cancer patients experienced the support of an oncology nurse navigator. As a result of monitoring this quality indicator, the program development committee implemented a more formal oncology nurse navigator referral process to reach more patients.
- The program development committee began tracking molecular testing in 2013. 84.3 percent (97/115) of patients had EGFR testing with quarterly compliance improving from 64.5 percent to 96.8 percent. 83.4 percent (96/115) of patients had ALK testing with quarterly compliance improving from 61.3 percent to 96.8 percent.

Several non-small cell lung cancer (NSCLC) indicators were added to the CoC's Cancer Program Practice Profile Report (CP3R) in 2014. As such, the LCI lung cancer program development committee added them to the thoracic quality dashboard in the first quarter of 2014. National targets and benchmarks do not yet exist for these indicators.

- 100 percent (3/3) of patients considered or received systemic chemotherapy in the recommended timeframe.

- Patients undergoing resection had at least 10 lymph nodes removed 91.6 percent (11/12) of the time.
- All cN2, Mo patients received first-course treatment other than surgery.
- The resection rate in NSCLC patients with adenocarcinoma and non-small cell with adeno features went from 34.5 percent (19/55) in 2012 to 22.2 percent (12/54) in 2013.

LCI's lung cancer program development committee will continue monitoring quality indicators to gauge processes, outcomes and clinical quality. As it already has, the dashboard will continue to evolve with lung cancer screening, diagnosis and treatment. Quality excellence remains a pillar of the lung cancer program and LCI as a whole.

Monitoring compliance with evidence-based guidelines, stage III non-small cell lung cancer

By Robert Raish, M.D., medical oncologist, OHSU Knight-Legacy Health Cancer Collaborative, Community Hematology Oncology—Northwest Portland

Management of lung cancer requires a multi-disciplinary team, and studies have shown that patients with the disease whose cases are reviewed



and discussed at a Lung Cancer Tumor Board have a better outcome. At Legacy Good Samaritan Medical Center, a weekly Lung Cancer Tumor Board meets to discuss cases of newly diagnosed lung cancer.

This meeting is attended by surgeons, pathologists, radiologists and multiple lung cancer specialists. This team recommends treatments, using national guidelines developed to help with decision-making. Although it is important that these national guidelines are considered in making recommendations at Tumor Board, it is far more important to establish that the treatment actually provided to our patients is the latest and best therapy, and in keeping with these national standards of care.

As part of our project for monitoring compliance with evidence-based guidelines, we reviewed our cases of stage III non-small cell lung cancer. Stage III lung cancer can sometimes be treated with surgery, but a combination of chemotherapy and

radiation therapy usually offers the best chance of long-term survival in this setting. It is important that the chemotherapy and radiation therapy be given at the same time for the best results.

We conducted a review of all of our cases of stage III non-small cell lung cancer in 2013 to determine whether the therapy recommended and received by these patients was in keeping with national guidelines. The review determined that lung cancer diagnosis and staging was appropriately and accurately done. In addition, patients who were not candidates for treatment due to extreme illness were not subjected to inappropriate and toxic therapy. We found that 100 percent of the patients at all five Legacy hospitals received appropriate treatment in compliance with national guidelines and in keeping with the current standards of care.

It is gratifying to all of us involved in cancer care to know that our efforts result in the best possible treatment and outcomes for our patients. The system we have in place at Legacy Health helps us work collaboratively as a team to effectively provide that care. We have the right people, technology and expertise to ensure that each patient who entrusts their care to us receives a treatment program that is right for them.

Cancer clinical research

By Leslie Sorenson, CCRP, manager, Legacy Cancer Clinical Research

Non-small cell lung cancer accounts for 85 to 90 percent of lung cancer cases nationally, and the majority of these cases are inoperable — creating a need for improved non-surgical treatments. In 2014, lung cancer made up 10.2 percent of cancer cases at Legacy Health.

Legacy Cancer Clinical Research offered four different studies for non-small cell lung cancer in 2014. These included protocols studying the effects of novel targeted molecular therapies, a master protocol for matching biomarkers to improved second-line therapies, and a trial using modern technology to determine whether tumor radiation dose can be increased. These studies are continuing into 2015.

The research staff works closely with medical oncologists, surgeons, radiation oncologists and other physician partners at Legacy and in the community in an effort to give patients an opportunity to participate in a clinical trial. The nurses and coordinators ensure that patients have a good understanding of the study process and are available to address questions or concerns that might arise along the way.



Cancer clinical research staff members are, from left: Gerald Leonard, clinical research coordinator II; Madeline Cook, research student; Christopher Bogan, clinical research coordinator II; Leslie Sorenson, manager; and Lisa Justice, R.N., stem cell transplant coordinator.

As we move into 2015, a new precision medicine trial, co-developed by the NCI and ECOG-ACRIN, will be opening. This protocol aims to tailor treatment to individual genetic characteristics rather than just the disease site or stage. There will also be numerous studies evaluating the efficacy of different treatment combinations in various cancers including a protocol to compare progression-free survival between patients treated with afatinib alone versus a combination of afatinib and cetuximab in patients with EGFR-mutant non-small cell lung cancer.

TABLE 10 Clinical trial accrual with Tumor Bank accrual, 2014

	Legacy Emanuel	Legacy Good Samaritan	Legacy Meridian Park	Legacy Mount Hood	Legacy Salmon Creek	Legacy Health
2014 annual analytic caseload	328	1,172	439	234	423	2,596
Number of analytic cases on clinical trials	84	90	38	20	14	246
Number accrued to Tumor Bank	11	55	7	1	16	90
Total (clinical trials and Tumor Bank)	95	145	45	21	30	336
Total percentage accrued to clinical trials/Tumor Bank	29.0%	12.4%	10.3%	9.0%	7.1%	12.9%

Legacy Research Institute Tumor Bank

By Serene Perkins, M.D., FACS, program director, Legacy Tumor Bank

Personalized medicine is the hot topic in health care and in medical research that is directly impacted by biorepositories like the Legacy Tumor



Bank. In 2002, the National Dialogue on Cancer identified limited access to “appropriately collected, consented, and annotated tissue” as a critical barrier to developing new cancer therapies. The Legacy Tumor Bank was founded in 2006 in

response to this resource gap in medical research and our biorepository has matured and grown with the biorepository industry. Frozen tissue, paraffin blocks, and associated data comprise the collection of the Legacy Tumor Bank. These resources are invaluable as cancer researchers explore topics like immuno-oncology and oncology biomarkers, areas of research that will lead to improved treatments and diagnostic tools for physicians worldwide.

The Legacy Tumor Bank remains the *only* state-wide, high-quality biorepository. While the Legacy Tumor Bank actively collects tissue specimens of all cancer types, both adult and pediatric, breast cancer tissue comprises 36 percent of our more than 1,000 banked cases, which represent the broad geographic and ethnic diversity of cancer patients in Oregon. Samples of tumor, along with matched normal tissue and clinical data, are distributed at minimal cost to scientists throughout the country, for only the cost of shipping. To date, we have collected more than 7,400 vials of tissue.

Legacy Cancer Institute is a major cancer center in our community and has received multiple accolades. Our tumor bank has been key to this recognition. The Legacy Tumor Bank fulfills a significant portion of the requirement for study enrollment in clinical research, contributing to the Legacy Cancer Institute’s Commission on Cancer accreditation. Our high-quality samples are highly sought after by cancer researchers across the country.

In 2014, we demonstrated adherence to the highest standards in biorepository management by applying for accreditation through the College of American Pathologists (CAP) Biorepository Accreditation Program and undergoing a successful site visit in April 2015. We presented our work at multiple local and national conferences, including the International Society for Biological and Environmental Repositories (ISBER) in May 2015, where we were invited to participate in a panel on biorepository sustainability.

Our governance board includes members and founding partners of the Treva Hoffman Foundation and The Moto District. Through our statewide initiative, we have developed community partnerships with medical centers in Roseburg and The Dalles, as well as The Lions Club International. As we continue to expand Legacy Health’s presence, we hope to partner with other hospitals throughout Oregon to set the standard for ethical, high-quality tumor banking, and ultimately increase Legacy Health’s visibility and sustainability nationwide.

TABLE 11 Tumor Bank accruals

LRI Tumor Bank	Legacy Emanuel	Legacy Good Samaritan	Legacy Meridian Park	Legacy Mount Hood	Legacy Salmon Creek	Legacy Health
2014 annual analytic caseload	328	1,172	439	234	423	2,596
Number accrued to Tumor Bank	11	55	7	1	16	90
Total percentage accrued to Tumor Bank	3.4%	4.7%	1.6%	0.4%	3.8%	3.5%

Oncology nurse navigation

By Jutta Kress, R.N., OCN, nurse navigator, Legacy Cancer Institute

Oncology nurse navigation is among the multiple support services offered at Legacy Cancer Institute. Our oncology nurse navigators are registered



nurses with a special certification in oncology care. The oncology nurse navigators are available to help support our cancer patients and their families from the time of diagnosis through the end of active treatment.

Our navigation program started in 2008 at Legacy Good Samaritan Medical Center. Today, Legacy Cancer Institute has navigators available to patients in all five of our medical centers: Legacy Emanuel, Legacy Good Samaritan, Legacy Meridian Park, Legacy Mount Hood and Legacy Salmon Creek. Our navigators work with physicians and staff to ensure our patients receive seamless care and support.

Legacy Medical Group pulmonologists are quick to connect newly diagnosed lung cancer patients with an oncology nurse navigator. Our nurse navigators assist our patients by helping them learn more about their diagnosis, offering emotional support and access to a variety of support services available from Legacy Cancer Institute, as well as from the community in which the patient resides.

Our oncology nurse navigators assess each patient for potential barriers to care, such as a lack of insurance, transportation issues or financial concerns. Legacy Cancer Institute is fortunate to have access to an American Cancer Society patient navigator. Through Legacy's collaboration with the American Cancer Society, the patient navigator can directly assist our patients and connect them with transportation programs, lodging programs and peer support, as well as other services offered by the American Cancer Society.

Integrative cancer care and survivorship services

By Reza Antoszewski, NP-C, survivorship, integrative care and Legacy Cancer Healing Center, Legacy Cancer Institute

The Legacy Integrative Care/Survivorship Clinic, which opened in July 2009, has seen a near doubling of patient referrals over the past year. Patients



with primary or metastatic disease of all cancer types are seen in the clinic. The goal of this clinic is to provide patients a way to access integrative care at Legacy Health, which can make a big difference in the patient's experience and reduce

symptoms during their cancer treatment. We work collaboratively as part of the team for the state-of-the-art cancer care that Legacy offers.

Legacy Health provides an holistic form of care, addressing symptom management from diagnosis

through post treatment. We utilize an integrative model of care that includes lifestyle medicine, principles of functional medicine and mind/body medicine. The medical issues and the physical, emotional, mental, existential and spiritual needs of each patient are evaluated. An individualized plan of care tailored to the unique needs of the patient during that time in their care continuum is provided, and shared among the Legacy team of providers. Visits during treatment are generally geared toward reducing the side effects of cancer and its treatment. In follow-up visits, patients further develop a plan to enhance health, resilience and a renewed sense of self-efficacy — especially as they move from cancer patient to their post-treatment life.

The clinical visit may include exercise and dietary suggestions, assessment and recommendations of supplements, mind/body activities such as mindfulness for symptom management, and risk reduction of cancer and other chronic ailments. Referrals may be made to mainstream services such as physical therapy or integrative services such as acupuncture. Recommendations for services such as expressive art therapy, yoga or meditation are offered through the Legacy Cancer Healing Center. Chaplain services and counseling are also provided.

Patients are often already receiving care from a complementary/alternative care provider or using nutritional or herbal supplements. These supplements are assessed for compatibility and safety during treatment. The supplements and other care recommended are those for which evidence exists to support their use and that have been reviewed for safety during treatment. Reputable suppliers of these supplements are recommended to patients to promote the use of quality supplements.

We work to educate patients about which supplements may be beneficial and which may be harmful or interfere with treatment, and about

how to navigate and evaluate the large amount of information, claims and products they may encounter. Patients often express gratitude at having a venue for addressing those types of questions and concerns.

Our main referral sources are surgeons, medical and radiation oncologists, nurse navigators and other members of the allied health care team. Patients may be referred during any time in their treatment, as well as in the post-treatment phase of care. Patients at high risk for cancer may also be referred or self-refer to our clinic.

The integrative care clinic serves as a resource for providers on topics of integrative care, supplements and additional services within the Legacy Cancer Healing Center. Education and information on current research, quality product lines and integrative care services within the community are also offered.

In 2014, the clinic staff were also part of the expansion of the Legacy Lung Cancer Screening Program, providing initial screening services for this growing program ([see article on lung cancer screening, page 10](#)).

Legacy's palliative care program

By Heather Mikes, D.O., Legacy Medical Group—Palliative Care, Legacy Salmon Creek Medical Center

Palliative care is an additional layer of support for patients and their family members, focused on relieving disease-related symptoms and improving patients' quality of life.



Legacy Health's caring and compassionate team of palliative care providers may become involved at any stage of treatment for patients with advanced or life-threatening illnesses in order to assist them

and their caregivers with decision making, management of debilitating symptoms, psychosocial support and coordination of additional medical and social services. Anyone — patients, families

or health care providers — can request assistance from Legacy Medical Group—Palliative Care through the patient's primary attending physician.

Legacy Medical Group—Palliative Care is excited to soon be able to offer outpatient services for our patients and community. The goal of the outpatient program is to support our patients and referring providers as they navigate their treatment course outside of the hospital. We look forward to rolling out this important service to our communities in January 2016.

For more information about our current inpatient consult service or future plans for our outpatient clinics, contact Legacy Medical Group—Palliative Care at 503-413-6862.

Community involvement 2014

Community events

March

Brave Day (breast restoration rights)
Breast Cancer Issues (Komen)

April

One Million Strong (colorectal cancer awareness)

May

St. Baldrick's Day (pediatric cancer awareness)

June

Cancer Survivors Day (city-wide event)

July

Be the Match Walk/Run (National Marrow Donor Program)

September

Legacy Emanuel Medical Center Healthy Living Celebration
("Be the Match," breast cancer awareness)

October

"Making Strides" Walk (American Cancer Society)
"Light the Night" Walk (Leukemia and Lymphoma Society)

November

Bone Marrow Transplant Survivor Conference (with OHSU)

Prevention and screening education and activities

April

Meals that Heal: "The Power of Yum"

October

Worship in Pink (breast health and screening promotion), in 32 congregations, eight community organizations
Breast cancer screening discussion at a Gresham retirement home
Breast cancer/screening awareness at Washington Square Mall
Breast cancer awareness activities and education for employee/visitors at Legacy Meridian Park Medical Center

Ongoing

- Free screening mammograms for un- or under-insured low-income women, through Oregon Breast and Cervical Cancer Program (BCCP), at Legacy Good Samaritan Medical Center, Legacy Emanuel Medical Center, Legacy Meridian Park Medical Center and Legacy Mount Hood Medical Center
- Grant-funded mammograms for underserved women, at Legacy Good Samaritan Medical Center, Legacy Meridian Park Medical Center, Legacy Mount Hood Medical Center and Legacy Salmon Creek Medical Center
- Lung cancer screening program for high-risk individuals

Ongoing groups and classes for cancer patients

Support groups

Brain Tumor Support Group
Breast Cancer Support Groups
Family Caregiver Support Group
Grief Support groups
Gynecological Cancer Support Group
Head and Neck Cancer Support Group
Lymphedema Support Group
Prostate Cancer Support Group

Educational classes

Expressions of Healing
Felting Workshop
Gardening Workshop for Individuals with Cancer
Living with Uncertainty and Change
Meditation for Cancer Patients
Touch, Caring and Cancer

Movement classes

Exercise and Nutrition
Latin Dance for Couples
Nia Mind/Body Exercise
Pilates for Individuals with Cancer
Qi Gong for Individuals with Cancer
Yoga for Individuals with Cancer

Oregon Partnership for Cancer Control (OPCC)

The Oregon Partnership for Cancer Control is a statewide collaboration of individuals and organizations with a commitment to reducing the burden of cancer in our state. Legacy Cancer Institute continues to be involved, represented by Reza Antoszewska, Terry Wagie and Charlyn Wilson, on Survivorship and Colorectal Health Task Forces.

Outreach via social media

The Legacy Health Marketing Department is an important partner with the cancer program in reaching the community through social media messaging, website content and banners, and targeted direct mail. Particularly, Facebook posts, often related to cancer awareness months, aim to engage and motivate readers toward healthy behaviors.

Professional education activities 2014

Conferences and courses

March

31st Annual Seminar for Radiation Oncology Professionals

May

NW Tribal Clinician's Cancer Update (with NW Portland Area Indian Health Board)

September

Chemotherapy and Biotherapy Course for Pediatrics (APHON)

October

Keith Hansen Visiting Professorship: Targeted Radioimmunotherapy; Multiple myeloma

10th Annual Pacific NW Excellence in Breast and Gynecological Care

Periodic

Oncology Nursing Society Chemotherapy and Biotherapy Course

Grand Rounds (CME) topics

Legacy Good Samaritan oncology

Brain Tumor Treatment at Legacy: 15 Years

Breast Cancer

Cervical Cancer Screening

Colon Surgery: Making It Safer, Better

Endocrine Surgery: Legacies and Innovations

Geriatric Oncology

Karyotype Sarcomas: Fusion-Driven vs. Complex

Lung Cancer CT Screening: Paradigm Shift

Mind-Body Medicine in Oncology

Molecular Profiling, Personalized Medicine

Prostate Cancer in Review

Treatment of Metastatic Melanoma

Legacy Good Samaritan integrative oncology

Case Study: Breast Cancer Patient Integrative Care

Inpatient Acupuncture: Evidence for Improved Patient Care

Palliation of Oncology Patients: Bereavement and Depression

Legacy Emanuel OB/GYN education

Clinical Utility of HPV Genotyping

Endometrial Monologues

Legacy Meridian Park primary care

Breast Density Law

Managing the Axilla: Breast Imager's Perspective

Melanoma Update

Pap Smear Guidelines for the PCP

Legacy Mount Hood primary care

Breast Density Law

Legacy Salmon Creek medical

Breast Cancer

Colon and Rectal Cancer: Surgical Management

CME On Demand Modules

Twenty-two past CME presentations were available on-demand in 2014, covering a variety of oncology topics, with credits ranging from .5 to 1.0 CME credits per module.

Cancer patient care conferences (tumor boards)

Brain/CNS Tumors (Legacy Emanuel)

Breast Care (Legacy Good Samaritan, Legacy Meridian Park, Legacy Salmon Creek)

Breast Cancer Radiology/Pathology Correlation (Legacy Good Samaritan, Legacy Meridian Park)

Gastrointestinal Tumors (Legacy Good Samaritan, Legacy Meridian Park)

General Cancer Conference (Legacy Meridian Park, Legacy Mount Hood, Legacy Salmon Creek)

Gynecological Cancers (Legacy Good Samaritan)

Head and Neck Tumors (Legacy Emanuel)

Metastatic Breast Care (Legacy Good Samaritan)

Mid-Columbia Medical Center Tumor Board (joint sponsorship)

Pediatric Oncology (Randall Children's Hospital)

Thoracic Tumors (Legacy Good Samaritan)

Urologic/Prostate Tumors (Legacy Good Samaritan)

Publications 2014

Johnson N, Sorenson L, Bennetts L, Winter K, Bryn S, Johnson W, Glissmeyer M, Garreau J, Blanchard D. Breast-specific gamma imaging is a cost-effective and efficacious imaging modality when compared with MRI. *Am J Surg.* 2014 May; 207(5):698–701; discussion 701. doi: 10.1016/j.amjsurg.2013.12.015. Epub 2014 Mar 12.

Pasko J, Schray M, Lee M, Johnson N. Experience with partial breast irradiation for treatment of breast cancer at a community-based cancer center. *Am J Surg.* 2014 May; 207(5):682–5

Geltzeiler CB, Rotramel A, Wilson C, Deng L, Whiteford MH, Frankhouse J. Prospective Study of Colorectal Enhanced Recovery After Surgery in a Community Hospital. *JAMA Surg.* 2014 Jul 23. doi: 10.1001/jamasurg.2014.675. [Epub ahead of print]

Shum JW, Dierks EJ. Evaluation and staging of the neck in patients with malignant disease. *Oral Maxillofac Surg Clin North Am.* 2014 May;26(2):209–21. doi: 10.1016/j.coms.2014.01.007. Epub 2014 Mar 20.

Legacy Cancer Institute Integrated Network Cancer Committee Members 2014

Mindy Ansteth, B.S., CTR, manager, Legacy Cancer Data Management

Amy Carl, CPHQ, quality improvement consultant, Legacy Cancer Institute

Andrew Cox, M.D., diagnostic radiologist

Paul Dorsey, M.S., genetic counselor, Legacy Cancer Institute

Brent Evetts, M.D., FACS, colorectal surgeon, Network Cancer Committee Chair

Rick Freeman, chaplain, Legacy Good Samaritan Medical Center

Leah Grotzinger, PharmD, BCOP, pharmacist, Legacy Good Samaritan Medical Center

Nathalie Johnson, M.D., FACS, breast surgeon, medical director, Legacy Cancer Institute and Breast Health Centers

Pamela Kilmurray, director, Legacy Cancer Institute, Rehabilitation, Legacy Breast Health Center and Legacy Hospice

Jutta Kress, BSN, R.N., OCN, oncology nurse navigator, Legacy Meridian Park Medical Center

Katherine Leonard, Ph.D., psychologist

Anthony Melaragno, M.D., vice president, behavioral health and oncology, Legacy Health

Heather Mikes, D.O., palliative care, Legacy Medical Group–Palliative Care

Gail Mueller, BSN, R.N., CHPN, manager, Legacy Hospice

Dan Osborn, BSW, American Cancer Society patient navigator, Legacy Cancer Institute

Kathryn Panwala, M.D., radiation oncologist, Cancer Liaison Physician, Legacy Medical Group–Radiation Oncology

Marci Reed, R.D., dietitian, Legacy Cancer Institute

Alizah Rotramel, M.D., colorectal surgeon, Legacy Medical Group–Gastrointestinal Surgery, Cancer Liaison Physician

Mark Schray, M.D., radiation oncologist, medical director, Legacy Medical Group–Radiation Oncology

Leslie Sorenson, CCRP, manager, Legacy Cancer Clinical Research

Ann Smith-Sehdev, M.D., pathologist, medical director, Pathology, Legacy Health

Wendy Talbot, LCSW, OSW-C, social worker, Legacy Cancer Healing Center and Legacy Mount Hood Medical Center

Jacqueline Vuky, M.D., medical oncologist, OHSU Knight-Legacy Health Cancer Collaborative, Community Hematology Oncology–Northwest Portland

Terry Wagie, M.S, R.N., clinical nurse specialist, Legacy Cancer Institute

Gail Weisgerber, manager, Legacy Rehabilitation Services, Legacy Good Samaritan Medical Center

Charlyn Wilson, R.N., BSN, program coordinator, Legacy Cancer Institute

Subcommittees of the Integrated Network Cancer Committee

Breast Health Center Meeting (Legacy Meridian Park Medical Center)

Breast Health Steering Committee (Legacy Health)

Breast Program Leadership Group (Legacy Good Samaritan Medical Center)

Breast Program Steering Committee (Legacy Mount Hood Medical Center)

Breast Program Steering Committee (Legacy Salmon Creek Medical Center)

Cancer Data Management Quality Committee

Center for Colorectal Cancer at Legacy Good Samaritan Medical Center

Colorectal Cancer Program System-wide Quality and Operations Meeting

Hospice Quality (QAPI)

Integrative Cancer Quality Committee

Legacy Cancer Institute Quality Advisory Council

Lung Cancer Screening Meeting

Prostate Program Development

Public/Professional Education Council

Radiation Oncology Quality Committee

Thoracic Program Development

Honors and accreditations 2014



Legacy Health ranks among the nation's best cancer programs, according to the American College of Surgeons' (ACS) Commission on Cancer, a respected authority on cancer care. The Commission also awarded Legacy's cancer program its Outstanding Achievement Award in the last two accreditation surveys.

Legacy Cancer Institute was the first in the United States to receive Network Cancer Program accreditation from the ACS, and we are still Oregon's only accredited network cancer program. This means you'll receive the same award-winning care at any of our campuses, so you can stay closer to home.



The breast health centers at Legacy Good Samaritan, Legacy Meridian Park, Legacy Mount Hood and Legacy Salmon Creek have earned the prestigious accreditation for excellence in the care of patients with breast cancer and benign breast disease from the American College of Surgeons' National Accreditation Program for Breast Centers (NAPBC).



In addition, the Legacy Breast Health Centers at Legacy Good Samaritan, Meridian Park, Mount Hood and Salmon Creek medical centers are designated Breast Imaging Centers of Excellence by the American College of Radiology. To achieve this distinction, a facility's imaging services must be fully ACR-accredited in mammography, stereotactic breast biopsy, breast ultrasound and ultrasound-guided breast biopsy.



Legacy Cancer Institute is one of only three nationally accredited blood and bone marrow transplant providers in Oregon. Learn more about FACT, the Foundation for the Accreditation of Cellular Therapy, which evaluates programs nationwide.



Legacy Medical Group—Radiation Oncology at Legacy Good Samaritan, Legacy Mount Hood and Legacy Salmon Creek medical centers is accredited by the American College of Radiology (ACR) Radiation Oncology Practice Accreditation (ROPA) program. Legacy Health's radiation oncology staff, equipment, treatment-planning and treatment records, as well as patient-safety policies and quality control/quality assessment activities are assessed to maintain ROPA accreditation. ACR accreditation provides Legacy's radiation oncologists with valuable third-party, impartial peer review and evaluation of patient care.

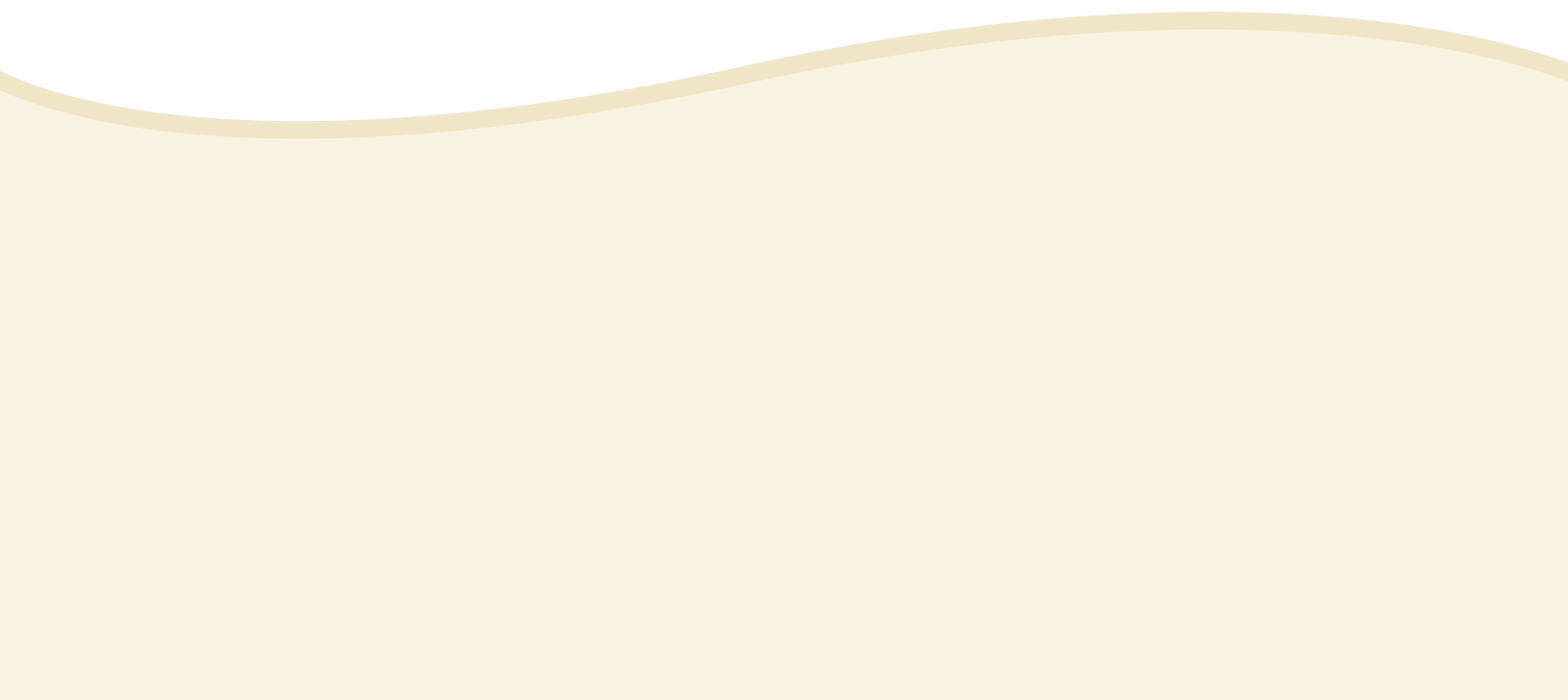


The Legacy Lung Cancer Screening Program at Legacy Good Samaritan Medical Center is accredited by the American College of Radiology (ACR) as an ACR Designated Lung Cancer Screening Center. To achieve this designation, the Legacy Lung Cancer Screening Program must maintain active ACR CT Accreditation in the ACR Chest Module and meet very specific requirements related to the screening population, staff qualifications, the ACR Lung Reporting and Data System (Lung-RADS), patient smoking cessation, CT equipment, quality control and imaging protocol.



Legacy laboratories and Legacy Cancer Tumor Bank have achieved College of American Pathologists (CAP) accreditation, which assures high standards for quality and consistency in collecting, processing and storing tumor specimens.

Legacy Cancer Institute is also designated a BlueCross BlueShield Distinction Center for Complex and Rare Cancers, for excellence in treating eight types of cancer.



Legacy Cancer Institute

503-413-8050

www.legacyhealth.org/cancer



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