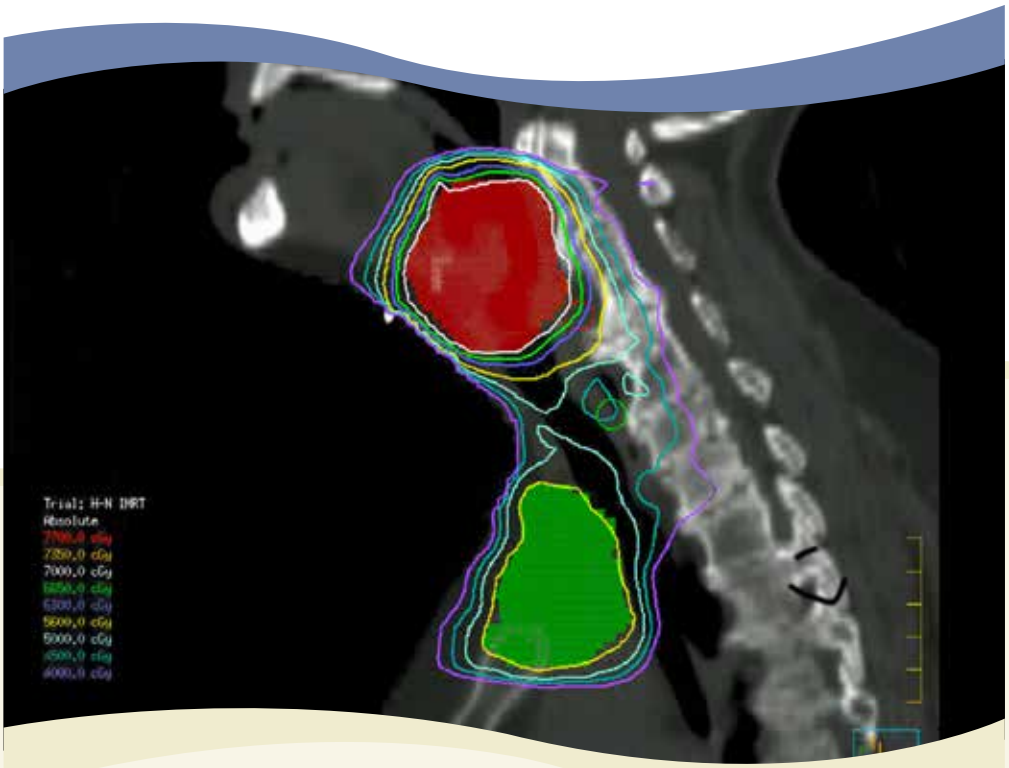
Legacy Cancer Institute Annual Report 2017

Oral, head and neck cancer



Legacy Cancer Institute

LEGACY HEALTH

LEGACY CANCER INSTITUTE

Contents

Cover image: Sagittal isodose distribution for the intensity-modulated radiation therapy of supraglottic cancer

Aaah...open your mouth

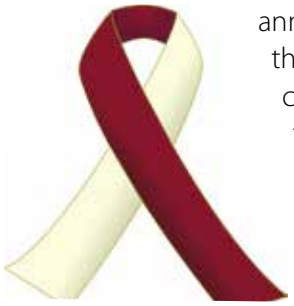
By Nathalie Johnson, M.D., FACS, medical director, Legacy Cancer Institute and Breast Health Centers

When thinking of a title and theme for this year's annual report, "Open Your Mouth" seemed quite apropos. The most obvious reason is that a large proportion of cancers of the head and neck occur in and about the oral cavity. The less obvious but necessary link is the discussion around the rise of oral human papilloma virus infection and its association with a rise in oral, head and neck cancer. There is clear advocacy needed around this issue as vaccination could play a huge role in reducing that risk. We need to be more vocal and "open our mouths" about it.

The Centers for Disease Control and Prevention (CDC) estimates that about 3,200 new cases of HPV-associated oropharyngeal cancers are diagnosed in women and 13,200 are diagnosed in men every year. The vast majority of men with oral cancer are under the age of 50. Studies are suggesting that about 70 percent of these cancers are related to infection with the HPV virus. Patients developing oral cancer are more likely to have had multiple sexual partners and current oral HPV infection. It appears to be linked with oral sex. The transmission is higher from the cervix/vagina, which hold higher concentrations of the virus, than it is from the penis, which may explain the higher rates of oral cancer seen in men relative to women. It doesn't appear that kissing has nearly the same transmission rate. Many more studies need to be performed to understand the mode of infection at a deeper level. Suffice it to say the incidence is increasing based on earlier onset of sexual activity and higher engagement in oral sex.

Here is where we need to promote increasing the rate of HPV vaccinations, especially in young men. The quadrivalent vaccine (Gardasil) has reduced infection with the cancer-causing strain by greater than 98 percent if given before infection. Hence the need to vaccinate children before the age of 12, when many of them begin to be sexually active. If the person is already infected, the efficacy of the vaccine drops to somewhere between 50–78 percent. We need to be more vocal about this public health issue. Prevention is the best way to cure. This is the way we slow the rise of oral cancer. Smoking used to be the most common etiology of oral, head and neck cancer, but smoking rates have dropped and HPV has surpassed it. Truly both are preventable. This is part of our community outreach and we hope to continue to make strides and raise awareness.

We will work toward making headway on preventable causes of oral, head and neck cancer. But for those who are diagnosed with this disease, there are amazing improvements in systemic therapies, which you will find delineated in this annual report. The explosion in immunotherapy has also had an impact on outcomes for many of the pathologies seen in this tumor site. The technology of surgical reconstruction is now so futuristic that it is hard to imagine that it is currently being performed at Legacy Good Samaritan Medical Center as part of the Oral, Head and Neck Program. These state-of-the-art reconstructions are critical to restoring the facial symmetry and function that are the mainstay of resilience for these patients. To be able to retain the premorbid facial appearance, and to eat and swallow almost in the fashion they did prior to surgery, is really such a positive change over the procedures performed even five years ago.



The awareness ribbon for oral, head and neck cancer

As you delve into the facts and figures, also note the supporting efforts in rehabilitation, both physical and mental, that are built into the Legacy Cancer Institute programs. You will be amazed. For patients, the Legacy Cancer Institute truly is where healing, hope and heart are one.

Most of these are active links. Click to open the relevant page on the Legacy Health website or other sites.

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 Inpatient Unit
Cancer data management/cancer registry
Cancer Rehabilitation Services
Cancer screening and prevention
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
OHSU Knight–Legacy Health Cancer Collaborative
Pathology
Wound and ostomy care

Cancer programs and specialty areas

Autologous stem cell transplant program
Bladder cancer
Blood cancers
Brain and spinal tumors
Breast cancer services
Children's Cancer and Blood Disorders Program
Colorectal cancer
Esophageal cancer
Gynecologic cancers — Cervical, ovarian, uterine, vaginal, vulvar
Hepatobiliary and pancreatic cancer
Kidney cancer
Lung cancer
Lung cancer screening
Melanoma
Oral, head and neck cancer
Prostate cancer
Stomach cancer

Affiliations

Be the Match: National Marrow Donor Program
Be the Match: DKMS
Be the Match: Department of Defense Marrow Donor Program

Clinical trials and research

Current clinical trials
Oncology clinical research
Tumor Bank

Support services — Adult

American Cancer Society gift closet
American Cancer Society patient navigator
Cancer support groups and classes
Cancer survivorship
Expressive arts therapy
Green Gables Guest House
Integrative care and symptom management
Lymphedema management
Massage therapy
Nutrition
Oncology nurse navigators
Pharmacy navigator
Social work
Stress management
Volunteer program

Support services — Pediatric

Acupuncture
Art therapy
Camp Ukandu
Candlelighters Lunches
Chelsea's Closet (dress-up costumes for children)
Chemo pals (Children's Cancer Association)
Child Life Therapy
Family Lantern Lounge
Family Wellness Center
Music Rx® Program
Nutritionist
Oncology case managers (navigators)
Pediatric Cancer Genetics
Pediatric Development and Rehabilitation
Pediatric Neuro-oncology Clinic
Pet therapy
Psychologist
Ronald McDonald House
School program
Social work
Survivorship services and KITE Clinic
Volunteer program

Legacy Cancer Institute overview: Highlights from 2017

By Paul Tseng, M.D., gynecology oncologist, chair, Integrated Network Cancer Committee, Legacy Cancer Institute

Led by the Integrated Network Cancer Committee (INCC), Legacy Cancer Institute continues to grow and expand exceptional cancer services to our Pacific Northwest community. We succeeded in optimizing coordinated cancer care between outpatient providers, hospital facilities, laboratory, pathology, infusion room and radiation services. Our patients are now served by the OHSU Knight–Legacy Health Cancer Collaborative, which is a synergy created to balance community, hospital and academic spheres of influence to promote the best blend of patient-centric care.

In spring of 2017, the OHSU Knight–Legacy Health Cancer Collaborative partnered with The Vancouver Clinic and opened Legacy Cancer Institute Hematology and Medical Oncology Clinic and Infusion Services in the Vancouver Clinic location at 87th Avenue. These clinics provide access to needed cancer expertise and treatment in Southwest Washington.

Legacy Cancer Institute has continued to focus on expanding services to women. The Legacy Center for Women's Cancer seeks to integrate breast and gynecologic cancer prevention, screening, treatment, and genetic evaluation/counseling into a comprehensive care model. The Legacy Gynecologic Oncology team served as a pilot for enhanced recovery after surgery (ERAS) and has advanced the surgical quality program to multiple hospitals and specialties within our community. In conjunction with Legacy Genetics, we continue development of our high-risk clinic, designed to bring education, expertise and plans for patients at elevated risk for all cancers.

Legacy Cancer Institute advanced our plans for lung cancer screening at our Legacy Meridian Park Medical Center campus to extend our Legacy Good Samaritan Medical Center-based clinic services southward. In addition, the geriatric oncology support clinic at Legacy Good Samaritan launched its services to cancer patients age 70 years and older. These patients benefit by having comprehensive evaluation and support from our cancer pharmacist, social worker and nutritionist in a single session to help support treatment issues and concerns with this underserved population.

During 2017, Allen Cheng, M.D., DDS, championed development of the Legacy Oral, Head and Neck (OHN) Cancer Program. The program includes monthly OHN cancer conferences, interdisciplinary meetings and a support group. This annual report features our team of OHN experts and presents the exceptional services we offer to serve this population. Throughout the year, outreach activities with local providers and educational events for community dentists promoted more awareness of oral, head and neck cancer issues to health care providers and their patients.

Legacy Cancer Research continues to offer groundbreaking research opportunities to our patients, and we are a major patient accrual contributor to the OHSU Knight–Legacy Health Cancer Collaborative.

Legacy Cancer Institute has established a partnership with our sister city in Tianjin, China. The exchange program allowed Chinese cancer physicians and researchers to spend time within our health system. Legacy sent a contingent to experience, observe and teach at the regional Tianjin hospital system.

Legacy Cancer Institute brings the full spectrum of cancer health to our employees, our patients, our community and our world. Thank you for sharing in our commitment.

Legacy Health 2017 site analysis: Oral, head and neck cancer

By Allen Cheng, M.D., DDS, FACS, medical director, Legacy Oral, Head and Neck Cancer Program, Head and Neck Surgical Associates

In the United States, oral, head and neck cancer remains a rare disease. Nationally, it is estimated that 63,580 patients will be diagnosed with cancer

of the oral cavity, pharynx or larynx in 2018. Of these, an estimated 13,740 patients will die from their disease (ACS Cancer Facts and Figures, 2018). In Oregon, from 2010 to 2014, there was an average of 657 new oral, head and neck cancer diagnoses and an average of 148 deaths annually (Oregon Health Authority).

In 2017, a total of 2,886 patients were diagnosed and/or treated at Legacy Cancer Institute (LCI). Eighty represented oral, head and neck cancers. The LCI top six cancer sites were breast, prostate, lung/bronchus, colon/rectum, corpus uteri, and urinary bladder. This is consistent with the highest volume of cancer cases reported at the state and national levels. *(See Figure 1, Primary cancer sites, pages 6–7, and Figure 2, Top six cancer sites 2017, page 7.)*

In 2017, 60 tumors were in the oral cavity and pharynx. Thirteen tumors were in the larynx. Six tumors were in the nose, nasal cavity and middle ear. One tumor was in the trachea. The age and gender distribution of the patients diagnosed and/or treated at LCI was similar to the national distribution published by the Commission on Cancer *(see Figure 3, Head and neck malignancies by age at diagnosis, page 8, and Figure 6, Head and neck cancer cases by gender, page 9)*. Most of these tumors were diagnosed at stage IV: 52 percent in the oral cavity and pharynx, 23 percent in the larynx and 100 percent in the nose, nasal cavity and middle ear *(see Figure 8, AJCC major stage groups, head and neck malignancies, page 9)*. The histology distribution of LCI head and neck cancer cases is similar to the Commission on Cancer national data *(see Figure 4, Histology distribution of head and neck cancer cases, page 8)*. That is similar to the distribution reported in the literature and is representative of the natural history of this disease, with many of these tumors having high propensity for metastases to lymph nodes in the neck. This distribution is likely to change in the next few years, as the American Joint Commission on Cancer (AJCC) rolls out new staging guidelines in January 2018.

Despite many patients being diagnosed at stage IV *(see Figure 8, AJCC major stage groups, head and neck malignancies, page 9)*, routine screening by general practitioners for oral, head and neck cancer is not recommended by the United States Preventive Services Task Force (USPSTF). However, major dental organizations, including the National Institute of Dental and Craniofacial Research (NIDCR), a branch of the National Institutes of Health, encourage dental professionals to perform screening head and neck examinations during dental visits. Since 2017, LCI has initiated a robust dental study club to provide both outreach and continuing education to dental professionals as an effort to partner with the dental community in matters relating to oral health.

Although cancers of the oral/head and neck region are rare, they rank among the most devastating. Oral cavity and pharyngeal cancers have a five-year survival rate of 65 percent, while laryngeal cancers have a five-year survival of 61 percent (SEER Cancer Statistics Review, 1975–2014). However, even survivors have several hurdles to returning to their pre-cancer lives. These diseases, along with their treatments, have long-lasting effects on speech, swallowing and facial appearance, all things central to social interactions and a patient's sense of self and well-being. Treatment is enormously complicated, requiring thoughtful integration of surgeons, medical oncologists, radiation oncologists, rehabilitation therapists of multiple disciplines and highly trained inpatient and outpatient nursing. In addition, these diseases disproportionately affect the most vulnerable of patients, many of whom are elderly, have limited financial resources and even

more limited social support systems. LCI hosts a multidisciplinary oral, head and neck tumor board once a month to review and plan treatment for patients diagnosed within Legacy Health, according to current National Comprehensive Cancer Network (NCCN) guidelines. Through these meetings, members of the treatment team review patients to ensure they are receiving well-coordinated care.

Over the last 25 years, we have seen several advances in treatment to address these challenges. Legacy Cancer Institute and its collaborators have been heavily invested in pushing for these new developments. In 2017, a large majority of patients diagnosed with oral, head and neck cancer at LCI chose to receive their treatment at LCI, or if they were diagnosed elsewhere, they chose LCI to receive treatment *(see Figure 7, Legacy head and neck treatment migration, page 9)*. The first course of treatment for our head and neck patient population is consistent with all other Commission on Cancer accredited programs nationally *(see Figure 5, First course of treatment, head and neck malignancies, page 8)*.

One of the largest advances has been in the realm of reconstructive surgery. The development of microvascular free tissue transfer, or "free flaps," has allowed surgeons to borrow tissue from other parts of the body, reshape and repurpose them, and reconstruct large defects with high degrees of reliability. Over the last decade, these techniques have been combined with 3-D imaging, computer planning, and 3-D printing to allow for high levels of patient-specific precision. Legacy Cancer Institute has been one of a small number of incubators across the country for the development of this technology, which has now become the standard for oral, head and neck reconstruction.

The oropharynx, the part of the throat that includes the base of tongue, tonsils, and soft palate, is one of the most common subsites of the head and neck affected by cancer. Classically, surgery for this area required large, invasive procedures. The advent of the Da Vinci surgical robot and transoral robotic surgery (TORS) has revolutionized surgical treatment of these cancers. By using the robot, early cancers of the oropharynx can be removed by a minimally invasive approach, markedly shortening recovery and improving functional outcomes without compromising survival. Legacy Emanuel Medical Center was the first hospital in the Pacific Northwest to use TORS to treat head and neck cancer.

The most exciting advance in cancer care is the advent of therapies that harness a patient's own immune system to fight their cancer. Immunotherapy is now part of standard of care treatment for patients with advanced cancers who have disease that has not responded to or has recurred despite traditional therapy (surgery, radiation therapy and platinum-based chemotherapy). Through the OHSU Knight–Legacy Health Cancer Collaborative, our medical oncologists can offer these state-of-the-art therapies to qualified patients.

Legacy Cancer Institute has been committed to cancer research in furthering scientific knowledge and promising new treatments. In 2018, LCI will become a participating site in two multicenter clinical trials for treatment of oral, head and neck cancers. The first is NRG-HN001, which is a randomized Phase II and Phase III study for treatment of nasopharyngeal carcinoma with different adjuvant chemotherapy regimens, using EBV DNA as a biomarker. The second is EA3132 (through ECOG-ACRIN Cancer Research Group), which is a Phase II randomized trial of radiation with or without cisplatin chemotherapy for surgically resected squamous cell carcinoma of the head and neck with TP53 sequencing. TP53 is a mutation commonly seen in oral, head and neck tumors, but it has not yet been studied as a means for treatment planning.

FIGURE 1 Primary cancer sites, Legacy Health 2017, all ages

	Emanuel		Good Samaritan		Meridian Park		Mount Hood		Salmon Creek		Legacy Health	
Primary site	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
DIGESTIVE SYSTEM												
Anus/anal canal/anorectum	0	0%	14	1.1%	3	0.7%	4	1.3%	4	0.6%	25	0.9%
Colon	15	6.1%	59	4.6%	36	8.5%	30	9.4%	29	4.6%	169	5.9%
Esophagus	1	0.4%	6	0.5%	3	0.7%	6	1.9%	12	1.9%	28	1.0%
Liver/intrahepatic bile duct	7	2.8%	6	0.5%	8	1.9%	4	1.3%	9	1.4%	34	1.2%
Gallbladder	0	0%	2	0.2%	0	0%	1	0.3%	0	0%	3	0.1%
Pancreas	14	5.7%	33	2.6%	19	4.5%	9	2.8%	25	4.0%	100	3.5%
Peritoneum/omentum/mesentery	0	0%	2	0.2%	1	0.2%	0	0%	1	0.2%	4	0.1%
Rectum/rectosigmoid	3	1.2%	22	1.7%	14	3.3%	11	3.4%	10	1.6%	60	2.1%
Small intestine	0	0%	3	0.2%	4	0.9%	1	0.3%	3	0.5%	11	0.4%
Stomach	3	1.2%	10	0.8%	3	0.7%	6	1.9%	12	1.9%	34	1.2%
Other digestive organs	1	0.4%	2	0.2%	1	0.2%	0	0%	1	0.2%	5	0.2%
Other biliary	0	0%	3	0.2%	2	0.5%	0	0%	2	0.3%	7	0.2%
ENDOCRINE												
Thyroid	14	5.7%	2	0.2%	6	1.4%	4	1.3%	25	4.0%	51	1.8%
Other endocrine including thymus	5	2.0%	4	0.3%	0	0%	1	0.3%	5	0.8%	15	0.5%
FEMALE GENITAL SYSTEM												
Cervix uteri	0	0%	28	2.2%	1	0.2%	2	0.6%	6	1.0%	37	1.3%
Corpus and uterus	2	0.8%	109	8.6%	26	6.2%	2	0.6%	27	4.3%	166	5.8%
Ovary	1	0.4%	23	1.8%	2	0.5%	2	0.6%	7	1.1%	35	1.2%
Vagina	0	0%	6	0.5%	0	0%	0	0%	0	0%	6	0.2%
Vulva	0	0%	13	1.0%	1	0.2%	0	0%	2	0.3%	16	0.6%
Other female genital organs	0	0%	16	1.3%	0	0%	0	0%	0	0%	16	0.6%
LEUKEMIA												
Lymphocytic leukemia	20	8.1%	8	0.6%	7	1.7%	1	0.3%	3	0.5%	39	1.4%
Myeloid/monocytic leukemia	8	3.2%	3	0.2%	2	0.5%	2	0.6%	6	1.0%	21	0.7%
LYMPHOMA												
Hodgkin	3	1.2%	3	0.2%	0	0%	0	0%	2	0.3%	8	0.3%
Non-Hodgkin	17	6.9%	33	2.6%	18	4.3%	13	4.1%	32	5.1%	113	3.9%
MALE GENITAL SYSTEM												
Penis	1	0.4%	0	0%	0	0%	0	0%	0	0%	1	0%
Prostate	21	8.5%	180	14.2%	31	7.3%	45	14.1%	56	8.9%	333	11.5%
Testis	4	1.6%	5	0.4%	5	1.2%	1	0.3%	7	1.1%	22	0.8%
Other male genital organs	0	0%	1	0.1%	0	0%	0	0%	0	0%	1	0%
ORAL CAVITY AND PHARYNX												
Floor of mouth	0	0%	0	0%	0	0%	0	0%	1	0.2%	1	0%
Gum/other mouth	3	1.2%	7	0.5%	0	0%	0	0%	1	0.2%	11	0.4%
Lip	0	0%	0	0%	0	0%	1	0.3%	0	0%	1	0%
Nasopharynx	0	0%	1	0.1%	0	0%	1	0.3%	0	0%	2	0.1%
Oropharynx	2	0.8%	1	0.1%	0	0%	0	0%	1	0.2%	4	0.1%
Salivary glands	2	0.8%	2	0.2%	0	0%	0	0%	0	0%	4	0.1%
Tongue	5	2.0%	7	0.5%	2	0.5%	2	0.6%	7	1.1%	23	0.8%
Tonsil	4	1.6%	4	0.3%	1	0.2%	2	0.6%	3	0.5%	14	0.5%

table continues on page 7

FIGURE 1 Primary cancer sites, Legacy Health 2017, all ages *(continued)*

	Emanuel		Good Samaritan		Meridian Park		Mount Hood		Salmon Creek		Legacy Health	
Primary site	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
RESPIRATORY SYSTEM												
Larynx	3	1.2%	1	0.1%	0	0%	5	1.6%	4	0.6%	13	0.5%
Lung/bronchus	14	5.7%	108	8.5%	39	9.2%	32	10%	79	12.6%	272	9.4%
Nose/nasal cavity/middle ear	4	1.6%	0	0%	0	0%	1	0.3%	1	0.2%	6	0.2%
Trachea/mediastinum/other respir	1	0.4%	0	0%	0	0%	0	0%	0	0%	1	0%
SKIN												
Melanoma	1	0.4%	48	3.8%	18	4.3%	5	1.6%	7	1.1%	79	2.7%
Other non-epithelial skin	0	0%	3	0.2%	0	0%	0	0%	1	0.2%	4	0.1%
URINARY SYSTEM												
Bladder	11	4.5%	49	3.8%	23	5.5%	22	6.9%	41	6.5%	146	5.1%
Kidney and renal pelvis	11	4.5%	53	4.2%	17	4.0%	9	2.8%	30	4.8%	120	4.2%
Ureter	1	0.4%	8	0.6%	0	0%	0	0%	2	0.3%	11	0.4%
Other urinary organs	2	0.8%	0	0%	0	0%	0	0%	0	0%	2	0.1%
OTHER SITES												
Bones/joints	0	0%	0	0%	0	0%	1	0.3%	1	0.2%	2	0.1%
Brain/other nervous system	30	12.1%	14	1.1%	14	3.3%	14	4.4%	23	3.7%	95	3.3%
Breast	0	0%	353	27.7%	101	23.9%	71	22.3%	123	19.6%	648	22.5%
Eye and orbit	0	0%	2	0.2%	0	0%	0	0%	0	0%	2	0.1%
Miscellaneous	5	2.0%	10	0.9%	11	2.6%	7	2.2%	7	1.1%	40	1.4%
Myeloma	1	0.4%	2	0.2%	3	0.7%	0	0%	6	1.0%	12	0.4%
Soft tissue	7	2.8%	3	0.2%	0	0%	1	0.3%	2	0.3%	13	0.5%
Total	**247**		**1,272**		**422**		**319**		**626**		**2,886**	

FIGURE 2 Legacy top six cancer sites comparison 2017

	Legacy Health, 2017		Oregon*		Washington*		American Cancer Society*	
Primary site	Patient count	Percentage of total	Patient count	Percentage of total	Patient count	Percentage of total	Patient count	Percentage of total
Breast	648	32%	3,400	28%	5,580	28%	268,670	28%
Prostate	333	19%	2,040	17%	3,730	19%	164,690	17%
Lung/bronchus	272	15%	3,140	26%	4,810	24%	234,030	25%
Colon/rectum	229	13%	1,510	12%	2,710	13%	140,250	15%
Corpus uteri	166	9%	890	7%	1,390	7%	63,230	7%
Urinary bladder	146	8%	1,130	9%	1,940	10%	81,190	9%
Total top six cancer sites	**1,794**	**62%**	**12,110**	**56%**	**20,160**	**56%**	**952,060**	**55%**
Total reportable cases	**2,886**		**21,520**		**36,170**		**1,735,350**	

**American Cancer Society (ACS) Facts & Figures 2018 (estimated cases)*

FIGURE 3 Head and neck malignancies by age at diagnosis, Legacy 2017 vs. Commission on Cancer 2015*

	Oral cavity and pharynx		Larynx		Nose, nasal cavity and middle ear	
Age at diagnosis	Legacy *n=60*	CoC *n= 229*	Legacy *n=13*	CoC *n=3,909*	Legacy *n=6*	CoC *n=1,946*
<20	0%	0%	0%	0%	0%	2%
20–29	0%	1%	0%	0%	0%	2%
30–39	5%	0%	0%	1%	17%	6%
40–49	5%	8%	8%	6%	0%	8%
50–59	30%	26%	15%	26%	33%	21%
60–69	32%	35%	62%	35%	33%	27%
70–79	13%	21%	8%	23%	17%	20%
80–89	15%	9%	8%	8%	0%	11%
≥90	0%	0%	0%	1%	0%	3%

FIGURE 4 Histology distribution of head and neck cancer cases, Legacy 2017 vs. CoC 2015*

	Oral cavity and pharynx		Larynx		Nose, nasal cavity and middle ear	
Histology	Legacy	CoC	Legacy	CoC	Legacy	CoC
Adenocarcinoma, NOS	0.0%	0.8%	0.0%	0.0%	16.7%	0.0%
Adenoidcystic carcinoma	1.6%	0.0%	0.0%	0.0%	16.7%	4.7%
Carcinoma, undifferentiated	0.0%	0.0%	0.0%	0.0%	0.0%	3.6%
Carcinoma, NOS	4.8%	2.1%	0.0%	0.0%	0.0%	3.8%
Ethesioneuroblastoma	0.0%	0.0%	0.0%	0.0%	0.0%	7.8%
Large cell neuroendocrine carcinoma	0.0%	0.0%	0.0%	0.0%	16.7%	0.0%
Large cell, nonkeratinizing squamous cell carcinoma	1.6%	4.0%	0.0%	0.0%	0.0%	5.0%
Melanoma, malignant	0.0%	0.0%	0.0%	0.0%	16.7%	7.7%
Melanoma, in situ	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Mucoepidermoid carcinoma	1.6%	0.0%	0.0%	0.0%	0.0%	1.3%
Papillary squamous cell carcinoma	0.0%	1.3%	0.0%	0.0%	0.0%	2.1%
Small cell carcinoma, NOS	0.0%	0.6%	0.0%	72.4%	0.0%	1.1%
Squamous cell carcinoma, basaloid	1.6%	0.0%	0.0%	0.0%	0.0%	1.6%
Squamous cell carcinoma, keratinizing, NOS	7.9%	15.1%	7.7%	18.7%	0.0%	11.4%
Squamous cell carcinoma, spindle cell	0.0%	0.0%	7.7%	0.9%	0.0%	0.0%
Squamous cell carcinoma, NOS	66.7%	68.2%	84.6%	0.0%	16.7%	30.3%
Other	11.1%	8.1%	0.0%	8.0%	16.7%	19.9%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

FIGURE 5 First course of treatment, head and neck malignancies, Legacy 2017 vs. CoC 2015*

	Oral cavity and pharynx		Larynx		Nose, nasal cavity and middle ear	
	Legacy	CoC	Legacy	CoC	Legacy	CoC
Surgery only	37%	12%	23%	17%	17%	30%
Surgery and chemotherapy	0%	1%	0%	1%	0%	2%
Radiation and chemotherapy	17%	34%	23%	23%	0%	11%
Surgery and radiation	13%	3%	8%	11%	33%	22%
Surgery, radiation and chemotherapy	17%	4%	0%	6%	33%	17%
Radiation only	12%	9%	46%	20%	0%	6%
Chemotherapy only	2%	6%	0%	2%	0%	2%
Other: no treatment or active surveillance	3%	31%	0%	20%	17%	10%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

*Most recent data available from the National Cancer Data Base

FIGURE 6 Head and neck cancer cases by gender, Legacy 2017 vs. Commission on Cancer 2015*

	Legacy	CoC
Male	56	3,254
Female	23	884
Total	**79**	**4,138**

FIGURE 7 Legacy head and neck treatment migration 2017

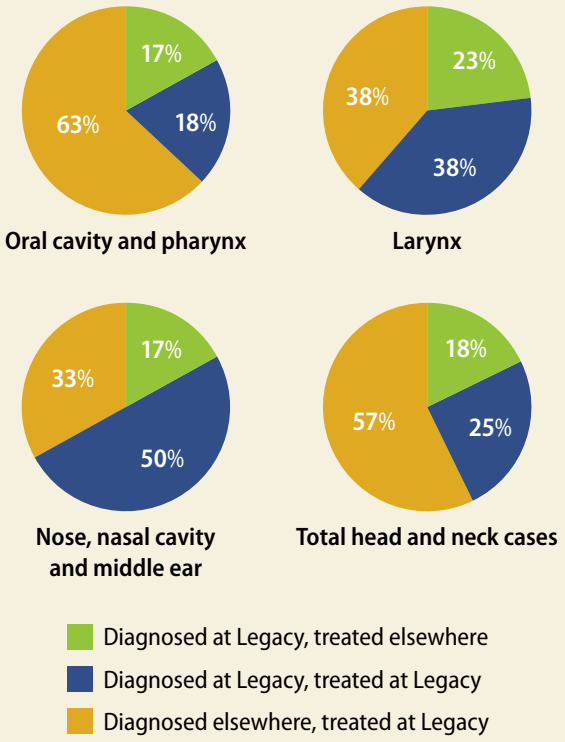
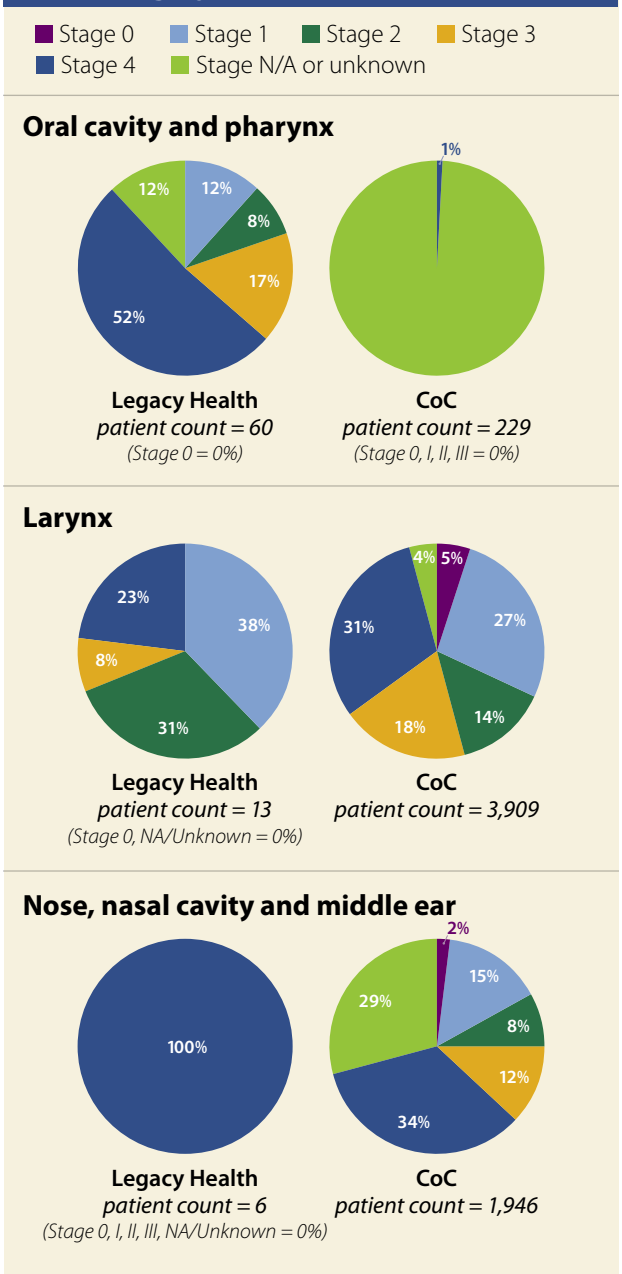


FIGURE 8 AJCC major stage groups, head and neck malignancies, Legacy 2017 vs. CoC 2015*



*Most recent data available from the National Cancer Data Base

Biomarkers in diagnosis of oral, head and neck cancer

By David Glidden, M.D., pathologist, Legacy Laboratory Services

The World Health Organization (WHO) Classification of Head and Neck Tumors, 4th Edition, 2017, now considers oropharyngeal squamous cell carcinoma associated with high-risk human papillomavirus (OPSCC-HPV) to be an epidemiologically, pathologically and clinically distinct form of head and neck squamous cell carcinoma. This distinction is based upon an understanding of transcriptionally active high-risk HPV, which has been identified as an important cause of oropharyngeal carcinoma. High-risk HPV type 16 is responsible for >90 percent of cases. The pathophysiology is well established. Viral DNA is integrated into host DNA. Transcription of HPV E6 and E7 mRNA leads to inactivation of p53 and RB proteins, and indirectly to accumulation of p16 protein. Current methods can detect HPV at the level of DNA (in situ hybridization/PCR) or protein (p16 immunohistochemistry).

OPSCC-HPV has shown a significant increase in incidence over the past several decades. In contrast, conventional smoking- and alcohol-related squamous cell carcinoma has shown a decrease in incidence during the same time period. The Centers for Disease Control and Prevention (CDC) estimates that more than 16,000 cases a year occur in the United States. The typical demographics include the following: male, white, higher socioeconomic status, and median age of 50–56 years. Oral sex is an established risk factor for oral HPV infection. There is a strong predilection for the base of tongue and the palatine tonsils. Typically, this cancer presents at an advanced clinical stage and often in the form of a small primary tumor with nodal involvement. Importantly, OPSCC-HPV is associated with significantly better survival outcomes than HPV-negative OPSCC. In addition, the risk of tumor recurrence and of the development of a second primary malignancy is lower with OPSCC-HPV. Consequently, such patients may be candidates for less aggressive treatment.

The College of American Pathologists (CAP) published a guideline titled "Human Papillomavirus Testing in Head and Neck Carcinomas" in the May 2018 issue of the *Archives of Pathology & Laboratory Medicine*. The objective was to develop evidence-based recommendations for the various methodologies and applications of high-risk HPV testing in head and neck carcinomas. One hundred fifty-seven studies were utilized in the development of the guideline. Fourteen statements, four recommendations and 10 expert consensus opinions were issued.

Based on this guideline, pathologists should perform high-risk HPV testing on all patients with newly diagnosed oropharyngeal squamous cell carcinomas, including all histologic subtypes. This testing may be performed on the primary tumor or on a regional lymph node metastasis when the clinical findings are consistent with an oropharyngeal primary. With p16 immunohistochemical staining being established as an independent predictor of improved patient prognosis and based upon its widespread availability, ease of use, reproducibility of interpretation, low cost and excellent performance on small specimen samples, the expert panel concluded that pathologists should perform high-risk HPV testing by surrogate marker p16 immunohistochemistry. Other statements in the guideline recommend that pathologists should not routinely perform high-risk HPV testing on patients with nonsquamous carcinomas of the oropharynx

References

World Health Organization (WHO) Classification of Head and Neck Tumors, 4th Edition, 2017

Human Papillomavirus Testing in Head and Neck Carcinomas, Guideline From the College of American Pathologists, *Arch Pathol Lab Med*. Vol 142, May 2018.

www.cap.org.

or nonoropharyngeal primary tumors of the head and neck; pathologists should routinely perform high-risk HPV testing on patients with metastatic squamous cell carcinoma of unknown primary in a cervical upper or mid jugular chain lymph node; and pathologists should not provide a tumor grade or differentiation status for HPV-positive/p16 positive oropharyngeal squamous cell carcinomas.

Currently at Legacy Health, p16 immunohistochemistry is utilized for high-risk HPV testing on all patients with newly diagnosed oropharyngeal squamous cell carcinomas. In addition, Legacy pathologists report primary OPSCCs that test positive for p16 immunohistochemistry as p16-positive (HPV-positive).

The current state of medical imaging for oral, head and neck cancer

By Jeffrey Cagley, M.D., neuroradiologist, Diagnostic Imaging NW

As advances in the diagnosis and treatment of oral, head and neck cancer have improved with time, so too have the quality and breadth of imaging options available to radiologists and treating physicians.

Many neuroradiology training programs and research centers have realized the unique imaging challenges of the oral, head and neck cancer patient population. As a result, education has been tailored to focus more heavily on diseases of the head and neck. Specifically, there has been an increased focus on the anatomy, diagnoses and post-treatment changes that make head and neck imaging a uniquely complex niche within the radiology medical specialty.

With exposure to the most up-to-date research and ongoing education, neuroradiologists can now provide treating clinicians with the highest quality of oral, head and neck cancer imaging and interpretation ever available.

Computed tomography (CT) has long been the workhorse imaging modality in oral, head and neck cancer and that remains true today. CT provides highest-resolution imaging with the added benefit of rapid acquisition, a factor that is beneficial for both patient tolerance of exam as well as minimization of image motion artifact. The benefits of CT do come with the cost of radiation exposure, though with the implementation of modern dose-reduction software, the radiologist can optimize image quality while administering the smallest possible patient radiation dose.

Magnetic resonance imaging (MRI) has continued to gain traction as a powerful tool in the setting of oral, head and neck cancer. MRI offers improved soft tissue contrast over CT with the added benefit of no radiation exposure. A specific example of the power of MRI in oral, head and neck cancer imaging is the ability to assess for perineural spread of tumor, a finding which can be extremely difficult to visualize on CT and one which has great treatment and prognostic consequences. The inherent drawbacks of MRI are a longer exam time, which can be less well tolerated by the patient, and increased susceptibility to motion degradation, though these can be minimized in the hands of a skilled technologist.

With new research demonstrating deposition of gadolinium from MRI contrast within the brain as well as elsewhere throughout the body, there has been an increasing push to implement safer MRI contrast compounds (cyclic versus linear agents) that limit gadolinium deposition. Though MRI contrast consists of safe, chelated (bound) gadolinium that is excreted in the urine, free gadolinium is a known heavy metal toxin. As such, radiologists and clinicians alike are exercising caution using gadolinium-based contrast moving forward. Currently there is no data to support adverse effects related to contrast-related gadolinium deposition

in the body, though this is a developing issue and more information is likely to arrive as research on this issue continues.

Finally, positron emission tomography (PET) is a commonly utilized, valuable study that allows for detection of metabolically active sites of tumor in the setting of cancer. Combination PET-MRI is a developing, potentially powerful tool that is increasingly utilized at different sites around the country. PET-MRI combines the soft tissue detail of MRI with the physiologic information provided by PET scanning to augment current diagnostic options in oral, head and neck cancer, especially in the setting of complex disease. Be on the lookout for this exciting modality to become more commonplace soon.

Advances in reconstruction

By Ashish Patel, M.D., DDS, FACS, surgeon, Head and Neck Surgical Associates

Head and Neck Institute (HNI), part of Head and Neck Surgical Associates (HNSA), in collaboration with Legacy Cancer Institute, has a rich history of pioneering head and neck reconstruction. Though microvascular reconstructive services are more widely available at major centers, the HNI has been at the forefront of this since the early 1990s.

Efforts spearheaded by Bryce Potter, M.D., and Eric Dierks, M.D., DMD, FACS, at Legacy Emanuel Medical Center helped shape the early art and science of vascularized head and neck reconstruction. As these techniques evolved and improved on both a local and national level, the HNI fellowship moved toward a comprehensive two-year program, with the final year dedicated to surgical education in microvascular reconstructive surgery.

Tuan Bui, M.D., the first fellow, who completed the two-year fellowship in 2011, was immediately recruited by HNSA/HNI to advance the reconstructive repertoire of the group and keep everything "in-house." In his fellowship year, Dr. Bui participated in about 30 free flap procedures.

Fast-forward to 2017 when Felix Sim, M.D., the 25th fellow, logged nearly 80 free flaps from eight donor sites during his training.

Currently the HNI provides microvascular reconstructive services in the Legacy Health system at Legacy Good Samaritan and Legacy Emanuel medical centers.

The majority of reconstructive surgery is provided to patients of HNSA, though there has been an increasing collaborative effort to provide microvascular services to Portland community ablative head and neck surgeons. The meticulous surgical and perioperative care for patients undergoing free flap reconstruction has translated to success rates (98 percent) that exceed the national average. In addition, the reconstructive services offered to patients include the routine use of virtual surgical planning, patient-specific 3-D printed implants and reconstruction plates, concomitant dental implant placement into osseous flaps, and in select cases, immediately loaded partial or full arch dental prostheses allowing patients to have facial and dental reconstruction in one operation.

The HNSA/HNI was the first West Coast center to successfully complete a "jaw in a day" procedure. Developed in New York by former HNI fellow, David Hirsch, M.D., patients prescribed this operation undergo ablative surgery for jaw tumors with concomitant fibula flap reconstruction and simultaneous placement of an implant loaded dental prosthesis, allowing patients to leave the OR with a fully functional jaw — teeth and all. Since then, this has become HNI's standard of care in treating patients with benign aggressive tumors of the jaws.

Through the collective experience filtered down over 25 years, microsurgical reconstruction at HNI

has transformed. Through experiential, technical and technological advances, what was inconceivable in the past is now readily achievable with free flap surgery. The focus has shifted toward patient-centric reconstruction and pushing the limits of microvascular surgery, rather than closing a wound.

As we've gained an understanding of flap physiology since the inception of head and neck microsurgery many decades ago, we ask ourselves what we can achieve rather than "will this work?"

HNI's microvascular surgery fellows gain skill and experience that propel them into fruitful and robust careers in major head and neck units both nationally and internationally. This has solidified HNI's position as a national leader in head and neck reconstructive surgery.

Radiation therapy in oral, head and neck cancer

By Misa Lee, M.D., radiation oncologist, Legacy Medical Group–Radiation Oncology

Overall, oral, head and neck (OHN) cancer accounts for 3.7 percent of new cancer cases in the United States. In 2017, approximately 63,000 new cases of oral cavity, pharyngeal and laryngeal cancers were reported, with oropharyngeal squamous cell cancer being the most commonly diagnosed head and neck malignancy.

At Legacy Health, there were 79 new cases of OHN cancer in 2017. We served patients from various counties in Oregon as well as Washington and Idaho. More than half of those patients received radiation therapy as a part of their treatment.

Although alcohol and tobacco abuse have traditionally been the main cause of cancers of the oral cavity, oropharynx, hypopharynx and larynx, human papillomavirus (HPV) has become one of the leading causes of head and neck cancer in the past few decades, especially in the oropharynx. Inactivation of the tumor-suppressor proteins p53 and pRb occurs when HPV E6 and E7 oncogenes are expressed.

The Centers for Disease Control and Prevention 2017 report states that approximately 70 percent of oropharyngeal cancers (primarily tonsillar and base of tongue cancers) tested positive for HPV. In a population-based surveillance study from 1988 to 2004, there was a 225 percent increase in oropharyngeal HPV-related cancers.

Thus, we are seeing a changing landscape for oral, head and neck cancer diagnosis and treatment as the incidence of HPV-positive cancers rise while HPV-negative (primarily tobacco- and alcohol-related) cancers decline. Often, HPV-positive cancer patients are young and otherwise healthy and without previous history of significant tobacco or alcohol use. Furthermore, several trials including ECOG 2399 and RTOG 0129 trials have shown the prognostic significance of HPV status, demonstrating superior treatment response leading to better overall survival. Such discovery has opened the door for us to question and test the possibility of reducing the intensity/dose of a given modality, both chemotherapy and radiation therapy, without compromising the efficacy. At present, there are several de-intensification trials including RTOG 1333 (NRG HN-002) and ECOG-ACRIN trials exploring such hypotheses.

Radiation therapy in OHN cancer treatment has undergone tremendous changes and improvements in the past few decades. With the development of CT, we can develop and deliver our treatments in much more concise, targeted fashion. At present, most OHN cancer patients are treated with an intensity-modulated radiation therapy (IMRT), which delivers precise, conformal radiation treatment that shapes the beam to the tumor. This allows one to lessen the dose as well as spare the nearby normal structures. Hence, it has allowed us to minimize potential late side effects such as dry

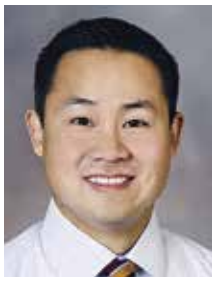
mouth, which had often been an inevitable side effect of OHN radiation therapy. This has improved the quality of life in our patients tremendously. Furthermore, IMRT has allowed us to consider re-irradiating patients with more ease when the cancer recurs and treatment options are limited.

As the demographic of our OHN cancer patients change and patients live longer, it is important for us to re-evaluate and reconsider how we approach overall patient care. Although it is imperative that we eradicate a patient's disease as best as we can, it is also important for us to not become complacent in minimizing potential late side effects while delivering these therapies. Hopefully, with steady improvements in treatment technology along with our ability to de-intensify treatment via lower dose and volume safely, we can reduce treatment-related morbidity, ultimately improving the quality of life for our patients.

Medical oncology for oral, head and neck cancer

By Ted Huang, M.D., medical oncologist, OHSU Knight–Legacy Health Cancer Collaborative

For years, platinum-based chemotherapy has been the backbone of treatment for both locally advanced and metastatic head and neck squamous cell cancer.



Chemotherapy is often paired with radiation in patients with locally advanced disease who are not surgical candidates, used post-operatively in patients who are found to have high-risk features on their surgical pathology, and given palliatively in patients who are found to have metastatic disease. Unfortunately, traditional chemotherapy can be difficult for some patients to tolerate due to potential side effects including fatigue, nausea and vomiting, neuropathy, nephropathy, and increased risk of infections.

More recently, there has been great interest in utilizing immunotherapy in the hopes of providing patients with an effective and less-toxic alternative to chemotherapy. In particular, there have been numerous anti-PD1/PDL-1 drugs that have reached the market over the past two years. These have demonstrated encouraging clinical benefit to patients who have had progression of their cancer after standard chemotherapy or are not able to tolerate the myriad adverse effects of chemotherapy. Anti-PD1/PDL-1 agents are immune checkpoint inhibitors given intravenously that work by preventing cancer cells from being able to avoid the body's natural immune defense.

Current agents such as nivolumab, pembrolizumab and durvalumab have been shown to provide benefit in approximately 12–25 percent of patients with relapsed/metastatic disease. Although these numbers do not seem impressive by themselves, a small proportion of these patients demonstrated a very robust response to treatment. Combine that with the fact that these agents are generally very well-tolerated, with most adverse effects being reported as fatigue, pruritus, rash and anorexia.

Medical oncologists with the OHSU Knight–Legacy Health Cancer Collaborative are using these newer checkpoint inhibitors, in addition to other forms of immunotherapy and targeted agents, to help advance the field in determining the optimal regimens for patients with oral, head and neck cancer.

Rehabilitation for the oral, head and neck cancer patient

By Cyd Dashkoff, P.T., CLT-LANA, rehabilitation, and Julia Robinson, speech-language pathologist, Legacy Rehabilitation Services

Rehabilitation, as defined by Michael D. Stubblefield, M.D., director of Cancer Rehabilitation at Kessler Institute for Rehabilitation, is a "process of restoring and maintaining the highest possible level of functioning, independence and quality of life to cancer patients and survivors."

Cyd Dashkoff, P.T., CLT-LANA

Julia Robinson

Cancer survival rates vary according to the type and stage at time of diagnosis. The Surveillance Epidemiology and End Results Program (SEER) reports that the current five-year survival rate for all cancers combined is estimated at 65.4 percent. With an increasing number of cancer survivors living longer after intervention, there is a growing opportunity for physical therapists to get involved and help manage the long-term effects from cancer treatment.

Patients with oral, head and neck (OHN) cancer present a unique challenge. The treatment, by virtue of its location, can have quite an impact on quality of life (QOL) as well as on daily activities and work. Common OHN cancer treatment-related impairments include: pain; cancer-related fatigue (CRF); chemo-induced peripheral neuropathy (CIPN); weakness; impaired mobility and range of motion (ROM) of neck and/or shoulder; postural dysfunction; impaired body image due to facial and neck disfigurement; lymphedema; myofascial and scar tissue restrictions; radiation fibrosis, as well as temporal-mandibular dysfunctions (TMJ).

Physical therapists who specialize in oncology rehabilitation are specially trained to assess and assist with these physically debilitating effects in OHN cancer patients. They help to restore functional ROM and strength and to minimize pain/discomfort through a combination of progressive exercises, neuromuscular and postural re-education, and manual techniques. Exercise is one of the key modalities employed by physical therapists. It is known to improve QOL, functional capacity, body composition, pain, weakness and depression following treatment for OHN cancer.

Shoulder and neck dysfunction may arise from scar tissue build-up, radiation fibrosis or injury to the cervical plexus or spinal accessary nerve (SAN, CN XI). Injury to those nerves can have a cascading effect. Weakness of the trapezius and sternocleidomastoid muscles leads to postural abnormalities of the scapula, shoulder and neck, limiting functional ROM of the shoulder and/or causing neck pain on the involved side. This leads to inability to carry out daily activities, from something as simple as reaching into a cupboard to having to turn their head while driving. As with any nerve injury, recovery after SAN injury is slow and is sometimes incomplete.

Cancer-related fatigue (CRF) is a common complaint from OHN cancer survivors. They have a persistent sense of physical, emotional and cognitive tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and interferes with usual functioning. According to the NCCN guidelines on CRF, exercise is most beneficial in addressing CRF. Cancer-related fatigue levels have been shown to be 40–50 percent lower in patients who exercise as oppose to the more sedentary patient.

Lymphedema (LE) is a swelling condition that develops because of impaired or disrupted lymphatics, either from scar tissue, lymph node excision or radiation fibrosis. Lymphedema in OHN cancer patients is not common, but it can have a devastating impact on their lives. The prevalence of OHN cancer lymphedema varies widely in the literature, from 12.1 percent to 75 percent based on the definition of LE, the varied measurement tools and the changing presentation of OHN cancer. It can be quite disfiguring, leading to impaired body image and emotional distress, and may interfere with vision or speech and swallow function. While

there is no known cure for LE, it can be managed by complete decongestive therapy (CDT). Legacy Health has specially trained physical therapists who are nationally certified by the Lymphology Association of North America (LANA). They provide patient education to reduce the risk of developing LE, provide CDT treatment to reduce swelling and promote health of the tissues, and train patients to be independent with LE self-management.

Legacy now offers a pre-habilitation program that assists patients throughout their cancer journey and beyond. It is defined as the precursor to cancer rehabilitation and includes evaluations and interventions designed to obtain a baseline status and to treat pre-existing impairments or improve a patient's pain or functional limitation prior to beginning oncology treatments. The program is a multidisciplinary approach that brings together physical therapists, registered nurses, speech therapists, social workers, dietitians and physicians. Patients are educated about what to expect during future treatments and how to best minimize the physical, functional and psychological challenges they may face. Literature supports that for many types of cancer, pre-habilitation initiated at time of diagnosis and prior to beginning of treatment can reduce incidence and/or severity of future functional impairments, decrease morbidity, improve physical health outcomes, and decrease hospital readmissions. Particular to OHN cancer, studies have shown that completing swallowing exercises prior to treatment improved function after chemoradiation therapy (Kotz et al., 2012).

Speech-language pathologists play an essential role on the interdisciplinary team treating oral, head and neck cancer, which affects structures critical to eating and speaking. Cancer rehabilitation in speech therapy aims to maximize functional outcomes and improve quality of life for patients before, during and after treatment.

Historically, speech-language pathologists have been involved with OHN cancer patients from the initial diagnosis (with preoperative teaching and a baseline evaluation) to post-care speech and swallowing needs. Over time, care has come to focus particularly on early intervention and pre-treatment exercises to help maintain speech, especially swallowing function, and thus to improve post-treatment quality of life. The goal is to prevent the late sequelae of fibrosis and atrophy of involved musculature.[1] Studies suggest that pre-treatment swallowing education and exercise can improve swallowing-specific quality of life in OHN cancer patients undergoing radiation and/or chemotherapy.[2–6]

During treatment, many patients tend to stop or limit solid foods due to pain or changes in taste when swallowing. Today, speech-language

References

1. Carroll, W. et al. Pretreatment swallowing exercises improve swallow function after chemoradiation. *The Laryngoscope*; 2008;118:39–43.

2. Peng, K. et al. A swallow preservation protocol improves function for veterans receiving chemoradiation for head and neck cancer. *Otolaryngology Head Neck Surgery*. 2015, 863–7.

3. Pauloski,B. Rehabilitation of Dysphagia following Head and Neck Cancer. *Physical Medicine Rehabilitation Clinics of North America*. 2008; 4: 889–928.

4. Schindler, A. et al. Dysphagia in head and neck cancer patients treated with radiotherapy and systemic therapies: Literature review and consensus. *Critical Reviews in Oncology/Hematology*. 2015; 96: 372–384.

5. Carroll, W. et al. Pretreatment swallowing exercises improve swallow function after chemoradiation. *The Laryngoscope*. 2008;118:39–43

6. Kulbersh, B. et al. Pretreatment, preoperative swallowing exercises may improve dysphagia quality of life. *The Laryngoscope*. 2006;116:883–6

7. Lango, M. et al. Baseline health perceptions, dysphagia and survival in head and neck cancer. *Cancer*; 2014; 840–847.

8. Lango, M. et al. Impact of baseline patient reported dysphagia on acute gastrostomy placement in patients with head and neck squamous cell carcinoma undergoing definitive radiation. *Head Neck*; 2016, E1318–24.

9. Brunelli, A. et al, Effectiveness of Social Support Group Interventions for Psychosocial Outcomes: A Meta-analytic Review. *The Australian Journal of Rehab Counseling*. 2016; 22: 104–127.

10. Ussher, J. et al. What do cancer support groups provide which other supportive relationships do not? The experience of peer support groups for people with cancer. *Social Science Medicine*. 2006; 10: 2565–76.

11. Vakharia, K. et al. Quality-of-life impact of participation in a head and neck cancer support group. *Otolaryngology Head and Neck Surgery*. 2007: 3: 405–10.

pathologists highly encourage patients to continue on an oral diet, if possible, in order to maintain strong muscle function.[7] As such, the earlier frequent prophylactic use of feeding tubes at initial diagnosis has decreased over the years.[8]

Another important component of speech-language pathology and survivorship involves support groups. Legacy offers a facilitated, city-wide OHN cancer support group. This group provides education and support for individuals and families coping with the effects of diagnosis and treatment. These types of support groups are associated with more active, adaptive coping strategies, and more feelings of control.[9–11]

With survivorship on the rise, patients are looking forward to life far beyond the completion of treatment. They are looking for a productive, meaningful and quality future. This can be achieved through a collaborative effort of the cancer team beginning at time of diagnosis. OHN cancer patients present a unique challenge, but with early intervention from physical therapists, they can prevent or minimize impairments, as well as maximize recovery from treatment-related side effects to resume their lives to the fullest.

Palliative care for patients with oral, head and neck cancer

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

As stated by the National Comprehensive Cancer Network, "The goal of palliative care is to anticipate, prevent and reduce suffering" in order to promote quality of life for patients with advanced or life-limiting illnesses and their families. Professional oncology guidelines now recommend earlier and routine involvement of palliative care (PC) for patients with advanced cancer concurrently with disease-directed, life-prolonging therapies.

In the field of oral, head and neck cancer, patients who would benefit from PC include those diagnosed with advanced squamous cell cancer (SCC), recurrent cancer or metastatic disease. Data from the nationwide inpatient sample on patients with incurable oral, head and neck cancer reveals that palliative care is consulted in only 5 percent of all cases, indicating that there are many opportunities to improve patients' access to PC.

Palliative care interventions facilitate patient autonomy and access to information, and support informed treatment choice.

There are several unique considerations for patients with oral, head and neck cancer that need to be considered in order to offer PC in a timely manner and to ultimately improve patients' treatment experiences.

The anatomic location of oral, head and neck cancer suggests that many patients will experience changes in their facial appearance and develop some degree of body disfigurement. Anticipatory and informed discussions on that topic may be difficult or sensitive to initiate before beginning treatment. Cancer treatments may also lead to dysfunctions in common tasks patients take for granted, such as speaking, eating, swallowing and breathing. Taste, hearing and smell can be affected. These changes can lead to adverse effects such as psychologic distress/depression, pain, weight loss, even guilt and self-blame, especially when cancer is linked to habits such as alcohol and tobacco. Palliative care can help address those physical and psychological symptoms early on so they do not take away from a patient's quality of life while pursuing tumor response and/or disease stabilization.

Guidelines from the United Kingdom recommend that palliative care support should be multidisciplinary, and that all core team members, including surgeons, nurses and social workers, should have training in advanced communication skills. They suggest that palliative care should be initiated by the primary oncology team and then

augmented by collaboration with an interdisciplinary team of palliative care experts.

Legacy Health's Palliative Care Service is available both inpatient and outpatient at all of Legacy's medical centers except Legacy Silverton Medical Center. For hospitalized patients, an inpatient palliative care consult order can be placed in Epic by any treating provider. Outpatient clinic referrals can also be placed in Epic under referral entry or by calling Legacy Medical Group–Palliative Care directly at 503-413-6862.

Cancer clinical research

By Emilie Dellit, research student, Legacy Oncology Clinical Research

Oral, head and neck cancer accounts for approximately 4 percent of all cancers in this country. In Oregon, out of every 100,000 people, nearly 30 people are diagnosed with oral, head and neck (OHN) cancer. In Washington, nearly 32 people out of every 100,000 are diagnosed with this disease.

The National Cancer Institute (NCI) supports translational research and clinical trials involving oral, head and neck cancer. These trials are designed to find effective treatments for these types of cancer, as well as to discover new ways to improve and manage side effects. However, despite substantial improvements in the treatment of OHN cancer over the last two decades, overall survival rates remain unsatisfactory. Improved therapeutic approaches for OHN cancer patients are necessary but are hampered by low patient recruitment rates in clinical trials, particularly Phase III studies.

Several factors contribute to low patient recruitment rates. In particular, oral, head and neck cancer is associated with many levels of distress and stigma, and this stigma is twofold because these cancers are often associated with lifestyle risk factors and treatment often results in confronting facial disfigurement. Alcohol and tobacco use as well as infection with cancer-causing types of human papillomavirus (HPV) are the three most important risk factors for OHN cancer, with at least 75 percent of these cancers caused by tobacco and alcohol use. Consequently, there is often a lot of shame, self-blame and guilt when a patient learns of a diagnosis; sometimes these emotions go as far as preventing a patient from seeking care and support.

In 2018, Legacy Health will be activating several studies for our oral, head and neck cancer patients including NRG-HN001, Randomized Phase II and Phase III Studies of Individualized Treatment for Nasopharyngeal Carcinoma Based on Biomarker Epstein Barr Virus (EBV) Deoxyribonucleic Acid (DNA). Nasopharyngeal carcinoma (NPC), a cancer of the nasopharynx, is unique among oral, head and neck cancer in its association with the Epstein-Barr virus (EBV), a widespread human herpes virus that is a risk factor for NPC. The study will aim to determine whether adjuvant chemotherapy is

Accruals to all Legacy Health cancer studies, 2017

	Legacy Health	Legacy Emanuel	Legacy Good Samaritan	Legacy Meridian Park	Legacy Mount Hood	Legacy Salmon Creek
2017 annual analytic caseload	2,858	247	1,267	413	312	619
Number of analytic cases on clinical trials	336	3	144	38	17	34
Number accrued to Tumor Bank	160	11	122	9	8	10
Total (clinical trials and Tumor Bank)	**496**	**14**	**266**	**47**	**25**	**44**
Total percentage accrued to clinical trials/Tumor Bank	**17.3%**	**5.6%**	**20.9%**	**11.3%**	**8.0%**	**7.1%**

necessary among patients with an undetectable EBV DNA level after concurrent chemoradiation.

An additional study to begin in 2018 for OHN cancer patients, EA3132, is titled Phase II Randomized Trial of Radiotherapy With or Without Cisplatin for Surgically Resected Squamous Cell Carcinoma of the Head and Neck (SCCHN) with TP53 Sequencing. Since genetic alteration in the tumor suppressor TP53 indicates an increased risk of recurrence, this study will further investigate previous findings as well as evaluate the disease-free survival of patients with p53 mutations after primary surgical resection.

If you would like more information about trials available at Legacy Health, or to refer a patient, call 503-413-8199 or email OncologyResearch@lhs.org.

Support services for oral, head and neck cancer patients

Legacy Cancer Healing Center

By Niani Dunner, MPH, coordinator, Legacy Cancer Healing Center

The Legacy Cancer Healing Center is the umbrella under which support services are available for oral, head and neck cancer patients and their families.

A diagnosis of cancer can affect many aspects of one's life; at the Legacy Cancer Healing Center we bring a whole-person approach to improve quality of life, both during and after treatment.

Legacy Cancer Healing Center staff members work closely with the patient, their family, and all members of the patient's cancer treatment team, offering assistance along the entire continuum of cancer care. Our aim is to assist patients with the physical, emotional, social and practical issues that arise from a cancer diagnosis and treatment. The Healing Center provides a comprehensive menu of group-based offerings, as well as individualized services provided by experienced, cancer-trained practitioners.

Individualized support services

- Cancer survivorship and integrative care offers individual consultation with a nurse practitioner. For more information, see the Integrated Survivorship Clinic article on page 21.
- Art therapy uses various artistic mediums to allow patients to express themselves, and offers individual and group sessions for adults with cancer and their children.
- Massage therapy is offered to patients at Legacy Good Samaritan Medical Center, both within radiation oncology and on the Cancer Care Unit. Fee-for-service massage therapy practice is offered at the Women's Wellness Center and is open to both men and women.
- A Legacy Health dietitian, a specialist certified in oncology nutrition, offers individual consultations in nutritional counseling before, during and after cancer treatment.
- A licensed clinical social worker addresses the emotional, social and financial concerns of the individual and family, and coordinates community services and resources.
- Stress management provides support and comfort during difficult procedures, including external beam and Gamma Knife radiation treatment for oral, head and neck cancer.
- The Green Gables Guest House, on the campus of Legacy Good Samaritan Medical Center, provides lodging for cancer patients and families from out of the area receiving treatment at Legacy. Out-of-town patients and their families can use this convenient home away from home, located directly across the street from the radiation oncology department.

Cancer groups, classes and events

The Legacy Cancer Healing Center offers an array of groups, classes and events that support patients

socially, emotionally and physically as they adapt to their cancer diagnosis, treatment and survivorship.

- An ongoing support group for oral, head and neck cancer patients is held once a month at Legacy Good Samaritan Medical Center. It offers peer-to-peer support, as well as professional guest speakers on topics relevant to oral, head and neck patients, survivors and their families.
- Meditation classes provide an avenue to come together to learn meditation skills in a supportive environment, in a weekly drop-in format.
- Step Into Fitness, offered at Legacy Good Samaritan and Legacy Meridian Park campuses, is a series focusing on exercise and anti-cancer nutrition.
- Offered for the 13th year in a row in 2017, Meals That Heal is a healthy eating and food-preparation event for individuals after a cancer diagnosis.
- Expressions of Healing classes at Legacy Good Samaritan and Legacy Salmon Creek medical centers provide cancer survivors the opportunity to explore their cancer journey through art, while creating community.
- Finding Center: Art-Making for Mindfulness and Stress Reduction was made available at four of Legacy Health's medical center campuses in 2017. This art-based group uses the healing power of mindfulness to reduce stress and anxiety.
- Other ongoing offerings include monthly gardening workshops and nature walks and weekly movement classes in Pilates, t'ai chi/qigong and yoga. A comprehensive list of cancer support groups and classes offered is in the Community Involvement section on page 26.

Support services for oral, head and neck cancer patients

Oncology nurse navigation

By Susan Gray, M.S., R.N., manager, Cancer Programs, Legacy Cancer Institute

Care for the oncology patient is complicated, even when localized and early-stage. However, when the patient has been diagnosed with oral, head and neck cancer, the patient faces a life-threatening malignancy as well as a complex treatment protocol that may affect their appearance and ability to speak and swallow. Successful treatment requires pretreatment evaluation and consultation by a myriad of specialists. The treatment regime is rigorous, and recovery can be prolonged. Although oral, head and neck cancer makes up only about 4 percent of all cancers in the United States, the impact on patients' overall quality of life can be significant.

The oncology nurse navigator provides education, support, guidance and reassurance to patients and their loved ones during the cancer treatment process. Disruptions to daily life for both patient and caregivers, disease and treatment-related side effects, and the financial and emotional strain of treatment are often significant. The oncology nurse navigator serves as a patient advocate, facilitating communication between the patient and the surgical, medical and radiation oncology providers, as well as ear, nose and throat clinicians, primary care physicians, imaging departments, dentists, dietitians, speech pathologists, physical therapists, social workers, mental health providers and community agencies required to ensure timely and coordinated care. Often barriers are encountered that can delay or impact appropriate care. The oncology nurse navigator is uniquely positioned and suited to preemptively remove barriers to care and help manage those issues that arise during care.

At Legacy Cancer Institute (LCI), we are very fortunate to offer nurse navigation services at each of our cancer program treatment sites. Our nurse navigators are licensed in both Oregon and Washington, and all nurses are Oncology Nurse Certified.

Although all navigators are generalists, meaning they support patients with all types of cancer, each navigator focuses on a specific site or type of cancer as a subject matter expert. In this manner, the team can be kept abreast of in-depth information regarding cancer care.

Navigators also facilitate weekly Care Conferences (tumor boards) in which all new cancer diagnoses are reviewed and discussed among a group of treatment experts, facilitating the most appropriate care recommendations.

Nurse navigators monitor their patients' progress with chart review, phone calls and in-person clinic or hospital visits throughout the treatment course.

After patients have finished their course of treatment, the nurse navigator helps develop and deliver a survivorship care plan. That document, initiated at diagnosis, is a summary of the patient's therapy, with recommendations for future surveillance and resources for post-cancer treatment issues.

Oral, head and neck cancer therapy is complex, and the treatment journey can be long and multifaceted. Fortunately, LCI offers these patients, as well as all cancer patients, expert, compassionate care, provided by a community of specialists and facilitated and supported by experienced and knowledgeable nurse navigators.

Support services for oral, head and neck cancer patients

Integrative Survivorship Clinic

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

Legacy Cancer Institute's Survivorship Care Clinic is in its 10th year of serving patients. Clinic services are available at Legacy Good Samaritan and Legacy Mount Hood medical centers. Plans are in place to expand the service to the Legacy Meridian Park Medical Center campus. Our clinic provides lifestyle, functional and mind/body medicine as part of care to our patients to help with symptom prevention and reduction during and after treatment. Information and education regarding cancer risk-reduction through lifestyle modification is an important part of post-treatment care.

Issues such as pain, fatigue, poor appetite and stress are managed in a wholistic manner, with consideration for the many aspects of patients' lives that may impact their health and symptoms. Patients appreciate the ability to have their symptoms holistically addressed, and to participate in improving their health and well-being.

My background, training and experience as an adult nurse practitioner is coupled with mind/body medicine, mental health, hospice and integrative care. Keeping current with strides in the fields of lifestyle, functional and integrative medicine allows for continuous development of evidence-informed care for our population.

Many of our patients participate in alternative therapies outside of the traditional health care system, along with their cancer treatment. Some of these nontraditional treatments may be helpful; others may be harmful. Our clinic provides a resource for patients and providers where alternative treatments, herbs and supplements are assessed for safety and efficacy.

Our clinic works closely with our pharmacy in providing quality supplements to our patients through our Apothecary. With the generous support of the Legacy Health Foundation, we have a grant to provide those supplements to patients who otherwise could not afford them.

Diet, exercise, restorative sleep, emotional resilience, social support and the patient's environment are all taken into consideration in developing a plan in shared agreement with the patient. Supplements, mindfulness training and modifications in lifestyle become part of the plan to improve the patient's well-being. Our clinic works with patients to assist and motivate them to take the steps needed to make healthy lifestyle changes.

Referrals to appropriate resources within and outside of the Legacy Health system are a regular part of the patient's individualized plan. Referrals such as physical therapy, pharmacy navigator, counseling and acupuncture are often part of the plan. Providers who are outside of the Legacy system are carefully vetted for competent and compassionate care.

Mind/body medicine and mindfulness are useful in our patients' coping and symptom management, as well as in helping our providers maintain resilience and compassion. Classes in mindfulness are available for patients and their loved ones on a weekly basis at Legacy Good Samaritan Medical Center. Mindfulness training is also available several times per year to all staff and providers throughout the Legacy Health system with the support of Employee Health, Nursing Services and the Legacy Provider Wellness Committee. As part of their clinic visits, patients may also be assisted using one-on-one training in mindfulness and other mind/body skills such as heart-rate variability biofeedback.

Referrals to our clinic are predominantly from physicians and allied health care providers. The patient may also self-refer. Visits are billable to most insurance, including Medicare and Medicaid.

Our patients appreciate this service and express the value of learning ways to minimize symptoms during and after treatment, and to improve health and well-being after treatment has ended.

Commission on Cancer, Cancer Liaison Physician report

By Alizah Rotramel, M.D, FACS, 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 the 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 patient care 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.

Cancer Program Practice Profile Reports describe system data regarding patient treatment and outcomes for patients with breast, cervical, colon, gastric, lung and rectal cancers.

For patients diagnosed in 2015 — the latest available data set — Legacy continued to meet all benchmarks and exceed national and local rates in all of the breast cancer measures at 93.7–100 percent *(see Figure 9, Legacy Health Breast Performance Measures, page 23)*.

Benchmark measures for patients with non-small cell lung cancer patients have been established at 85 percent *(see Figure 10, Legacy Health Lung Performance Measures, page 23)*. One hundred percent of lung cancer patients were considered for chemotherapy, and nonoperative treatment was pursued in 75 percent of N2Mo stage III lung cancers, six of eight patients. In further review, this rate is currently improved to 100 percent. Rates of lymph node removal are also now being recorded as a surveillance measure, without a yet-established recommended baseline. At least 10 lymph nodes were removed with lung resection specimens at a rate of 92.9 percent, improved from 84.2 percent in the prior year and much higher than the 43 percent rate nationally for CoC-accredited programs.

The latest CP3R also measures performance rates for two colon measures and one rectal measure

(see Figure 11, Legacy Health Colorectal and Gastric Performance Measures, page 24). We have collected at least 12 lymph nodes with 96 percent of colon specimens, meeting the 85 percent benchmark, and exceeding the rates of the rest of CoC programs, which are 92–95 percent locally and nationwide. We exceeded the benchmarks with 94.7 percent of stage III colon cancer patients considered for chemotherapy and with preoperative radiation/chemotherapy considered for 100 percent of locally advanced rectal cancers. We continue to outperform other CoC programs in Oregon, the Pacific Northwest region and the nation.

Since the last CP3R, an additional measure has been added to assess treatment of patients with gastric cancer: at least 15 lymph nodes removed and resected with the stomach specimen. Our rate improved from 50 percent to 100 percent, exceeding the baseline standard of 80 percent.

Cervical, ovarian, endometrial, kidney and bladder measures are also being recorded but no benchmarks have been established.

The NCDB also provides information for the American College of Surgeons Cancer Quality Improvement Program (CQIP), a data-driven, process- and outcomes-based cancer quality improvement initiative. It confidentially reports data as entered in NCDB to 1,500 individual CoC-accredited hospitals, 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 continue to be 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

FIGURE 9 Legacy Health Breast Performance Measures, Commission on Cancer (CoC) Cancer Program Practice Profile Report (CP3R),

Select measures	CoC standard	CoC benchmark	Legacy 2015* performance
Radiation is administered within one year (365 days) of diagnosis for women under the age of 70 receiving breast conservation surgery for breast cancer (Accountability)	4.4	90%	93.7%
Tamoxifen or third generation aromatase inhibitor is recommended 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%	98.5%
Radiation therapy is recommended 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%	95.2%
Image or palpation-guided needle biopsy to the primary site is performed to establish a diagnosis of breast cancer (Quality Improvement)	4.5	80%	99.6%
Combination chemotherapy is recommended or administered within four months (120 days) of diagnosis for women under the age of 70 with AJCC T1cN0, or stage IB–III hormone receptor negative breast cancer (Accountability)	NA	NA	100%

FIGURE 10 Legacy Health Lung Performance Measures, Commission on Cancer (CoC) Cancer Program Practice Profile Report (CP3R)

Select measures	CoC standard	CoC benchmark	Legacy 2015* performance
Systemic chemotherapy is administered within four months to day preoperatively or day of surgery to six months postoperatively, or it is recommended for surgically resected cases with pathologic lymph node-positive (pN1) and (pN2) NSCLC (Quality Improvement)	4.5	85%	100%
Surgery is not the first course of treatment for cN2, M0 lung cases (Quality Improvement)	4.5	85%	75% (6/8 total cases)

**Most recent data available from the Commission on Cancer*

dedicated to serving our patients. We again overall 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.

FIGURE 11 Legacy Health Colorectal and Gastric Performance Measures, Commission on Cancer (CoC) Cancer Program Practice Profile Report (CP3R)

Select measures	CoC standard	CoC benchmark	Legacy 2015* performance
At least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer (Quality Improvement)	4.5	85%	96.0%
Adjuvant chemotherapy is recommended or administered within 4 months (120 days) of diagnosis for patients under the age of 80 with AJCC stage III (lymph node positive) colon cancer (Accountability)	NA	NA	95%
Preop chemotherapy and radiation are administered for clinical AJCC T3N0, T4N0, or stage III; or postop chemo and radiation are administered within 180 days of diagnosis for clinical AJCC T1-2N0 with pathologic AJCC T3N0, T4N0, or stage III; or treatment is recommended; for patients under the age of 80 receiving resection for rectal cancer (Quality Improvement)	4.5	85%	100%
At least 15 regonal lymph nodes are removed and pathologically examined for resected gastric cancer (Quality Improvement)	4.5	80%	100%

**Most recent data available from the Commission on Cancer*

Legacy Cancer Data Management

By Veronica Redd, certified tumor registrar, Legacy Cancer Data Management

The field of cancer data management is one of continual change, evolving in parallel with the most current advances in cancer diagnosis, cancer staging and personalized targeted cancer treatment.

As an integral component of Legacy Cancer Institute (LCI), the Cancer Data Management (CDM) Department is responsible for accurate and timely data collection and reporting. Quality and timely cancer data is vital for clinicians and researchers to be able to develop new clinical trials and targeted treatments that improve patient outcomes and survival.

Legacy Cancer Institute is an Integrated Network Cancer Program (INCP) accredited by the American College of Surgeons (ACS) Commission on Cancer (CoC), accessioning over 2,800 newly diagnosed cancer cases in 2017 and conducting yearly follow-up on cancer patients diagnosed or treated at LCI since 1997. Our institute was the first accredited INCP in the nation and a proud recipient of the CoC Outstanding Achievement Award for the past three consecutive survey cycles.

We are also proud to maintain National Accreditation Program for Breast Centers (NAPBC) accreditations at our breast health centers located at Legacy Good Samaritan, Legacy Meridian Park, Legacy Mount Hood and Legacy Salmon Creek medical centers.

In 2017, the field of cancer data management, along with the Commission on Cancer, American Joint Commission on Cancer (AJCC), Surveillance, Epidemiology and End Results (SEER), National American Association of Cancer Registries (NAACCR), and the National Cancer Registrar's Association (NCRA) collaborated to bring about new, extensive and exciting changes to take effect in 2018. The national changes will integrate the latest in evidence-based cancer staging and treatment to continue to support clinicians and scientists in the battle against cancer.

In preparing for the changes going into effect in 2018, education is critical and therefore a top

priority of the Legacy CDM team. The team has been diligently preparing by attending a host of site-specific training webinars, local workshops and conferences, and team training sessions.

Three of our certified tumor registrars (CTR) — Mindy Ansteth, manager, Melanie Tolan-Hudson and Heather Posthuma — attended the 2017 NCRA conference in Washington, D.C. These annual national conferences are essential to staying abreast of all the changes within the field, obtaining required education hours for the renewed CTR certifications and meeting the CoC and NAPBC continuing education requirements for the LCI cancer program accreditations.

In 2017, three Legacy physicians hosted educational webinars through the NCRA. I want to recognize and thank Janice Olson, M.D., MHA, pediatric oncologist; Yassmine Akkari, Ph.D., FACMG, cytogenetics and molecular pathologist; and Colleen McCormick, M.D., MPH, gynecologic surgical oncologist, for their expertise on topics related to pediatric and gynecologic cancer anatomy and staging, and laboratory evaluation of pediatric cancers.

The CDM team continued to be active in the Oregon Cancer Registrar's Association (OCRA). I attended the 2017 OCRA Fall Workshop in Medford, where I was honored to be nominated as secretary on the executive committee for 2018. Serving in that position will allow me to collaborate with other CDM professionals across Oregon and make a positive impact on the quality of cancer registry data collected in the state.

We are proud to share that Dawn Cox, CTR Lead, was asked to participate on the NCRA advanced education committee to make a positive impact on a national level, and also that a member of our team, Molly Sengvongxay, received her CTR certification in 2017.

Other members of the 2017 CDM team include Lorraine Colwell, CTR; Catherine Gunn, CTR; Katherine Fulcher, CTR; Alyssa Lapeyri, MBA, CDM tech; Susan Malone, B.S., CDM tech; Heather Posthuma, CTR; Jessica Scheper, B.S., office assistant; Melania Tolan Hudson, B.S., CTR; and Mindy Ansteth, B.S., CTR, manager.

Publications 2017

Walcott-Sapp S, Johnson N, and Garreau J. Integrative Services Help Cancer Patients Maintain Work Schedule During and After Treatment. Currently in press, accepted for publication by *American Journal of Surgery*.

Sutton T, Johnson N, and Garreau J. Mammographic Screening in Women Under 50: Low-Risk is Not Protective. Currently in press, accepted for publication by *American Journal of Surgery*.

Kupfer P, Cheng A, Patel AA, Amundson M, Dierks EJ, Bell RB. Virtual Surgical Planning and Intraoperative Imaging in Management of Ballistic Facial and Mandibular Condylar Injuries. *Atlas Oral Maxillofacial Surgery Clinics of North America*. 2017 Mar;25(1):17–23.

Feng Z, Bethmann D, Kappler M, Ballesteros-Merino C, Eckert A, Bell RB, Cheng A, Bui T, Leidner R, Urba WJ, Johnson K, Hoyt C, Bifulco CB, Bukur J, Wickenhauser C, Seliger B, and Fox BA. Multiparametric immune profiling in HPV-negative oral squamous cell cancer. *JCI Insight*, June 2017.

Khatib B, Gelesko S, Amundson M, Cheng A, Patel A, Bui T, Dierks E, Bell R. Updates in Management of Craniomaxillofacial Gunshot Wounds and Reconstruction of the Mandible in *Trauma in Facial Plastic Surgery*, an issue of *Facial Plastics Clinics of North America*. 2017; 563–576.

Westhoff GL, Chen Y, Teng NNH. Targeting FOXM1 Improves Cytotoxicity of Paclitaxel and Cisplatinum in Platinum-Resistant Ovarian Cancer. *International Journal of Gynecological Cancer*. 2017 Oct; 27(8):1602–1609. doi: 10.1097/IGC.0000000000001063.

Community involvement 2017

Community events

March

Breast Cancer Issues (Komen)

June and November

Healing through the Arts: Painting and poetry presentations at Legacy Good Samaritan Medical Center

July

St. Baldrick's Day (pediatric cancer awareness)

September

Gynecologic Cancer Awareness Month activities at Legacy Good Samaritan, Legacy Meridian Park, Legacy Mount Hood and Legacy Salmon Creek medical centers, with community screening of the film "N.E.D."

October

"Making Strides" Walk (American Cancer Society)

"Worship in Pink" breast cancer awareness and screening promotion (Susan G. Komen)

"Light the Night" Walk (Leukemia & Lymphoma Society)

Prevention and screening education and activities

March

Colorectal cancer awareness and screening promotion activities for employees and visitors at Legacy Good Samaritan, Legacy Meridian Park and Legacy Mount Hood medical centers

"Meals that Heal" talk on cancer-fighting foods with American Cancer Society at Whole Foods

October

Breast cancer awareness activities and education for employees and visitors at Legacy Meridian Park, Legacy Good Samaritan, Legacy Mount Hood and Legacy Salmon Creek medical centers

Evening breast health education and mammogram event at Legacy Good Samaritan Medical Center

Ongoing

Lung cancer screening program for high-risk individuals

Tobacco cessation counseling for those in lung screening program

Periodic Saturday after-hours screening colonoscopies at Legacy Meridian Park and Legacy Mount Hood medical centers

Periodic mammogram promotion with on-site appointment scheduling at Legacy Salmon Creek, Legacy Meridian Park and Legacy Good Samaritan medical centers

Ongoing groups and classes for cancer patients

Support groups

Brain Tumor Support Group

Breast Cancer Support Groups

Gynecological Cancer Support Group

Head and Neck Cancer Support Group

Lymphedema Support Group

Prostate Cancer Support Group

Expressive arts

Expressions of Healing: Art and Community

Felting Workshop

Finding Center: Art Making for Mindfulness and Stress Reduction

Gardening Workshop for Individuals with Cancer

Words for Healing

Mind/Body classes

Meditation for cancer patients, caregivers and family members

Mindfulness Meditation

Movement and exercise classes

Bodies in Balance

Pilates for Individuals with Cancer

Qigong for Individuals with Cancer

Step into Fitness: Healthy lifestyle program

Yoga for Individuals with Cancer

Outreach via social media

The Legacy Community Relations and 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. Facebook posts, often related to cancer awareness months, aim to engage and motivate readers toward healthy behaviors.

Professional education activities 2017

Conferences and courses

March

Medical Treatment for Brain Tumors seminar (OHSU Knight–Legacy Health Cancer Collaborative)

April

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

Northwest Marrow Transplant Program: Stem Cell Transplantation Biennial Conference

33rd Annual Seminar for Radiation Oncology Professionals

June and November

Dental Education Series/Study Club

September

Risk-reduction Strategies for Hereditary Breast and Ovarian Cancer Syndrome

October

13th Annual Pacific Northwest Excellence in Gynecological and Breast Cancer Care

Grand Rounds (CME) topics

Legacy Good Samaritan oncology

Current Management of Glioblastoma

Integrative Care: Chemotherapy-Induced Peripheral Neuropathy

Colonoscopy: The Scopes Awaken!

Oral/Head and Neck Oncology: Multidisciplinary Approach

Integrative Care: Death with Dignity Act in Practice

Next Generation Tumor Genetic Testing at Legacy Health

Hyperbaric Oxygen Therapy for Chronic Radiation Tissue Injury

Immunotherapy for Genitourinary Malignancies

Targeted Therapy and Gynecologic Oncology

Young Women with Breast Cancer

Recognizing and Meeting the Unique Psychological and Psychosocial Needs of Cancer Survivors

Legacy Emanuel OB/GYN education

In HPV We Trust

Molecular Diagnosis in Endometrial Cancer: Is Pathology Obsolete?

Make America Great (at screening) Again

Management of Adnexal Masses in Pregnancy

In Case You Thought the Pap Smear Was Dead

Legacy Meridian Park primary care

Biologics: Friend or Foe?

Lung Nodules and Lung Cancer Screening Updates

Legacy Good Samaritan ophthalmology

Early Detection of Uveal Melanoma

The Vancouver Clinic: All-Provider Meeting

Colon Cancer Screening and Detection

Smoking Cessation

Cancer patient care conferences (tumor boards)

Brain/CNS Tumors (Legacy Good Samaritan)

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

Gynecological Cancers (Legacy Good Samaritan)

Head and Neck Tumors (Legacy Good Samaritan)

Metastatic Breast Care (Legacy Good Samaritan)

Pediatric Oncology (Randall Children's Hospital)

Thoracic Tumors (Legacy Good Samaritan)

Urologic/Prostate Tumors (Legacy Good Samaritan)

Legacy Cancer Institute Network Cancer Committee members 2017

Primary

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

Jonathan Avery, president, Legacy Good Samaritan Medical Center

Sara Butler, LCSW, radiation oncology social worker, Legacy Good Samaritan Medical Center

Amy Carl, CPHQ, quality improvement consultant and coordinator, Legacy Cancer Institute, Legacy Hospice

Andrew Cox, M.D., interventional and diagnostic radiologist, Diagnostic Imaging NW, Legacy Good Samaritan Medical Center

Jennifer Garreau, M.D., coordinator, Cancer Conference, Legacy Good Samaritan Medical Center

Susan Gray, M.S., R.N., manager, Cancer Programs, Legacy Cancer Institute

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

Pam Kilmurray, director, Legacy Cancer Service Line, Breast Health Centers, Legacy Hospice, Legacy Cancer Institute

Jutta Kress, BSN, R.N., OCN, nurse educator and practice specialist, Legacy Cancer Institute

Katherine Leonard, Ph.D., psychologist, private practice

Ben Lunine, chaplain, Legacy Good Samaritan Medical Center

Tony Melaragno, M.D., vice president, Behavioral Health and Oncology, Legacy Health

Heather Mikes, D.O., Legacy Palliative Medicine Service, Legacy Salmon Creek Medical Center

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

Marci Reed, R.D., L.D., CSO, registered dietitian, Legacy Cancer Healing Center, Legacy Good Samaritan and Legacy Mount Hood medical centers

Kelly Rice, Pharm.D., pharmacist, Legacy Good Samaritan Medical Center

Alizah Rotramel, M.D., colorectal surgeon, Legacy Medical Group–Surgical Oncology, Legacy Good Samaritan Medical Center

Mark Schray, M.D., medical director, Legacy Medical Group–Radiation Oncology, Legacy Good Samaritan Medical Center

Ann Smith-Sehdev, M.D., anatomic and clinical pathologist, medical director, Anatomic Pathology, Legacy Salmon Creek and Legacy Good Samaritan medical centers

Leslie Sorenson, CCRP, manager, Cancer Research and Legacy Genetics Services, Legacy Cancer Institute

Paul Tseng, M.D., gynecologic oncologist, chair, Integrated Network Cancer Committee, Legacy Good Samaritan Medical Center

Therese Tuohy, Ph.D., CGC, genetics counselor, Legacy Genetics Services

Gail Weisgerber, P.T., manager, Legacy Rehabilitation Services, Legacy Good Samaritan Medical Center

Charlyn Wilson, R.N., BSN, coordinator, Community Outreach and Activity, Legacy Cancer Institute

Alternates

George Anadiotis, D.O., medical director, Pediatric Development and Rehabilitation, Randall Children's Hospital at Legacy Emanuel

Selma Annala, R.T., CLC, coordinator, Legacy Cancer Healing Center

Sallie Bowman, director, Spiritual Care, Legacy Good Samaritan Medical Center

Dawn Cox, CTR, registrar, Legacy Good Samaritan Medical Center

Kelly Doherty, MBA, OT/L, manager, Radiation Oncology and Legacy Cancer Healing Center, Legacy Good Samaritan and Legacy Salmon Creek medical centers, Legacy Cancer Healing Center

Samir Desai, M.D., medical oncologist, OHSU Knight Cancer Institute Community Hematology, Legacy Mount Hood Medical Center

Niani Dunner, coordinator, Legacy Cancer Healing Center

Leah Grotzinger, Pharm.D., BCOP, pharmacist, Legacy Good Samaritan Medical Center

Bryce Helgerson, president, Legacy Salmon Creek Medical Center

David Hughes, director, Clinical and Support Services, Legacy Meridian Park Medical Center

Lisa Justice, R.N., OCN, coordinator, clinical research

Misa Lee, M.D., radiation oncologist, Legacy Good Samaritan Medical Center

(continued)

Legacy Cancer Institute Network Cancer Committee members 2017 *(continued)*

Lynne Macmillan, P.T., manager, Acute Care and OP Rehabilitation, Legacy Mount Hood Medical Center

Laura Mahar, ANP, nurse practitioner, Legacy Palliative Medicine Service, Legacy Good Samaritan Medical Center

Lynda Nguyen, R.D., registered dietitian, Legacy Good Samaritan Medical Center

Joanne Ohanesian, LCSW, inpatient oncology social worker, Legacy Meridian Park Medical Center

Kevin Oyama, M.D., anatomic and clinical pathologist, Cascade Pathology, Legacy Meridian Park Medical Center

Cydney Sheley, MSN, R.N., coordinator, Stem Cell Transplant Program, Legacy Cancer Institute

Mika Sunago, M.S., R.N., OCN, manager, Oncology and Surgical Specialties, Legacy Good Samaritan Medical Center

Tamara Telles, manager, American Cancer Society

Henry Vea, M.D., diagnostic radiology, Diagnostic Imaging NW, Legacy Emanuel Medical Center

Joan Wendel, R.N., MSN, CBCN, AOCNS, nurse navigator, Legacy Good Samaritan Medical Center

Joe Yoder, director, Clinical and Support Services, Legacy Salmon Creek Medical Center

Medical directors and invited guests

Cynthia Aks, D.O., FACOS, breast surgeon, Legacy Mount Hood Medical Center

Reza Antoszewska, NP-C, nurse practitioner, Legacy Cancer Healing Center, Legacy Good Samaritan and Legacy Salmon Creek medical centers

Alivia Cetas, M.D., FACS, surgeon, medical director, Breast Health Center, Legacy Meridian Park Medical Center

Allen Cheng, M.D., DDS, medical director, Head and Neck Oncology Program, Legacy Good Samaritan and Legacy Emanuel medical centers, Head and Neck Surgical Associates

Brett Evetts, M.D., surgeon, medical director, Colon and Rectal Oncology Program, Legacy Meridian Park Medical Center

Jordan Fein, M.D., medical director, Lung Cancer Program, Legacy Good Samaritan Medical Center

Joe Frankhouse, M.D., FACS, surgeon, medical director, Colon and Rectal Oncology Program, Legacy Good Samaritan Medical Center

Ashok Modha, M.D., surgeon, medical director, Neuro Oncology Program, Legacy Good Samaritan and Legacy Salmon Creek medical centers, Rebound Orthopedics and Neurosurgery

Janice Olson, M.D., MHA, medical director, Children's Cancer and Blood Disorders Program, Randall Children's Hospital at Legacy Emanuel

Gerald Segal, M.D., medical director, Autologous Stem Cell Transplant Program, Legacy Good Samaritan Medical Center, Compass Oncology

William Winter, M.D., medical director, Legacy Medical Group–Gynecologic Oncology, Legacy Good Samaritan Medical Center and Beaverton

Subcommittees of the Integrated Network Cancer Committee

Cancer Data Management Quality Committee

Cancer Quality Advisory Council

Cancer/Public Professional Education and Marketing Council

Cancer Program and Quality Committees

Breast Program Leadership Committees at Legacy Good Samaritan, Legacy Meridian Park, Legacy Mount Hood and Legacy Salmon Creek medical centers

Cancer Healing Center/Integrative Cancer Quality Committee

Cancer Support Services Meeting

Center for Colorectal Cancer at Legacy Good Samaritan Medical Center

Central Nervous System Program Development

Colorectal Cancer System-wide Quality and Operations Meeting

Gynecologic Oncology Program Development

Head and Neck Program Development

Hospice Quality (QAPI)

Lung Cancer Screening Meeting

Radiation Oncology Quality Committee

Thoracic Program Development

Honors and accreditations 2017

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 three 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. Patients can receive the same award-winning care at any of our campuses, closer to home.

The breast health centers at Legacy Good Samaritan, Legacy Meridian Park, Legacy Mount Hood and Legacy Salmon Creek medical centers 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.

Honors and accreditations 2017

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

Nathalie Johnson, M.D., FACS, Oregon History Maker Award recipient 2017, Oregon Historical Society

Legacy Oncology Clinical Research — Received approval for NRG Oncology research group main membership

Legacy Oncology Clinical Research — Recognized by National Cancer Institute leadership in 2017 as a high performing site based on accrual

Legacy Medical Group — Recipient of Excellence in Colon Cancer Screening awarded by CareOregon Steering Committee

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 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.

Legacy Cancer Institute

503-413-8050

www.legacyhealth.org/cancer

LEGACY HEALTH

LEGACY CANCER INSTITUTE