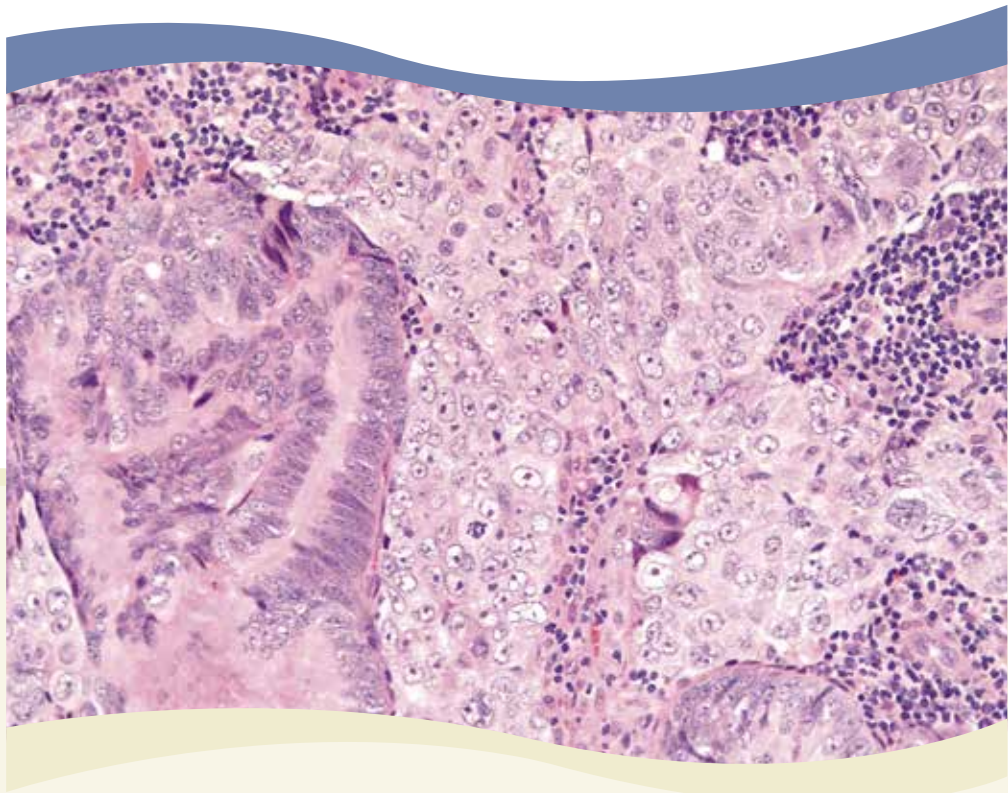


# Legacy Cancer Institute Annual Report 2016 Gynecologic cancer



Legacy Cancer Institute



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

*Cover image: Dedifferentiated carcinoma of the endometrium (hematoxylin and eosin, 200x). Mixed endometrioid carcinoma (left) and undifferentiated carcinoma (right). Mixed endometrioid-undifferentiated (dedifferentiated) carcinomas may be associated with Lynch syndrome. Dedifferentiated carcinomas are aggressive tumors; 50 percent present at advanced stage and lymph node spread is common.*

## Legacy's Center for Women's Cancers: Keeping ahead of pace in an ever-changing world

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

Technology, genetics, immunotherapy, personalized therapies and medical politics — who can keep up? Over the past several years we have



been barraged with emerging changes in screening recommendations and treatments. This has been very prevalent in the world of women's cancers. So many of us remember the recommendation for yearly screening pelvic exam with

Pap smear and mammogram. With the advent of higher-level testing rooted in understanding the strains of human papillomavirus (HPV) associated with cervical cancer, this yearly recommendation has changed.

Now, instead of yearly screening, some women are told not to come back for five years if they are in a monogamous relationship and have a result that is negative for one of the high-risk strains of HPV. In addition, the recommendations for mammography have changed. It is hard for most people to keep this straight, with some asking if they should be seen every other year, annually, or not at all.

Unfortunately, we are beginning to see many women not being screened well due to confusion. With the wide gaps in screening recommendations, there has also been a drop in routine care as many women came in for screening. Without the need to screen, they are not coming in to have blood pressure and cholesterol monitored even though these tests are also important. Cervical cancer was almost a historic disease, but there has been a resurgence due to missed screening. We may begin to see this creep of more advanced disease into other body sites where cancer is common in women, as in the uterus, ovary/fallopian tube and breast.

Let's understand the impact of cancer on women in our population. It is the second leading cause of

death in women in this country, with heart disease accounting for 22.3 percent and cancer a close second at 21.6 percent. The next closest is chronic lung disease at 6 percent (CDC, 2014). We are making advances in the treatment of ovarian/fallopian tube, uterine and cervical cancer. However, prevention or early detection are far better options. In this report, you will read about the amazing technology that is being brought to bear on these diseases.

In addition, you will learn about the explosion of genomic evaluation of tumors and genetic testing that are deepening our understanding of the diseases as well as improving our ability to prevent them. You will find out that uterine cancer can be a genetically inherited risk but is also associated with obesity. These are factors that can help us to prevent the disease. This is also true of ovarian/fallopian tube cancer. We now understand that there are many other genetic aberrations besides *BRCA1* and *BRCA2* that place women at risk for this disease.

Research is continuing at a fast and furious pace as we understand so much more at a molecular level. This is stimulating the advancement of more personalized approaches to care of more advanced disease as well.

We are very proud of the services offered through the Legacy Center for Women's Cancers that extend far beyond the diseases to support our patients completely. We now use the term "resilience" — taking patients through treatment that maybe difficult physically, emotionally and spiritually but having them emerge on the other side restored. You will also learn of the incredible array of services that help return patients to life and that support those who will end up living with disease or succumbing to it. These are all facets of care and all tenderly cared for through the components of our program. The Legacy Center for Women's Cancers is where healing, heart and hope are one.

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

## Comprehensive cancer services

For more information about our services, please visit [legacyhealth.org/cancer](http://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  
 Oral, head and neck cancer  
 Hepatobiliary and pancreatic cancer  
 Kidney cancer  
 Lung cancer  
 Melanoma  
 Prostate cancer  
 Stomach cancer

### 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

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

## Legacy Cancer Institute overview: Highlights from 2016

By Kathryn Panwala, M.D., radiation oncologist, chair, Integrated Network Cancer Committee, Legacy Cancer Institute

As the 2016 Legacy Integrated Network Cancer Committee (INCC) Chair, I am proud to share the accomplishments and achievements of Legacy



Cancer Institute for 2016. For the third consecutive accreditation survey cycle, Legacy Cancer Institute was awarded the American College of Surgeons (ACS) Commission on Cancer (CoC) Outstanding Achievement Award (OAA). The OAA recognizes cancer programs that strive for excellence in demonstrating compliance with the CoC standards and are committed to ensuring high quality cancer care.

In addition, all Legacy Breast Health Centers (at Legacy Good Samaritan, Meridian Park, Mount Hood and Salmon Creek medical centers) were granted re-accreditation from the ACS National Accreditation Program for Breast Centers (NAPBC). With NAPBC accreditation, patients can be assured that Legacy is held to the highest standards of care for patients with diseases of the breast. The Legacy Emanuel and Legacy Medical Group–St. Helens clinics are included under the Legacy Good Samaritan NAPBC accreditation umbrella.

Legacy made significant strides in accomplishing several clinical and programmatic goals for 2016. The clinical goals identified by the INCC included adding supportive services across all Legacy campus sites, to increase access to genetic counselors and testing, developing a high-risk genetic program and building a strong pre-habilitation program at Legacy Good Samaritan, Meridian Park and Salmon Creek medical centers (with a plan to extend to the Legacy Mount Hood campus). The programmatic goals included developing a head and neck oncology program and neuro-oncology program centered at Legacy Good Samaritan, building the hepatobiliary and pancreatic program at Good Samaritan, initiating a medical oncology cancer collaborative program at Legacy Salmon Creek and expanding the Legacy Mount Hood breast program and tumor bank services at Mount Hood and Salmon Creek.

A prime focus of Legacy Cancer Institute was to expand supportive services at each facility based on a GAP analysis to assess the needs. Services evaluated included social work, dietary services, patient fitness programs, genetics and integrative health that included yoga and art therapy. Physicians can now initiate a social services assessment referral that prompts the use of the NCCN distress thermometer and in high needs patients, a full assessment of needs including stress management, dietary and exercise needs, art therapy and spirituality, as well as evaluation by Legacy survivorship and integrative care for additional services or resources. Reza Antoszewski, NP-C, Legacy survivorship and integrative care, began seeing patients on the Legacy Mount Hood Medical Center campus in the fall of 2016, allowing for critical access to these services for East County residents.

The goal to ensure patients were appropriately screened and counseled for potential genetic conditions and to develop a “high-risk” program at Legacy was completed this year with the hiring of Therese Tuohy, Ph.D., board-certified geneticist. Dr. Tuohy spearheads a weekly genetic conference to review and standardize patient risk assessments and counseling across all Legacy sites. Additional personnel were trained for genetic counseling under the City of Hope training program, including Margie Glissmeyer, PA-C, and Jun Ma, N.P., Ph.D., with plans for Cynthia Aks, M.D., and Gina Westhoff, M.D., to complete training in 2017. Legacy achieved a 280 percent increase in patients undergoing genetic counseling, and a 129 percent increase in genetic testing being performed at Legacy in 2016.

The building of a cancer pre-habilitation program at Legacy Salmon Creek, Meridian Park and Good Samaritan medical centers has continued with trials being conducted with colorectal and urogynecological patients. The goals of the program include a complete evaluation and intervention designed to obtain a baseline status and treat pre-existing impairments or improve patients’ pain or functional limitations prior to initiating cancer treatments. This helps to reduce cancer complications and improve

physical and psychological health of patients. A plan is in place to expand this program to Legacy Mount Hood Medical Center.

Legacy Cancer Institute continues to strive for excellence in providing comprehensive cancer care for our patients. Legacy Good Samaritan developed both a head and neck oncology program and neuro-oncology program, as well increased services for its hepatobiliary/pancreas program. Tumor boards and interdisciplinary program planning meetings are occurring regularly on the Legacy Good Samaritan campus to continue to develop these programs for our patients.

Legacy Breast Health Center—Mount Hood expanded this year to include a second admission space, additional seating in the waiting area, three

new larger ultrasound rooms better designed for procedures, a larger stereotactic procedure room and improved work spaces for radiologists and nurses. This construction was completed in May of 2016. Additionally, tumor bank services were expanded at Legacy Salmon Creek and Legacy Mount Hood medical centers to include both fresh and paraffin-embedded specimens. Specimen accrual goals were met at all facilities in 2016. Legacy Salmon Creek infusion services were transitioned to Oregon Health & Sciences University and a cancer care collaborative was established at Legacy Salmon Creek. Beacon integration of infusion facilities will allow for the standardization of procedures across the network, facilitating greater provider access to patient information.

## Legacy Health 2016 site analysis: Gynecologic cancer

By Paul Tseng, M.D., director, Women's Services, Legacy Cancer Institute, MIGS Fellowship director, Legacy GME

In Oregon, an estimated 1,000 women will be diagnosed each year with an invasive cervical, ovarian or uterine cancer (Oregon State Cancer Registry,



Oregon Cancer Incidence by Site, Sex and Year 2007–11). Similarly, an estimated 1,700 women a year will be diagnosed in Washington (Washington State Cancer Registry, Cancer by Site Year 2013). Invasive uterine cancer (corpus uteri)

was among Legacy's six most common cancers in 2016 (see Figure 2, *Top six cancer sites 2016*, page 6). Also among the six most common cancer sites in 2016 were breast, prostate, lung/bronchus, colon/rectum and bladder/urethra cancer.

A total of 2,679 new cancer patients were diagnosed and/or treated with first course of treatment at Legacy Cancer Institute (LCI) in 2016, of which 272 patients were diagnosed with a gynecologic cancer (see Figure 1, *Primary cancer sites, Legacy Health 2016*, page 5). The age distribution at diagnosis at Legacy is in line with the most recent data published by the Commission on Cancer's (CoC) National Cancer

Data Base (NCDB) (see Figure 3, *Gynecologic cancer sites by age at diagnosis*, page 6).

Fortunately, the state of Oregon has demonstrated a continued commitment to the breast and cervical cancer screening program initiated in the early 1990s, and Legacy Health has made it a priority to develop health care transformation initiatives throughout the system and in our communities. Regular screening combined with ongoing patient education is key to early diagnosis, treatment and survival.

In 2016, a group of highly specialized gynecologic oncology surgeons joined Legacy Health, adding to the depth and breadth of gynecologic cancer expertise available to our patients. Providing expert opinions and specialized treatment options is essential for our patients. Legacy diagnosed and treated 39 percent of our gynecologic cancer cases in 2016. Patients diagnosed elsewhere and then treated at Legacy represented 57 percent of all cases. A very small percentage of patients were diagnosed at Legacy with all treatment provided elsewhere (4 percent) (see Figure 4, *Gynecologic treatment migration 2016*, page 6). We are incredibly

FIGURE 1 Primary cancer sites, Legacy Health 2016, all ages

Primary site	Emanuel		Good Samaritan		Meridian Park		Mount Hood		Salmon Creek		Legacy Health	
	Patient count	Percentage of total	Patient count	Percentage of total	Patient count	Percentage of total	Patient count	Percentage of total	Patient count	Percentage of total	Patient count	Percentage of total
Anus/anal canal	1	0.4%	7	0.6%	4	1.0%	4	1.3%	2	0.4%	18	0.7%
Bladder/urethra/other urinary organs	11	4.5%	55	4.6%	28	6.8%	29	9.5%	42	8.1%	165	6.2%
Bone/joints/articular cartilage	0	0.0%	1	0.1%	0	0.0%	0	0.0%	0	0.0%	1	0.04%
Brain/other nervous system	27	11.1%	20	1.7%	11	2.7%	11	3.6%	20	3.8%	89	3.3%
Breast	0	0.0%	298	24.8%	111	27.1%	54	17.7%	89	17.1%	552	20.6%
Cervix	0	0.0%	20	1.7%	2	0.5%	6	2.0%	2	0.4%	30	1.1%
Colon	1	0.4%	35	2.9%	29	7.1%	40	13.1%	43	8.3%	148	5.5%
Corpus uteri	2	0.8%	137	11.4%	4	1.0%	2	0.7%	23	4.4%	168	6.3%
Esophagus	0	0.0%	6	0.5%	3	0.7%	3	1.0%	4	0.8%	16	0.6%
Eye/orbit	0	0.0%	2	0.2%	0	0.0%	0	0.0%	0	0.0%	2	0.1%
Gallbladder	0	0.0%	1	0.1%	0	0.0%	2	0.7%	1	0.2%	4	0.1%
Hodgkin's lymphoma	0	0.0%	3	0.3%	0	0.0%	1	0.3%	0	0.0%	4	0.1%
Kidney/renal pelvis/ureter	19	7.8%	54	4.5%	12	2.9%	9	3.0%	51	9.8%	145	5.4%
Larynx	2	0.8%	2	0.2%	1	0.2%	2	0.7%	4	0.8%	11	0.4%
Leukemia	22	9.0%	15	1.3%	10	2.4%	6	2.0%	5	1.0%	58	2.2%
Liver/Intrahepatic bile duct	8	3.3%	9	0.8%	9	2.2%	5	1.6%	5	1.0%	36	1.3%
Lung/bronchus	27	11.1%	114	9.5%	32	7.8%	29	9.5%	51	9.8%	253	9.4%
Melanoma (in situ and malignant)	3	1.2%	59	4.9%	8	2.0%	3	1.0%	9	1.7%	82	3.1%
Mesothelioma	0	0.0%	1	0.1%	0	0.0%	1	0.3%	0	0.0%	2	0.1%
Myeloma	0	0.0%	1	0.1%	3	0.7%	1	0.3%	3	0.6%	8	0.3%
Non-Hodgkin's lymphoma	7	2.9%	28	2.3%	20	4.9%	17	5.6%	17	3.3%	89	3.3%
Nose/nasal cavity/middle ear	2	0.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	0.1%
Oral cavity/pharynx	12	4.9%	22	1.8%	4	1.0%	7	2.3%	11	2.1%	56	2.1%
Other biliary	0	0.0%	1	0.1%	2	0.5%	1	0.3%	1	0.2%	5	0.2%
Other digestive organs	0	0.0%	3	0.3%	0	0.0%	0	0.0%	1	0.2%	4	0.1%
Other gynecologic sites	0	0.0%	14	1.2%	0	0.0%	1	0.3%	3	0.6%	18	0.7%
Other skin	0	0.0%	2	0.2%	0	0.0%	2	0.7%	1	0.2%	5	0.2%
Ovary	1	0.4%	28	2.3%	2	0.5%	0	0.0%	0	0.0%	31	1.2%
Pancreas	9	3.7%	21	1.8%	18	4.4%	8	2.6%	17	3.3%	73	2.7%
Penis	0	0.0%	2	0.2%	0	0.0%	0	0.0%	0	0.0%	2	0.1%
Prostate gland	37	15.2%	148	12.0%	37	9.0%	27	8.9%	64	12.3%	313	11.7%
Rectum/rectosigmoid junction	2	0.8%	23	1.9%	16	3.9%	10	3.3%	6	1.2%	57	2.1%
Retroperitoneum/peritoneum	0	0.0%	2	0.2%	0	0.0%	0	0.0%	0	0.0%	2	0.1%
Small intestine	2	0.8%	5	0.4%	3	0.7%	2	0.7%	2	0.4%	14	0.5%
Soft tissue	3	1.2%	4	0.3%	3	0.7%	3	1.0%	1	0.2%	14	0.5%
Stomach	1	0.4%	10	0.8%	5	1.2%	5	1.6%	2	0.4%	23	0.9%
Testis/spermatic cord	7	2.9%	5	0.4%	6	1.5%	1	0.3%	5	1.0%	24	0.9%
Thyroid/other endocrine glands	32	13.1%	13	1.1%	19	4.6%	4	1.3%	24	4.6%	92	3.4%
Trachea/mediastinum	1	0.4%	0	0.0%	1	0.2%	0	0.0%	0	0.0%	2	0.1%
Vulva/vagina	0	0.0%	17	1.4%	0	0.0%	2	0.7%	6	1.2%	25	0.9%
Other/ill-defined sites	5	2.0%	12	1.0%	7	1.7%	7	2.3%	5	1.0%	36	1.3%
<b>Grand total</b>	<b>244</b>	<b>100%</b>	<b>1,200</b>	<b>100%</b>	<b>410</b>	<b>100%</b>	<b>305</b>	<b>100%</b>	<b>520</b>	<b>100%</b>	<b>2,679</b>	<b>100%</b>

**FIGURE 2 Legacy top six cancer sites 2016**

Primary site	Legacy Emanuel	Legacy Good Samaritan	Legacy Meridian Park	Legacy Mount Hood	Legacy Salmon Creek	Legacy Health	Percentage of total analytics	American Cancer Society*
Breast	0	298	111	54	89	552	21%	249,260
Prostate	37	148	37	27	64	313	12%	180,890
Lung/bronchus	27	114	32	29	51	253	9%	224,390
Colon/rectum	3	58	45	50	49	205	8%	134,490
Corpus uteri	2	137	4	2	23	168	6%	60,050
Bladder/urethra	11	55	28	29	42	165	6%	76,960
<b>Total top six sites</b>	<b>80</b>	<b>810</b>	<b>257</b>	<b>191</b>	<b>318</b>	<b>1,656</b>	<b>62%</b>	<b>926,040</b>
<b>Percentage of total analytic cases†</b>	<b>3%</b>	<b>30%</b>	<b>10%</b>	<b>7%</b>	<b>12%</b>	<b>62%</b>	<b>—</b>	<b>55%</b>

\*American Cancer Society 2015 estimated new U.S. cancer cases

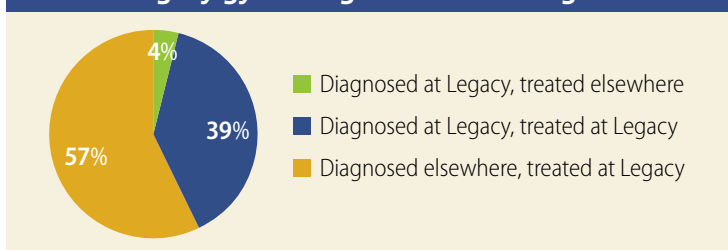
†Diagnosed and/or treated at Legacy Health

**FIGURE 3 Gynecologic cancer sites by age at diagnosis, Legacy 2016 vs. Commission on Cancer 2014\***

Age at diagnosis	Cervix		Corpus uteri		Ovary		Vulva/vagina		Other GYN sites		Percentage of total GYN sites	
	Legacy n=30	CoC n= 9,943	Legacy n=168	CoC n=42,490	Legacy n=31	CoC n=16,971	Legacy n= 25	CoC n=5,981	Legacy n=18	CoC n=2,382	Legacy n=272	CoC n=77,767
< 29	0%	6%	1%	0%	10%	3%	4%	1%	0%	3%	2%	2%
30–39	20%	19%	3%	3%	0%	4%	8%	4%	0%	3%	5%	5%
40–49	30%	25%	10%	8%	0%	11%	0%	11%	6%	8%	10%	11%
50–59	27%	23%	25%	27%	26%	23%	24%	21%	28%	20%	25%	25%
60–69	13%	15%	40%	36%	32%	27%	24%	23%	17%	30%	33%	30%
70–79	7%	8%	17%	18%	26%	20%	28%	20%	44%	24%	20%	18%
80–89	3%	3%	4%	7%	6%	10%	4%	15%	6%	10%	4%	8%
≥90	0%	1%	1%	1%	0%	2%	8%	4%	0%	2%	1%	1%

\*Most recent data available from the National Cancer Data Base

**FIGURE 4 Legacy gynecologic treatment migration 2016**



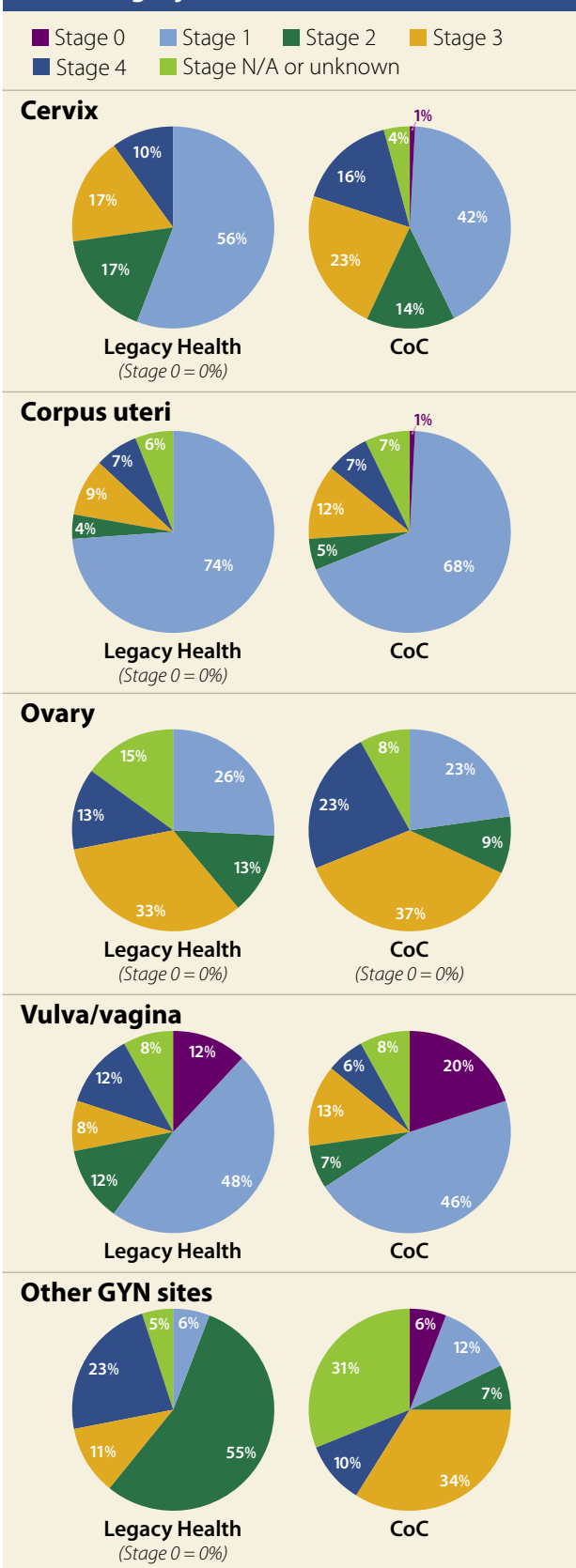


proud that 96 percent of all Legacy gynecologic cancer patients made the choice to receive all or a part of their first course cancer treatment at Legacy.

The AJCC major stage groups for gynecologic cancers at Legacy is also in line with the most recently published data from the CoC NCDB (see Figure 5, *AJCC major stage groups, gynecologic cancers, at right*). This also holds true for the first course treatment received by Legacy patients compared to the national CoC data. The one notable exception is vulvar/vagina diagnoses, which is explained by the referral of more early stage disease associated with surgically amenable treatment (see Figure 6, *First course of treatment, gynecologic malignancies, page 8*). Legacy continues to endorse and follow the National Comprehensive Cancer Network (NCCN) evidence-based treatment guidelines. The detailed gynecologic histology distribution of Legacy's 2016 cases compared to the national CoC data is provided in Figure 7, *Histology distribution of gynecologic cancer (see page 9)*.

Legacy hosts a robust city-wide multidisciplinary gynecologic oncology cancer conference twice a month at Legacy Good Samaritan Medical Center. Attendance includes representatives from Legacy surgery, medical oncology, radiation oncology, pathology and radiology, as well as other oncology experts from throughout our community. Each year, Legacy designates a primary and alternate attendee from each medical discipline to attend the conference, to ensure consistency in the attendance of our gynecologic experts to discuss the most appropriate treatment and management options for our patients. Oncology nurse navigators, oncology clinical researchers, geneticists and others also attend. The current list of gynecologic clinical trials is shared and discussed at the conference, as well as genetics, integrative care and social support services. The gynecologic cancer conference is an integral component of the gynecologic oncology program here at Legacy Health.

**FIGURE 5 AJCC major stage groups, gynecologic Legacy 2016 vs. CoC 2014\***



\*Most recent data available from National Cancer Data Base

**FIGURE 6 First course of treatment, gynecologic malignancies — Legacy 2016 vs. CoC 2014\***

	Cervix		Corpus uteri		Ovary		Vulva/vagina		Other GYN sites	
	Legacy	CoC	Legacy	CoC	Legacy	CoC	Legacy	CoC	Legacy	CoC
Radiation and chemotherapy	37%	32%	1%	0%	0%	0%	16%	29%	0%	1%
Surgery only	43%	31%	49%	58%	29%	19%	64%	17%	22%	18%
Radiation only	6%	6%	6%	2%	0%	0%	0%	18%	0%	1%
Surgery, radiation and chemotherapy	7%	14%	10%	11%	0%	1%	12%	8%	6%	1%
Surgery and radiation	3%	5%	18%	13%	0%	0%	4%	9%	0%	1%
Surgery and chemotherapy	0%	2%	11%	10%	70%	57%	0%	2%	71%	58%
Chemotherapy only	0%	4%	2%	1%	0%	12%	4%	4%	0%	9%
Surgery, radiation and hormone therapy	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Surgery and hormone therapy	0%	0%	1%	1%	0%	1%	0%	0%	0%	0%
Radiation, chemotherapy and hormone therapy	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hormone therapy only	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
No treatment	1%	5%	0%	4%	1%	9%	0%	11%	1%	10%
Other	0%	1%	0%	1%	0%	1%	0%	2%	0%	1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

\*Most recent data available from the National Cancer Data Base

**FIGURE 7 Histology distribution of gynecologic cancer cases — Legacy 2016 vs. CoC 2014\***

Histology	Cervix		Corpus uteri		Ovary		Vulva/vagina		Other GYN sites	
	Legacy n=30	CoC n=9,943	Legacy n=168	CoC n=42,490	Legacy n=31	CoC n=16,971	Legacy n=25	CoC n=5,981	Legacy n=18	CoC n=2,382
Adenocarcinoma, NOS	28%	16%	3%	5%	1%	11%	4%	2%	0%	11%
Adenocarcinoma, endocervical type	0%	4%	0%	0%	0%	0%	0%	0%	0%	0%
Adenosarcoma	0%	0%	1%	0%	3%	0%	0%	0%	0%	0%
Adenosquamous carcinoma	3%	3%	0%	0%	0%	0%	0%	0%	0%	0%
Basal cell carcinoma, NOS	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%
Basaloid squamous cell carcinoma	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%
Carcinosarcoma, NOS	0%	0%	2%	3%	3%	0%	0%	0%	10%	2%
Carcinoma, NOS	3%	2%	1%	1%	6%	6%	4%	4%	6%	8%
Choriocarcinoma, NOS	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%
Clear cell adenocarcinoma, NOS	3%	0%	2%	2%	0%	7%	0%	0%	6%	0%
Endometrioid adenocarcinoma, NOS	0%	4%	68%	0%	10%	0%	0%	0%	0%	0%
Endometrial stromal sarcoma, NOS	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Endometrioid carcinoma	0%	2%	0%	69%	0%	11%	0%	0%	0%	4%
Extramammary Paget's disease	0%	0%	0%	0%	0%	0%	1%	5%	0%	0%
Large cell neuroendocrine carcinoma	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Large cell, nonkeratinizing squamous cell carcinoma	0%	7%	0%	0%	0%	0%	0%	2%	0%	0%
Leiomyosarcoma, NOS	0%	0%	1%	2%	0%	0%	0%	0%	0%	0%
Malignant melanoma	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%
Mixed cell adenocarcinoma	0%	0%	13%	8%	3%	6%	4%	0%	0%	3%
Mucinous adenocarcinoma	0%	2%	0%	0%	10%	5%	0%	0%	6%	0%
Mullerian mixed tumor	0%	0%	0%	2%	0%	0%	0%	0%	0%	2%
Neoplasm, malignant	0%	0%	1%	0%	0%	4%	0%	0%	0%	3%
Papillary serous cystadenocarcinoma, NOS	0%	0%	0%	2%	3%	11%	0%	0%	0%	9%
Papillary squamous cell carcinoma	3%	0%	0%	0%	0%	0%	4%	0%	0%	0%
Pseudosarcomatous carcinoma	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%
Serous cystadenocarcinoma, NOS	0%	0%	7%	6%	58%	36%	0%	0%	72%	53%
Serous surface papillary carcinoma	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%
Small cell carcinoma	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%
Squamous cell carcinoma, keratinizing, NOS	3%	7%	0%	0%	0%	0%	12%	19%	0%	0%
Squamous cell carcinoma, NOS	54%	51%	0%	0%	0%	0%	67%	60%	0%	0%
Teratoma, malignant, NOS	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

\*Most recent data available from the National Cancer Data Base

## Gynecologic cancer screening

By Gina Westhoff, M.D., surgeon, Legacy Medical Group—Gynecologic Oncology

Of all the gynecologic cancers, only cervical cancer has a proven screening tool — the Pap smear — that can find the cancer early, which is when



treatment works best. The Pap smear can also find pre-cancers that can be effectively treated to prevent development of cervical cancer. The Pap smear has never been evaluated by a randomized, controlled clinical trial but observational data

shows a significant decrease in cervical cancer incidence and mortality.

After the widespread adoption of the Pap smear in the 1950s, the rate of cervical cancer decreased 70 percent by the mid-1980s, and both incidence and mortality have continued to decrease. However, more than half of the new cases of cervical cancer occur in women who have not had appropriate screening or who have never had a Pap smear, which means more work needs to be done.

Older women and those without access to health care are more likely to be under-screened. Strategies to increase screening include public health campaigns, clinic reminder systems or “pop-up” reminders when the patient seeks care at urgent care or the emergency room.

Recommendations for cervical cancer have recently changed, and it is recommended that Pap testing be initiated at age 21 regardless of sexual activity. Pap cytology alone should be repeated every three years until the age of 30. After age 30, Pap cytology and human papillomavirus (HPV) co-testing is recommended every five years.

If HPV testing is not available, screening with cytology alone every three years is another option. Co-testing leads to the detection of cervical abnormalities sooner, but also leads to increased rates of follow-up testing and has not been shown to improve mortality. HPV testing is not useful in women younger than age 30 because of high rates of clearance of the virus, and as a result, co-testing is not recommended to start until age 30.

Earlier initiation of screening and more frequent screening may be recommended in certain patients, for example those who are immunocompromised or exposed to diethylstilbestrol in utero.

Most cervical cancer is caused by HPV infection, and we also can decrease incidence and mortality through widespread adoption of the HPV vaccine.

HPV infection can also lead to vulvar and vaginal cancer, so HPV vaccination will also decrease the incidence and mortality of these more rare gynecologic cancers. There are currently three available HPV vaccines that protect against different strains of the HPV virus. All vaccines protect against HPV 16 and HPV 18, the two strains most commonly associated with cancer. There is one vaccine — Gardasil 9 — that protects against five other cancer-causing high-risk strains of HPV and also offers the most comprehensive protection against cervical, vaginal and vulvar pre-cancer and cancer.

However, widespread use of the vaccine in the United States has lingered with only 54 percent of females receiving at least one dose of the vaccine, as noted in a study from 2012. In that study, 84 percent of females had recent medical care that included receiving another vaccination, so access to care does not seem to explain low vaccination rates. Top reasons for not vaccinating include believing the vaccine was not needed, concern about vaccine safety, lack of knowledge about the vaccine and lack of sexual activity. Public health education and provider campaigns to increase HPV vaccination are other important steps to reduce the incidence of cervical, vulvar and vaginal cancers.

Uterine cancer is the most common gynecologic cancer, and the fourth most common cancer affecting women overall with almost the same number of new cases each year as colon cancer. Symptoms of uterine cancer include post-menopausal bleeding or abnormal uterine bleeding, including intermenstrual bleeding or bleeding after prolonged periods of amenorrhea. Risk factors for uterine cancer include exposure to unopposed estrogen, most commonly from obesity or anovulation, and this

hormonal dysregulation leads to irregular uterine bleeding. Patients with these risk factors or bleeding symptoms are at a high risk for uterine cancer and should be evaluated with a pelvic ultrasound or endometrial biopsy.

Routine screening of asymptomatic women at average risk is not advised, as there is no data to support the efficacy of screening to reduce uterine cancer mortality. Women with Lynch syndrome have a genetic syndrome that increases the lifetime risk of uterine cancer to 30–70 percent, compared to 3 percent in the general population, and these women should be followed with routine endometrial biopsy and risk-reducing hysterectomy when done with childbearing.

Ovarian cancer is the second-most common gynecologic cancer and is the leading cause of death from gynecologic cancer. At this time, there is no effective screening test for ovarian cancer. Screening women at average risk with pelvic ultrasound and/or Ca-125 has been the topic of many studies. At this time, the data do not consistently show reduction in mortality to offset the risks of screening. A new protocol using serial measurements of Ca-125 and an algorithm that incorporates a rate of change may improve the positive predictive value of screening, but the data are not yet sufficient to implement into general practice. The

strongest risk factor for ovarian cancer is family history. Approximately 10–20 percent of all ovarian cancers are inherited, and taking a thorough family history is recommended to evaluate patients who meet criteria for genetic testing.

*BRCA1* and *BRCA2* are the two most common genes which cause hereditary ovarian cancer, and the incidence of these mutations is 1 in 40 if Ashkenazi Jewish and 1 in 400 in the general U.S. population. Women with BRCA mutations have an overall lifetime risk of ovarian cancer between 30–40 percent, compared to 1.7 percent in the general population. By identifying women affected by hereditary cancer syndrome, risk reduction surgery can be recommended to remove the ovaries and fallopian tubes, which can decrease the risk of ovarian cancer to that of the general population, of around 2 percent. In addition, women with hereditary ovarian cancer syndrome are also candidates for screening pelvic ultrasound and Ca-125.

Because there is no other reliable way to screen for the majority of gynecologic cancers (ovarian, uterine, vulvar or vaginal), it is important to educate patients and primary care providers to recognize the symptoms and warning signs. Referral to gynecology is always welcome for further evaluation to ensure that appropriate screening and preventative counseling is performed.

## Endometrial cancer pathology and the role of tumor genetics in diagnosis, treatment and prognosis

By Ann Smith Sehdev, M.D., director, Anatomic Pathology, Legacy Laboratory Services

Endometrial cancer is the most common gynecological cancer in developed countries and the United States. Recent observations have confirmed



an increase in endometrial cancer incidence following the early termination of the Women's Health Initiative trial in 2002.

The increased incidence of endometrial cancer has resulted in renewed research efforts

looking at how to accurately classify endometrial cancers to consistently guide surgical and medical management while avoiding over and under treatment.

Historically, endometrial cancers have been divided into Type I and Type II tumors based primarily on histomorphology. Type I cancers are seen more commonly in obese women and are usually endometrioid type and hormone receptor positive. Type II cancers are diagnosed in older, thinner women, and are more likely to

have a non-endometrioid histology and are hormone receptor negative. Unfortunately, the use of histomorphology alone to accurately classify endometrial cancers is subjective and has limited reproducibility even among expert gynecologic pathologists. The subjectivity of diagnosis has led to inconsistent management and limited our ability to advance and improve patient care.

Recently, extensive work has been done looking at endometrial cancers using a genomic-based classification. The most comprehensive molecular study of endometrial cancer has been published by The Cancer Genome Atlas (TCGA) Research Network. TCGA looked at the molecular profile of endometrial cancers using whole genome sequencing, exome sequencing, microsatellite instability assays and copy number analysis and correlated the information with progression free survival.

Using this approach, TCGA identified four molecular subgroups of endometrial cancer: POLE ultra-mutated tumors, microsatellite mutated tumors, copy number high tumors with mostly *TP53* mutations and a remaining group without these alterations. Since the publication of TCGA findings, researchers have been working on developing diagnostic tools and methods to recapitulate TCGA classification system using clinically applicable methods available outside the research setting.

Researchers at the University of British Columbia developed the Proactive Molecular Risk Classifier for Endometrial Cancer (ProMisE) using routine immunohistochemistry for the detection of mismatch repair (MMR) protein expression and *TP53* mutations and Sanger sequencing to evaluate for

polymerase epsilon exonuclease domain mutations (POLE EDM).

The prognostic ability of ProMisE was compared with TCGA and current risk-stratification systems. After multivariable analysis, the ProMisE molecular subgroup assignment maintained the identification of four prognostic subgroups of endometrial cancer with similar clinicopathological characteristics.

The patients with mutations in *TP53* were older, non-obese women with high-grade non-endometrioid tumors. Patients with POLE EDM were younger women who on follow-up had a significantly favorable clinical outcome despite having aggressive pathologic features, including high-grade tumors, deep myometrial and lymphovascular invasion. Patients with MMR deficient tumors showed similar clinical characteristics as the POLE EDM group but had a worse clinical outcome.

The findings of the ProMisE trial show that molecular classification of endometrial cancers can be achieved using methods such as immunohistochemistry to provide prognostic information at the time of diagnosis without adding significant time and cost.

Currently at Legacy Health, all newly diagnosed endometrial cancers are tested for MMR protein expression and mutations in *TP53* if indicated. The feasibility of routine sequencing for POLE EDM is also being evaluated. Although there is still much work to be done to determine how to best incorporate molecular genetics into current clinical care, one can anticipate rapid progress over the next few years with a more personalized approach to tumor classification and patient management.

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## References

- Recent changes in endometrial cancer trends among menopausal-age US women. *Cancer Epidemiology* Vol 37, Issue 4, August 2013, pp 374–377
- Interobserver agreement in endometrial carcinoma histotype diagnosis varies depending on the cancer genome atlas (TCGA)-based molecular subgroup. *Am J Surg Pathol* 41 (2), 245–252. 2017
- Integrated genomic characterization of endometrial carcinoma. *Nature* 497, 67–73. 02 May 2013
- New classification of endometrial cancers: the development and potential applications of genomic-based classification in research and clinical care. *Gynecologic Oncology Research and Practice* 2016 3:14

## Genomics at Legacy Health

By Yasmine Akkari, Ph.D., FACMGG, scientific director, Cytogenetic Services and Molecular Pathology, Legacy Laboratory Services

It has been recently appreciated that cancer is not only a disease of accumulating genomic aberrations, but also an individual disease where patients will have a different cancer type with different



genomic changes driving the disease malignancy.

Although the concept of personalized medicine has been gaining track in the medical community, the idea of treating each patient in an individualized manner is as old as time.

Circa 350 B.C.E., Aristotle was quoted as having said, “So if someone . . . knows the universal without knowing the individuals contained in it, he will often fail in his treatment, for it is the individual who has to be treated.”

With the rapid advances of molecular technologies, we are now aiming to use molecular profiling using a wide range of techniques, including immunohistochemistry, fluorescence in situ hybridization and next generation sequencing to stratify cancer patients according to their disease prognosis, drug sensitivity and markers predictive of adverse events. This will ultimately allow administration of the most tailored therapy in an ultimate effort to increase the curability rate.

Cancer is not just one disease. It is a constellation of seemingly random and continuously changing genomic abnormalities that drives the cell to evade cycling checkpoints or DNA repair. For this reason, the “one size fits all” treatment protocols are not always successful, which in turn allows cancer cells to build resistance mechanisms and evade treatment. The oncology community has therefore been increasingly aware that the keys to successfully treat cancer are:

- Not to have it at all — and this is achieved with implementation of screening and surveillance programs
- To target it efficiently through personalized medicine

It is important to note that profiling the tumor genome, i.e., somatic genomic profiling, is not always sufficient. Testing that provides awareness that certain cancers can be inherited, i.e., germline testing, will not only provide more information about the family members at risk, but may, in many instances, drive appropriate therapy.

Therefore, the recognition of families or single individuals who present with an early age at diagnosis of cancer, multiple primary tumors, a constellation of tumors consistent with a specific cancer syndrome, e.g., breast and ovarian cancers, or evidence of an autosomal dominant transmission should prompt providers to test for germline mutations in cancer genes, thereby establishing appropriate screening and treatment for the patient and his/her family members.

The development of next-generation sequencing (NGS) — a technology that allows sequencing of multiple genes from multiple patients in a single workflow — has expanded our knowledge of specific molecular alterations that not only *initiate* but also *drive* tumor growth and metastasis. The information generated from this technology has informed diagnostic classification, therapy guidance, and has provided insights into the prognosis of the disease. In addition, NGS is the most efficient tool to analyze tumor genomes especially when standard chemotherapy is not successful.

Since health care delivery should be local and accessible to patients close to their homes, building an NGS program for tumor profiling at Legacy will provide an opportunity to serve the local community and treat the patient with targeted therapy. Moreover, since the completion of the Human Genome Project in 2003, we have become increasingly aware of benign sequence variations not only among individuals, but also across different ethnic and geographically isolated populations.

In addition, the rapid progress in disease gene identification and sequence data from cancer genomes have made this technology amenable

to clinical interpretation and advances in targeted therapies. The benefit from such a personalized medicine program will help eliminate trial and error inefficiencies in cancer testing and help decrease health care costs.

In considering the development of such a program, we have sought to broaden the scope of interdisciplinary tumor boards across the system to include molecular geneticists/pathologists and to further integrate molecular knowledge. In addition, we have established a testing methodology that is compatible with different specimen types, incorporates quality control metrics throughout the workflow to increase efficiency and offers a robust bioinformatics pipeline that can accommodate complex variant calling and interpretation. Finally, compliance with our regulatory agencies is a must for a successful and accurate operation.

In an effort to bring NGS in the most economical manner, we have sought a collaboration with a trusted vendor, QIAGEN, and became the beta-site for clinical tumor profiling of its new NGS workflow (GeneReader). To this end, we were also able to

contribute to the development of an “actionable” tumor panel that incorporate genes documented to be mutated in the five most prevalent cancers with the greatest health impact: breast, ovarian, colon, lung and melanoma. This “necessary and sufficient” pan-cancer panel permits batching of samples across multiple indications with resulting savings in cost and human labor.

The sequence reads generated by this workflow from each patient will be analyzed by a sophisticated bioinformatics pipeline (QIAGEN Clinical Insight) that provides variant calling and interpretation, in addition to references to supporting literature, interactions with approved drugs, and links to clinical trials offered within a close distance to the patient’s home location.

The Molecular Department at Legacy Laboratory Services is in the process of completing the validation of this test. It is expected to be available to our Legacy physicians in the summer of 2017. For more information about this program or other molecular testing, contact Dr. Yasmine Akkari at [yakkari@lhs.org](mailto:yakkari@lhs.org) or Stacie Lupo at [slupo@lhs.org](mailto:slupo@lhs.org).

## Genetics of gynecologic cancer

By Therese Tuohy, Ph.D., certified genetics counselor, Legacy Genetics Services

It is estimated that in the U.S. there were 95,320 new cases of gynecological cancer in 2016, and 28,830 deaths (see Figure 8, page 15). In Oregon, the estimates are that there were approximately 230 cases of ovarian cancer, 650 uterine cancers and 130 cervical cancers. While most uterine and cervical cancers are diagnosed when they are still localized, more than 60 percent of ovarian cancers have metastasized to distant sites by the time of diagnosis.<sup>1</sup>



After age, family history is the next highest risk factor for both ovarian and endometrial cancers,\* up to 5 percent of uterine cancers, most of them endometrial, are attributable to inherited causes.

Interestingly, BRCA1 is more associated with serous ovarian and serous-like endometrial cancer,<sup>2</sup> while Lynch syndrome is more associated with non-serous epithelial tumors.<sup>3,4</sup>

Over the last few years, the scope of genetic testing for inherited predisposition to gynecological cancers has vastly expanded from BRCA1/2 and Lynch syndrome genes (MLH1, MSH2, MSH6, PMS2 and EPCAM) to include multiple additional genes, whose roles in tumor suppression are still emerging. TP53, PTEN and STK11 are now well characterized as having increased risks for uterine and/or ovarian cancer.

Although not as high in risk, several additional genes are now known to be associated with increased risks for uterine and/or ovarian cancers: BRIP1, DICER, PALB2, PTEN, RAD51C, RAD51D and

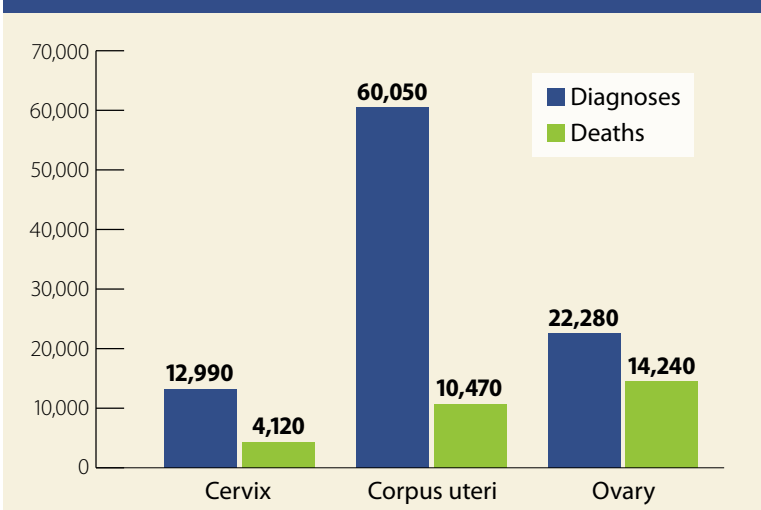


SMARCA4. Data continue to accumulate on the risk profiles of these genes, in parallel with the integration of panel testing into standard-of-care management.

Germline testing using blood or buccal samples continues to be the gold standard for assessing inherited risk for multiple types of cancer and is most effectively applied following established and continually revised professional guidelines designed to optimize specificity and sensitivity. However, although we can think of all cancer as being genetic, only a small proportion is due to inherited predisposition. Somatic testing of tumor tissues has emerged as a powerful tool to guide customized treatment that targets the altered genetic profiles that drive cancer.<sup>4</sup> (See the article by Ann Smith Sehdev, M.D., on page 11.) The two intersect when somatic testing incidentally reveals inherited mutations as well as those that are acquired with tumor progression.

In contrast to these broad and “deep dive” platforms, most direct-to-consumer testing offers a shallow sweep of mutations associated with moderate and mildly elevated risks for cancer and multiple other diseases. Some of these platforms include testing for both advertised high-risk mutations that are specifically reported and unadvertised high-risk mutations that can only be identified by individual patients evaluating the raw data.

**FIGURE 8 American Cancer Society gynecologic cancer estimates for 2016**



Many factors influence decisions about genetic testing for inherited cancer risk and risk-management strategies. Psychological factors that have been associated with testing uptake include cancer-specific distress and perceived risk of developing cancer. However, studies have shown low levels of distress after genetic testing for both carriers and non-carriers, particularly in the longer term, especially when provided in the context of personalized genetic evaluation and discussion of the results.

Communication about an inherited risk of breast and gynecologic cancer is complex; gender, age and the degree of relatedness are some elements that affect disclosure of this information. Research is ongoing to better understand and address psychosocial and behavioral issues in high-risk families.\*

## Endnotes

<sup>1</sup> Siegel RL, Miller KD, Jemal A. Cancer Statistics, 2017. *CA Cancer J Clin*. 2017 Jan;67(1):7–30.

<sup>2</sup> Shu CA, Pike MC, Jotwani AR, Friebel TM, Soslow RA, Levine DA, Nathanson KL, Konner JA, Arnold AG, Bogomolnij F, Dao F, Olvera N, Bancroft EK, Goldfrank DJ, Stadler ZK, Robson ME, Brown CL, Leitao MM Jr, Abu-Rustum NR, Aghajanian CA, Blum JL, Neuhausen SL, Garber JE, Daly MB, Isaacs C, Eeles RA, Ganz PA, Barakat RR, Offit K, Domchek SM, Rebeck TR, Kauff ND. Uterine Cancer After Risk-Reducing Salpingo-oophorectomy Without Hysterectomy in Women With BRCA Mutations. *JAMA Oncol*. 2016 Nov 1;2(11):1434–1440.

<sup>3</sup> Ketabi Z, Bartuma K, Bernstein I, Malander S, Grönberg H, Björck E, Holck S, Nilbert M. Ovarian cancer linked to Lynch syndrome typically presents as early-onset, non-serous epithelial tumors. *Gynecol Oncol*. 2011 Jun 1;121(3):462–5

<sup>4</sup> Carnevali I, Libera L, Chiaravalli A, Sahnane N, Furlan D, Viel A, Cini G, Cimetti L, Rossi T, Formenti G, Ghezzi F, Riva C, Sessa F, Tibiletti MG. Somatic Testing on Gynecological Cancers Improve the Identification of Lynch Syndrome. *Int J Gynecol Cancer*. 2017 May 2. doi: 10.1097/IGC.0000000000001010. [Epub ahead of print]

## Advances in gynecologic cancer treatment

By William E. Winter, III, M.D., medical director, Legacy Medical Group—Gynecologic Oncology

Reduced federal funding for cancer research in general and, to a much greater extent, for gynecologic cancer research has been quite



evident over the last several years. The number of available NCI/CTEP-sponsored trials has dropped from 56 in 2012 to only 18 last year. Enrollment in these clinical trials is at an all-time low, having decreased 90 percent from over 7,000 women

in 2011 to just under 1,000 women in 2016. Despite these alarming statistics, however, the last year has seen some very significant advancements in gynecologic cancer care.

First, we continue to advance the accessibility and applicability of minimally invasive surgery (MIS), especially with robotics. It was not that long ago that as a young OB/GYN resident hoping to pursue a fellowship in gynecologic/oncology, essentially all of the surgical management of gynecologic cancers involved laparotomies, multiday hospital stays and a relatively high risk of peri-operative morbidity.

Fast forward 16 years and here we are. Around 80 percent of women with endometrial/uterine cancer receive surgical staging via robotics/MIS compared to less than 10 percent some 10 years ago. The same applies to early stage cervical cancer. Robotics/MIS is now considered standard of care for these gynecologic cancers. In the uncommon event when we discover an adnexal mass is a tubal/ovarian malignancy, robotics and MIS play a large role in surgical staging of this disease.

There has also been a recent trend toward using robotics/MIS in advanced ovarian cancer after the results of the EORTC (Vergote et al., 2010) and, more recently, CHORUS (Kehoe et al., 2016) studies, which investigated the safety and efficacy of neoadjuvant chemotherapy and interval debulking surgery compared to standard primary debulking surgery followed by adjuvant chemotherapy. This has primarily been a result of the new da Vinci Xi Surgical

System robotic platform that facilitates multi-quadrant surgical access necessary for debulking surgery. These data, mainly retrospective to date, are very new and the verdict is still out.

While the sentinel lymph node procedure has been increasingly utilized, it has not quite yet been universally adopted. That will change soon in light of several presentations given at the 2017 Annual Meeting on Women's Cancers (SGO). Two trials, in particular, highlighted this advance. First, the FIRES Trial (Rossi et al., 2017) was a multicenter trial enrolling almost 400 patients evaluating the effectiveness of Firefly sentinel lymph node biopsy procedures followed by standard lymphadenectomy in endometrial/uterine malignancies of all grades and histologies.

Comparing to standard lymphadenectomy, the study found that the sensitivity for node positive disease was 97.2 percent and negative predictive value was 99.6 percent. More compelling was the fact that almost 20 percent of sentinel nodes with metastatic disease were found outside of the traditional boundaries for a complete standard lymphadenectomy.

Second, the international SENTICOL 2 randomized controlled trial (Mathevet et al., abstract 2017) compared sentinel lymph node dissection alone with sentinel lymph node dissection followed by standard lymphadenectomy in women with early stage cervical cancer.

The authors found no difference in survival or recurrence rates between the two groups. There were no false negative sentinel lymph nodes seen in the group that also had standard lymphadenectomy. Importantly for our patients, the rate of clinically significant lymphedema was much lower in the sentinel lymph node only group.

These continued advances in robotics/MIS are truly inspiring and are being utilized within Legacy Health. With our concurrent adoption of Enhanced Recovery After Surgery (ERAS) protocols, we are transforming radical cancer surgeries into procedures with low morbidity, improved

outpatient recovery, high patient satisfaction, and, most importantly, no difference in recurrences and survival when compared to traditional open procedures.

In 2016, the Legacy Institute for Surgical Education and Innovation, in partnership with Legacy Medical Group–Gynecology, Legacy Medical Group–Gynecologic Oncology, Legacy Medical Group–Advanced Gynecology, Legacy Medical Group–Urogynecology, Women’s Healthcare Associates LLC, and the Portland chapter of the American College of Obstetrics and Gynecology, developed and performed a highly successful postgraduate skills course in advanced laparoscopic and robotic gynecology surgery. The Third Annual Advanced Laparoscopic and Robotic Gynecology Post-Graduate Course provided surgeons with an intensive hands-on experience in advanced minimally invasive techniques. The invited course faculty from Legacy Health included: Paul Tseng, M.D., FACOG, and Colleen McCormick, M.D., MPH, FACOG, from Legacy Medical Group–Gynecologic Oncology; Blake Osmundsen, M.D., MCR, FACOG, and Claire Gould, M.D., FACOG, from Legacy Medical Group–Urogynecology; and Carolyn Piszczek, M.D., FACOG, Legacy Health minimally invasive gynecology fellow. This course will be held on a biannual basis.

Gynecologic oncologists are a unique amalgam of specialty care: surgical and medical oncology. While we are focused on a limited scope of cancers, our expertise translates into improved clinical outcomes for our patients as study after study has shown. In addition to the surgical advances listed earlier, there have been many advances in the medical treatment of gynecologic cancers this year.

For the purposes of this brief update, I have chosen to focus on one extraordinary advance in treatment of high-grade serous cancers (HGSC) of tubal/ovarian/peritoneal origin — polyadenosine diphosphate ribose polymerase (PARP) inhibitors. Not since paclitaxel replaced cyclophosphamide in the mid-1990s have we seen such dramatic improvement in survival for these cancers. Study 19 (Lederman et al., 2012), showed a progression free survival (PFS) advantage with olaparib maintenance therapy after second line platinum-based therapy.

The subset of *BRCA* mutation positive patients showed the best response (Lederman et al 2014). Study 42 demonstrated a 31 percent overall response rate in patients with germline *BRCA1/2* mutations receiving monotherapy with olaparib for platinum-resistant recurrent HGSC. Considering dismal response rates typically seen in this population, this is an enormous improvement. Currently, olaparib is FDA-approved for patients with *BRCA* mutations after third-line chemotherapy.

The ARIEL2 trial evaluated another PARP inhibitor, rucaparib, as monotherapy for platinum-sensitive recurrent HGSC (Swisher et al., 2017). Not only did the investigators demonstrate improved PFS in patients with *BRCA1/2* mutations but to a lesser extent in patients with homologous recombination deficiency (*HRD*).

But perhaps the most remarkable results come from the ENGOT-OV-16/NOVA trial evaluating the use of niraparib in maintenance therapy for platinum-sensitive recurrent HGSC after retreatment with platinum-based chemotherapy (Mirza et al., 2016). The most impactful result from this trial was the fact that even wild-type *BRCA* patients without *HRD* positivity showed an improvement in PFS. Patients with germline *BRCA1/2* mutation, *HRD* positivity, and wild-type *BRCA1/2* mutations (and *HRD* negative) showed 16, 9, and 5 month PFS advantages, respectively. All of these were statistically significant. Based on this study, niraparib recently received FDA-approval for treatment as maintenance therapy in platinum sensitive recurrent HGSC following second-line therapy regardless of *BRCA* or *HRD* status.

These are a few, but not all, of the amazing things that are happening in GYN cancer care internationally. Locally, Legacy Medical Group–Gynecologic Oncology is currently one of the top accruing institutions to the PRIMA trial evaluating niraparib in maintenance therapy after platinum-based chemotherapy for primary treatment of HGSC.

## The role of radiation oncology in gynecologic oncology treatment

By Mark Schray, M.D., radiation oncologist, Legacy Medical Group—Radiation Oncology

Radiation oncology has always had a large role to play in gynecologic oncology treatment. There is continuing evolution in this role as surgical, chemotherapeutic, targeted immunologic and radiation therapy techniques have improved over decades.



The gynecologic and radiation oncologists must work closely together in a coordinated fashion to optimize

patient outcomes. The arrival of Paul Tseng, M.D., William Winter, M.D., Colleen McCormick, M.D., Gina Westhoff, M.D., and Weiya Wysham, M.D., to the Legacy Medical Group—Gynecologic Oncology specialty clinic has transformed the gynecologic oncology program at Legacy Cancer Institute and elevated the quality of care for our patients with gynecologic malignancy. We are personally thrilled to again have the opportunity to carefully and optimally coordinate multimodality care facilitated by professional alignment.

External beam radiation therapy has evolved continuously with the consistent application of intensity modulation that allows “dose-painting” or intensification of treatment to high-risk regions while simultaneously sparing the nearby normal tissues. This type of treatment is only possible with modern accelerator technology and treatment planning computers, including image fusion capacity for multiple imaging technologies. The potential benefits of these advances can only be realized if the application of dose within the patient can be precise on a daily basis. Various image guidance techniques have been developed that allow us to virtually eliminate daily positioning variation as well as correct for internal target and normal tissue daily positional variation due to physiological processes such as respiratory motion and organ filling.

The next generation of these external radiation techniques discussed above is called stereotactic ablative body radiotherapy (SABR) and involves the application of one to five large doses of radiation

treatment to very limited volumes with the intention of ablating or sterilizing the target region. This can be used to eliminate well-defined local recurrences of cancer or limited metastatic deposits.

All of this sophisticated external beam treatment technology is available at each of our radiation oncology treatment facilities at Legacy Good Samaritan, Legacy Salmon Creek and Legacy Mount Hood medical centers.

Brachytherapy is the discipline within radiation oncology in which radioactive material is placed directly within the cancer or within a limited tumor bed or target region to increase the radiation dose while sparing surrounding normal tissues. Gynecologic malignancy has always been particularly well suited to the use of brachytherapy and that prominent role continues today. Uterine, cervical and vaginal cancer are examples of diseases in which brachytherapy has a prominent role to play. This can be with applicators positioned within these body cavities (intracavitary) or with needles/tubes placed in surrounding tissues (interstitial).

These treatments require a dedicated team of physicians, nurses, medical physicists, imaging technologists and sedation specialists to optimize outcomes and patient experience. There is ongoing evolution in application design including hybrid intracavitary/interstitial applicators and the increasing use of MRI imaging to improve the treatment planning process.

Legacy has been a regional leader in brachytherapy for almost three decades. We started our high dose rate remote after loader program in the 1990s, a decade before any other regional facility. We remain the highest-volume gynecologic brachytherapy practice in Oregon, providing an unmatched resource based on our depth and breadth of experience.

The additions of our gynecologic oncologists to Legacy Medical Group facilitates coordination and communication and firmly establishes Legacy Health as the preferred provider for women with gynecologic malignancy.

## Lower limb lymphedema management for gynecologic cancer patients

By Sandy Kirchner, P.T., CLT-LANA, physical therapist, Legacy Rehabilitation Services

A common concern for gynecological cancer survivors is lymphedema of the lower abdomen and extremities. Lower limb lymphedema is an abnormal accumulation of protein-rich fluid in the affected trunk or leg that can occur after pelvic lymph node removal, trauma, radiotherapy or cancer recurrence. This condition can be progressive, has no known cure and may have negative effects on physical mobility, emotional wellbeing and quality of life. Symptoms may include difficulty walking, achiness or pain, limb heaviness, tightness of clothing or shoes and swelling.



The prevalence of lower limb lymphedema varies widely in the literature based on lymphedema definition, how it is measured, type of gynecological cancer, number and location of lymph nodes resected and time to assess for lymphedema after surgery. Estimates suggest 20 to 30 percent of those with lymph node removal, trauma or radiation therapy to the groin or abdomen may develop lower limb lymphedema. Onset usually appears as leg swelling and tends to occur within 12 months following gynecological cancer treatment, but it can occur months to years later.

Currently there is lack of standardized criteria for defining, measuring, staging and grading of lower limb lymphedema. Different international organizations still need to establish more global lymphedema assessment guidelines to better ensure early detection and timely treatment.

Patients receiving gynecological cancer treatment need to be educated about the risk factors for developing lymphedema and how to recognize early signs and symptoms. Early detection is key to prompt intervention and long-term success in managing the condition.

Effective lymphedema therapy by a certified lymphedema therapist is important for successful

management of lower limb lymphedema. Legacy Cancer Rehabilitation Services has specially trained physical therapists certified nationally by the Lymphology Association of North America (LANA) in lymphedema management using the complete decongestive therapy (CDT) method. One of these trained physical therapists will perform a comprehensive lymphedema assessment and provide an individualized patient treatment plan.

The goals of lymphedema therapy are to reduce the distressing symptoms, to educate patients in long-term self-management and to help minimize lymphedema's impact on daily life, work, recreational activities and emotional consequences.

Complete decongestive therapy is the most widely used treatment option for lymphedema in the United States. CDT involves manual or pneumatic lymph drainage, compression bandages and garments, exercise, skin care and self-management education.

Surgery may be a treatment option for a very small select group of patients with lymphedema. Surgical management of lymphedema, including liposuction, lymphaticovenous anastomosis, microsurgical techniques for lymphatic grafting and omental flaps have been more recently reported. Larger studies are needed regarding the role of surgery, the best surgical approach, timing of these operative procedures, potential complications and long-term benefits. In the earliest stages of research is the use of identified growth factors to stimulate the growth of lymph vessels to treat lymphedema.

Overall lymphedema is an unwelcome consequence of gynecological cancer treatment. This potential lifelong sequela caused by gynecological cancer treatment should be recognized early so that patients can be referred to experts in the field of treating lymphedema to help ensure cancer survivors enjoy a better quality of life.

## Physical therapy for gynecologic oncology patients

By Claudia von Hammerstein, P.T., physical therapist, Legacy Rehabilitation Services

What's love got to do with it? Our ability to heal and return to being a fully functional being includes being a sexual being.



Our clients have survived their cancer, but genitourinary complications are common and, when the treatment ends, the patient is left to feel alone with the effects of chemotherapy, radiation or surgical trauma. She may have incontinence, pelvic

pain or sexual dysfunction and feel at a loss as to where to go for help.

Pelvic floor physical therapy is the general term used to describe a variety of treatments utilized by specially trained physical therapists for the management of pelvic floor dysfunction.

A skilled physical therapist can help to rebuild the strength of the pelvic floor to improve urinary continence and reduce pain related to sexual function. In a study published in the April 2015 edition of *Physical Therapy Journal*, researchers found that physical therapy services are now more commonly sought out for individuals surviving breast and genitourinary cancers. (See more at [www.curetoday.com/community/amy-vant/2015/05/what-is-the-role-of-physical-therapy-in-cancer-recovery?](http://www.curetoday.com/community/amy-vant/2015/05/what-is-the-role-of-physical-therapy-in-cancer-recovery?))

A recent systematic review by Bernard et al., (2016) looked at the effects of radiation therapy on the structure and function of the pelvic floor muscles of patients with cancer in the pelvic area. Although surgery and chemotherapy are treatment approaches often used in the management of pelvic cancers, this paper specifically focused on radiation therapy: “[Radiation therapy] is often recommended in the treatment of pelvic cancers. Radiation can leave the tissue hard and inflexible, resulting in pelvic organ prolapse, urinary or fecal incontinence and acute and chronic pelvic pain such as vestibulitis, vulvodynia, constipation and dyspareunia due to restrictive scar tissue.”

Whether it is advice on managing anal fissures (skin protection, down-training overactive pelvic floor muscles, achieving good stool consistency, teaching defecatory techniques) or dealing with dyspareunia (dilator or vibrator selection, choosing and using an appropriate lubricant, dealing with the ergonomic or orthopedic challenges that can be a barrier to returning to sexual function and enjoyment), pelvic rehabilitation practitioners are probably the best clinicians for optimizing a return to both pelvic and global health during and after treatment for pelvic cancers.

We work with a combination of myofascial release/trigger-point work, stress awareness, breath work and biofeedback techniques. We address connective tissue support, or the lack thereof, with mobilization and strengthening. We also provide a home exercise program based on our findings, for posture, endurance and continence.

However, one of the biggest barriers we face is lack of awareness about the benefits of pelvic rehabilitation — on the part of the patients but also, unfortunately, in the medical and oncology community. Happily, this situation is improving — not only is the evidence base expanding from research, but oncologists are recognizing that pelvic rehabilitation is a key component of regaining quality, and not just quantity, of life after treatment ends.

As Yang reported in his 2012 paper, pelvic floor rehabilitation programs improve pelvic floor function (particularly urinary continence and sexual function) and overall quality of life in gynecologic cancer patients. And perhaps, most heartening of all, was his statement that “Pelvic floor rehab physiotherapy is effective even in gynecologic cancer survivors who need it the most.”

At Legacy Outpatient Rehabilitation, we work with oncologists, urogynecologists, gynecologists, midwives, colorectal surgeons and gastroenterologists to provide effective, individualized therapy.

## Oncology clinical research

By Madeline Cook, B.A., clinical research coordinator, Legacy Oncology Clinical Research

In 2014 three major research cooperative groups — the National Surgical Adjuvant Breast and Bowel Project, Radiation Therapy Oncology Group



and Gynecologic Oncology Group — joined together to become NRG Oncology. Legacy Health partnered previously with each of these groups and is currently a member of NRG Oncology, allowing us to provide some of the largest cooperative group research trials to patients.

In 2016, we opened five different trials through this collaboration aimed at treating gynecologic cancers.

NRG GY004 and GY005 are two of these trials that are focused on recurrent ovarian, fallopian tube and peritoneal disease. NRG GY004 is specifically for patients with platinum-sensitive disease treated with at least one line of chemotherapy while NRG GY005 is for platinum-resistant disease.

A traditional option for these patient populations usually involves re-treatment with chemotherapy, which carries increased side effects. These trials are aimed at developing new regimens with improved responses and reduced symptom burden. PARP inhibitors are an emerging class of drugs as alternative treatments for these patients. Both GY004 and GY005 include an arm with single agent PARPi, olaparib. Both trials also include an arm with a combination of olaparib and cediranib, an investigational VEGFR inhibitor, and are compared against a physician's choice chemotherapy arm.

We also have access to industry-sponsored trials to offer even more trials for gynecologic cancers. Tesaro Inc. PR-30-5017-C is a randomized double-blind placebo-controlled trial evaluating niraparib, a PARP inhibitor, for maintenance therapy after primary treatment of stage 3 and 4 ovarian cancer. Currently there aren't any treatment options to prevent recurrence of ovarian cancer.

The Molecular Analysis for Therapy Choice (MATCH) trial was also opened at Legacy Health in 2016. Since the development of molecular profiling, the idea of personalized, targeted therapy has been the ultimate goal in cancer care. Unfortunately, patients have had limited access to molecular tumor profiling due to cost, and when mutations were found, many times there were often no approved drugs to target them.

The MATCH trial gives access to both centralized testing and treatment options for drugs either approved for other use or currently in Phase II development with 26 different treatment groups. This trial is open to patients with all solid tumor types or multiple myeloma who have progressed after standard treatment or do not have any treatment options that have been shown to improve overall survival.

In 2016, gynecologic cancer made up 10 percent of cancer cases diagnosed and/or treated at Legacy Health. Over 15 percent of Legacy's total analytic case volume for all cancer sites was accrued to clinical trials in 2016. Figure 9 (*below*) provides Legacy's 2016 clinical trial accrual volumes by hospital and Legacy Cancer Institute overall.

**FIGURE 9 Clinical trial accrual with Tumor Bank accrual 2016**

	Legacy Health	Legacy Emanuel	Legacy Good Samaritan	Legacy Meridian Park	Legacy Mount Hood	Legacy Salmon Creek
2016 annual analytic caseload	2,679	244	1,200	410	305	520
Number of analytic cases on clinical trials	241	78	122	20	9	12
Number accrued to Tumor Bank	171	16	91	27	22	15
<b>Total (clinical trials and Tumor Bank)</b>	<b>412</b>	<b>94</b>	<b>213</b>	<b>47</b>	<b>31</b>	<b>27</b>
<b>Total percentage accrued to clinical trials/Tumor Bank</b>	<b>15.4%</b>	<b>38.5%</b>	<b>17.8%</b>	<b>11.5%</b>	<b>10.2%</b>	<b>5.2%</b>

## Legacy Research Institute Tumor Bank

*By Serene Perkins, M.D., FACS, program director, Legacy Tumor Bank, and John Ost, CCRP, research assistant, Legacy Tumor Bank*

The continued quest to personalize cancer care depends upon the availability of “appropriately collected, consented, and annotated tissue” (National Dialogue on Cancer, 2002) to develop novel



therapies. The Legacy Tumor Bank was founded in 2006 to address this resource gap by storing frozen and paraffin-embedded tumor tissue. Thanks to the outstanding support we have received from surgeons, pathologists and multiple team members at the Legacy Cancer Institute, our collection has now grown to greater than 1,200 cases, with 7,600 samples for potential research use.



We continue to fulfill a significant portion of clinical research enrollment require-

ments, contributing to Legacy Cancer Institute’s Commission on Cancer (CoC) accreditation and recent 2016 Outstanding Achievement Award (OAA). A significant percent of our collection is comprised of breast and colorectal cancers, yet our collection represents the spectrum of human solid cancers, which allows for research initiatives to include nearly all major tissue regions.

We were awarded re-accreditation by the College of American Pathologists (CAP) in May 2016, demonstrating our long-term commitment to

biorepository excellence. Additionally, we were invited to present our achievements of implementing “progressive consent” (front-door consent at the time of surgery) at the International Society for Biological and Environmental Repositories (ISBER) in Berlin, Germany, as a testament to our sustainability and demonstrable impact on patient participation and resource conservation.

Long-standing collaborations with the Community Cancer Center in Roseburg and the Mid-Columbia Medical Center in The Dalles, with support from The Lions Club of Oregon, make donating tumors for research possible outside of the Portland metropolitan area. Reaching beyond the Willamette Valley helps us to meet the biorepository project goal of providing high-quality tissue across a broader regional scope to cancer researchers, and models the Legacy Health mission and values in support of our patients, our community, and our world.

We are grateful for continued support from the Good Samaritan Foundation, the Treva Hoffman Foundation, The Moto District, NW Moto MDs, American Medical Response, the Portland Police Bureau and Boomer Fitness. It is the continued dedication of our sponsors that enables us to work together with our partners in patient care and research to meaningfully use our high-quality tumor collection, thus expanding Legacy’s presence in the health care and research communities.



*Support services for gynecologic cancer patients*

## Legacy Cancer Healing Center

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

The Legacy Cancer Healing Center at Legacy Good Samaritan Medical Center is the umbrella under which support services reside for gynecologic cancer patients and their families. A diagnosis of cancer can affect many aspects of one's life; the vision of the Legacy Cancer Healing Center is that life is meant to be lived to the fullest.

To support the state-of-the-art cancer treatment offered at Legacy, the Legacy Cancer Healing Center addresses the physical, emotional and spiritual issues that arise from a cancer diagnosis and treatment. To that aim, the Legacy Cancer Healing Center provides a comprehensive menu of classes and groups, as well as the individual services of cancer-trained and experienced practitioners.

### Individualized support services

- Cancer survivorship and integrative care offers individual consultation with a nurse practitioner. For more information, see "Integrative care and symptom management" on page 25.
- Expressive arts therapy uses various artistic media to allow patients to express themselves and offers individual and group counseling to adults with cancer and their children.
- Massage therapy is offered at Legacy Good Samaritan Medical Center. The massage therapist sees patients in radiation oncology and on the Cancer Care Unit. The fee-for-service practice is at the Women's Wellness Center and is open to both men and women.
- Music thanatology is available across Legacy. Trained musicians help alleviate fear, anxiety and discomfort at the hospital bedside through harp and voice.
- A Legacy dietitian, a certified specialist in oncology nutrition, offers individual consultations in nutritional counseling before, during and after cancer treatment.



*Legacy Cancer Healing Center staff members, from left: Selma Annala, R.T., CLC, coordinator, Cancer Healing Center; Angela Paquin, LCSW oncology social worker; Rae Waterman, volunteer coordinator, GGGH; Marci Reed, R.D., CSO, L.D., oncology dietitian; Sara Butler, LCSW, oncology social worker; Josh Casey, LMT, massage therapist; Wendy Tucker, M.A., ATR, CYT, Qigong, tai chi instructor; Georgia Rounder, R.D., L.D., registered dietitian.*

- A licensed clinical social worker addresses the emotional, social and financial concerns of the individual and family, and coordinates community services and resources.
- Spiritual care addresses the spiritual concerns of patient and family in both inpatient and outpatient settings.
- Stress management instruction and guidance in behavior modalities helps patients cope with the stress of a cancer diagnosis through individual counseling. This service also provides support and comfort during difficult procedures, including brachytherapy radiation treatment for gynecological cancers.

### Cancer education and movement classes

- In 2016, the Legacy Cancer Healing Center offered Step Into Fitness, a series on exercise and nutrition at Legacy Good Samaritan and Legacy Meridian Park campuses; a healthy eating and food preparation class for individuals post cancer diagnosis; monthly gardening workshops and nature walks; and weekly classes in Nia, Pilates, Qigong and yoga. Yoga classes were expanded to the Legacy Mount Hood Medical Center campus beginning July 2016.

- Meditation classes provide an avenue for cancer survivors to come together to learn meditation skills in a supportive environment in both a weekly drop-in format and an educational series for those new to the practice.
- Expressions of healing classes at Legacy Good Samaritan and Legacy Salmon Creek medical centers provide cancer survivors the opportunity to create community and explore their cancer journey through the arts.
- Finding Center: Art-Making for Mindfulness and Stress Reduction was added in the fall of 2016 at Legacy Good Samaritan, Legacy Mount Hood and Legacy Meridian Park medical center campuses. This art-based group combined with the healing power of mindfulness to reduce stress and anxiety.
- An ongoing support group for gynecological cancer patients is held twice monthly at Legacy Good Samaritan Medical Center, facilitated by Katherine Leonard, Ph.D., a psychologist experienced in oncology.
- The Green Gables Guest House on the campus of Legacy Good Samaritan Medical Center provides lodging for patients and families from out of the area receiving medical care at Legacy. Gynecological cancer patients receiving their radiation brachytherapy treatment at Legacy Good Samaritan often utilize this convenient home away from home, located directly across the street from the Legacy Radiation Oncology. Other options for housing in hotels in the area for our out-of-town patients are addressed by the American Cancer Society patient navigator.

A comprehensive list of cancer support groups and classes offered on a regular basis is on page 32.

Legacy Cancer Healing Center staff members work closely with the patient, her family and all members of the patient's cancer treatment team offering assistance along the entire continuum of cancer care. It is our goal to be available to meet patient needs with individualized caring support, education and resource provision.

### *Support services for gynecologic cancer patients*

## Legacy Oncology Nurse Navigation

*By Joan Wendel, R.N., MSN, CBCN, AOCNS, oncology nurse navigator, Legacy Cancer Institute*

In 1990, while working at Harlem Hospital in New York City, Harold Freeman, M.D., implemented "patient navigation." One of his major goals was to expand access to cancer screening for underserved women by eliminating health-care system barriers. This included educating the community about breast cancer and encouraging screening.



In 2008, Legacy Good Samaritan Medical Center started its own oncology nurse navigation program that quickly grew to include many cancer diagnoses. This program has expanded to all five of the Legacy Health medical centers. Although it looks a little different than the

original model, the goal remains the same — eliminating barriers to care.

Oncology nurse navigators are professional registered nurses who offer individualized assistance to patients, families and caregivers through the cancer continuum. Our goal is to begin at time of diagnosis to identify obstacles, to provide resources to overcome any health care system and practical barriers, to enhance psychosocial support and to offer disease-specific education. We continue to guide and support these individuals through the cancer continuum and work closely with all members of the health care team to ensure smooth and timely access to treatments.

At Legacy Health, the nurse navigators have an extensive oncology background and many

hold national certifications. Ongoing continuing education is important to maintaining a level of competence. This education takes the form of attendance at national and local conferences, regular participation at the citywide Gynecologic Oncology Cancer Conferences, in addition to reading journal articles and completing a variety of continuing education courses.

Early referral to navigation is important for the identification of needs and the formation of a trusting relationship with the healthcare team. We are fortunate to have nurse navigation available at all Legacy Health locations; an oncology pharmacy navigator at Legacy Good Samaritan; and access to an American Cancer Society (ACS) navigator on the Legacy Good Samaritan campus, a collaborative venture with the ACS. As part of our role, we also

arrange access to additional support services available through the Legacy Cancer Healing Center.

The oncology pharmacy navigator is available to answer medication-related questions including potential drug interactions and side-effect management and to facilitate access to medication assistance programs. The American Cancer Society navigator assists with financial resources, transportation and cancer-related educational materials.

Defining our role for patients, families and caregivers can be challenging at times. I have been referred to as a “trail guide” by my patients, which accurately describes my role of guiding patients through unfamiliar territory while overcoming obstacles in their path. What an appropriate image for a Legacy Health oncology nurse navigator working in the beautiful Pacific Northwest!

#### *Support services for gynecologic cancer patients*

## **Legacy Health’s integrative care clinic: Symptom management and integrative care**

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

Legacy Health’s integrative care clinic has been serving patients since 2009. We offer this clinical service at both Legacy Good Samaritan and Legacy



Mount Hood medical centers.

As the nurse practitioner providing care, I have been trained in adult primary care, functional medicine and mind-body medicine to help support patients holistically during and after care as part of Legacy

Cancer Institute.

Patients often seek help with symptom management and prevention. The clinic offers up-to-date care based on the growing fields of lifestyle medicine and integrative care. The clinic provides care for our diverse oncology and high-risk population, including our gynecology oncology patients.

Alivia Cetas, M.D., breast surgeon, comments: “All of my patients who have seen Reza in consultation have unanimously expressed value in the experience.

Many have been able to fine tune their use of supplements, reducing unnecessary ones and buying more effective options to help manage their symptoms and improve their experience during cancer treatment and in survivorship ... I very much depend on providers such as Reza, to be able to access these resources and others to provide the highest quality of care in her evaluation and recommendations for my patients in regard to natural/alternative medicines.”

The clinic takes a holistic or global view of our patients. Assessments include the physical, emotional, social, existential, environmental and spiritual issues that often emerge from cancer diagnosis and treatment.

Referrals to the clinic are predominantly through oncology physicians. Other referral sources are primary care physicians, nurse navigators, allied health professionals or self-referral.

Most insurance providers, including the Oregon Health Plan, cover these services.

Services span preventive care for high-risk patients, and care for patients through all stages of cancer, including metastatic disease. Clinic services can begin during any phase of care. Helping patients improve sleep, exercise, diet and emotional resilience can help improve outcomes and quality of life regardless of cancer site or stage. Our gynecology oncology patients appreciate the management of symptoms such as pain, residual chemotherapy effects, menopausal and emotional symptoms that occur during and after treatment.

A typical plan of care may include recommendations for diet, exercise, sleep hygiene and mind/body practices, along with referrals to services such as acupuncture, physical therapy or other specialty services. Legacy's free classes and services such as social work, art therapy, pharmacy navigation, yoga and meditation are also often included in the plan. Acupuncture is available for inpatients by physician referral at Legacy Good Samaritan Medical Center.

Post-treatment clinic care often includes continued symptom management for late effects as well as patient education regarding evidence-based information on lifestyle modification that can diminish the risk of future cancers and other chronic illnesses. Vetted referrals to acupuncture and other evidence-based integrative care in the community are also offered.

Patients are often confused by the enormous range of information, some valid and some invalid, that is available through the media and the natural medicine community. Reviewing the patient's current supplements and natural medicine products for interactions with medications or side effects, as well as educating patients about resources that can help them make safe choices, helps to ensure our patients' health and well-being.

Patients often experience grief, depression and/or anxiety. Mind-body medicine techniques, meditation and heart rate variability biofeedback

are available to the patient as part of the clinic visit, along with appropriate referral to counselors, psychiatry, chaplain, social work and other services that can best help a particular patient through the emotional challenges of treatment. Patients appreciate the ability to turn their attention to actions to help themselves to improve symptoms and overall health.

The integrative care clinic provider also serves as a resource for Legacy providers — through in-services or Integrative Oncology Grand Rounds — on topics relating to integrative care, supplements and additional services within Legacy Cancer Institute and the larger community. Education and information about current integrative research, quality product lines and integrative care services within the community are also offered in professional and general population venues.

Legacy Employee Health supports training in mindfulness throughout the Legacy system to help improve staff resilience and allow those skills to be used with patients to decrease distress and stress-related symptoms.

In conjunction with our pharmacy navigator, Legacy now provides high-quality, low-cost supplements to our patients through The Apothecary at Legacy Good Samaritan Medical Center. These supplements can make a difference in the scope and intensity of effects from cancer and its treatment. We have worked with our gynecologic oncology providers to create a list of supplements that will help reduce the impact of symptoms during chemotherapy.

Patients often comment on how having attention placed on their experience, symptoms, emotions and hopes gives them focused ways to participate in improving their health and well-being, and makes a great difference in their experience and healing process.

## Monitoring compliance with evidence-based guidelines — Stage 2 and 3 endometrial cancer (CoC Standard 4.6)

By Paul Tseng, M.D., director, Women's Services, Legacy Cancer Institute, MIGS Fellowship director, Legacy GME

In 2016, the Legacy Integrated Network Cancer Committee (INCC) identified endometrial cancer to monitor compliance with evidence-based treatment guidelines. This detailed case review assesses and verifies that patients are evaluated and treated according to the National Comprehensive Cancer Network (NCCN) clinical practice guidelines. The NCCN guidelines are endorsed and followed by Legacy Cancer Institute to ensure that all patients receive preventive, diagnostic, treatment and supportive services that are most likely to lead to optimal outcomes.



As a required physician member of the Legacy INCC and a gynecologic surgical oncologist, I provided oversight and participated in the case review of Legacy's stage 2 and stage 3 endometrial cancer cases. The goal was to assess if the diagnostic cancer evaluation was adequate and the treatment plan concordant with NCCN guidelines. Stage 2 and 3 endometrial cancer was reviewed due to the critical role that the diagnostic evaluation plays in ruling out metastatic disease to accurately stage and guide treatment for our patients. Depending on the histologic grade of the tumor, the difference in treatment for early stage versus advanced stage (stages 2–4) endometrial cancer is administering systemic treatment. This underscores the importance of ensuring the appropriate diagnostic evaluation to accurately guide treatment.

The case review conducted in 2016 included all 2015 analytic stage 2 and stage 3 endometrial cancer cases diagnosed and/or receiving part or all of first course treatment at Legacy. All Legacy-employed gynecologic surgical oncologists participated by reviewing an equal number of de-identified cases treated by a colleague. The methodology for the review included a standardized review form where findings of the review were documented specifically for the initial diagnostic

evaluation, the optimal diagnostic evaluation, and treatment delivered per NCCN guidelines. The completed forms were then used to collect and compile the results of the case review.

According to the NCCN guidelines, the initial evaluation for endometrial cancer should include documentation of a complete health history, complete blood counts (including platelets), endometrial biopsy and chest imaging. The optional evaluation includes a liver function test, renal function test, chemistry profile and consideration of genetic testing and counseling for patients under 50 years of age and those with a significant family history of endometrial and/or colorectal cancer. Patients with Lynch syndrome tend to be diagnosed at earlier ages and are at higher risk for other cancers including colorectal and renal malignancies. Chemotherapy can be deleterious in patients with Lynch syndrome, therefore identifying Lynch-related cancers early is essential in formulating treatment strategies, e.g., avoiding use of current standard chemotherapy, and future management and surveillance.

Our review of the *initial diagnostic evaluation* component found that all stage 2 patients received the necessary initial diagnostic work up to rule out metastatic disease and correctly stage for treatment. Similarly, our review of the *optional diagnostic evaluation* components found that for both stages, all patients had documentation of renal profile and chemistry profile results.

Three patients were identified who lacked the optional liver function test results in the medical record performed outside of Legacy, and one patient did not receive genetic testing due to patient refusal. The final component of the case review assessed delivery of treatment according to NCCN guidelines. We identified one patient who did not receive treatment according to NCCN guidelines due to patient refusal.

The results of the case review found that patients treated at Legacy are receiving treatment

according to NCCN guidelines. The review process reinforced the importance of documenting when specific tests are not performed and the reason why, when patients refuse workup or treatment, and any workup or treatment provided by an outside organization.

About 73 percent of all cases reviewed were diagnosed elsewhere, which requires that workup

and treatment performed elsewhere is documented in the medical record.

Results of the 2016 case review were shared with the Legacy INCC and gynecologic oncology group. In addition, genetic referrals are now tracked and reviewed as a performance quality indicator on the quarterly gynecologic oncology quality improvement dashboard.

## Commission on Cancer, Cancer Liaison Physician report

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

The Commission on Cancer's 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 Data Base (NCDB) data. The CLP reports to the Legacy Integrated Network Cancer Committee at least four times per year, or once per quarter. I have the privilege of serving Legacy as CLP and quality improvement coordinator.



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

CP3R provides Legacy with yearly data for the entire system, as well as by hospital, to allow us to assess the treatment and outcomes for our breast, colon, gastric, lung and rectal cancer patients. For patients diagnosed in 2014, the latest available data set, Legacy continued to meet all benchmarks and exceed national and local rates in all breast cancer measures at 95.2-100 percent (see Figure 10, page 29).

The CoC benchmark measures for patients with non-small cell lung cancer have been established at 85 percent (see Figure 12, page 30). One hundred percent of Legacy lung cancer patients were considered for chemotherapy, and nonoperative treatment was pursued in all N2M0 stage 3 lung cancers. Rates of lymph node removal are also now being recorded as a surveillance measure, without a yet established recommended benchmark. At least 10 lymph nodes were removed, with Legacy lung resection specimens at a rate of 84.2 percent, improved from 70.6 to 71.4 percent in the prior years and much higher than the 43 percent rate nationally for COC-accredited programs.

The latest CP3R also measures performance rates for two colon and one rectal measure (see Figure 11, page 30). We have collected at least 12 lymph nodes with 98 percent of colon specimens, meeting the 85 percent benchmark and exceeding the rates of the rest of CoC programs, which are 90-91 percent locally and nationwide. We exceeded the benchmarks with 100 percent of stage 3 colon cancer patients considered for chemotherapy and preoperative radiation/chemotherapy considered for 100 percent of locally advanced rectal cancers, increased from 90.9 percent, and continue to outperform other CoC programs in Oregon, our Pacific Northwest region and the nation.

A new CP3R gastric performance measure was released to assess if at least 15 regional lymph nodes are removed and pathologically examined for resected gastric cancer. In 2014, there were six Legacy cases considered for this measure. A case

review established that all cases eligible for this measure received the appropriate surgical treatment and lymph node removal based on unique circumstances of each patient. Legacy will continue to monitor this measure as new CoC performance data is released.

Bladder, cervix, endometrium, kidney, lung and ovarian cancer surveillance measures are also now tracked through CP3R. No performance benchmarks have been established by the CoC, but Legacy regularly reviews all CP3R surveillance measures to assess patient treatment and compare our performance to that of other CoC accredited programs nationally.

Legacy voluntarily enrolled in the NCDB Rapid Quality Reporting System (RQRS) in 2012. RQRS is a reporting and quality improvement tool that provides real clinical time assessment of hospital level adherence to quality of cancer care measures for breast and colon cancer. RQRS is an integral component of Legacy's Integrated Network Cancer Committee, as well as program development and quality improvement committees.

The NCDB provides the data for the ACS Cancer Quality Improvement Program (CQIP). CQIP is a data-driven, process and outcomes-based cancer quality improvement initiative that confidentially reports to 1,500 individual CoC-accredited hospitals their data as entered in NCDB, including comparisons with national data from all CoC-accredited programs. Measures include those captured in the CP3R. Updated Legacy breast, colon and rectal cancer quality outcomes percentages 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 dedicated to serving our patients. We again meet or exceed the cancer care quality benchmarks and will continue working to identify opportunities to optimize patient care through our partnership with the CoC.

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

Select measures	CoC standard	CoC benchmark	Legacy 2014* 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%	98.7%
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%	99.5%
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%	100%
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%
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	95.2%

\*Most recent data available from the Commission on Cancer

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

Select measures	CoC standard	CoC benchmark	Legacy 2014* performance
At least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer (Quality Improvement)	4.5	85%	97.6%
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	100%
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 regional lymph nodes are removed and pathologically examined for resected gastric cancer (Quality Improvement)	4.5	80%	50% (3/6 total cases)

**FIGURE 12 Commission on Cancer (CoC ) Cancer Program Practice Profile Report (CP3R), Legacy Health, Lung Performance Measures**

Select measures	CoC standard	CoC benchmark	Legacy 2014* performance
Systemic chemotherapy is administered within 4 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%	100%

\*Most recent data available from the Commission on Cancer

## Legacy Cancer Data Management — 2016 highlights

By *Melania Tolan-Hudson, B.S., CTR, RHIT, certified tumor registrar*

Legacy Cancer Data Management (CDM) had a very successful year. Between accreditation surveys, cancer registry database upgrades, national conferences, and quality initiatives and reporting, each member of the team contributed to the quality of collecting, analyzing and reporting cancer data for Legacy Health.



Quality plays a big role within the cancer registry as the data we provide are used for Legacy cancer program quality improvement dashboards, the CoC Rapid Quality Reporting System (RQRS), the Commission on Cancer (COC) National Cancer

Data Base (NCDB), mandatory state reporting, and data requests for administration, medical staff and oncology clinical research. I was honored this year to participate in an internship at the Oregon State Cancer Registry (OSCaR) as part of my bachelor’s degree program. During this time, I had the opportunity to see firsthand how our data are used at the state level for cancer statistics, policy improvement and research.

Legacy CDM participated in two important accreditations surveys in 2016: the National Accreditation Program for Breast Centers (NAPBC) and the Commission on Cancer.

The CDM Department contributed to Legacy Health receiving the CoC Outstanding



Achievement Award in 2016 by participating in RQRS, processing timely patient follow up, completing certified tumor registrar education, processing physician quality abstract reviews, monitoring and tracking Legacy tumor board performance, completing CoC special studies, and our timely, error-free, yearly data submissions to the NCDB for the Annual Call for Data.

We also received a continued NAPBC accreditation for our breast centers located at Legacy Good Samaritan, Legacy Meridian Park, Legacy Mount Hood, and Legacy Salmon Creek medical centers.

Three of our certified cancer registrars — Lorraine Colwell, Catherine Gunn, and Janel McNally — attended the 2016 National Cancer Registrars Association (NCRA) Annual Conference in Las Vegas. These conferences are vital in staying abreast to all the changes within the CDM field, obtaining required education hours for the renewed CTR certifications, and meeting the CoC CTR continuing education standard for accreditation and commendation.

Our team has been active in the Oregon State Registrars Association (OCRA). We are proud to mention that Catherine Gunn, CTR, served as president for OCRA, and I was honored to be elected to the nominating committee. Both Catherine and I attended the OCRA Fall Conference hosted by St. Charles Cancer Registry in Bend. We are also lucky to have Lorraine Colwell, CTR, continue to serve on the NCRA advanced education committee and share with us the latest updates and information.

The cancer data management field is one of continual and rapid change as cancer diagnosis, staging and individualized treatment continues to advance. The new American Joint Committee on Cancer (AJCC) eighth edition staging manual will go into effect on Jan. 1, 2018. We are preparing for these changes through training webinars and workshops, as well as staying informed with the latest updates and newsletters.

Within our registry, we have had implemented many automated data imports from Legacy's electronic medical record system and radiation oncology treatment system. The data imports have provided increased efficiency to our team by significantly reducing the amount of time to process monthly patient follow-up, data entry

for monthly case reportability case finding and radiation oncology treatment documentation.

The Legacy CDM team achieved an 88 percent yearly patient follow-up rate for patients diagnosed since 1997, and a 95 percent patient follow-up rate for patients diagnosed within the last five years. This increased efficiency allowed our team to abstract 2,679 analytic cases and respond to over 150 data request from Legacy administration and research in 2016.

Last but not least, I am proud to share that a member of our team, Veronica Redd, received her CTR certification. Additional members of the 2016 CDM team include Mindy Ansteth, B.S., CTR, manager; Lorraine Colwell, CTR; Dawn Cox, CTR lead; Katherine Fulcher, CTR, RHIT; Catherine Gunn, CTR; Alyssa Lapeyri, B.S., CDM tech; Susan Malone, B.S., CDM tech; Janel McNally, CTR; Veronica Redd, CTR; and Jessica Scheper, B.S., office assistant.

## Community involvement 2016

### Community events

#### March

Breast Cancer Issues (Komen)

#### June

St. Baldrick's Day (pediatric cancer awareness)

Cancer Survivors Day celebration (city-wide event)

#### July

Breast cancer educational talk on 3-D mammography, environmental factors, at Legacy Mount Hood

#### October

Healing through the Arts, at Legacy Good Samaritan Medical Center

"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)

Holistic care options for breast cancer patients (at Gresham Chamber of Commerce meeting)

### Prevention and screening education and activities

#### March

Colorectal cancer awareness and screening promotion activities for employee/visitors, at Legacy Meridian Park and Legacy Good Samaritan medical centers

#### April

"Meals that Heal" talks — nutrition for cancer prevention and to address treatment side effects, at Legacy Good Samaritan Medical Center

#### October

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

#### November

"Great American Smoke-out" information and tobacco cessation support, 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

Grant-funded mammograms for underserved women, at Legacy Mount Hood and Legacy Salmon Creek 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

#### Educational classes

Expressions of Healing: Art and Community

Felting Workshop

Finding Center: Art Making for Mindfulness and Stress Reduction

Gardening Workshop for Individuals with Cancer

Meditation for Cancer Patients

Words of Healing

#### Movement classes

Nia Mind/Body Exercise

Pilates for Individuals with Cancer

Qi Gong for Individuals with Cancer

Step into Fitness: Healthy lifestyle program

Yoga for Individuals with Cancer

### Outreach via social media

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

## Professional education activities 2016

### Conferences and courses

#### April

NW Tribal Clinician's Cancer Update (with NW Portland Area Indian Health Board)  
 Endometrial Cancer: Surgical vs. medical management of the co-morbid patient  
 Third Annual Advanced Laparoscopic and Robotic Gynecology Postgraduate Course

#### May

32nd Annual Seminar for Radiation Oncology Professionals

#### October

12th Annual Pacific NW Excellence in Gynecological and Breast Cancer Care  
 Keith Hansen Visiting Professorship: Palliative principles for serious illness

### Grand Rounds (CME) topics

#### *Legacy Good Samaritan oncology*

Updates in Management of Gliomas  
 Cancer Prevention: Did you Know?  
 Hereditary GI Cancer Syndromes  
 Controversies in Head and Neck Radiotherapy  
 Going Upstream: Benefits of Early Palliative Care  
 Treatment Sequencing and Patient Selection for Surgery in HPB Malignancy  
 Radiation Therapy in NSCLC  
 Prostate Cancer Biomarkers  
 Obesity, Metformin and Gynecologic Cancer  
 Teachable Moments and Resilience after Cancer  
 Acupuncture/NADA Protocol for Cancer Patients

#### *Legacy Emanuel OB/GYN education*

Tumors that Teach the Teacher  
 Alphabet Soup: Molecular classification of endometrial carcinoma  
 What's in a name? "Ovarian" Cancer vs. Pelvic Serous Carcinoma

#### *Legacy Emanuel medical*

Palliative Principles in Serious Illness Care: Lessons from Oncology

#### *Legacy Meridian Park primary care*

Hereditary Cancer Syndromes and Risk Assessment, for the PCP  
 Colorectal Cancer Screening: Who, Where, When and How for 2016  
 Gynecologic Oncology 101; and Cervical Cancer Screening and Prevention Update  
 Breast Cancer Updates for Primary Care

#### *Randall Children's pediatric*

Unique Challenges in the Care of Children with Brain Tumors

### CME on-demand modules

Nine CME presentations were available on-demand in 2016, covering a variety of oncology topics, with credits ranging from .5 to 1.25 CME credits per module.

### 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 Emanuel/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)

## Publications 2016

Kuhn E, Wang TL, Doberstein K, Bahadirli-Talbott A, Ayhan A, Sehdev AS, Drapkin R, Kurman RJ, Shih leM. CCNE1 amplification and centrosome number abnormality in serous tubal intraepithelial carcinoma: further evidence supporting its role as a precursor of ovarian high-grade serous carcinoma. *Mod Pathol*. 2016 Oct; 29(10); 1254–61.

Robins HI, Zhang P, Gilbert MR, Chakravarti A, de Groot JF, Grimm SA, Wang F, Lieberman FS, Krauze A, Trotti AM, Mohile N, Kee AY, Colman H, Cavaliere R, Kesari S, Chmura SJ, Mehta M. A randomized phase I/II study of ABT-888 in combination with temozolomide in recurrent temozolomide resistant glioblastoma: an NRG oncology RTOG group study. *J Neurooncol*. 2016 Jan;126(2):309-16. doi: 10.1007/s11060-015-1966-z. Epub 2015 Oct 27.

Golden SE, Thomas CR Jr, Deffebach ME, Sukumar MS, Schipper PH, Tieu BH, Kee AY, Tsen AC, Slatore CG. "Even if I Don't Remember, I Feel Better." A Qualitative Study of Patients with Early-Stage Non-Small Cell Lung Cancer Undergoing Stereotactic Body Radiotherapy or Surgery; Early Stage Lung Cancer Comparative Effectiveness Research Consortium. *Ann Am Thorac Soc*. 2016 Aug;13(8):1361–9. doi: 10.1513/AnnalsATS.201602-130OC.

Cook M, Johnson N, Zegzula HD, Schray M, Glissmeyer M, Sorenson L. Prophylactic use of pentoxifylline (Trental) and vitamin E to prevent capsular contracture after implant reconstruction in patients requiring adjuvant radiation. *Am J Surg* 2016 May; Vol. 211 (5), pp. 854–9. Epub: 2016 Feb 22.

## Legacy Cancer Institute Network Cancer Committee members 2016

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

Kristin Burdick, M.D., palliative care, Legacy Palliative Care Medicine

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

Andrew Cox, M.D., interventional and diagnostic radiologist

Samir Desai, M.D., medical oncologist

Rick Freeman, chaplain, Legacy Good Samaritan Medical Center

Jennifer Garreau, M.D., surgical oncologist, Legacy Medical Group—Surgical Oncology

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

Pamela Kilmurray, director, Legacy Cancer service line, Breast Health Centers, Legacy Hospice and Legacy Good Samaritan Medical Center Rehabilitation Services

Katherine Leonard, Ph.D., psychologist

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

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

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

Kathryn Panwala, M.D., radiation oncologist, Legacy Medical Group—Radiation Oncology

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

Kelly Rice, PharmD, oncology pharmacy navigator, Legacy Good Samaritan Medical Center

Alizah Rotramel, M.D., colorectal surgeon, Legacy Medical Group—Gastrointestinal Surgery, Legacy Good Samaritan and Legacy Mount Hood medical centers

Ann Smith Sehdev, M.D., anatomic and clinical pathologist, medical director, Anatomic Pathology, Legacy Health

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

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

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

Dena Wellington, CSWA, social worker, Legacy Cancer Healing Center, Legacy Good Samaritan and Legacy Mount Hood medical centers

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

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

### 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 2016



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.



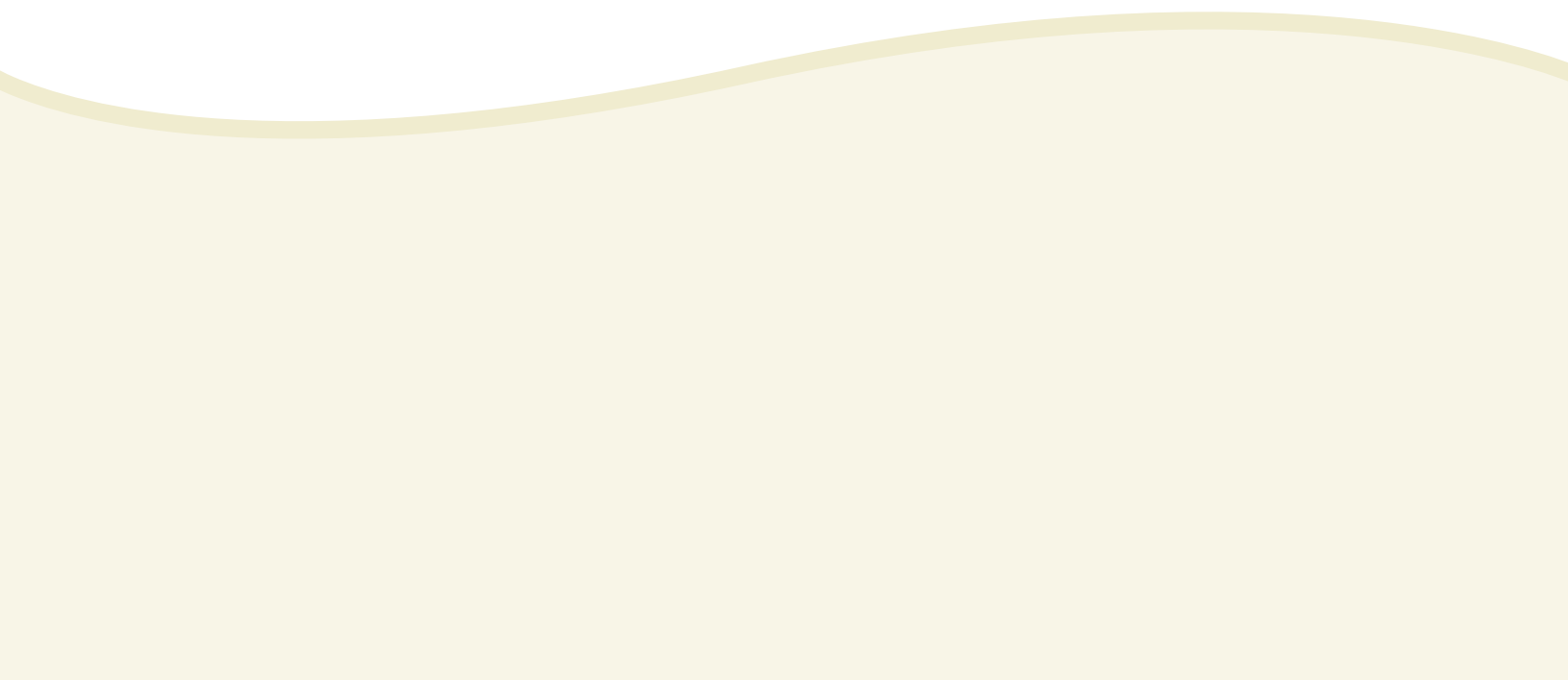
The Legacy Lung Cancer Screening Program at Legacy Good Samaritan Medical Center is accredited by the American College of Radiology (ACR) as an ACR Designated Lung Cancer Screening Center. To achieve this designation, the Legacy Lung Cancer Screening Program must maintain active ACR CT Accreditation 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.

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





## Legacy Cancer Institute

503-413-8050

[www.legacyhealth.org/cancer](http://www.legacyhealth.org/cancer)



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