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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.

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.
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.
Comprehensive cancer services

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

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

**Cancer programs and specialty areas**
- Autologous stem cell transplant program
- Bladder cancer
- Blood cancers
- Brain and spinal tumors
- Breast cancer services
- Children’s Cancer and Blood Disorders Program
- Colorectal cancer
- Esophageal cancer
- Gynecologic cancers
- 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

*Most of these are active links. Click to open the relevant page on the Legacy Health website.*
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 Antoszewska, 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
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...
## Site Analysis — Gynecologic

### Figure 1: Primary Cancer Sites, Legacy Health 2016, All Ages

<table>
<thead>
<tr>
<th>Primary Site</th>
<th>Emanuel</th>
<th>Good Samaritan</th>
<th>Meridian Park</th>
<th>Mount Hood</th>
<th>Salmon Creek</th>
<th>Legacy Health</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patient Count</td>
<td>Percentage of Total</td>
<td>Patient Count</td>
<td>Percentage of Total</td>
<td>Patient Count</td>
<td>Percentage of Total</td>
</tr>
<tr>
<td>Anus/anal canal</td>
<td>1</td>
<td>0.4%</td>
<td>7</td>
<td>0.6%</td>
<td>4</td>
<td>1.0%</td>
</tr>
<tr>
<td>Bladder/urethra/other urinary organs</td>
<td>11</td>
<td>4.5%</td>
<td>55</td>
<td>4.6%</td>
<td>28</td>
<td>6.8%</td>
</tr>
<tr>
<td>Bone/joints/articular cartilage</td>
<td>0</td>
<td>0.0%</td>
<td>1</td>
<td>0.1%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Brain/other nervous system</td>
<td>27</td>
<td>11.1%</td>
<td>20</td>
<td>1.7%</td>
<td>11</td>
<td>2.7%</td>
</tr>
<tr>
<td>Breast</td>
<td>0</td>
<td>0.0%</td>
<td>298</td>
<td>24.8%</td>
<td>111</td>
<td>27.1%</td>
</tr>
<tr>
<td>Cervix</td>
<td>0</td>
<td>0.0%</td>
<td>20</td>
<td>1.7%</td>
<td>2</td>
<td>0.5%</td>
</tr>
<tr>
<td>Colon</td>
<td>1</td>
<td>0.4%</td>
<td>35</td>
<td>2.9%</td>
<td>29</td>
<td>7.1%</td>
</tr>
<tr>
<td>Corpus uteri</td>
<td>2</td>
<td>0.8%</td>
<td>137</td>
<td>11.4%</td>
<td>4</td>
<td>1.0%</td>
</tr>
<tr>
<td>Esophagus</td>
<td>0</td>
<td>0.0%</td>
<td>6</td>
<td>0.5%</td>
<td>3</td>
<td>0.7%</td>
</tr>
<tr>
<td>Eye/orbit</td>
<td>0</td>
<td>0.0%</td>
<td>2</td>
<td>0.2%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Gallbladder</td>
<td>0</td>
<td>0.0%</td>
<td>1</td>
<td>0.1%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Hodgkin's lymphoma</td>
<td>0</td>
<td>0.0%</td>
<td>3</td>
<td>0.3%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Kidney/renal pelvis/ureter</td>
<td>19</td>
<td>7.8%</td>
<td>54</td>
<td>4.5%</td>
<td>12</td>
<td>2.9%</td>
</tr>
<tr>
<td>Larynx</td>
<td>2</td>
<td>0.8%</td>
<td>2</td>
<td>0.2%</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Leukemia</td>
<td>22</td>
<td>9.0%</td>
<td>15</td>
<td>1.3%</td>
<td>10</td>
<td>2.4%</td>
</tr>
<tr>
<td>Liver/Intrahepatic bile duct</td>
<td>8</td>
<td>3.3%</td>
<td>9</td>
<td>0.8%</td>
<td>9</td>
<td>2.2%</td>
</tr>
<tr>
<td>Lung/bronchus</td>
<td>27</td>
<td>11.1%</td>
<td>114</td>
<td>9.5%</td>
<td>32</td>
<td>7.8%</td>
</tr>
<tr>
<td>Melanoma (in situ and malignant)</td>
<td>3</td>
<td>1.2%</td>
<td>59</td>
<td>4.9%</td>
<td>8</td>
<td>2.0%</td>
</tr>
<tr>
<td>Mesothelioma</td>
<td>0</td>
<td>0.0%</td>
<td>1</td>
<td>0.1%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Myeloma</td>
<td>0</td>
<td>0.0%</td>
<td>1</td>
<td>0.1%</td>
<td>3</td>
<td>0.7%</td>
</tr>
<tr>
<td>Non-Hodgkin's lymphoma</td>
<td>7</td>
<td>2.9%</td>
<td>28</td>
<td>2.3%</td>
<td>20</td>
<td>4.9%</td>
</tr>
<tr>
<td>Nose/nasal cavity/middle ear</td>
<td>2</td>
<td>0.8%</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Oral cavity/pharynx</td>
<td>12</td>
<td>4.9%</td>
<td>22</td>
<td>1.8%</td>
<td>4</td>
<td>1.0%</td>
</tr>
<tr>
<td>Other biliary</td>
<td>0</td>
<td>0.0%</td>
<td>1</td>
<td>0.1%</td>
<td>2</td>
<td>0.5%</td>
</tr>
<tr>
<td>Other digestive organs</td>
<td>0</td>
<td>0.0%</td>
<td>3</td>
<td>0.3%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Other gynecologic sites</td>
<td>0</td>
<td>0.0%</td>
<td>14</td>
<td>1.2%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Other skin</td>
<td>0</td>
<td>0.0%</td>
<td>2</td>
<td>0.2%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Ovary</td>
<td>1</td>
<td>0.4%</td>
<td>28</td>
<td>2.3%</td>
<td>2</td>
<td>0.5%</td>
</tr>
<tr>
<td>Pancreas</td>
<td>9</td>
<td>3.7%</td>
<td>21</td>
<td>1.8%</td>
<td>18</td>
<td>4.4%</td>
</tr>
<tr>
<td>Penis</td>
<td>0</td>
<td>0.0%</td>
<td>2</td>
<td>0.2%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Prostate gland</td>
<td>37</td>
<td>15.2%</td>
<td>148</td>
<td>12.0%</td>
<td>37</td>
<td>9.0%</td>
</tr>
<tr>
<td>Rectum/rectosigmoid junction</td>
<td>2</td>
<td>0.8%</td>
<td>23</td>
<td>1.9%</td>
<td>16</td>
<td>3.9%</td>
</tr>
<tr>
<td>Retroperitoneum/peritoneum</td>
<td>0</td>
<td>0.0%</td>
<td>2</td>
<td>0.2%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Small intestine</td>
<td>2</td>
<td>0.8%</td>
<td>5</td>
<td>0.4%</td>
<td>3</td>
<td>0.7%</td>
</tr>
<tr>
<td>Soft tissue</td>
<td>3</td>
<td>1.2%</td>
<td>4</td>
<td>0.3%</td>
<td>3</td>
<td>0.7%</td>
</tr>
<tr>
<td>Stomach</td>
<td>1</td>
<td>0.4%</td>
<td>10</td>
<td>0.8%</td>
<td>5</td>
<td>1.2%</td>
</tr>
<tr>
<td>Testis/spermatic cord</td>
<td>7</td>
<td>2.9%</td>
<td>5</td>
<td>0.4%</td>
<td>6</td>
<td>1.5%</td>
</tr>
<tr>
<td>Thyroid/other endocrine glands</td>
<td>32</td>
<td>13.1%</td>
<td>13</td>
<td>1.1%</td>
<td>19</td>
<td>4.6%</td>
</tr>
<tr>
<td>Thymus/thymusadrenal gland</td>
<td>1</td>
<td>0.4%</td>
<td>0</td>
<td>0.0%</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Vulva/vagina</td>
<td>0</td>
<td>0.0%</td>
<td>17</td>
<td>1.4%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Other/ill-defined sites</td>
<td>5</td>
<td>2.0%</td>
<td>12</td>
<td>1.0%</td>
<td>7</td>
<td>1.7%</td>
</tr>
<tr>
<td><strong>Grand total</strong></td>
<td><strong>244</strong></td>
<td><strong>100%</strong></td>
<td><strong>1,200</strong></td>
<td><strong>100%</strong></td>
<td><strong>410</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Site analysis — Gynecologic

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

<table>
<thead>
<tr>
<th>Primary site</th>
<th>Legacy Emanuel</th>
<th>Legacy Good Samaritan</th>
<th>Legacy Meridian Park</th>
<th>Legacy Mount Hood</th>
<th>Legacy Salmon Creek</th>
<th>Legacy Health</th>
<th>Percentage of total analytics</th>
<th>American Cancer Society*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>0</td>
<td>298</td>
<td>111</td>
<td>54</td>
<td>89</td>
<td>552</td>
<td>21%</td>
<td>249,260</td>
</tr>
<tr>
<td>Prostate</td>
<td>37</td>
<td>148</td>
<td>37</td>
<td>27</td>
<td>64</td>
<td>313</td>
<td>12%</td>
<td>180,890</td>
</tr>
<tr>
<td>Lung/bronchus</td>
<td>27</td>
<td>114</td>
<td>32</td>
<td>29</td>
<td>51</td>
<td>253</td>
<td>9%</td>
<td>224,390</td>
</tr>
<tr>
<td>Colon/rectum</td>
<td>3</td>
<td>58</td>
<td>45</td>
<td>50</td>
<td>49</td>
<td>205</td>
<td>8%</td>
<td>134,490</td>
</tr>
<tr>
<td>Corpus uterus</td>
<td>2</td>
<td>137</td>
<td>4</td>
<td>2</td>
<td>23</td>
<td>168</td>
<td>6%</td>
<td>60,050</td>
</tr>
<tr>
<td>Bladder/urethra</td>
<td>11</td>
<td>55</td>
<td>28</td>
<td>29</td>
<td>42</td>
<td>165</td>
<td>6%</td>
<td>76,960</td>
</tr>
</tbody>
</table>

**Total top six sites**

- Legacy Emanuel: 80
- Legacy Good Samaritan: 810
- Legacy Meridian Park: 257
- Legacy Mount Hood: 191
- Legacy Salmon Creek: 318
- Legacy Health: 1,656

**Percentage of total analytic cases†**

- Legacy Emanuel: 3%
- Legacy Good Samaritan: 30%
- Legacy Meridian Park: 10%
- Legacy Mount Hood: 7%
- Legacy Salmon Creek: 12%
- Legacy Health: 62%
- American Cancer Society*: 55%

*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**

<table>
<thead>
<tr>
<th>Age at diagnosis</th>
<th>Cervix</th>
<th>Corpus uteri</th>
<th>Ovary</th>
<th>Vulva/vagina</th>
<th>Other GYN sites</th>
<th>Percentage of total GYN sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legacy n=30</td>
<td>CoC n=9,943</td>
<td>Legacy n=168</td>
<td>CoC n=42,490</td>
<td>Legacy n=31</td>
<td>CoC n=16,971</td>
<td>Legacy n=29</td>
</tr>
<tr>
<td>&lt;29</td>
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</tbody>
</table>

*Most recent data available from the National Cancer Data Base

**FIGURE 4 Legacy gynecologic treatment migration 2016**

- Green: Diagnosed at Legacy, treated elsewhere (39%)
- Blue: Diagnosed at Legacy, treated at Legacy (57%)
- Orange: Diagnosed elsewhere, treated at Legacy (4%)
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, geneticians 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.
## Site analysis — Gynecologic

### Figure 6: First course of treatment, gynecologic malignancies — Legacy 2016 vs. CoC 2014*

<table>
<thead>
<tr>
<th></th>
<th>Cervix</th>
<th>Corpus uteri</th>
<th>Ovary</th>
<th>Vulva/vagina</th>
<th>Other GYN sites</th>
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*Most recent data available from the National Cancer Data Base
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*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 inter-menstrual 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.

References
Integrated genomic characterization of endometrial carcinoma. *Nature* 497, 67–73. 02 May 2013
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
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.1

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,2 while Lynch syndrome is more associated with non-serous epithelial tumors.3,4

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...
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. (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.

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.*

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**Endnotes**


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.
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.
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

Physical therapy for gynecologic oncology patients

By Claudia von Hammerstein, PT., 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?)

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.
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.
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 requirements, 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.

• 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 gynecologic 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.

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

By Reza Antoszewska, 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.
Compliance

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 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.

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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...
Cancer Liaison Physician report

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.

<table>
<thead>
<tr>
<th>FIGURE 10</th>
<th>Commission on Cancer (CoC) Cancer Program Practice Profile Report (CP3R), Legacy Health, Breast Performance Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select measures</td>
<td>CoC standard</td>
</tr>
<tr>
<td>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)</td>
<td>4.4</td>
</tr>
<tr>
<td>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)</td>
<td>4.4</td>
</tr>
<tr>
<td>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)</td>
<td>4.4</td>
</tr>
<tr>
<td>Image or palpation-guided needle biopsy to the primary site is performed to establish a diagnosis of breast cancer (Quality Improvement)</td>
<td>4.5</td>
</tr>
<tr>
<td>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)</td>
<td>NA</td>
</tr>
</tbody>
</table>

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


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
Marc 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, PT., 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

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.