OHSU CANCER COMMITTEE

2015 Annual Report
Focus on Melanoma
Dear colleagues and friends,

As chairman of the OHSU Cancer Committee, I am proud to present this year's report.

For 2015, we have focused on advances in melanoma treatment, including standardized screening and examination procedures and the most advanced surgical techniques and adjuvant therapies. If melanoma is found and treated early, an estimated 95 percent of patients live at least 10 years. This makes screening and early detection paramount. The OHSU Knight Cancer Institute partners with the National Cancer Institute and national and global advocacy organizations to improve sun safety, increase research participation and detect malignancies as early as possible.

In this report, we also highlight the Commission on Cancer's Cancer Program Practice Profile Report, or CP3R. This Web-based reporting tool offers providers information on consideration of and adherence to selected standards of care for breast, colon, lung and gastric cancers. The CP3R aims to improve patient care quality at the local level and allows hospitals to compare their care to that of other providers.

This year was truly historic for OHSU. We met the $1 billion fundraising challenge from Nike co-founder Phil Knight and his wife Penny, setting a new philanthropic record. More than 10,000 donors from all 50 states participated, inspired by our plans to radically transform early detection of lethal cancers. Early detection is one of the greatest needs in today’s cancer care.

In addition, this year marks the creation of the OHSU Knight Cancer Network. This statewide organization for cancer prevention and outreach will help us better serve the entire state, including many Oregonians in rural areas.

As always, our goal is to help you offer patients the most advanced, timely and compassionate care available. We know that the strongest outcomes come from effective communication and close collaboration with patients and providers, and we aim to be your resource for the highest quality of cancer care in our community and beyond.

Sincerely,

Kevin Billingsley, M.D.
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Treating melanoma at OHSU Knight Cancer Institute
The OHSU Knight Cancer Institute provides patient- and family-centered care from internationally known providers. OHSU also offers access to major research trials and a wide range of resources for every stage of cancer and recovery.

At the OHSU Knight Cancer Institute, experts from many medical disciplines come together to provide the most advanced care available for patients with melanoma, including the latest surgical techniques and clinical trial options. Leadership by a dermatologist means we have a greater integration and emphasis on the early stages of disease than many cancer centers are able to accomplish. OHSU’s melanoma program also has an increased focus on prevention and early detection, as well as expansion of population health, immunotherapy and translational research efforts.

From advanced diagnostic tools to new drugs that are increasing survival, we offer a full range of options to patients from Oregon and beyond.
Melanoma today: Rising incidence, varying prognosis

Skin cancers are the most commonly diagnosed malignancy in the United States. Most skin cancers are not melanomas—basal and squamous cell carcinomas are much more common. However, melanoma is the most fatal of all cutaneous malignancies, and incidence has risen in the past 30 years.

### Melanoma of the skin

#### Percentage of cases by stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localized</td>
<td>84%</td>
</tr>
<tr>
<td>Regional</td>
<td>9%</td>
</tr>
<tr>
<td>Distant</td>
<td>4%</td>
</tr>
<tr>
<td>Unknown</td>
<td>3%</td>
</tr>
</tbody>
</table>

#### Percentage of cases and five-year relative survival by stage at diagnosis

- **Localized**: 100%
- **Regional**: 75%
- **Distant**: 50%
- **Unstaged**: 25%
- **Unknown**: 0%

#### Percentage of five-year relative survival by stage at diagnosis

- **Localized**: 98.3%
- **Regional**: 63%
- **Distant**: 16.6%
- **Unstaged**: 80.2%
Comparison of melanoma to other cancers by age group

Percentage of new cases by age group

Percentage of deaths by age group


The percentage of deaths from melanoma of the skin is highest among people aged 75–84, but disproportionately affects younger individuals relative to other cancers.

69

Median age at death

Early detection improves melanoma survival significantly. Patients treated for stage 0 or thin stage I melanomas are likely to have a long, disease-free survival or cure. On the other hand, lesions that go undetected until they exceed two millimeters thick are more likely to lead to fatal metastatic disease.

**An Oregon concern**

The state of Oregon has one of the nation’s highest incidence rates of melanoma. Incidence for both sexes combined is 26.6 per 100,000 residents. This is more than 133 percent of the U.S. average for melanoma, which is 19.9 new cases per 100,000 residents. Mortality statistics are even more alarming. Oregon men < 65 have the fifth highest melanoma mortality rate in the nation; women are first (SEER 2008–2012). The reason for the disproportionately high fatalities in women with melanoma is unknown.

**Age-adjusted invasive cancer incident rates in the U.S.**

**Melanoma of the skin, 2008–12**

**By state**

*AGE-ADJUSTED TO THE 2000 U.S. STANDARD POPULATION*

**U.S. RATE: 19.85 PER 100,000**

<table>
<thead>
<tr>
<th>Range</th>
<th>Color</th>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.77–18.26</td>
<td>Light orange</td>
<td>Light orange</td>
</tr>
<tr>
<td>18.34–20.90</td>
<td>Yellow</td>
<td>Yellow</td>
</tr>
<tr>
<td>21.00–23.03</td>
<td>Light red</td>
<td>Light red</td>
</tr>
<tr>
<td>23.40–32.80</td>
<td>Dark red</td>
<td>Dark red</td>
</tr>
</tbody>
</table>

Our location in a state with high melanoma incidence and mortality has spurred the OHSU Knight Cancer Institute and melanoma program to redouble our efforts. Our aim is to improve melanoma care for all, and to improve awareness and sun safety in our state and beyond. This report covers how melanoma is treated at OHSU, our specific expertise and our approach to improving skin cancer awareness in the community. We also provide some data on all cancers treated at OHSU.

**REFERENCE**

Connecting with global research

The OHSU melanoma program is one of four institutions participating in the Melanoma Tissue Bank Consortium (MTBC). This consortium is creating a primary melanoma tissue archive for melanoma research efforts worldwide. Your patients are welcome to participate in this tissue bank repository to help advance melanoma research. Major advances in treating other cancers, such as breast and prostate cancer, have resulted from similar sample-banking efforts.

The consortium aims to gather 500 tissue samples for melanoma research, with accompanying blood and urine samples and other information. Any patient, regardless of where they received care, can donate tissue to the bank for research. Other MTBC members are California Pacific Medical Center, Northwestern University’s Robert H. Lurie Comprehensive Cancer Center and the University of Pittsburgh Cancer Institute.

Member of collaborative working groups on melanoma

OHSU’s program is also a member of cooperative groups such as the Southwest Oncology Group, the National Sentinel Lymph Node Working Group and the International Melanoma Working Group. Participation in national working groups such as these gives you and your patients access to the most advanced clinical trials, enables clinicians to better understand the pathology of lymph node metastases, and helps researchers accelerate discovery of new, more effective melanoma treatments. These efforts keep our program at the cutting edge of advances in melanoma care.

Oregon’s national melanoma ranking

<table>
<thead>
<tr>
<th>Incidence</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>#5</td>
<td>overall nationally</td>
</tr>
<tr>
<td>#3</td>
<td>females (under 50) nationally</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mortality</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>#4</td>
<td>overall nationally</td>
</tr>
<tr>
<td>#1</td>
<td>females (all ages) nationally</td>
</tr>
</tbody>
</table>


In the U.S. in 2015, the American Cancer Society estimated about 73,870 new melanomas will be diagnosed and about 9,940 people will die of melanoma.
Multidisciplinary melanoma tumor board

Bringing specialists from many disciplines together is a key differentiator for patients who receive melanoma care at an academic medical center such as OHSU. Patients who come to OHSU with melanoma or suspected melanoma are treated according to the National Comprehensive Cancer Network (NCCN) guidelines. However, some cases are not straightforward. These are presented at the melanoma treatment planning conference, or “tumor board,” that meets three times a month. Experts from relevant disciplines are present. Our multidisciplinary tumor board provides the knowledge to cover every possible therapeutic option and clinical trial that may be helpful.

This group addresses all types of skin cancer concerns, including:

- Melanoma
- Atypical melanocytic neoplasms of uncertain malignant potential
- Advanced basal cell and squamous cell carcinoma
- Merkel cell carcinomas

**Expert review**

We offer case review and prospective treatment planning from specialists in:

- Dermatology
- Surgical and medical oncology
- Radiation oncology
- Interventional radiology
- Surgical pathology and dermatopathology
- Genetics and genetic counseling
- Clinical and basic research
- Clinical trial coordination
- Patient navigation, nutrition, social work and other family services

The OHSU Melanoma Executive Working Group meets on the fourth Thursday of each month to evaluate clinical trial offerings and set the strategic initiatives of the group.
Prospective treatment planning

Community providers are welcome to present a difficult case to the melanoma treatment planning forum, attend case conferences in person or by video, and/or participate in this CME-qualified conference. Beginning in the fall of 2016, tumor boards will be available by video streaming. The multidisciplinary team creates a prospective written treatment plan at the time each case is discussed. This plan is filed for review at the next patient encounter and shared with the community provider.

The melanoma treatment planning conference is just one of OHSU Knight Cancer Institute’s 15 disease-specific tumor boards. All boards are overseen by the OHSU Cancer Committee, which is accredited by the American College of Surgeons.

Multidisciplinary Melanoma Tumor Board Director
John Vetto, M.D., F.A.C.S.

To present a case to the melanoma tumor board, please email russelpa@ohsu.edu.

To refer a patient or consult with the OHSU melanoma team, call the OHSU Physician Consult and Referral Service at 800 245-6478.

Caring for your patients

We take pride in the specialty care we provide to OHSU-based patients and those who are referred to us from the community.

89% of melanoma patients seen at OHSU survive longer than the national average, based on stage-specific survival rates. (NCDB Survival Data, 2003–2008)

Patients rate us in the top 99th percentile nationally compared to their experience with others. (Press Ganey)

Expert pathology diagnoses for over 500 cases were given to community providers in 2015.
Screening and diagnosis

OHSU Skin Cancer Screening Guidelines

We recommend an annual skin cancer screening examination for individuals with the following risk factors:

- Family history of skin cancer
- Considerable history of sun exposure and sunburn
- Light-skinned men and women over the age of 65
- Patients with atypical moles
- Patients with more than 50 moles

The relative risk of melanoma increases with each of these risk factors, as indicated below.

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Relative risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of skin cancer (AK, BCC, SCC)</td>
<td>4.3 [2]</td>
</tr>
<tr>
<td>History of indoor tanning in women &lt; 30 (ever vs. never)</td>
<td>6.0 [4]</td>
</tr>
<tr>
<td>History of sunburns (positive vs. negative)</td>
<td>2.0 [3]</td>
</tr>
<tr>
<td>Atypical nevi (5 vs. 0)</td>
<td>6.2 [1]</td>
</tr>
<tr>
<td>Multiple nevi (101–120 vs. 15)</td>
<td>6.9 [1]</td>
</tr>
<tr>
<td>Sun sensitivity</td>
<td></td>
</tr>
<tr>
<td>Fitzpatrick I vs. IV</td>
<td>2.1 [2]</td>
</tr>
<tr>
<td>Fitzpatrick II vs. IV</td>
<td>1.8 [2]</td>
</tr>
<tr>
<td>Density of freckles (high vs. low)</td>
<td>2.1 [2]</td>
</tr>
<tr>
<td>Eye color (light vs. dark)</td>
<td>1.5–1.6 [2]</td>
</tr>
<tr>
<td>Hair color</td>
<td></td>
</tr>
<tr>
<td>Blonde vs. dark</td>
<td>2.0 [2]</td>
</tr>
<tr>
<td>Red vs. dark</td>
<td>3.6 [2]</td>
</tr>
</tbody>
</table>

REFERENCES

Other individuals without these specific risk factors should discuss the utility of an annual examination with their provider and jointly determine if an exam is indicated. Patients who have had a melanoma may need more frequent examinations. This depends on the disease stage at diagnosis and how long since it was diagnosed.

**Self-examination for all patients**

Many melanomas are found by patients, friends or family members. For this reason, the OHSU melanoma program recommends that all patients examine their own skin each month, whether or not they have had a previous melanoma. Enlisting the help of a partner is encouraged because it can improve detection of suspicious lesions in hard to examine areas, such as the scalp, back or back of legs. Self-examination raises melanoma awareness and may increase the likelihood of patients bringing a suspect lesion to the clinician sooner. This is beneficial because stage at diagnosis is a key predictor of outcome in melanoma.

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**Familial melanoma — When do patients need genetic testing?** By Sancy Leachman, M.D.

Approximately 55 percent of malignant melanomas have a genetic cause, while 45 percent can be attributed to environmental factors. Several melanoma predisposition genes have been identified, including **CDKN2A, CDK4, BAP1,** and **MITF,** among others.

So which patients should be offered genetic testing for familial melanoma? Our clinic follows the “rule of three.” We offer genetic counseling to melanoma patients who fall into one or both of these categories:

- A melanoma patient with a personal history of three or more invasive melanomas.
- A melanoma patient who has two or more first- or second-degree blood relatives with invasive melanoma, pancreatic cancer, uveal melanoma, neurological tumors, breast cancer, renal cancer or mesothelioma.

People who are members of a “melanoma family,” but have not had melanoma themselves, should be screened every six to 12 months beginning at age 21.

If a causative gene is identified, the lifetime risk is estimated to be approximately 30 to 70 percent, and screening may need to begin as early as puberty, between the ages of 10 and 14. These patients should practice photoprotection and receive increased monitoring via 1) thorough, regular mole monitoring and 2) screening for other associated cancers. These patients’ first-degree relatives should be offered genetic counseling and testing.

The OHSU melanoma program can connect appropriate patients with a medical geneticist and genetic counselor to discuss testing options. If you are concerned about a patient or would like to discuss genetic testing for melanoma, please call the OHSU Physician Consult and Referral Service at 800-245-6478.
Clinician exam

Skin checks by a trained clinician are essential for high-risk patients. Studies show that melanomas discovered on routine clinical examination were thinner than those found by patients, which correlates with earlier-stage disease.

Clinician screening is especially valuable for the back and backs of the legs, which are challenging for patients to screen on their own. The trunk, including the back, is the most common site for melanomas in men, followed by the head and neck. In women, the most common site is the lower leg. However, head and face melanomas account for more than one-third of cases.

Pigmented lesion clinic

Tracking changes over time is a key to detecting melanoma early. Patients referred to the OHSU melanoma program’s pigmented lesion clinic have a personal history of melanoma or atypical nevi, a family history of melanoma or numerous moles.

The medical team is expert at recognizing atypical lesions. Patients receive a total-body skin exam and can also receive a specialized photography session to track lesions over time.

An OHSU mole-tracking app, Mole Mapper™, is sometimes recommended as an adjunct to a self-skin exam. See call-out box on page 15 for details.

Standardizing the melanoma examination

Our dermatologic oncologists use a standardized approach to the clinical examination for melanoma survivors and patients with suspected melanomas. For patients who are seen twice yearly (for example,

<table>
<thead>
<tr>
<th>Long-term follow-up for high-risk patients</th>
<th>By John Vetto, M.D., F.A.C.S., and Kristen Massimino, M.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients at risk for recurrent melanoma require a long-term screening regimen. During the first five years after diagnosis, follow-up is typically with the physician and team who managed the most advanced disease stage, though shared follow-up is common in the multidisciplinary setting.</td>
<td></td>
</tr>
<tr>
<td>Surgical oncology, medical oncology and dermatology participate as needed. For example, a patient with stage II melanoma has long-term follow-up with the dermatology team. A patient with stage III receives follow-up care from surgical oncology, while a patient with stage IV melanoma is followed up by the medical oncology team. Patients at all stages benefit from the expertise of OHSU’s multidisciplinary melanoma team and the resources of the OHSU Knight Cancer Institute, including access to national clinical trials.</td>
<td></td>
</tr>
<tr>
<td>For patients at high risk of recurrence (stages IIB–IV), the standard cutaneous oncology follow-up schedule is:</td>
<td></td>
</tr>
<tr>
<td>• First two years year post-treatment: every two to four months</td>
<td></td>
</tr>
<tr>
<td>• Third to fifth year post-treatment: every six months</td>
<td></td>
</tr>
<tr>
<td>• Fifth year and beyond: yearly</td>
<td></td>
</tr>
<tr>
<td>Tests at each visit depend on the stage of melanoma treated. The OHSU melanoma program follows NCCN guidelines, including a complete history and physical at each visit. Dermatologic surgeons follow patients every three to 12 months depending on risk, according to American Academy of Dermatology guidelines.</td>
<td></td>
</tr>
</tbody>
</table>
high-risk melanoma survivors), practitioners frequently alternate visits so that these specialized providers are familiar with the patient, and the patient benefits from a built-in second opinion.

Our physician-nurse practitioner team has a combined 45 years of experience in melanoma screening and care. This approach provides continuity and quality of care. It also ensures established patients with new lesions are seen quickly by providers well-versed in their cases, facilitating speedy diagnosis and treatment.

Susan Tofte, F.N.P., sub-specializes in melanoma early detection and has led the Department of Dermatology’s mole monitoring clinic since 2004.

DermSpectra™ high-resolution photography

In addition to clinical examinations, we offer patients high-resolution skin photography with the DermSpectra™ Skin Imaging System. Patients step into a private photo booth, operated by a trained medical technician, which uses nine high-resolution digital cameras to create a photographic record of skin lesions. (Patients may choose to wear some clothing, though they are counseled that this may lead to missing some lesions.) Patients receive a USB drive with their photos and are encouraged to make a follow-up appointment with an OHSU provider or, if not an OHSU patient, with their own provider to review the images or share photos. These photos can be included in the patient’s medical record.

Advantages of DermSpectra™ over traditional medical photography of skin lesions include:

- Lighting optimized for the highest-quality images.
- Seven standard photography positions to provide maximal views and allow replication in future scans.

Patients should allow one hour for the appointment, with approximately 20 minutes in the photo booth. DermSpectra™ takes less time than traditional medical photography and is a less costly option.

Mole Mapper app for tracking, research

Mole Mapper™ is a new cellphone app currently available for iPhone® (coming to Android in 2016). Patients use the phone’s camera to photograph their moles. The app maps moles to zones on the body and tracks changes in their size over time, using a reference object such as a coin. Mole Mapper™ also reminds patients to check their moles regularly. Users can share images with their health care team.

In addition to helping patients track moles, Mole Mapper™ allows them to participate in research to improve melanoma diagnosis. Users may choose to keep their images private, share images only with their own doctors or complete an in-app consent process to participate in a research study. Once consented, they can securely transmit Mole Mapper™ images — and responses to occasional research surveys — to help researchers study whether cell phone images can help develop diagnostic algorithms. Patients are cautioned that Mole Mapper™ is not a diagnostic tool.
Melanoma diagnosis and survival rates by stage
In order to diagnose and stage melanoma, a biopsy is critical. An excisional biopsy with a 1 to 2 mm margin of adjacent normal-appearing skin is recommended, though a deep saucerization biopsy is also appropriate if the entire lesion can be sampled with this technique. Superficial shave biopsies should be avoided. An incisional biopsy may be required for larger lesions. Sentinel node biopsy is used to inform treatments and follow-up regimens and should be used for patients presenting with clinical stage IB or II disease prior to any surgery or adjuvant therapy.

**Staging**

The TNM System (Tumor-Node-Metastasis) is the most widely used way of determining cancer stages. This staging system, created by the American Joint Committee on Cancer (AJCC), provides important prognostic and survival information. A number of clinical and pathological factors determine the stage of melanoma.

The “T” categories are given numbers (0 to 4) based on the tumor’s thickness. The tumor may also be assigned the letter “a” or “b” based on ulceration and mitotic rate.

The “N” indicates the number of lymph nodes positive for cancer cells and whether they have moved from the primary tumor into nearby lymph nodes. The nodes may be classified using “a” or “b” based on whether the lymph node is palpable or not and whether or not it can be seen on a scan. Nodes are referred to as “c” when they are in-transit metastases or satellites without metastatic nodes.

The “M” category is used to describe melanoma metastasis throughout the body — whether melanoma cells have moved from the primary (original) site to distant sites in the body and where those sites are located. The prognosis is affected by where metastasis has occurred.

The latest 2009 AJCC staging guidelines include a measure of proliferation (mitotic rate) while eliminating the Clark level for stage I disease. For stage IV cases, serum levels of lactate dehydrogenase (LDH) are included because it is a strong prognostic factor in melanoma. Sentinel node biopsy with immunohistochemical (IHC) staining is acknowledged as a common way to identify the presence of micrometastases.
<table>
<thead>
<tr>
<th>Stage</th>
<th>Ulceration status</th>
<th>Tumor thickness (T)</th>
<th>Regional lymph nodes (N)</th>
<th>5-year survival rates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LOCAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 0/In situ</td>
<td>–</td>
<td>–</td>
<td>none</td>
<td>99%+</td>
</tr>
<tr>
<td>Stage IA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1aN0M0</td>
<td>No ulceration or mitosis &lt;1/mm²</td>
<td>T1a: ≤ 1.0mm</td>
<td>none</td>
<td>95%</td>
</tr>
<tr>
<td>Stage IB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1bN0M0</td>
<td>No ulceration or mitosis ≥ 1/mm²</td>
<td>T1b: ≤ 1.0mm</td>
<td>none</td>
<td>91%</td>
</tr>
<tr>
<td>T2aN0M0</td>
<td></td>
<td>T2a: 1.01-2.0 mm</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td><strong>REGIONAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage IIA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2bN0M0</td>
<td>With ulceration</td>
<td>T2b: &gt; 1 ≤ 2.0mm</td>
<td>none</td>
<td>77–79%</td>
</tr>
<tr>
<td>T3aN0M0</td>
<td>No ulceration</td>
<td>T3a: 2.01-4.0mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage IIB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T3bN0M0</td>
<td>With ulceration</td>
<td>T3b: 2.01-4.0mm</td>
<td>none</td>
<td>63–67%</td>
</tr>
<tr>
<td>T4aN0M0</td>
<td>No ulceration</td>
<td>T4a: &gt; 4mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage IIC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T4bN0M0</td>
<td>With ulceration</td>
<td>T4b: &gt; 4mm</td>
<td>none</td>
<td>45%</td>
</tr>
<tr>
<td>Stage IIIA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1-4aN1aM0</td>
<td>No ulceration</td>
<td>Any depth</td>
<td>N1a: 1 node</td>
<td>70%</td>
</tr>
<tr>
<td>T1-4aN2aM0</td>
<td>No ulceration</td>
<td></td>
<td>N2a: 2–3 nodes</td>
<td>63%</td>
</tr>
<tr>
<td>Stage</td>
<td>Ulceration status</td>
<td>Tumor thickness (T)</td>
<td>Regional lymph nodes (N)</td>
<td>5-year survival rates</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------</td>
<td>---------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
</tbody>
</table>
| **Stage IIIB**
T1-4bN1aM0  
T1-4bN2aM0  
T1-4aN1bM0  
T1-4aN2bM0  
T1-4aN2cM0  
AnyTN3M0 | With ulceration   | Any depth           | N1a: 1 node                                                                            | 50–53%               |
|            |                   |                     | N2a: 2–3 nodes                                                                          |                       |
|            | No ulceration     | Any depth           | N1b: 1 node                                                                            | 46–59%               |
|            |                   |                     | N2b: 2–3 nodes                                                                          |                       |
|            |                   |                     | N2c: ≥ 4 nodes matted or in-transit                                                      |                       |
| **Stage IIIC**
T1-4bN1bM0  
T1-4bN2bM0  
T1-4bN2cM0  
AnyTN3M0 | With ulceration   | Any depth           | N1b: 1 node                                                                            | 24–29%               |
|            |                   |                     | N2b: 2–3 nodes                                                                          |                       |
|            |                   |                     | N2c: ≥ 4 nodes matted or in-transit                                                      |                       |

**REFERENCES**
Melanoma treatment
By Sancy Leachman, M.D., Ph.D., John Vetto, M.D., F.A.C.S.,
Justin Leitenberger, M.D., Anna Bar, M.D., Kristen Massimino,
M.D., and Matthew Taylor, M.D.

Stage 0/In situ melanoma on the head and neck can have
subclinical extension beyond its borders, so for these anatomic
locations, Mohs surgery is utilized at OHSU. It is treated with
a two-step surgical approach. The first step involves the
modified Mohs micrographic surgical technique, which allows
microscopic evaluation of 100 percent of the tissue margin on
the day of surgery. If melanoma is present at the margins, additional skin is removed on the same day until the margin is clear. The second step involves removing an additional thin margin, which is processed in the dermatopathology lab using standard paraffin-embedded permanent sections. Confirming clear margins using both methodologies increases the level of confidence that all of the cancer has been removed.

Patients typically return on the first or second postoperative day for wound reconstruction or removal of additional tissue layers in the rare instance that margins are still positive. In general, the modified Mohs technique provides more complete and efficient melanoma removal early in the disease course when stage 0/in situ melanoma is more likely to be cured. In addition, patients often only need to come to the surgical suite on two days rather than several.

**Stage IA** melanoma on most locations on the body is typically treated by a dermatologic surgeon with a modified Mohs technique (see above). The lesion is widely excised with margins of 1 to 2 centimeters. In general, it is recommended that stage IA patients have close follow-up surveillance by a dermatologist every two to four months for the first two years, every six months for years two to five, and then annually after five years.

**Stage IB and II** melanoma is also typically treated with wide excision with a margin of 1 to 2 cm. Sentinel lymph node biopsy is often recommended at this stage. Patients may be offered molecular prognostic testing, clinical trial participation and adjuvant interferon-alpha or other adjuvant drugs on clinical trials. Follow-up is similar to stage I disease, but typically includes involvement of both dermatology and surgical oncology and may involve imaging in high-risk cases.

**Stage III** melanoma is generally treated with an excision with a 1 to 2 cm margin, if not already done. Patients receive a node dissection to ensure no cancerous nodes remain. Medical therapy is with interferon-alpha, ipilimumab, vaccines and other drugs, given on or off a clinical trial. These drugs are given as adjuvants to improve survival beyond surgery alone. The medical oncologist works with the patient to create an individualized treatment plan, taking into account the form of stage III melanoma as well as the patient’s health and lifestyle. Postoperative radiation may be given to the affected node sites, especially if pathologic examination reveals a significant amount of cancer in the nodes. Follow-up is similar to stage II disease (every two to four months for the first two years, every six months out to five years, and annually thereafter), though care is often shared between surgical and medical oncology (first five years) and performed primarily by dermatology after five years. Imaging studies and laboratory tests may be routinely performed to monitor recurrence or progression of disease.

**Stage IV** melanoma is not curable, as the cancer has metastasized to distant lymph nodes and sites, including the lungs, liver, brain and bones. However, long-term survival statistics have improved dramatically with the advent of effective targeted and immunotherapies (see box). Treatment can include removing the affected nodes and organ metastases if there are one or a few metastases involved. Such treatment may relieve symptoms and prevent death from causes such as respiratory failure, but may not prolong survival. Lung and brain metastases are most frequently fatal. Nonresectable areas of tumor may be treated with radiation to make them shrink. Drugs and vaccines, including immunotherapy, targeted therapy and chemotherapy, can sometimes shrink tumors and prolong survival. Follow-up is similar to stage III.
New FDA-approved drugs for melanoma
By Matthew Taylor, M.D.
New agents deliver game-changing treatment, better outcomes

The timeline below shows drugs used to treat malignant melanoma in the past 40 years. Since 2010, research has led to an explosion in the number of therapeutic agents for melanoma, with the addition of nine new drugs to the oncology arsenal. These agents have the potential to change melanoma outcomes for thousands of patients.

2014 – The FDA approved pembrolizumab and nivolumab for treatment of advanced or metastatic melanoma that was not responsive to other drugs. These drugs act by blocking a cellular pathway called PD-1, which restricts the body’s immune system from attacking melanoma cells.


May 2014 – Combination therapy with dabrafenib and trametinib was approved. Both are for patients with inoperable metastatic melanoma with a mutation in a gene call BRAF. The combination was approved based on a phase 3 trial that showed substantial benefit to patients with advanced melanoma.


November 2015 – The FDA approved the use of nivolumab in combination with ipilimumab to treat metastatic melanoma. In this study, over 60 percent of patients treated with this combination had a substantial decrease in the size of their tumors.

New treatment trials increase survival
By Matthew Taylor, M.D.

Clinical trials of new treatments are the bright spot for patients with metastatic melanoma, which is generally not considered curable. Patients in some ongoing trials of novel immunotherapies have survived several years beyond the typical life expectancy for patients with these advanced cancers.

OHSU participates in all phases of clinical trials for melanoma. These trials aim to find new therapeutics that are less toxic and more effective than current treatments and that increase survival.

Current melanoma trials present patients with promising options. We encourage community providers to contact OHSU early in the patient’s care to discuss potential clinical trial options and how to sequence these with FDA-approved therapies. A patient who has already received too many treatments, or specific therapies, may not be eligible for participation in some clinical trials. Understanding the options for both clinical trials and standard treatment early in the disease course helps patients maximize their options.
**Radiation therapy for melanoma**
*By Arthur Hung, M.D.*

Melanoma was once thought to be radiation-resistant. However, research has shown that these tumors do respond to larger fractionated doses given over a shorter time than for other cancers. For example, the standard course of radiation for another malignancy may last six to seven weeks. To treat melanoma, a larger dose may be given in fewer treatments (e.g., five treatments in two and a half weeks).

Radiation therapy is not a primary melanoma treatment, but is an option for controlling regional spread and metastasis. For example, it may be used as:

- Adjuvant therapy for patients with high risk of local recurrence or positive surgical margins (e.g., to decrease incidence of cancer recurrence in lymph nodes)
- Therapy to eradicate limited metastatic disease in the brain or the rest of the body
- Palliative therapy for patients with metastatic disease
- Local control for melanomas

**Radiation with targeted therapies**

Treatment effects on melanoma may be additive when used with immunotherapy such as ipilimumab, nivolumab or pembrolizumab. There is growing evidence that radiation has the potential to expose antigens for presentation to the immune cells at the same time that checkpoint inhibitors and anti-CLA4 therapies (such as ipilimumab) invigorate the immune system. The theory is that the immune system begins to change so it is better able to identify the cancer cells. While the mechanism of action is not yet fully understood, the treatment is promising enough to warrant giving a large dose of radiation for palliation along with immunotherapy under some circumstances.

**Hyperthermia for melanoma**

Hyperthermia is available at OHSU to treat melanoma. It is sometimes used to treat patients with satellitosis, where melanoma has recurred in many small tumors under the skin near the primary site. The hyperthermia and radiation work in tandem, both rendering the cancer cells more vulnerable to immune system activity and ramping up the immune response.

The radiation oncology team works with the surgical and medical oncologists to control regional and systemic disease as completely as possible. OHSU will be adding a dedicated melanoma radiation oncologist, Reid Thompson, M.D., Ph.D., to the program in 2016.

**Personalizing melanoma therapies**
*By Christopher Corless, M.D., Ph.D.*

Not all patients with melanoma will benefit from immunotherapies, but there may be other options depending on their tumors' mutation profiles. The Knight Diagnostic Laboratories, located at OHSU, offers state-of-the-art testing for melanoma that can identify alterations for which targeted therapeutics can be highly effective. In addition, the laboratories can screen for germline abnormalities that may confer cancer risk. Employing next-generation DNA sequencing technologies for clinical testing, Knight Diagnostic Laboratories is among the nation's leaders in the development of custom assays to serve cancer patients.
The term “ocular melanoma” is typically used to refer to uveal melanomas that arise in the iris, ciliary body and choroid. These tumors are the most common intraocular malignancy in adults, accounting for 95 percent of ocular melanomas. Approximately 5 percent of ocular melanomas affect the conjunctiva. These lesions are molecularly distinct from uveal melanomas and more similar to melanomas of the skin. The ocular melanoma specialists at OHSU Casey Eye Institute, also melanoma program members, are the Pacific Northwest’s primary referral center for this disorder.

**Treating ocular melanoma**

Ocular melanoma is a rare disease, affecting five to six people per 1 million per year. It is optimally treated at an academic medical center using a multidisciplinary approach. Patients are generally referred when their physician notes a concerning lesion. There are many benign ocular lesions, so as with cutaneous melanoma, review by a specialist can be reassuring or the first step toward treatment. Growth or change in a lesion raises concern for melanoma. High-risk features for uveal melanoma include subretinal fluid, an orange pigment on the surface of the lesion and visual symptoms. Risk factors include skin and iris pigmentation. The classic presentation is a light-skinned patient with light irises.

Ocular melanoma has no gender predisposition. As with many other cancers, smoking is a risk factor. This form of melanoma is most common in patients in their 60s, but OHSU treats patients across the life span.

**The challenge of micrometastasis in ocular melanoma**

Primary treatment is usually effective and local recurrence is rare. However, micrometastases is a major clinical challenge in uveal melanoma as currently there is no way to detect them. Typically, patients have periodic imaging surveillance, but up to 50 percent of patients with uveal melanoma develop metastatic disease. Uveal melanoma is remarkable for spreading to the liver in more than 90 percent of cases. The lung is the second most common site. This predictability allows clinicians to focus imaging efforts on the liver and lungs, but unfortunately no curative treatment currently exists for metastatic disease. Identifying patients as early as possible offers the best chance for higher quality of life and more
durable response to treatment. Several clinical trials are open in the United States and research is ongoing to develop improved systemic and liver-directed therapies.

**Molecular testing for likely metastasis**

Molecular testing is available for patients with uveal melanomas that can be biopsied. Gene expression profiling allows clinicians to differentiate tumors likely to metastasize from those that are not. While biopsy is not an option for all patients or tumors, more clinicians and patients are choosing this option in order to plan surveillance, decide on clinical trial participation and make personal decisions.

**Treating uveal melanoma**

Uveal melanoma can be treated through enucleation surgery or radiation therapy. Enucleation surgery is removal of the eye that leaves the muscles intact. It is the best option for some patients, such as individuals with very large tumors or other ocular concerns.

Radiation therapy is either plaque brachytherapy, performed in cooperation with the OHSU Radiation Medicine department, or charged particle therapy. Treatment is selected on a case-by-case basis and tailored to each patient’s needs.

**Treating conjunctival melanoma**

Treatment for ocular surface melanoma is typically excisional biopsy with cryotherapy. Prognosis depends on the location of the original tumor, but both local recurrence and metastatic disease may occur. Patients with conjunctival melanoma should be monitored two to three times yearly (more often in the postoperative period) by both an ophthalmologist with experience in melanoma and by an oncologist for evaluation of metastatic disease. Our conjunctival melanoma team includes specialists in ocular surface tumors, including cornea and oculoplastic surgeons as well as medical oncologists.
Melanoma in adolescent and young adult patients

By Brandon Hayes-Lattin, M.D.

Melanoma is a common cancer in adolescents and young adults (AYA), particularly women. It is the second most common malignancy in women aged 20–29, after thyroid cancer, and the third most common in the 30–39 age group (when breast cancer becomes more prevalent). Melanoma is the most common cancer in men aged 35–39.

Reasons for melanoma’s prevalence in this age group are not completely understood. However, melanoma in younger patients may be due to a genetic syndrome or immunosuppression, as well as to the ultraviolet light exposure with which melanoma is associated.

**Melanoma behaves differently in AYAs**

Young adults with melanoma tend to present with thicker lesions than older patients. It is not yet clear whether this is due to delayed diagnosis or differing biology. Young patients tend to have a greater risk of sentinel lymph node involvement than older patients with the same stage of melanoma in the skin. Thicker lesions and sentinel node involvement are both associated with worse prognosis.
Increased prevalence of BRAF mutation in younger individuals

The genetic mutations seen in melanoma vary by age. For example, BRAF (pronounced “BEE-raff”) mutations occur in 80 to 90 percent of young adults with melanoma, versus 60 to 70 percent of all melanomas. Targeted therapy is available.

An important time for prevention

Many cases of melanoma in older adults can be linked to UV exposure as a young person. Sun exposure and sunburns as a young adult are one of the most important risk factors for melanoma in later years, so sun safety messages to adolescents and young adults are recommended.

Personalized support for AYAs with melanoma

While melanoma is common among young adults, the average age at diagnosis is 62. Adolescent and young adult patients may feel isolated because they are different from most others in treatment. Young adults and teens also have very different medical, emotional and social needs from both children and older adults.

Patients aged 15 to 39 can benefit from the OHSU Knight Cancer Institute’s Adolescent and Young Adult Oncology program while being treated for cancer or making the transition to survivorship. This program is the only one in Oregon and one of a few nationwide. Medical director Brandon Hayes-Lattin, M.D., is a survivor of young adult cancer who advises many advocacy groups on the medical needs of adolescent and young adult patients.

The AYA program helps with:

- Concerns about fertility after cancer treatment
- Emotional challenges
- Education, relationship and career challenges
- Insurance coverage
- Other medical and life issues related to cancer and treatment

Support services include Cancer Transition Sessions, a six-week program to help young adults transition from treatment to survivorship; the support group Survivor Portland; and Unspoken Ink, a 10-week creative writing workshop. The program also collaborates with First Descents Weekend to present a two-day summer adventure program for AYA cancer fighters and survivors.

The AYA program’s community partners include:

- Familias en Acción
- Oncology Youth Connection
- Athletes for Cancer
- Children’s Healing Art Program
- Leukemia-Lymphoma Society
- Candlelighters

Participants in OHSU’s AYA program have access to all the resources of the OHSU Knight Cancer Institute, including clinical trials. To refer a patient or consult with OHSU’s AYA program staff, call 503-494-0446.
Melanoma Community Registry

The OHSU Knight Cancer Institute is home to the Melanoma Community Registry. Sancy Leachman, M.D., Ph.D., is the principal investigator for this IRB-approved registry, officially named the War on Melanoma: enlisting a cohort of melanoma survivors and their families (IRB # 10561). Individuals who join the registry can participate in research studies and educational opportunities, and volunteer in their communities to spread awareness.

The ultimate goal of the registry is to support myriad studies aimed at decreasing melanoma deaths in Oregon by 50 percent over a five-year period once research begins. Initially launched in May 2014, the registry currently has approximately 6,000 melanoma survivors, family members and friends who have already joined the registry. Anyone can join regardless of where they live or where they receive care.

Why Oregon?

Oregon consistently has one of the highest incidence rates of melanoma cases in the United States. Despite its cloudy weather, melanoma rates are high in the state. We want to understand why. In a study done in Germany, an educational campaign and routine screening done by trained clinicians had a significant impact on the mortality rate of melanoma. There are many similarities between that region and Oregon including demographics and population size. Using an experimental design, we hope to launch a public health campaign of education and outreach with individuals, skin care providers and medical professionals to detect melanomas early when the cure rate is highest. This is in addition to the ongoing clinical trials and bench science needed to find answers.

Confidential registration and resources

Participating in the Melanoma Community Registry is confidential. Registrants may complete surveys about their melanoma diagnosis and request information on research opportunities, upcoming events and patient resources.

Reaching rural Oregonians

Beyond the western corridor of the Willamette Valley, much of Oregon is rural. Residents in these areas may lack access to skin cancer education, screening or dermatologists and other melanoma specialists. The registry is a way to connect people to information and studies that may lead to earlier diagnoses and improved outcomes statewide.
Sample donations for basic science research

We know melanoma has a strong genetic component. People who have had multiple melanomas and/or have a blood relative with melanoma have a significantly increased melanoma risk. Therefore, having blood, saliva and tissue samples for basic science research is critical to finding answers. At OHSU, the Knight Cancer Institute BioLibrary and the Melanoma Tissue Bank Consortium are exceptional resources for scientists. We provide opportunities at community outreach events for our registry members to provide valuable samples. Together we can make a difference.

<table>
<thead>
<tr>
<th>Registry membership</th>
<th>Members of OHSU’s Melanoma Community Registry as of November 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,702</td>
<td>Melanoma survivors</td>
</tr>
<tr>
<td>568</td>
<td>Family members</td>
</tr>
<tr>
<td>207</td>
<td>Friends of survivors</td>
</tr>
<tr>
<td>140</td>
<td>Other</td>
</tr>
<tr>
<td>2040</td>
<td>Mole Mapper™ users</td>
</tr>
</tbody>
</table>

Community partners

The registry works with nonprofit and national organizations as well as other OHSU departments. Partners include:

- AIM at Melanoma
- SolSurvivors Oregon

War on Melanoma Principal Investigator
Sancy Leachman, M.D., Ph.D.

Registry coordinator
Elizabeth Stoos

For more information, email waronmelanoma@ohsu.edu or call 844 300-SPOT (7768).
Prevention: melanoma and sun safety outreach

<table>
<thead>
<tr>
<th>War on Skin Cancer Event — May 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>127 people joined the Melanoma Community Registry</td>
</tr>
<tr>
<td>244 completed a research survey</td>
</tr>
<tr>
<td>162 donated blood samples to the Knight Biolibrary</td>
</tr>
<tr>
<td>50 expressed interest in clinical trials</td>
</tr>
<tr>
<td>61 signed up to be healthy controls</td>
</tr>
<tr>
<td>252 had skin cancer screenings</td>
</tr>
<tr>
<td>150 played the “Wheel of Prevention” educational game</td>
</tr>
</tbody>
</table>

**Research expo and outreach events**

The Department of Dermatology and the OHSU Knight Cancer Institute hold an annual community outreach event in May for melanoma awareness month. In 2015, more than 800 visitors attended the War on Skin Cancer Event at the OHSU Center for Health and Healing on the South Waterfront in downtown Portland. The day featured a skin cancer research expo with researchers available to discuss their current areas of inquiry with attendees. OHSU and community dermatology providers provided free skin cancer screenings. A 5K community walk was held to raise melanoma awareness and research funds to support the Melanoma Tissue Bank Consortium.

For the past two years, the OHSU Department of Dermatology has collaborated with SolSurvivors Oregon (www.SolSurvivorsUSA.org/Oregon) to present the Melanoma Community Research Forum. Held in November 2015 at the Collaborative Life Sciences Building on the South Waterfront, presentations included “Family history and melanoma prevention” by Lisa Aspenwall, Ph.D., of the University of Utah, and “Melanoma treatment and clinical trials” by Matthew Taylor, M.D., of OHSU. Attendees were invited to join the presenters in small discussion groups to share their personal experiences with melanoma.

**Community Cancer Education Program**

The OHSU Knight Cancer Institute’s Community Cancer Education Program is part of the National Cancer Institute’s National Outreach Network. Programs are underway in Bend, a sunny, high-altitude region located in the central part of the state known for outdoor recreation and ranching. Skin cancer incidence rates are high there and elsewhere in rural Oregon. Knight Community Health Educators conduct prevention activities in several rural Oregon communities.

**Supporting sun safety legislation**

The OHSU melanoma program, including members of the Melanoma Community Registry, provided strong backing for the nearly unanimous passage of House Bill 3041 in the Oregon State Legislature. This law makes Oregon the second state in the union, after California, to allow children to use sunscreen and wear sun-protective clothing at school and school-sponsored activities. Sunscreen was formerly regulated as a nonprescription medication.
Previously, the OHSU Knight Cancer Institute supported the Oregon State Legislature in passing House Bill 2896. This bill makes it illegal for children under 18 to use tanning devices unless they have a physician’s exemption. Oregon was the third state in the nation to enact this ban. As of July 2015, 10 other states and the District of Columbia now have this restriction.

Establishment of the OHSU Knight Cancer Network Grant provides vital support for rural Oregonians

This year marks the launch of the OHSU Knight Cancer Network, a statewide cancer outreach network. The network will provide hospitals, medical oncology practices, physicians and community-based health organizations — such as skilled nursing facilities, hospice care and home health agencies — access to OHSU Knight Cancer Institute expertise in cancer prevention, education, diagnostics, treatment and survivorship. It will also offer support to direct patients to appropriate clinical trials. The network is the first of its kind in Oregon.
Margy Bertoldi was hired to serve as administrator of the network. She will provide administrative leadership to the program under the guidance of the OHSU Knight Cancer Institute’s Deputy Director Tom Beer, M.D., and Ann Raish, Vice President, oncology services.

The OHSU Knight Cancer Network is part of OHSU’s commitment to increase engagement with communities statewide. The network’s goals are to provide educational and training opportunities for health care professionals as well as to develop strong support programs within community health care organizations. This will meet patients’ needs more effectively by ensuring they have access to the best treatment at the most appropriate location.

**Pairing basic research with sun safety education**

Educating children on sun safety is an important step toward reducing the burden of melanoma and other skin cancers. OHSU researcher Amanda McCullough, Ph.D., works with the Environmental Protection Agency’s SunWise program to provide age-appropriate sun safety education to K–12 students. She has worked in the Beaverton, Ore., school district for nearly 10 years. Lessons include content on sun safety, UV radiation, using UV-sensitive beads, and a UV-sensitive Frisbee. Teachers receive follow-up activities and information on the SHADE Foundation of America’s joint poster contest with the EPA.

In 2014, the McCullough lab worked with OHSU researchers to survey approximately 200 Oregon educators on participation in the EPA SunWise program. The research group also worked on a sun safety education program for young workers in the City of Portland Department of Parks and Recreation. This program included videos and memes directed to a young adult audience. Data analysis is ongoing for these studies.

**Delivering evidence-based prevention**

Each year, the OHSU Knight Cancer Institute provides at least one evidence-based prevention activity that meets the needs of our community. Oregon’s high rates of melanoma incidence and mortality make this disease a high public health priority. The OHSU Knight Cancer Institute melanoma program is committed to delivering health promotion in the most effective, evidence-based manner to the right audience.
Sun safety recommendations
Appropriate sun protection measures can help reduce the incidence of melanoma. The OHSU melanoma program recommends:

1. Wearing photoprotective clothing
This is the most important element. If an area can be covered with clothing, there is no need for sunscreen.

2. Using sunscreen
For areas not covered by clothing. Our physicians recommend a zinc oxide-based physical sunblock.

3. Avoiding strong midday UV light
Choosing morning or evening rather than midday for outdoor activities, and opting for shade instead of direct sun, makes a significant difference in an individual’s dose of UV radiation.
Quality study and improvement — liver resection fast track

Impact of fast tracking liver resection patients to medical surgical oncology unit

Until recently, all patients undergoing liver resection at OHSU were admitted to the intensive care unit postoperatively. However, not all these patients require ICU-level care. Drawbacks include lower patient mobility, longer time to urinary catheter removal and a longer hospital stay. In turn, these factors increase cost and the risk of potential complications, while diverting resources from patients in need of intensive care.

To test an alternative to this tradition, a surgical oncologist agreed to admit patients undergoing liver resection directly to a medical-surgical oncology (MSO) unit. Screening criteria for admitting liver resection patients directly to an MSO unit were developed and implemented. Nurses on the MSO unit were educated on the specific needs of post-liver resection patients. The post-anesthesia unit nurses agreed to complete phase 1 post-anesthesia care, then hand patients over to MSO nurses.

Methods

Clinical data from the University Health System Consortium database was used to pull patient outcome data. Patients were identified by hospital code and primary procedure code (50.22 hepatectomy, 50.3 hepatic lobectomy). These codes limited the study to patients treated by the participating surgical oncologist for the study period of April 2014-March 2015. The methodology was repeated for April-June 2015 to identify five patients for comparison. In addition, the records of five study patients were reviewed for data on postoperative ambulation and urinary catheter removal and to identify complication data.
Results

- The average length of stay (LOS) for liver resection patients was seven days. Study patients averaged five days. The average LOS in the ICU was two days. Study patients averaged 0.2 days in the ICU.
- The average direct cost of care for liver resection patients was $18,029. For study patients, it was $14,946.
- The five patients whose records were reviewed ambulated on the first day after surgery, or POD-1. They walked an average of 3.8 times per day. Urinary catheters were removed on POD-1.
- One patient in the study developed a post-operative ileus, had urinary retention and was transferred from the MSO unit to the ICU for a day.

Conclusions

Limiting ICU admission of liver resection patients to those who require intensive care may decrease overall patient LOS and cost of care. This practice could also increase availability of ICU beds for patients who need these resources. Admitting patients directly to an MSO unit after liver resection may also decrease the risk of complications because of earlier ambulation and urinary catheter removal.
Cancer Program Practice Profile Report (CP3R)

The Commission on Cancer’s Cancer Program Practice Profile Report or CP3R, is a Web-based reporting tool that offers providers a platform to assess adherence to and consideration of standard of care therapies for major cancers. CP3R currently reports estimated performance rates for five quality improvement measures and five accountability measures from four primary sites including breast, colon, gastric and lung. The most recent data set available to review is from 2013. The CP3R reporting tool aims to promote improvement in the quality of patient care at the local level and also allows hospitals to compare their care to that of other providers.

Annually, the Commission on Cancer requires their accredited facilities to review performance levels for selected accountability and quality improvement measures. OHSU appoints a cancer liaison physician (CLP) to their Cancer Committee who is responsible for analyzing and presenting this data to the committee each year. The OHSU Cancer Committee CLP for 2015 is Liana Tsikitis, M.D.

Dr. Tsikitis and the Cancer Committee members review every case for every CP3R measure that falls below 100 percent to ensure no quality of care issues have occurred. An action plan is developed for any CP3R measure that falls below thresholds established by the CoC.
C3PR measures focused on in 2013

<table>
<thead>
<tr>
<th>MEASURE NAME AND DEFINITION</th>
<th>COC STANDARD</th>
<th>OHSU</th>
<th>OREGON STATE</th>
<th>ALL COC APPROVED PROGRAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BREAST</strong></td>
<td></td>
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</tr>
<tr>
<td>NBX</td>
<td>80%</td>
<td>95.7%</td>
<td>88.9%</td>
<td>90.3%</td>
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<tr>
<td>Image or palpation-guided needle biopsy (core or FNA) of the primary site is performed to establish diagnosis of breast cancer (Quality Improvement)</td>
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<tr>
<td>HT</td>
<td>90%</td>
<td>98%</td>
<td>96.1%</td>
<td>91.3%</td>
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<tr>
<td>Tamoxifen or third generation aromatase inhibitor is considered or administered within 1 year (365 days) of diagnosis for women with AJCC T1c or stage IB-III hormone receptor positive breast cancer (Accountability)</td>
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<tr>
<td>MASTRT</td>
<td>90%</td>
<td>100%</td>
<td>86.4%</td>
<td>87.7%</td>
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<tr>
<td>Radiation therapy is considered or administered following any mastectomy within 1 year (365 days) of diagnosis of breast cancer for women with &gt;= 4 positive regional lymph nodes (Accountability)</td>
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<tr>
<td>BCSRT</td>
<td>90%</td>
<td>99.2%</td>
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<td>Radiation is administered within 1 year (365 days) of diagnosis for women under the age of 70 receiving breast conservation surgery for breast cancer (Accountability)</td>
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<tr>
<td>MAC</td>
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<td>100%</td>
<td>95.2%</td>
<td>92.3%</td>
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<td>Combination chemotherapy is considered or administered within 4 months (120 days) of diagnosis for women under 70 with AJCC T1cN0, or stage IB - III hormone receptor negative breast cancer (Accountability)</td>
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<tr>
<td><strong>COLON</strong></td>
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<tr>
<td>ACT</td>
<td>90%</td>
<td>92.3%</td>
<td>91.5%</td>
<td>89.3%</td>
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<td>Adjuvant chemotherapy is considered or administered within 4 months (120 days) of diagnosis for patients under the age of 80 with AJCC stage III (lymph node positive) colon cancer (Accountability)</td>
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<td>12RLN</td>
<td>85%</td>
<td>*85.7%</td>
<td>90.6%</td>
<td>90%</td>
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<tr>
<td>At least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer (Quality Improvement)</td>
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<tr>
<td><strong>GASTRIC</strong></td>
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<tr>
<td>G15RLN</td>
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<td>64%</td>
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<tr>
<td><strong>LUNG</strong></td>
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<td></td>
</tr>
<tr>
<td>LNOSURG</td>
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<td>100%</td>
<td>94.2%</td>
<td>92%</td>
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<tr>
<td>Surgery is not the first course of treatment for cN2, M0 lung cases (Quality Improvement)</td>
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*While 21 patients met inclusion criteria for this measure, 3 had fewer than 12 nodes removed. For one patient, resection was minimized due to 2 additional complex primary malignancies; another patient was undergoing polypectomy and it was unclear if invasive cancer was present. No reason was noted or identified for the third patient.*
2014 analytic cases — site and stage distribution
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**NOTE** Figures above represent patients first seen at OHSU in 2014 and include analytic cases only (diagnosed here and/or received part or all first course here). Basal and squamous cell skin cancer and CIS cervix not collected.
OHSU cancer committee and leadership teams 2015

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