

# Legacy Cancer Institute Annual Report 2023

Oral, Head and Neck Cancers



Legacy Cancer Institute

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

## Face Forward- The rich history and features of Head and Neck Cancer, at the Legacy Cancer Institute

By Nathalie Johnson, MD, FACS; breast surgical oncologist; senior medical director, LMG Specialties & medical director of Legacy Cancer Institute & Breast Health Centers

Featuring our Head and Neck Cancer program is such a pleasure because we



can put our best Face Forward. Our program has such a storied history with pioneers of head and neck surgery, embodying excellence in the past and continuing with innovation and cutting-edge therapies and surgical technology today. In recognition of our storied history, we go back to Dr. Harvey Baker, a nationally recognized surgical oncologist who specialized in head and neck surgery and was the father of the Cancer Institute at Legacy (Good Samaritan). He is recognized as leader in Head and Neck cancer and wrote one of the early manuals "*Surgery of the Head and Neck. A Handbook of Operative Surgery*" first published in 1958. He also we a major contributor to the booklet on Oral Cancer published by the American Cancer Society in 1973. The Society of Surgical Oncology still awards the Harvey Baker traveling award, and a statue of Dr Baker sits at the entrance to building 3 at our Good Samaritan campus.

Fast forward to the present, and our Head and Neck program is still putting it's best Face Forward. Dr. Cheng, our fearless leader, and team are excellent and manage patients with a focus on healing with heart and hope. Although cancer of the head and neck is not as common as lung, prostate, breast or colon cancer its impact on the person affected can be devastating. A tumor in the head and neck region can impact speech and swallowing, which are critical functions, but it can also significantly impact appearance. The impact a change in facial appearance has on the psyche can not be overstated. Here is where the Head and Neck program continues to excel today. Our surgeons were involved in the inception and implementation of computer-assisted design (CAD), which incorporates 3D printing to shape facial reconstructive prosthesis that restores the cosmetic appearance of a patient's face. This has transformed previously disfiguring procedures to remarkable outcomes that remove tumors, including portions of the tongue and or jaw, and yet give results that allow patients to walk in the world without the stares of strangers. This is phenomenal! Our surgeons are also spearheading Transoral Robotic Surgery that allows these resections with less obvious scars and rebuilds the face and neck "Jaw in a Day".

To really round out the complex care of patients with head and neck cancer is the entire team of medical and radiation oncologist who administer the latest therapeutic regimens in keeping with current clinical trial results and best practice. This is in addition to nurse navigation and an amazing team in the Healing Center. It requires a lot of coordination with other services, as many patients require some time with feeding tubes and other means of nutritional support during treatment. There is intensive speech and other therapies needed to return to optimum function. We can't thank our team enough for the superlative care they provide and the ways in which they show up and show out. . . . . Always putting the best Face Forward!

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

## Comprehensive Cancer Services

For more information about our services, please visit [legacyhealth.org/cancer](https://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 and High Risk Services
- Legacy Hospice
- Legacy Medical Group–Colon and Rectal 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
- 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

- Oncology clinical research
- Tumor bank

### Support services — adult

- American Cancer Society Gift Closet
- Cancer support groups and classes
- Cancer survivorship
- Expressive arts therapy
- Green Gables Guest House
- Integrative care and symptom management
- Lymphedema management
- Nutrition
- Oncology nurse navigation
- Pharmacy navigator
- Oncology psychology services
- Oncology social work
- Stress management
- Volunteer program

### Support services — pediatric

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

## Legacy Cancer Institute Overview: Highlights from 2023

By Alizah Rotramel, MD, MS, FACS; colorectal surgeon; chair, Integrated Network Cancer Committee, Legacy Cancer Institute

Our Legacy Integrated Network Cancer Program is an American College of Surgeons Commission on Cancer (CoC)-accredited cancer program.



Throughout each year, our multidisciplinary team assesses and fulfills CoC-required standards involving nine separate categories. Each has separate guidelines and measures that have been designated as optimal for

patient care. CoC Accreditation supports us in evaluating the individual and collective impact of cancer and cancer treatment on the physical, emotional, and spiritual well-being of our patients. We then use these data to compare to national benchmarks and best practices.

In addition to annual and real-time assessments, re-accreditation occurs on a triennial basis. CoC-trained site reviewers visit cancer programs (now virtually) and review program activities and documentation to ensure compliance with standards.

We completed our extensive ACS CoC Re-Accreditation site visit on March 16, 2023. This involved review of our program, project results, visits to our Multidisciplinary Care conferences where patient cases were evaluated, and meetings were held with Legacy administrative leadership, Legacy Cancer Institute staff, physician leadership and committee members.

The Legacy Integrated Network Cancer Program again received full Accreditation through 3/01/2026, and our reviewers provided this summary:

“During the site review the resiliency, collegiality, commitment to their patients, and pride at working at Legacy of the Cancer Committee members and many others who attended were apparent. Despite

the challenges of the past 3 years and their significant impact on their staff and population, they addressed the 2020 CoC standards well, submitted accurate, timely data, and continuously improved high-quality patient care, meeting or often exceeding performance measures. They continue to be role models for an outstanding INCP.”

The re-accreditation was certainly a highlight of 2023!

Notable events during the 2023 year also included:

- Ongoing support programs for our cancer patients, including Forest Bathing, “Return to Self” art therapy, exploring grief and resilience through the creative process, Yoga Nidra, and Gong Bath Meditation.

- Opening of the LCI Sexual Health Clinic, championed by Dr. Moffitt and the gynecology oncology team, identifying and addressing a critical need for cancer patient’s transition to survivorship.

- Implementation of the Mastectomy Same Day Discharge program, identifying and delivering specialized care to appropriate patients.

This year’s Annual Report on Head and Neck Cancers also will provide you with a comprehensive look at our care at Legacy. While it’s just one cancer site, the reviews that follow represent the work of a wide variety of specialists, including oncologists, surgeons, pathologists, radiologists, speech pathologists and other health care professionals, as well as the experienced data reviewers and administrative team. Please enjoy their expert articles-- we appreciate the privilege of serving our patients as the Legacy team, and the opportunity to share our work with you.

## Legacy Cancer Institute Site Analysis: Oral, head and neck cancer

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

In the United States, Oral/Head and Neck Cancer is the ninth most common cancer site. Nationally, it is estimated that 71,190 patients will be diagnosed with



cancer of the oral cavity, pharynx, or larynx in 2024. Of these, an estimated 16,110 patients will die from their disease (ACS Cancer Facts and Figures, 2024). In Oregon, from 2018-2021, there has been an average of 660 new oral and oropharynx cancer diagnoses and an average of 159 deaths annually (Oregon Health Authority).

In 2023, a total of 3,596 patients were diagnosed and/or treated at the Legacy Cancer Institute (LCI). Of these, 141 represented head and neck cancers (oral cavity, oropharynx, larynx, nasal, sinuses, ear, and thyroid). Of these, 67 tumors were in the oral cavity and pharynx. Sixteen tumors were in the larynx. Three tumors were in the nose, nasal cavity and middle ear (see Figure 1). The age distribution of the patients treated at the LCI tracks with the distribution published by the Commission on Cancer (COC) (see Figure 3). Nearly all of these cancers of the head and neck were squamous cell carcinomas (Figure 4). Of these, 28.4% of the oral cavity and oropharynx cancers were related to the human papilloma virus (HPV), which tracks with the observation that most oropharynx cancers are now caused by high-risk HPV.

Depending on the subsite within the head and neck region, the biology and natural history of squamous cell carcinoma, and consequently the treatment, can vary substantially. For oral cavity cancer, surgery takes a primary role, with radiation and chemotherapy used in the adjuvant setting. For cancers of the oropharynx and larynx, primary treatment with radiation therapy and chemotherapy is more commonly used, with surgery reserved for the salvage setting, very advanced local disease,

or very early-stage disease. Figure 5 highlights that the LCI experience mirrors the trends across other sites within the COC.

Head and neck cancers may affect any gender, although there is a strong predilection for males, with 69% of the patients treated at Legacy being male (Figure 6). This has been true for head and neck cancers since they were first described, although why is not completely clear. It is likely that it relates to exposures, namely smoking and alcohol.

Since the start of the LCI Oral/Head and Neck Cancer program, the LCI has made a concerted effort towards outreach. This has clearly paid dividends, as 52% of patients with oral/head and neck cancer treated at Legacy were diagnosed outside the system and referred to Legacy for their care (Figure 7).

A substantial proportion of head and neck cancers were diagnosed at Stage IV (29% in the oral cavity and pharynx, 30% in the larynx, and 32% in the nose, nasal cavity and middle ear; see Figure 8). This is representative of the natural history of this disease, with many of these tumors having high propensity for metastases to lymph nodes in the neck. However, there has been a marked improvement in our earlier diagnoses, with 42% of oral cavity/oropharynx cancers and 37% of larynx cancers being diagnosed in Stage I or II, compared to our data from 2017, where 52% of patients were diagnosed in Stage IV. Part of this is explained by a change in criteria for staging of HPV related oropharynx cancers, but part of this is also due to the work of the LCI to improve education, outreach, and access to head and neck cancer care across the Legacy network.

Despite many patients being diagnosed at Stage IV, routine screening by general practitioners for oral/head and neck cancers is not recommended by the United States Preventive Services Task Force

(USPSTF). However, major dental organizations, including the National Institute of Dental and Craniofacial Research (NIDCR), a branch of the National Institute of Health, encourage dental professionals to perform screening head and neck examinations during dental visits. Since 2017, the LCI has provided both outreach and continuing education to dental professionals as an effort to partner with the dental community in matters relating to oral health.

Although cancers of the oral/head and neck region are less common than other cancer sites, they rank among the most devastating. Oral cavity and pharyngeal cancers have a 5-year survival rate of 69%, while laryngeal cancers have a 5-year survival rate of 61.5% (SEER Cancer Statistics Review, 2014-2020). However, even survivors have several hurdles to returning to their pre-cancer lives. These diseases, along with their treatments, have long lasting effects on speech, swallowing, and facial appearance, all things central to social interactions and a patient's sense of self and well-being. Treatment is enormously complicated, requiring thoughtful integration of surgeons, medical oncologists, radiation oncologists, rehabilitation therapists of multiple disciplines, and highly trained inpatient and outpatient nursing. In addition, these diseases disproportionately affect the most vulnerable of patients, many of whom are elderly, have limited financial resources, and even more limited social support systems. The LCI hosts a multidisciplinary oral/head and neck tumor board once a month to review and treatment plan patients diagnosed within Legacy Health according to current National Comprehensive Cancer Network (NCCN) guidelines. Through these meetings, patients are connected to the members of the treatment team to ensure they are receiving well-coordinated care. The LCI also hosts a recurring Head and Neck Support group to help build a community among and between patients going through the challenges of treatment and survivorship.

Over the last 25 years, we have seen several advances in treatment to address these challenges. The LCI and its collaborators have been heavily invested in pushing for these developments.

One of the largest advances has been in the realm of reconstructive surgery. The development of microvascular free tissue transfer, or "free flaps", has allowed surgeons to borrow tissue from other parts of the body, reshape and repurpose them, and reconstruct large defects with high degrees of reliability. Over the last decade, these techniques have been combined with 3-D imaging, computer planning, and 3-D printing to allow for high levels of patient specific precision. The LCI has been one of a small number of incubators across the country for the development of this technology, which has now become the standard care for head and neck reconstruction. Taking this further, our surgeons at Legacy have been at the forefront of "Jaw in a Day", combining advanced microsurgical techniques, cutting-edge technology, and dental expertise to provide complete skeletal and dental reconstruction in a single surgery.

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

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

Legacy Health and the LCI have, through our commitment to build strong bonds with our partners in the community, created a network that continues to provide not only exceptional health

care, but personal health care. This has been true for our head and neck cancer patients as it has been on all the cancer programs that the LCI has committed to growing.



Figure 1. Woman with recurrent ameloblastoma, a benign aggressive tumor of the mandible.

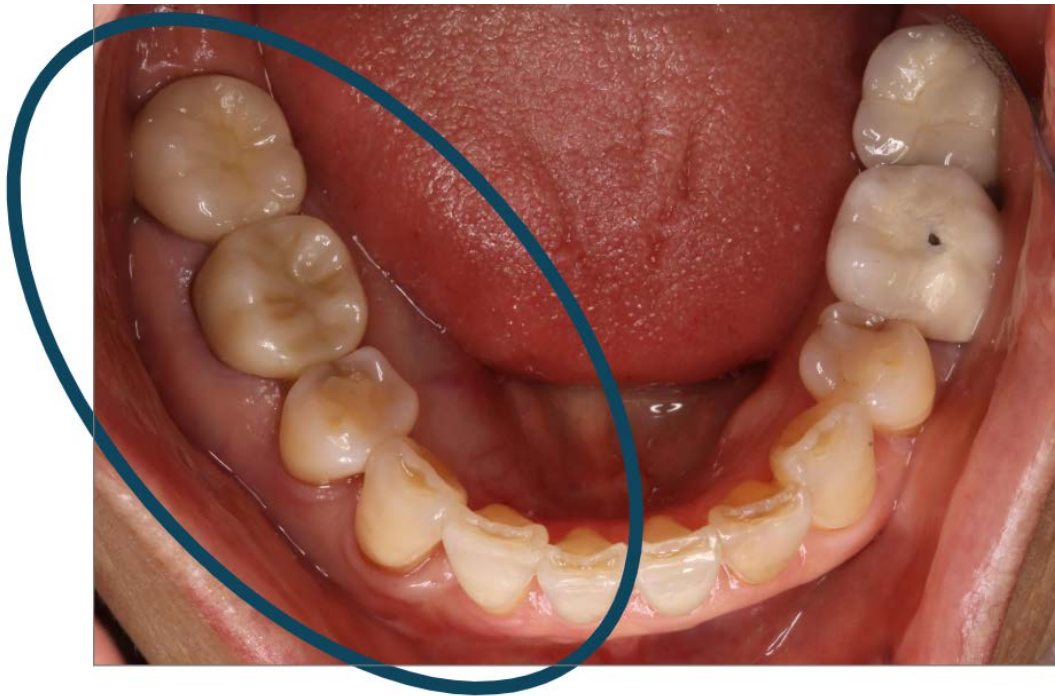


Figure 2. Enlargement of the the right mandibular body due to growth of the tumor.

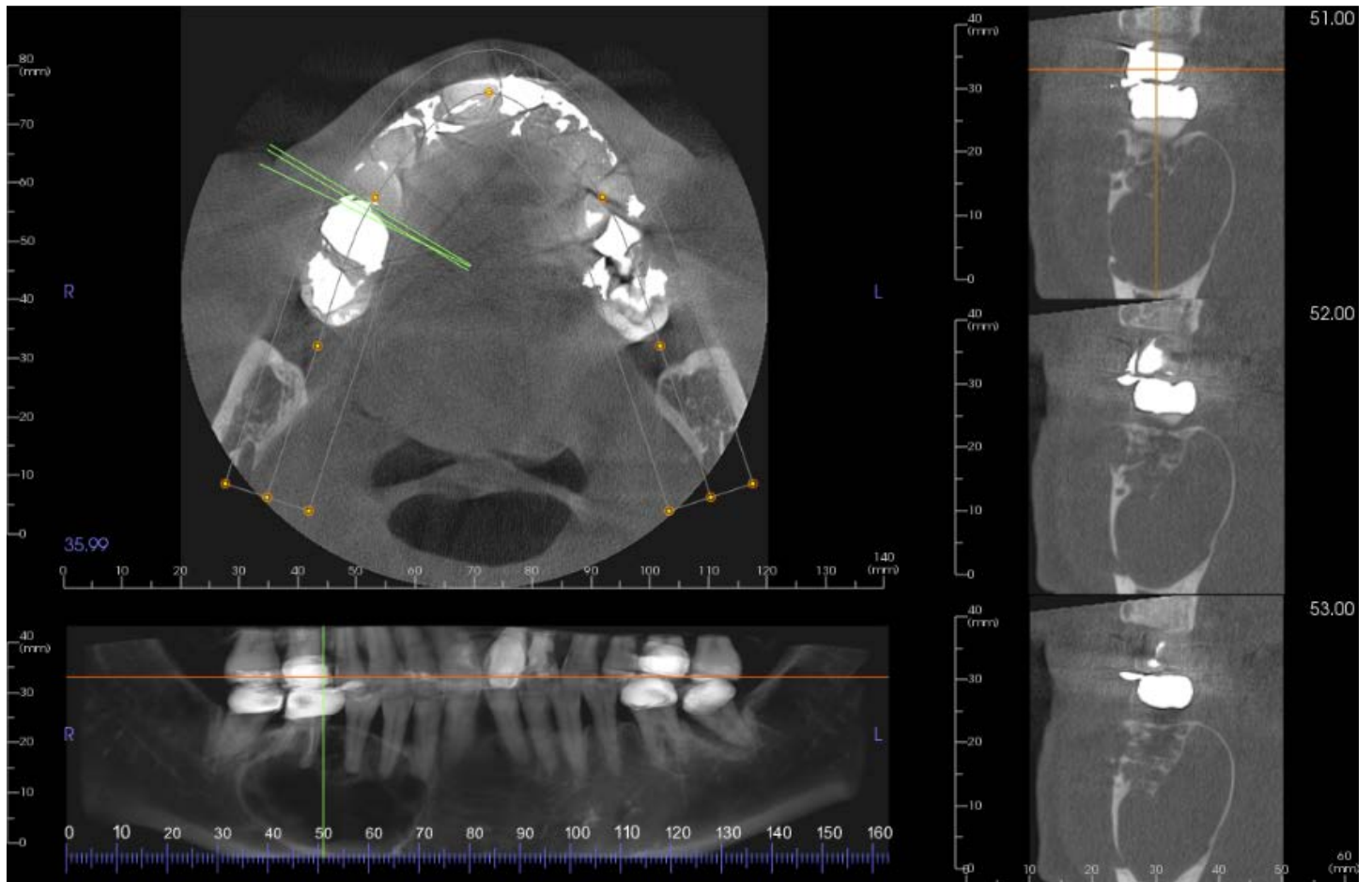


Figure 3. Selected images from a conebeam CT demonstrates a destructive lesion of the mandible

### Guide Design: Titanium 3D Printed Guide for Mandible



Figure 4. Computer planning images. Red highlights the planned resection of the mandible, which includes at least a 1 cm margin beyond the visible tumor. Computer planning and 3D printing are used together to print surgical guides to allow the surgery to proceed precisely as planned.

### Guide Design: Fibula Harvesting Guide (Slot)

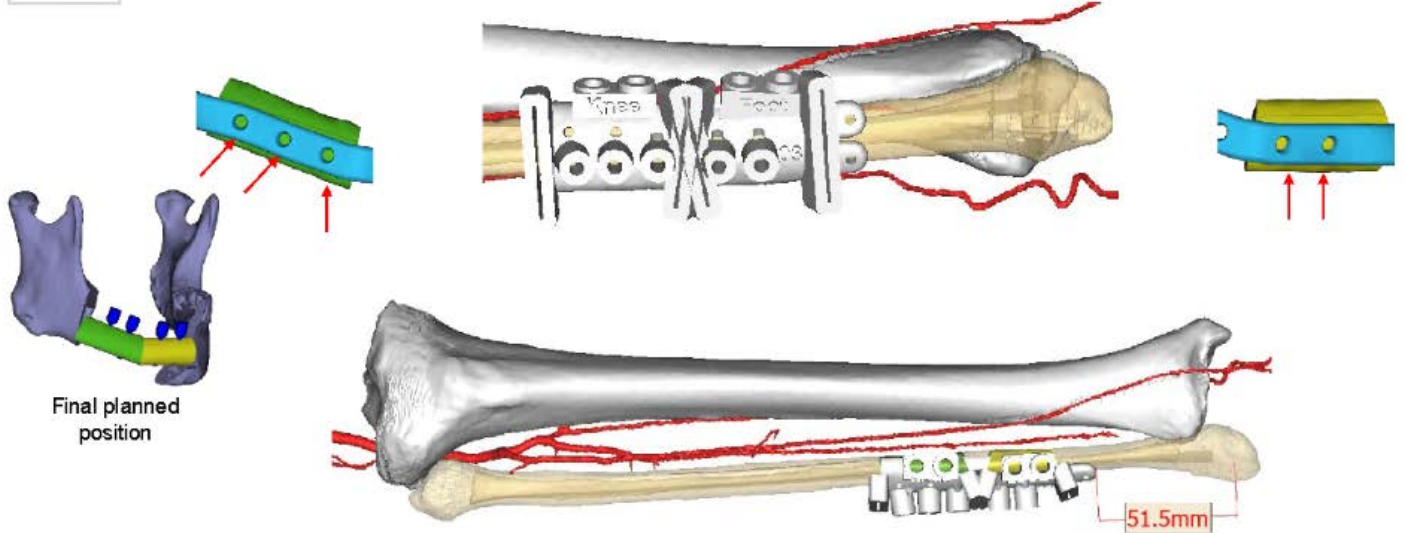
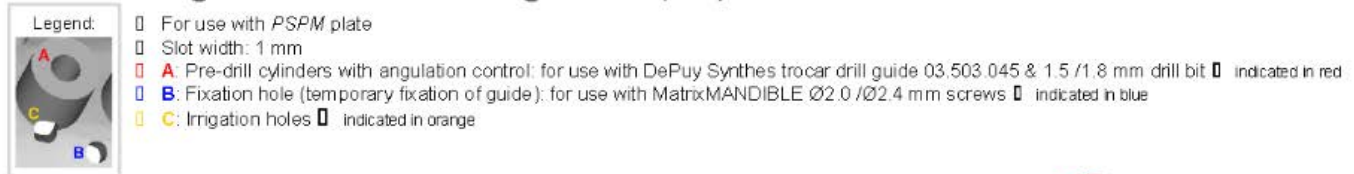


Plate screw holes that are indicated by fibula guide (counting from distal):

- Part 1: All holes
- Part 2: All holes

Figure 5. The patient was planned for a reconstruction with a fibula free flap. Computer planning allows for 3D printed surgical guides that allow us to accurately place dental implants and shape the fibula into a new mandible.

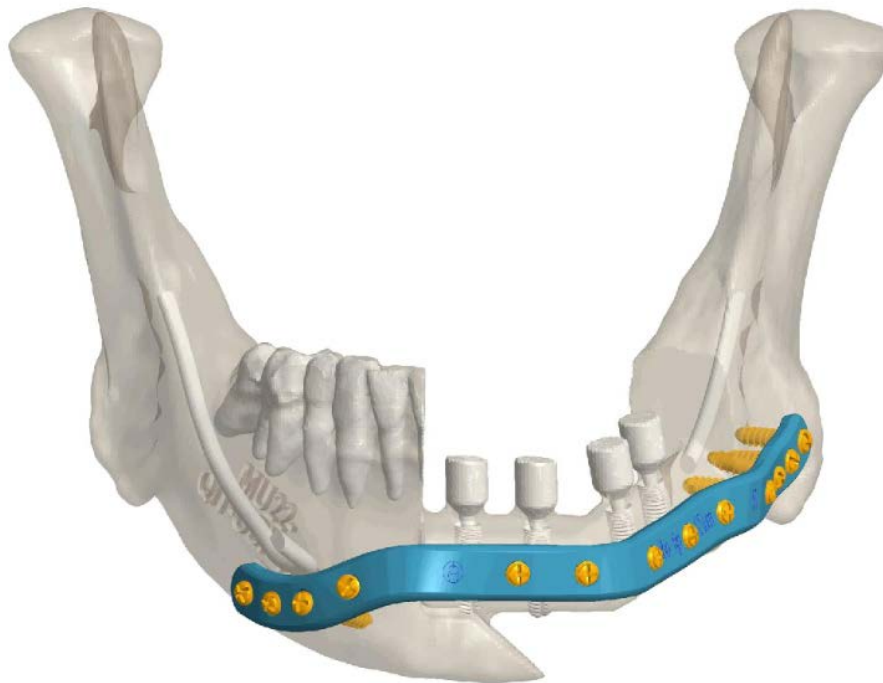


Figure 6. Computer planning is also used to create patient specific plating hardware. This removes the need for manual shaping of hardware. The result is more efficient, accurate, and stronger.

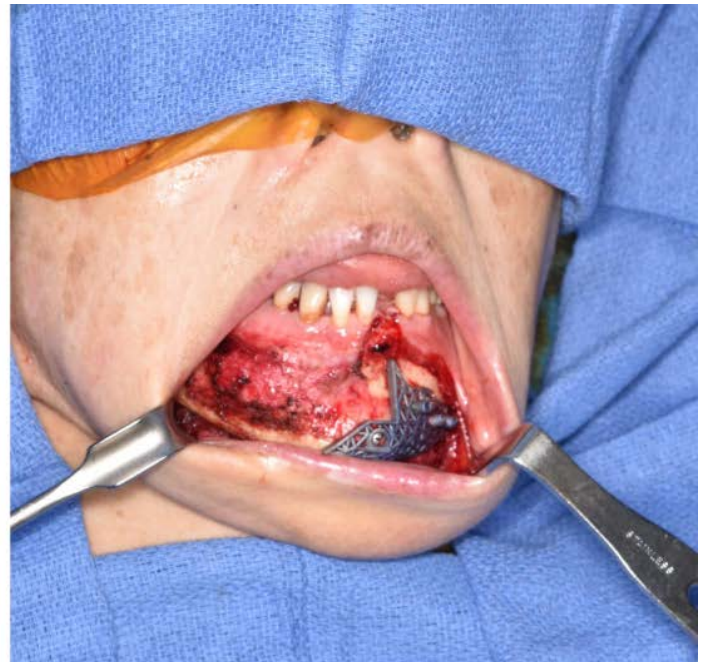
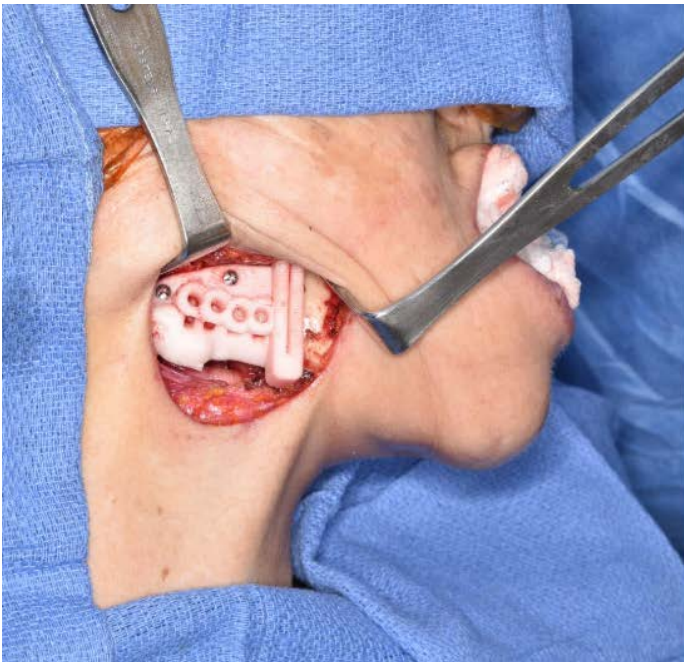


Figure 7. The surgical guides are used at the head to perform the mandibular resection of the tumor exactly as planned.



Figure 8. The right mandible, after being resected.



Figure 9. Nerve allograft is used to reconstruct the resected inferior alveolar nerve to restore sensation in the lower lip and chin.

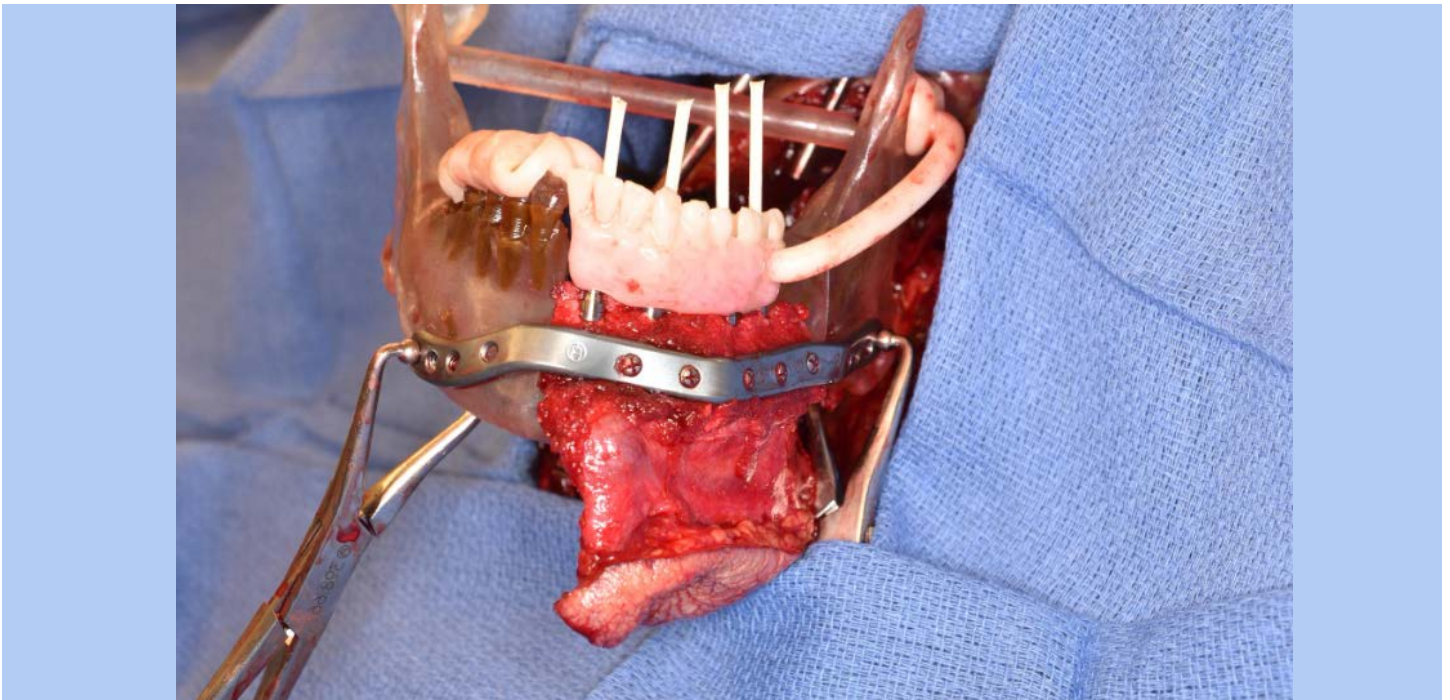


Figure 10. The fibula free flap is harvested. While still at the leg, dental implants are placed into the fibula and is shaped, using 3D printed guides. A pre-made dental prosthesis made from computer planning is then secured to the dental implants. A mandible model is used as a verification jig to ensure appropriate seating and fit.



Figure 11. The free flap is inset, and the arterial and venous anastomoses are performed. The occlusion is verified in the mouth and further adjustments are made if necessary.

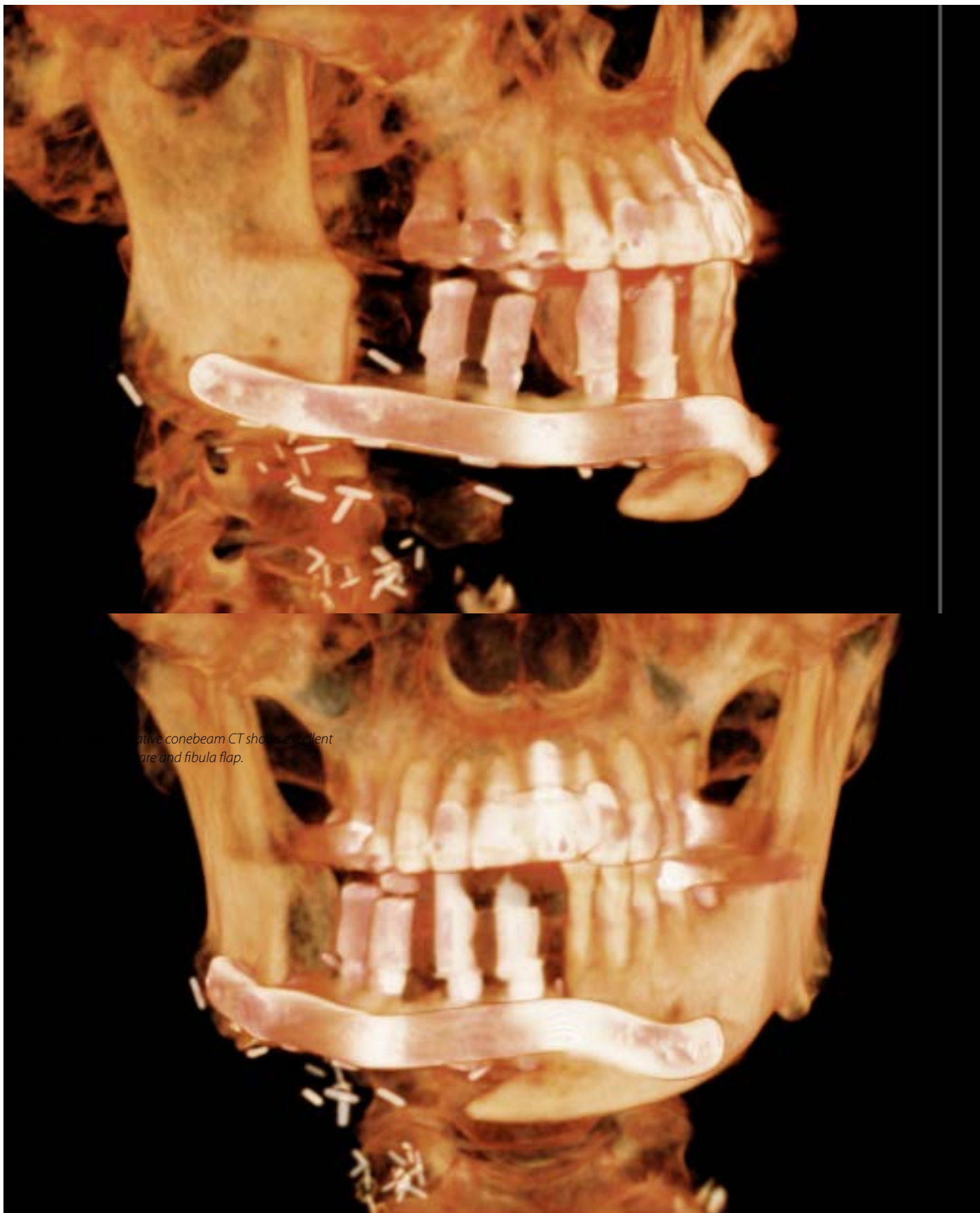


Figure 12. The patient returns for her three month postoperative visit. Her swelling has mostly resolved and incisions are well healed.



Figure 13. The provisional restoration is further adjusted to improve the fit and appearance.

Figure 13. The provisional restoration is further adjusted to improve the fit and appearance.



Postoperative conebeam CT shows excellent placement of the hardware and fibula flap.

Figure 14. The postoperative conebeam CT shows excellent placement of the hardware and fibula flap.

**FIGURE 1** Legacy Health 2023 primary cancer sites by body system, all ages

Primary Site	Emanuel		Good Samaritan		Meridian Park		Mount Hood		Salmon Creek		Legacy Health	
	Patient Count	Percentage of total	Patient Count	Percentage of total	Patient Count	Percentage of total	Patient Count	Percentage of total	Patient Count	Percentage of total	Patient Count	Percentage of total
<b>DIGESTIVE SYSTEM (n = 559, 15.5%)</b>												
Anus/anal canal/anorectum	1	0.3%	5	0.4%	2	0.3%	3	0.8%	14	1.3%	25	0.7%
Colon	11	3.7%	53	4.5%	30	4.9%	29	7.3%	65	5.8%	188	5.2%
Esophagus	4	1.3%	6	0.5%	6	1.0%	5	1.3%	14	1.3%	35	1.0%
Liver/intrahepatic bile duct	12	4.0%	9	0.8%	10	1.6%	9	2.3%	13	1.2%	53	1.5%
Gallbladder	0	0.0%	1	0.1%	1	0.2%	1	0.3%	1	0.1%	4	0.1%
Pancreas	7	2.3%	12	1.0%	24	3.9%	11	2.8%	43	3.9%	97	2.7%
Peritoneum/omentum/mesentery	0	0.0%	1	0.1%	0	0.0%	0	0.0%	0	0.0%	1	0.0%
Rectum/rectosigmoid	5	1.7%	31	2.7%	9	1.5%	12	3.0%	20	1.8%	77	2.1%
Small intestine	0	0.0%	7	0.6%	2	0.3%	3	0.8%	6	0.5%	18	0.5%
Stomach	5	1.7%	11	0.9%	10	1.6%	3	0.8%	13	1.2%	42	1.2%
Other digestive organs	0	0.0%	1	0.1%	1	0.2%	0	0.0%	4	0.4%	6	0.2%
Retroperitoneum	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	0.2%	2	0.1%
Other biliary	2	0.7%	1	0.1%	4	0.6%	0	0.0%	4	0.4%	11	0.3%
<b>ENDOCRINE (n = 76, 2.1%)</b>												
Thyroid	12	4.0%	11	0.9%	7	1.1%	1	0.3%	24	2.2%	55	1.5%
Other endocrine including thymus	4	1.3%	8	0.7%	4	0.6%	2	0.5%	3	0.3%	21	0.6%
<b>FEMALE GENITAL SYSTEM (n = 282, 7.8%)</b>												
Cervix uteri	0	0.0%	8	0.7%	9	1.5%	1	0.3%	4	0.4%	22	0.6%
Corpus and uterus	4	1.3%	61	5.2%	69	11.2%	8	2.0%	32	2.9%	174	4.8%
Ovary	4	1.3%	27	2.3%	12	1.9%	4	1.0%	4	0.4%	51	1.4%
Vagina	0	0.0%	0	0.0%	1	0.2%	0	0.0%	1	0.1%	2	0.1%
Vulva	0	0.0%	2	0.2%	3	0.5%	1	0.3%	1	0.1%	7	0.2%
Other female genital organs	2	0.7%	7	0.6%	5	0.8%	4	1.0%	8	0.7%	26	0.7%
<b>LEUKEMIA (n = 72, 2.0%)</b>												
Lymphocytic leukemia	12	4.0%	2	0.2%	3	0.5%	2	0.5%	16	1.4%	35	1.0%
Myeloid/monocytic leukemia	5	1.7%	3	0.3%	6	1.0%	9	2.3%	12	1.1%	35	1.0%
Other Leukemia	0	0.0%	0	0.0%	0	0.0%	1	0.3%	1	0.1%	2	0.1%
<b>LYMPHOMA (n = 150, 4.2%)</b>												
Hodgkin	9	3.0%	3	0.3%	0	0.0%	2	0.5%	7	0.6%	21	0.6%
Non-Hodgkin	22	7.3%	35	3.0%	16	2.6%	10	2.5%	46	4.1%	129	3.6%
<b>MALE GENITAL SYSTEM (n = 265, 7.4%)</b>												
Penis	0	0.0%	1	0.1%	1	0.2%	0	0.0%	1	0.1%	3	0.1%
Prostate	18	6.0%	76	6.5%	48	7.8%	25	6.3%	71	6.4%	238	6.6%
Testis	1	0.3%	9	0.8%	5	0.8%	4	1.0%	4	0.4%	23	0.6%
Other male genital organs	0	0.0%	1	0.1%	0	0.0%	0	0.0%	0	0.0%	1	0.0%
<b>ORAL CAVITY AND PHARYNX (n = 67, 1.9%)</b>												
Floor of mouth	0	0.0%	2	0.2%	0	0.0%	0	0.0%	0	0.0%	2	0.1%
Gum/other mouth	1	0.3%	5	0.4%	0	0.0%	0	0.0%	0	0.0%	6	0.2%
Lip	1	0.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.0%
Nasopharynx	0	0.0%	0	0.0%	2	0.3%	0	0.0%	1	0.1%	3	0.1%
Oropharynx	0	0.0%	1	0.1%	0	0.0%	0	0.0%	1	0.1%	2	0.1%
Salivary glands	0	0.0%	1	0.1%	2	0.3%	0	0.0%	2	0.2%	5	0.1%
Tongue	6	2.0%	13	1.1%	3	0.5%	1	0.3%	5	0.4%	28	0.8%
Tonsil	2	0.7%	6	0.5%	1	0.2%	3	0.8%	5	0.4%	17	0.5%
Hypopharynx	1	0.3%	0	0.0%	1	0.2%	0	0.0%	0	0.0%	2	0.1%
Other Oral Cavity & Pharynx	0	0.0%	1	0.1%	0	0.0%	0	0.0%	0	0.0%	1	0.0%
<b>RESPIRATORY SYSTEM (n = 418, 11.6%)</b>												
Larynx	7	2.3%	1	0.1%	1	0.2%	2	0.5%	5	0.4%	16	0.4%
Lung/bronchus	48	15.9%	121	10.4%	64	10.4%	46	11.6%	117	10.5%	396	11.0%
Nose/nasal cavity/middle ear	2	0.7%	1	0.1%	0	0.0%	0	0.0%	0	0.0%	3	0.1%
Trachea/mediastinum/other resp.	0	0.0%	1	0.1%	0	0.0%	0	0.0%	1	0.1%	2	0.1%
Pleura	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.1%	1	0.0%
<b>SKIN (n = 115, 3.2%)</b>												
Melanoma	3	1.0%	67	5.7%	10	1.6%	4	1.0%	29	2.6%	113	3.1%
Other non-epithelial skin	0	0.0%	2	0.2%	0	0.0%	0	0.0%	0	0.0%	2	0.1%

table continues on page 18

**FIGURE 1** Legacy Health 2023 primary cancer sites by body system, all ages (continued from p. 17)

Primary Site	Emanuel		Good Samaritan		Meridian Park		Mount Hood		Salmon Creek		Legacy Health	
	Patient Count	Percentage of total	Patient Count	Percentage of total	Patient Count	Percentage of total	Patient Count	Percentage of total	Patient Count	Percentage of total	Patient Count	Percentage of total
<b>URINARY SYSTEM (n = 337, 9.4%)</b>												
Bladder	19	6.3%	40	3.4%	32	5.2%	26	6.5%	70	6.3%	187	5.2%
Kidney and renal pelvis	12	4.0%	23	2.0%	19	3.1%	25	6.3%	54	4.9%	133	3.7%
Ureter	1	0.3%	4	0.3%	0	0.0%	4	1.0%	6	0.5%	15	0.4%
Other urinary organs	0	0.0%	1	0.1%	0	0.0%	0	0.0%	1	0.1%	2	0.1%
<b>OTHER SITES</b>												
Bones/joints	1	0.3%	0	0.0%	0	0.0%	0	0.0%	1	0.1%	2	0.1%
Brain/other nervous system	37	12.3%	16	1.4%	16	2.6%	21	5.3%	25	2.2%	115	3.2%
Breast	1	0.3%	451	38.6%	160	25.9%	98	24.7%	303	27.2%	1,013	28.2%
Eye and orbit	0	0.0%	1	0.1%	0	0.0%	0	0.0%	0	0.0%	1	0.0%
Miscellaneous	10	3.3%	12	1.0%	10	1.6%	14	3.5%	25	2.2%	71	2.0%
Myeloma	4	1.3%	3	0.3%	4	0.6%	2	0.5%	22	2.0%	35	1.0%
Soft tissue	3	1.0%	0	0.0%	2	0.3%	0	0.0%	2	0.2%	7	0.2%
Mesothelioma	1	0.3%	3	0.3%	2	0.3%	1	0.3%	1	0.1%	8	0.2%
Kaposi Sarcoma	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.1%	1	0.0%
<b>TOTAL</b>	<b>301</b>		<b>1,168</b>		<b>617</b>		<b>397</b>		<b>1,113</b>		<b>3,596</b>	

**FIGURE 2** Legacy top six cancer sites comparison 2023

Primary Site	Legacy Health, 2023		Oregon*		Washington*		American Cancer Society*	
	Patient Count	Percentage of total	Patient Count	Percentage of total	Patient Count	Percentage of total	Patient Count	Percentage of total
Breast	1014	46%	3,438	28%	7,020	33%	300,590	27%
Bronchus & Lung	396	18%	2,490	21%	4,041	19%	238,340	21%
Prostate gland	238	11%	2,693	22%	4,356	21%	288,300	26%
Colon/rectum	189	9%	1,629	13%	2,664	13%	153,020	14%
Bladder	188	9%	1,020	8%	1,706	8%	82,290	7%
<b>Corpus Uteri</b>	<b>167</b>	<b>8%</b>	<b>863</b>	<b>7%</b>	<b>1,224</b>	<b>6%</b>	<b>66,200</b>	<b>6%</b>
<b>Total top six cancer sites</b>	<b>2,192</b>	<b>61%</b>	<b>12,133</b>	<b>56%</b>	<b>21,011</b>	<b>52%</b>	<b>1,128,740</b>	<b>58%</b>
<b>Total reportable cases</b>	<b>3,596</b>		<b>21,602</b>		<b>40,036</b>		<b>1,958,310</b>	

\*Oregon (2021); Washington (2020); American Cancer Society (ACS) Facts & Figures 2023 (estimated cases)

**FIGURE 3 Head and neck malignancies by age at diagnosis, Legacy 2023 vs. Commission on Cancer 2021\***

Age at diagnosis	Oral Cavity and pharynx		Larynx		Nose, nasal cavity and middle ear	
	Legacy n = 67	CoC n = 35,026	Legacy n = 16	CoC n = 9,472	Legacy n = 3	CoC n = 2,149
0-29	0%	1%	0%	0%	0%	3%
30-39	3%	2%	0%	1%	0%	4%
40-49	7%	7%	0%	4%	0%	8%
50-59	16%	22%	13%	20%	33%	19%
60-69	43%	34%	56%	38%	33%	29%
70-79	19%	24%	19%	26%	33%	23%
80-89	6%	9%	13%	10%	0%	11%
>=90	4%	2%	0%	2%	0%	2%

\*Commission on Cancer NCDB comparison reports (2021)

**FIGURE 4 Histology distribution of head and neck cancer cases, legacy 2023 vs. commission on cancer 2021\***

Histology	Oral Cavity and pharynx		Larynx		Nose, nasal cavity and middle ear	
	Legacy n = 67	CoC n = 35,026	Legacy n = 16	CoC n = 9,472	Legacy n = 3	CoC n = 2,149
Adenocarcinoma, NOS	0.0%	1.2%	0.0%	0.1%	0.0%	3.4%
Carcinoma, acinar cell	3.0%	1.2%	0.0%	0.0%	0.0%	0.0%
Carcinoma, adenoid cystic	0.0%	1.6%	0.0%	0.1%	66.7%	5.2%
Carcinoma, adenosquamous	0.0%	0.2%	0.0%	0.1%	0.0%	0.9%
Carcinoma, large cell	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%
Carcinoma, mucoepidermoid	1.5%	2.7%	0.0%	0.0%	0.0%	0.9%
Carcinoma, secretory of the breast	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%
Carcinoma, undifferentiated, NOS	0.0%	0.0%	0.0%	0.0%	0.0%	4.8%
Carcinoma, verrucous NOS	0.0%	0.7%	0.0%	0.3%	0.0%	0.2%
Carcinoma, NOS	1.5%	1.9%	0.0%	1.1%	0.0%	3.8%
Melanoma, NOS	0.0%	0.2%	0.0%	0.0%	0.0%	7.1%
Neoplasm, malignant	1.5%	0.4%	0.0%	0.5%	0.0%	0.6%
Small cell carcinoma, NOS	0.0%	0.2%	0.0%	0.3%	0.0%	1.3%
Squamous cell carcinoma in situ, NOS	0.0%	0.0%	12.5%	0.0%	0.0%	0.0%
Squamous cell carcinoma, basaloid	1.5%	1.3%	0.0%	0.7%	0.0%	0.9%
Squamous cell carcinoma, HPV-positive	28.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Squamous cell carcinoma, HPV-negative	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%
Squamous cell carcinoma, keratinizing, NOS	14.9%	15.9%	25.0%	28.9%	0.0%	14.8%
Squamous cell carcinoma, lg cell, nonkeratinizing, NOS	3.0%	7.7%	0.0%	2.9%	0.0%	6.8%
Squamous cell carcinoma, papillary	0.0%	0.4%	0.0%	0.9%	0.0%	1.4%
Squamous cell carcinoma, spindle cell	1.5%	0.4%	0.0%	0.9%	0.0%	0.7%
Squamous cell carcinoma, NOS	37.3%	59.9%	62.5%	61.8%	33.3%	25.3%
<b>Total</b>	<b>100%</b>	<b>97%</b>	<b>100%</b>	<b>99%</b>	<b>100%</b>	<b>80%</b>

\*Commission on Cancer NCDB comparison reports (2021)

**FIGURE 5 First course of treatment, head and neck malignancies, Legacy 2023 vs. Commission on Cancer 2021\***

	Oral Cavity and pharynx		Larynx		Nose, nasal cavity and middle ear	
	Legacy n = 67	CoC n = 35,026	Legacy n = 16	CoC n = 9,472	Legacy n = 3	CoC n = 2,149
Surgery only	42%	30%	25%	17%	0%	26%
Surgery and chemotherapy	0%	1%	0%	0%	0%	2%
Surgery and radiation	13%	14%	13%	11%	33%	20%
Surgery, radiation, and chemotherapy	6%	9%	0%	5%	0%	15%
Radiation only	4%	6%	25%	26%	0%	5%
Radiation and chemotherapy	24%	25%	25%	24%	33%	11%
Chemotherapy only	0%	2%	0%	1%	33%	3%
Other specified therapy, no treatment, or active surveillance	10%	4%	13%	13%	0%	0%
Total	100%	91%	100%	99%	100%	81%

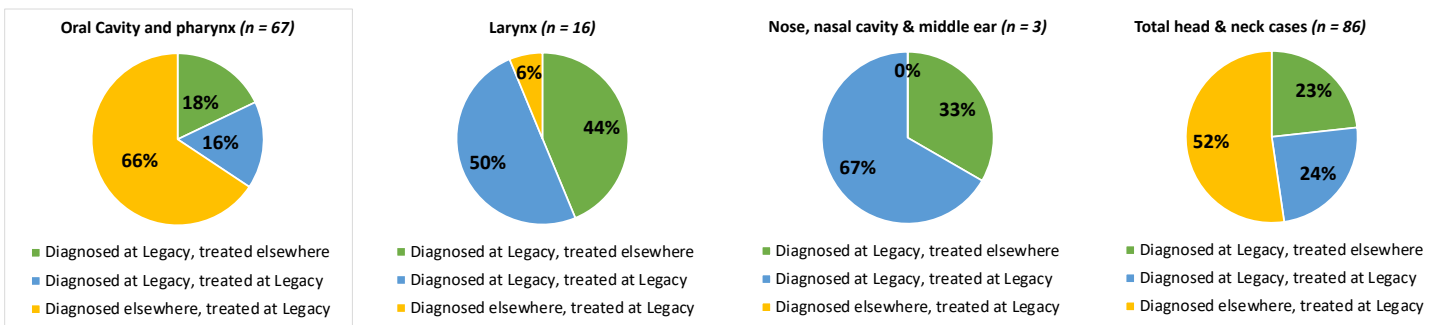
\*Commission on Cancer NCDB comparison reports (2021)

**FIGURE 6 Head and neck cancer cases by gender, Legacy 2023 vs. Commission on Cancer 2021\***

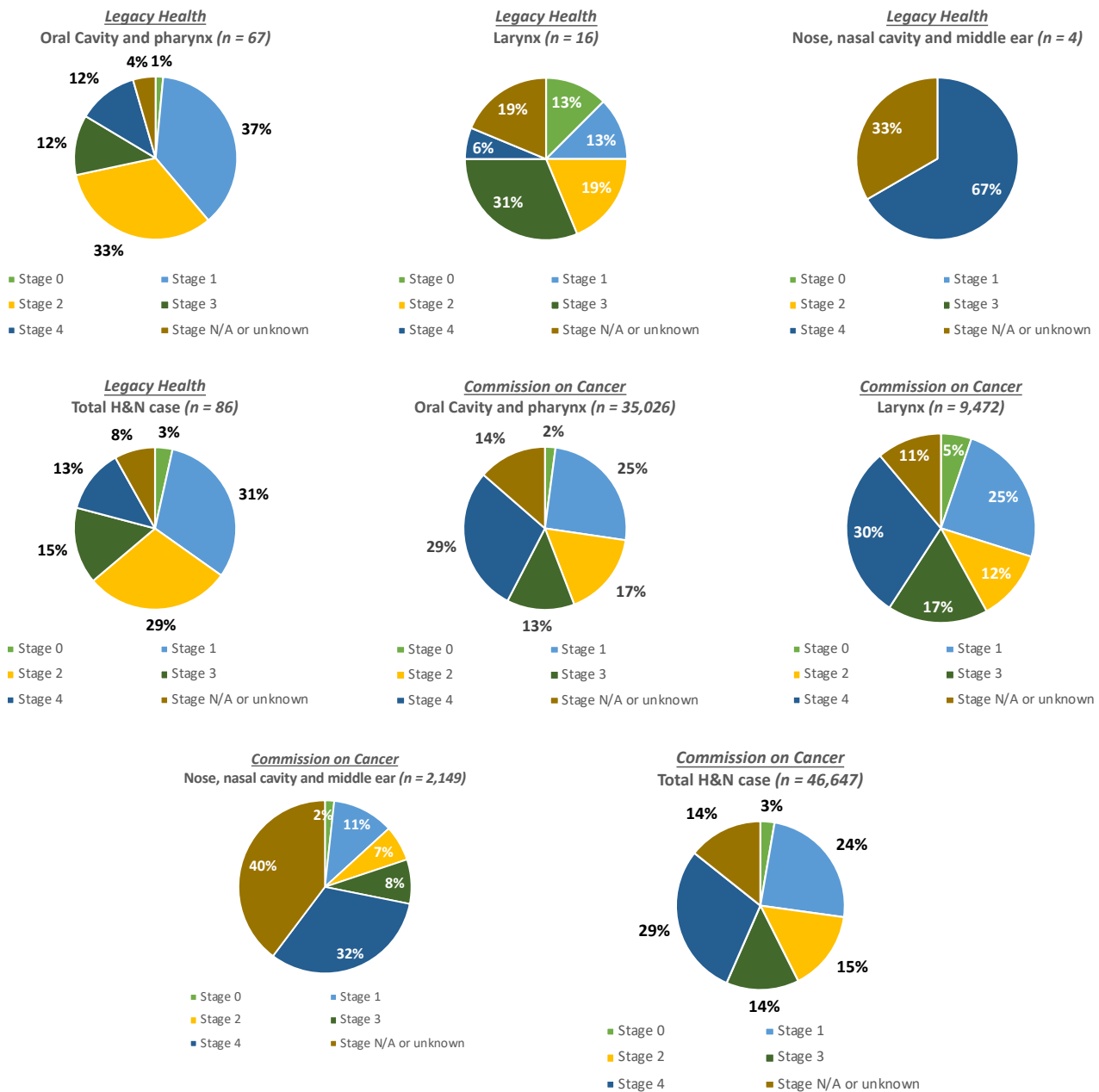
	Legacy n = 86	CoC n = 46,647
Male	69%	71%
Female	30%	29%
Transsexual, natal female	1%	0%
Total	100%	100%

\*Commission on Cancer NCDB comparison reports (2021)

**FIGURE 7 Legacy head and neck treatment migration 2023**



**FIGURE 8 AJCC major stage groups, head and neck malignancies, Legacy 2023 vs. Commission on Cancer 2021\***



## Advances in Reconstruction

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

Head and neck cancers affect a part of the body that is front and center, taking away from facial appearance, speech, and swallowing. All these



things are essential for every one of our social interactions as humans. Surgery is the mainstay of oral cancers and used frequently in cancers of the oropharynx and larynx when organ sparing approaches fail. Unfortunately, this requires resection of structures that immediately affect our patients' quality of life.

When surgeons first began treating head and neck cancer over a century ago, achieving disease control was the only goal. However, this left patients with significant dysfunction in the best cases and horrible disfigurement in the worst.

Over the last 30 years, rapid advances have been made in the realm of head and neck reconstruction. In the 1990s, the advent of microvascular free tissue transfer, also known as "free flaps", was transformative for head and neck cancer patients, both figuratively and literally. Suddenly, we had a reliable method to replace soft tissue and bone in a way that could restore facial form and function. Head and Neck Surgical Associates (HNSA), in partnership with the Legacy Cancer Institute (LCI), was at the tip of the spear of this movement. Drs. Bryce Potter and Eric Dierks started the Head and Neck Cancer Program at Legacy Emanuel, along with one of the first accredited Fellowships in Head and Neck Oncology over 30 years ago. They, along with those who have trained as residents and fellows, have taken the baton and pushed the envelope for head and neck reconstruction even further.

One of the limitations with free flap reconstruction of the head and neck is that it requires a

unique combination of both artistry and technical prowess to achieve optimal results. This was rare, as this could only be achieved consistently by a few surgeons across the country, which limited access to the best care for most patients. In 2010, Dr. David Hirsch, one of our fellowship alumni, was the first to apply computer-assisted design and manufacturing (CAD/CAM) to develop techniques. The use of 3D printing to help shape free flaps based off preoperative modeling was a tectonic paradigm shift that changed reconstructive surgery forever. All of a sudden, technology lowered the barrier of entry for predictable and truly excellent reconstruction results. HNSA and the LCI were incubators for these techniques and were some of the first surgeons in the country to apply this. It is now widely considered the standard of care and has allowed for this service to be provided in hospitals across the country and the world.

Since then, reconstructive surgery has continued to evolve and improve. Surgeons, partnering with industry, medical engineers, and dental specialists, are now able to combine microvascular surgical expertise, fabrication of 3D medical models, surgical guides, patient-specific fixation hardware, and patient-specific dental prosthetics in a way where, in appropriate patients, we can fully reconstruct facial and dental form in a single surgery. This is something that used to take 2-3 years and multiple surgeries to achieve (See Figures). Referred to as "Jaw in a Day", this was first described by Drs. David Hirsch and Ashish Patel, both alumni of the LCI Head and Neck Fellowship, and is a technique that has been adopted across the country.

The LCI and HNSA, through their continued collaboration and partnership, have continued to provide the highest level of care while maintaining the personal touch that characterizes what makes Legacy so great.

## Radiation therapy in oral, head and neck cancer

Won Lee M.D. Radiation Oncologist, Legacy Medical Group – Radiation Oncology

In 2023, the NCI estimates there will be 65-70K new cases of head and neck cancers diagnosed in the U.S. and 15K people will die from this disease.



Approximately 75% will originate from the oropharynx and oral cavity, with the vast majority the cases arising from the tonsil and base of tongue of the oropharynx. Within the Legacy Health System, there will be approx. 80-100 new cases of

head and neck cancers diagnosed.

Patients may receive radiation as the primary treatment for head and neck cancers, but they may also receive radiation after surgery. Patients often receive radiation if they are at high risk for developing a locoregional relapse after surgery, such as advanced T<sub>3/4</sub> tumors, multiple positive lymph nodes, positive margins and extracapsular extension (ECE) seen amongst the positive lymph nodes. Patients, especially with positive margins and ECE seen on pathology after surgery, will often receive platinum-based chemotherapy with radiation.

Approximately 75% of oropharyngeal cancers will be related to the HPV. The E6/7 oncoprotein relating to HPV appears to lead to genomic instability, allowing these tumors to be more susceptible to radiation-induced apoptosis (programmed cell death). HPV positivity carries a better response and overall cure rates when compared to HPV negative tumors. Historical data from the Radiation Therapy Oncology Group (RTOG) clearly show a better response rate and overall survival benefit in patients with HPV mediated head and neck cancers.

Radiation as primary treatment or in a post-operative setting can cause significant

acute morbidity (sore throat, mucositis, taste change, weight loss/dehydration, fatigue) and late morbidity (permanent dry mouth, taste change, neck fibrosis and permanent swallowing difficulties).

Given these short-term and long-term side effects from radiation for head and neck cancers, as well as the favorable overall prognosis from HPV mediated head and neck cancers, many modern trials are studying whether de-intensification of the radiation (dose or volume/area treated) and chemotherapy may be possible without compromising the cure rates.

For low risk HPV mediated head and neck cancer, both Princess Margaret Hospital and MD Anderson Hospital (MDAH) have shown that omitting the uninvolved contralateral neck from radiation results in acceptable recurrence, as the contralateral neck failure rates are near 5%.

The NRG HN 002 trial showed by lowering the radiation dose to 60 Gy over 6 weeks (vs the standard 70 Gy over 7 weeks) in favorable HPV head neck cancer patients showed excellent locoregional and overall survival rates when compared to historical norms.

Lastly, data from MDAH and UCSD have shown excellent 2-year disease-free survival and overall survival rates in low-risk HPV head and neck cancers with radiation alone without chemotherapy.

In conclusion, as the prognosis and overall cure rates of HPV mediated head and neck cancers continue to be very favorable, future studies and trends will continue to focus on the de-intensification of the radiation as well as systemic therapies such as chemotherapy and immunotherapy.

## LCI Head and Neck

By Matthew Evans

The understanding of the genomic bases of oncologic disease continues to evolve at an exponential rate. Techniques such as next-generation sequencing (NGS) and fluorescent in situ hybridization (FISH) have become more widely accessible and cost-effective, facilitating enhanced diagnostic accuracy, refined tumor classification schematics, and application of novel targeted therapies for entities that had previously proven unamenable to pharmaceutical intervention. Salivary gland neoplasms of the head and neck represent one of many tumor groups in which genomic testing has aided pathologists and clinicians alike in their diagnostic and therapeutic interventions.

Salivary gland neoplasms encompass a heterogeneous group of tumors often exhibiting significant histomorphologic overlap and non-specific immunohistochemical profiles. These characteristics can present diagnostic dilemmas with a wide range of clinical and prognostic implications. At one end of the spectrum lie tumors, such as hyalinizing clear cell carcinoma, which portray a relatively indolent clinical course, and at the other, lie more aggressive entities, such as salivary duct carcinoma, which have a propensity for higher rates of metastasis and poor overall survival. While histologic categorization remains the foundation of diagnosing salivary gland neoplasms, genomic testing has become a more routine adjunct in recent years, particularly in those entities exhibiting either high-grade transformation or an inherently diverse morphology. Many salivary gland tumors harbor specific genetic abnormalities that have emerged as distinct diagnostic criteria. These entities with their most commonly associated molecular abnormalities include mucoepidermoid carcinoma (CRTC1-MAML2 fusion), adenoid cystic carcinoma (MYB/MYBL1-NFIB fusion), secretory carcinoma (ETV6-NTRK3 fusion), polymorphous adenocarcinoma (PRKD gene family alterations), hyalinizing clear cell carcinoma (EWSR1-ATF1 fusion), mucinous adenocarcinoma (AKT1 alterations), and microsecretory adenocarcinoma (MEF2C-SS18

fusion). FISH testing is often the most practical methodology for identifying these aberrations; however, NGS testing offers a broader range of testing, that in some instances, may be more useful and at times more cost-efficient.

Beyond diagnostic accuracy, molecular testing is also advancing therapeutic strategies. Most salivary gland neoplasms present at a locally advanced stage amenable to surgical resection, which is commonly preceded by radiation. Investigation of the utility of systemic therapy in those locally advanced stages is ongoing. Conversely, patients presenting with or who subsequently develop either widespread or metastatic disease experience a more challenging course and may benefit from targeted therapeutic interventions. One such intervention has been identified in association with the HER2 pathway, initially pioneered in the management of breast cancer and since applied to some salivary gland neoplasms. Overexpression or amplification of HER2 is generally evaluated by either immunohistochemistry or FISH, while broader testing with NGS can identify multiple genetic abnormalities, including HER2 gene mutations. Monoclonal antibodies against the HER2 receptor are commonly administered in combination with other chemotherapy agents and have shown success. Similarly, targeted drug therapies are available for NTRK gene fusions, which have been demonstrated in secretory carcinoma of the salivary gland. Given recent FDA approval of NTRK inhibitors, evaluation for the gene fusion is warranted whenever a diagnosis of secretory carcinoma is suspected. Other genetic abnormalities that may present potential drug targets include androgen receptor activation as seen in salivary duct carcinoma, RET gene alterations as seen in both salivary duct carcinoma and secretory carcinoma, and NOTCH mutations as seen in adenoid cystic carcinoma.

At Legacy Health, the pathology team, in collaboration with reference laboratories, integrates genomic analysis into its algorithmic management

of salivary gland neoplasms. As the field continues to expand and new molecular abnormalities are identified, the diagnostic challenges present in this group of tumors are lessened and novel therapies become more widely available, dramatically improving patient outcomes and prolonging overall survival.

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## Medical Imaging in Head and Neck Cancer

*Stephen J. Tang MD, Pacific Imaging Associates*

Medical imaging in the assessment of oral, head and neck cancers remains a large part of the multidisciplinary approach to management of these cancers. This encompasses multiple imaging modalities at the team's disposal, all of which provide important information needed to determine the best treatment plan tailored to each individual patient.



CT (computed tomography) remains the most accessible

medical imaging modality for cancer assessment. With intravenous contrast, CT offers excellent spatial resolution with rapid image acquisition accomplished with lower radiation doses thanks to advances in radiation dose reduction techniques over the last decade. In addition to staging the primary tumor, CT also can assess lymph nodes to help stage the extent of the patient's nodal disease, if any, and for distant disease elsewhere in the body as appropriate.

MRI (magnetic resonance imaging) offers many advantages in comparison to CT, which include the lack of ionizing radiation. MRI offers considerably higher tissue resolution. For instance, MRI is superior to CT in assessment for perineural spread of tumor,

which has significant prognostic implications. However, MRI remains a modality that requires a significant amount of time to acquire while needing the patient to remain very still, requirements which some patients may not be able to tolerate. Additionally, patients with implanted medical devices or ferrous metal material within their body may not be able to safely complete MRI or require specific monitoring, which overall limits accessibility of MRI.

PET imaging (positron emission tomography) has found increasing use due to PET's utility in providing an active snapshot of disease burden within the entire body. Compared to CT alone, PET can more accurately assess nodal disease burden and more readily exclude more distant metastases. Recently, new dose reduction strategies have been employed to allow less injected radiotracer to the patient without sacrificing diagnostic quality. PET imaging has been increasingly used to assess treatment response and remains an integral tool in overall oncologic imaging.

Ultrasound is a less often used modality, but still has great utility as a problem-solving tool. Ultrasound allows assessment of cervical lymph nodes in addition to the thyroid and major salivary glands in the neck. Ultrasound utilizes no ionizing radiation and can be targeted directly at the site

of a palpable finding, which may very well be the initial encounter for head and neck cancer. The greatest benefit of ultrasound is likely in its ability to provide real-time guidance for tissue biopsy of abnormal lymph nodes, nodules and neck masses. However, ultrasound is inherently limited to the areas scanned, can be time-consuming, depends heavily on the ultrasound operator's expertise and does not offer the ability for overall assessment of

the neck to the extent that CT and MRI can.

These modalities should be considered complementary and readily provide the information needed to guide treatment planning. Overall, medical imaging has and will continue to play a significant role in the diagnosis and management of oral, head and neck cancers.

## Medical Oncology for oral, head and neck cancer

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

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



cell cancer. Chemotherapy is often paired with radiation in patients with locally advanced disease who are not surgical candidates, used post-operatively in patients who are found to have high-risk features on their surgical pathology, and

given palliatively in patients who are found to have metastatic disease.

Unfortunately, traditional chemotherapy can be difficult for some patients to tolerate due to potential side effects, including fatigue, nausea and vomiting, neuropathy, nephropathy, and increased risk of infections.

Recent advances have been looking at ways to “de-escalate” treatment in an attempt to decrease side effects from chemotherapy. From a medical oncology standpoint, this means we have adjusted chemotherapy dosing to better balance quality of life and treatment benefit without sacrificing cure rates.

Over the past 5-10 years, there has also been great interest in utilizing immunotherapy in the

hopes of providing patients with an effective and less-toxic alternative to chemotherapy. Anti-PD1/PDL-1 agents are immune checkpoint inhibitors given intravenously that work by preventing cancer cells from being able to avoid the body's natural immune defense. Current agents such as nivolumab, pembrolizumab, and durvalumab have been shown to provide benefit in approximately 12–25 percent of patients with relapsed/metastatic disease. Although these numbers do not seem impressive by themselves, a small proportion of these patients demonstrated a very robust response to treatment that can last for several years. Combine that with the fact that these agents are generally very well tolerated, with most adverse effects being reported as fatigue, pruritus, rash and anorexia.

We also have a number of cutting-edge, Phase I/II trials available at the main OHSU campus that we can offer to patients who progress on standard treatment. Medical oncologists with the OHSU Knight–Legacy Health Cancer Collaborative are using these checkpoint inhibitors, in addition to other forms of immunotherapy and targeted agents, to help advance the field in determining the optimal regimens for patients with oral, head and neck cancer.

## Rehabilitation for the oral, head-and-neck cancer patient

By: Julia Robinson, MS, CCC-SLP, Speech-Language Pathologist, Legacy Rehabilitation Services

Speech Therapy plays a crucial role in the multidisciplinary care of oral, head-and-neck (OHN) cancer patients, aiming to rehabilitate



patients' speech and swallowing functions, enhance their communication abilities, and improve their overall quality of life. Studies show that pre-treatment swallowing education and exercise

improve swallowing-specific quality of life in OHN cancer patients undergoing radiation and/or chemotherapy. Thus, we aim for early intervention to educate patients about the potential effects of cancer treatments on speech and swallowing, and to establish a baseline to assess future improvement. After surgery, speech therapists work closely with patients to adapt to their anatomical changes. Structured exercises are often provided to improve the strength and coordination of patients' speech and swallowing muscles. For patients with ongoing deficits, for example, with swallowing, compensatory techniques are taught. For instance, we teach patients to alter food textures and the positioning of their head when swallowing, and how to pace themselves when eating; these strategies enable safer and more effective swallowing and maximize functional outcomes.

Over the past several years, many of the Legacy Speech Therapists have completed advanced continued education training on Lymphedema with OHN patients. When lymphedema occurs, it can be either external (e.g., visible swelling in the face, neck, and under the chin) or internal (e.g., swelling within the pharynx, larynx, and oral cavity). These conditions arise due to the disruption of, or damage to, the lymphatic system during surgery or from the effects of radiation therapy. The resulting fluid accumulation can lead to difficulties with speech and swallowing, as well as discomfort. Speech Therapy treatment for lymphedema management includes Manual

Lymphatic Drainage (MLD) with gentle, rhythmic, hand movements to stimulate lymphatic flow and reduce fluid buildup. This technique helps decrease swelling and improve tissue health. Additionally, the use of compression garments, such as elastic wraps or custom-fitted garments, can be used to maintain reduced swelling achieved through MLD. Therapeutic exercises are also taught to promote fluid movement and drainage.

Throughout treatment, speech therapists provide comprehensive care by collaborating with oncologists, surgeons, dietitians, psychologists, nurse navigators, and other healthcare professionals. This team approach ensures that all aspects of patients' health are addressed, leading to better outcomes.

Survivorship is another key component of speech therapy. We offer a Legacy-sponsored, city-wide head-and-neck cancer support group. This monthly group, which is now online, is open to all OHN individuals for support and education while they cope with the effects of diagnosis and treatment.

Outpatient Speech Therapy Rehab orders can be placed under EPIC or by faxing a referral to Legacy Outpatient Rehab at 503-413-1504 or call 503-413-3707.

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## Legacy Oncology Nurse Navigation Program

By Allison Cerone, MSN, RN, OCN; oncology nurse navigator, Legacy Cancer Institute

The Oncology Nurse Navigator (ONN) is an Oncology Certified Registered Nurse with multiple years of experience working within Oncology



services. Navigation support for head and neck cancer is provided to patients at all Legacy campuses within the Portland Metro Area. Nurses are licensed in both Oregon and Washington. The Navigator offers a steady presence

throughout the patient's treatment course to help answer questions regarding the plan of care, provide patient education, connect to resources, anticipate patient needs, overcome barriers to care, and advocate on the patient's behalf.

Legacy hosts monthly head and neck cancer conferences to review new patients with the multidisciplinary team made up of Oral Surgeons, Radiation Oncologists, Medical Oncologists, Pathologists, Radiologists, Rehab providers, Research, and Oncology Nurse Navigators. This is also an opportunity for the ONN to connect patients with clinical studies, psychosocial support, and request additional referrals or interventions specific to the individual's needs.

Care of patients with a head and neck cancer diagnosis often requires multiple referrals to different specialties, usually in a small amount of time. Patients may meet with an ENT, Surgeon, Medical Oncologist, Radiation Oncologist, and a Dentist soon after diagnosis. The ONN helps ensure the initial workup is completed in a timely manner,

frequently collaborating outside the Legacy Health system, with a focus on expediting treatment start by addressing barriers to care as soon as possible. Navigators provide education on what to expect from the visit with each specialist while also trying to minimize the stress to patients and caregivers.

Treatment for head and neck cancer can affect many daily functions for years to come, making for a potentially arduous journey. Multiple treatment modalities (surgery, radiation, chemotherapy) can lead to changes to speech, dental changes, and difficulty with swallowing or eating. Nutrition is a huge concern for patients, early connection to the Oncology Dietitian is recommended. The ONN also encourages patients to establish care with our rehab team as early as possible for patient support, education, and individually tailored rehab plans.

The Legacy Cancer Institute provides a wealth of resources to address the psychosocial effects of treatment. Monthly head and neck support groups are available, providing a forum for patients and family members to seek peer support and share information. Individual counseling can be provided by our Oncology Psychologist to address topics such as fear of recurrence, anxiety, depression, changes to appearance/identity, or concerns about quality of life after treatment. Integrative Medicine can help manage treatment-related symptoms that affect daily life, such as fatigue, pain, or sleep disturbances. The Navigator helps connect patients to the aforementioned services within Legacy, externally, and virtually through web-based resources.

Once patients complete treatment, the ONN continues to offer support and encourage ongoing follow-up with the rehab team, routine Dental care, continued focus on nutrition, and surveillance with the Oncology team per (NCCN) Guidelines. The

Nurse Navigator remains available to patients and their families as they move into survivorship, as do the support services and resources at the Legacy Cancer Institute.

## HPV, Vaccinations, and Oropharyngeal Cancer

*Christine Brown, MS, BSN, RN, RD, OCN, Cancer Program Manager*

### What is HPV?

Human papillomavirus (HPV) is a complex but common sexually transmitted infection. There are more than 100 strains of HPV, but only a few subtypes that can lead to cancer. HPV can be transmitted by direct skin-to-skin genital contact during vaginal, anal, or oral sex. Nearly everyone who is sexually active will get at least one type of HPV at some point in their lives. More than 42 million people are currently infected with HPV in the United States, and about 14 million, including teens, become newly infected with HPV every year. Most people clear HPV within 1 to 2 years, but HPV infection can persist in some people. It usually takes years after being infected with a high-risk HPV subtype for cancer to develop.



The CDC reports approximately 37,000 new cases of HPV-caused cancer are diagnosed annually in the United States. Although cervical cancer is the most well-known of the cancers caused by HPV, there are other types of cancer caused by HPV, including oropharyngeal cancer (throat, tonsils, and the base of the tongue). Research indicates that oropharyngeal cancer has now surpassed cervical cancer as the most prevalent HPV infection-related cancer. It is unclear if having HPV alone is enough to cause oropharyngeal cancer, or if other risk factors (such as alcohol, smoking or chewing tobacco) interact with HPV and contribute to its development. HPV is not known to cause other head and neck cancers, including those in the mouth, larynx, lip, nose, or salivary glands.

### On the Rise: HPV and Oropharyngeal Cancer

The incidence of HPV-positive oropharyngeal cancer in the United States has increased in recent decades. Research indicates that 70% of oropharyngeal cancers are caused by high-risk HPV infection. For perspective, of the 20,805 cases of oropharyngeal cancer diagnosed annually in the United States, ~14,800 (70%) are thought to be caused by HPV, specifically HPV16, a subtype of the HPV virus. Current incidence rates of oropharyngeal cancer in Oregon and Washington are higher than the national rate. An average of 656 cases in Oregon and 1,122 cases in Washington are diagnosed annually. Oregonian men account for more new cases (470) than women (186). In Washington, men account for more new cases (775) than women (347). Six counties in Oregon have reported a 5-year trend of increased incidence of oropharyngeal cancer from 2016 – 2020. This list includes Marion and Multnomah Counties. The 10th highest incidence rate in Oregon for both genders, all ages, is Multnomah County. Clark County in Washington has the highest oropharyngeal cancer incidence rate in the state for males, all races, <50 years of age.

### HPV Vaccination: A Call to Action

Although the first HPV vaccine was approved in 2006, Gardasil-9 (9vHPV) has been the only type of HPV vaccine distributed in the US since late 2016. This vaccine protects against nine HPV types (6, 11, 16, 18, 31, 33, 45, 52, and 58). The CDC recommends HPV vaccination for 11- to 12-year-olds, yet supports vaccines starting at age 9. HPV vaccination is also recommended for everyone through age 26, if not vaccinated already. Vaccination is not

recommended for everyone older than age 26 however, some adults age 27 through 45 who are not already vaccinated are encouraged to discuss the benefits with their healthcare provider.

Despite widespread availability of HPV vaccines for more than 15 years, rates for HPV vaccination continue to lag far behind as compared to other common adolescent vaccines. In Oregon, only 57% of adolescents ages 13-17 years of age had completed all HPV vaccine doses in 2023. HPV coverage of one or more doses among 11 – 12-year-olds in Washington last year was only 36.5% and even lower rates (23%) were reported in Clark County.

Unfortunately, the percentages are short of the Healthy People 2020 goal of 80% of age-eligible adolescents being vaccinated against HPV. The underuse of HPV vaccines represents an important cancer risk reduction opportunity in this country and globally. We have a chance to prevent cancers caused by HPV, including oropharyngeal cancer, by increasing HPV vaccine uptake. The efforts to do so require raising awareness and acceptance among the general public, reducing missed clinical opportunities, maximizing access, supporting healthcare providers and systems in delivering

the HPV vaccine, and engaging key stakeholders to renew their commitment to prioritizing HPV vaccination. At Legacy Cancer Institute, we will remain committed to applying what is known to help ensure that today's young people and future generations are protected against HPV cancers.

**Sources of Information:**

- ALERT Immunization Information System, Oregon Immunization Program
- CDC Human Papillomavirus (HPV) [www.cdc.gov/hpv](http://www.cdc.gov/hpv)
- Centers for Disease Control and Prevention. How many cancers are linked with HPV each year? [Internet]. Atlanta (GA): CDC; [updated 2018 Aug 22; cited 2018 Aug 26].
- National Cancer Institute – State Cancer Profiles [www.statecancerprofiles.cancer.gov](http://www.statecancerprofiles.cancer.gov)
- National Cancer Institute – HPV and Cancer [www.cancer.gov](http://www.cancer.gov)
- Oregon Health Authority – Chronic Disease Data, Oregon Public Health Division [www.oregon.gov/oha](http://www.oregon.gov/oha)

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## Legacy Cancer Data Management

*Heather Posthuma, CTR; certified tumor registrar, Legacy Cancer Data Management*

As I look out my window in the spring of 2024, I am reminded of how quickly the weather can change. As they say in Oregon, “If you don’t like the weather, wait five minutes.” This seems to coincide with the rapid changes in the ever-evolving cancer data management field. The more we collect, the more we know. The more we know, the more treatments improve, thus creating a catalyst for change



in what registrars collect. This year, I am deeply honored to share with you how this past season has changed in our cancer data management realm.

**Updated Manuals**

We received eight updated coding manuals. Among key clarification changes, here are a few highlights of our updates.

**Tobacco Use Smoking Status**

This reintroduced field clarifies tobacco use smoking status. Collection does not include marijuana use, smokeless tobacco, e-cigarettes, vape, or oral nicotine pouch use. Previously retired in 2002, many registries continued to collect this field.

**Surgery Codes**

Previously two-digit fields, a new code format was

introduced. There were minor to no changes to the description of our surgery codes, with the exception of skin malignancies. This challenged us with case completion deadlines, education, and a software update.

### **Accreditation**

The vigorous triennial survey process resulted in a renewed accreditation for National Accreditation Program for Breast Centers and Commission on Cancer. Cancer registry compliance includes maintaining continuing education (CE), credentialing, facilitating cancer conference, quality control, data accuracy, timely submission to the National Cancer Data Base (NCDB), participation in Rapid Quality Reporting System, and follow-up of patients.

### **Education and Certification**

As a department, we earned 112.5 total CE credits in 2023. Five registrars re-certified their credentials with the National Cancer Registrars Association Council on Certification last year.

### **Data Requests and Cancer Conference**

Cancer Data Management Technicians facilitated 343 cancer conferences, completed 150 data requests, maintained and followed up on 39,421 cases, reviewed 2,769 hospice cases, and imported 5,235 cases for suspense review.

### **Quality Assurance**

A total of 280 abstracts were peer reviewed. This analysis evaluated 37 data fields encompassing primary site, histology, grade, stage, and treatment, demonstrating => 90% accuracy.

### **NCDB Submission**

We submitted 29,655 cases from 2008 to 2022 to NCDB with zero errors and within the required timeline.

### **Abstracting Timeliness**

The cancer registry team abstracted a total of 4,080 cases. We ended the year with a goal to maintain abstracting cases six months from the date of first contact.

### **New CTR credential: ODS-C**

It is truly the end of an era as 2023 marked the last year to use the seasoned credential of Certified Tumor Registrar (CTR). Our credentialing title is now Oncology Data Specialist-Certified (ODS-C). This modification reflects changes in the field and aligns our credentials with the current terminology in our profession. With all the recent changes, this may be the hardest to wrap our heads around. The CTR credential has been used since abstracting was a handwritten form on one sheet of paper-- so don't be surprised if we call ourselves CTR's for a few more years.

## Legacy Cancer Institute Integrated Network Cancer Committee Members 2023

Mindy Ansteth, BS, CTR, CPHQ; manager, cancer data management and quality improvement consultant, Legacy Cancer Institute

Christine Brown, MS, BSN, RN, RD, OCN; cancer program manager, nurse navigation and support services, Legacy Cancer Institute

Sally Bowman; pastoral care, Legacy Good Samaritan Medical Center

Sara Butler, MSW, LCSW, OSW-C; oncology social worker, Legacy Cancer Institute

Allen Cheng, MD, DDS; oral/head & neck surgeon, medical director Legacy Head & Neck Cancer Program

Alison Clarke, DO; palliative care physician, Legacy Medical Group—Palliative Care

Dawn Cox, CTR; supervisor, cancer data management, Legacy Cancer Institute

Laurie Christensen, RN, OCN; oncology nurse navigator, Legacy Cancer Institute

Brandon Dyer, MD; radiation oncologist, Legacy Medical Group—Radiation Oncology

Maryam Farinola, MD; anatomic and clinical pathologist, medical director, anatomic pathology, Cascade Pathology

Sam Gruner, MD; interventional and diagnostic radiologist, Diagnostic Imaging NW, Legacy Good Samaritan Medical Center

Nathalie Johnson, MD, FACS; breast surgical oncologist, medical director, Legacy Cancer Institute and Legacy Breast Health Centers

Carly Jones, MSN, RN, OCN; oncology nursing & practice specialist, Legacy Cancer Institute

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

Melissa Moffitt, MD, FACOG; surgeon, Legacy Medical Group—Gynecologic Oncology

Duy Nguyen, MD

Marci Reed, LD, CSO, RD; oncology dietician, Legacy Cancer Institute

Kelly Rice, PharmD; oncology pharmacy navigator, Legacy Cancer Institute

Alizah Rotramel, MD, FACS; colorectal surgeon, Legacy Medical Group—Colon and Rectal Surgery

Karen Savereide, DPT; manager outpatient rehab, acute rehab, and vestibular & audiology testing, Legacy Cancer Institute

Leslie Sorenson, CCRP; manager, oncology research, genetics, autologous stem cell transplant, high risk, oncology psychology, and lung cancer screening program, Legacy Cancer Institute

Therese Tuohy, PhD, CGC; certified genetics counselor, Legacy Cancer Institute

Tyler Van Brunt, RN, MN, CENP; nursing director, OHSU-Legacy Cancer Collaborative

Gina Westhoff, MD, FACOG; gynecologic oncologist, Legacy Medical Group—Gynecologic Oncology; medical director, Legacy Cancer Institute

## Honors and Accreditations 2023



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



Legacy Cancer Institute was the first in the United States to receive Network Cancer Program accreditation from the ACoS. Patients can receive the same award-winning care at any of our campuses, closer to home.

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



Legacy Cancer Institute was 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 was 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 were assessed to maintain ROPA accreditation. ACR accreditation provides Legacy's radiation oncologists with valuable third-party, impartial peer review and evaluation of patient care.



Legacy's lung cancer screening program at Legacy Good Samaritan Medical Center was accredited by the American College of Radiology (ACR) as an ACR Designated Lung Cancer Screening Center. To achieve this designation, Legacy's lung cancer screening program had to 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 achieved College of American Pathologists (CAP) accreditation, which ensures high standards for quality and consistency in collecting, processing and storing tumor specimens.



Legacy Oncology Clinical Research received approval for NRG Oncology research group main membership.



Legacy Oncology Clinical Research was recognized by National Cancer Institute leadership as a high-performing site based on accrual.

**Legacy Cancer Institute**

503-413-8050

[legacyhealth.org/cancer](https://legacyhealth.org/cancer)

