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Life After Head/Neck Cancer:

The Role of the APP in Survivorship

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Financial Disclosures:

I have no relevant relationships with ineligible companies to disclose within the past 24 months. (Note: Ineligible companies are defined as those whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients.)

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LEARNING OBJECTIVES

Define	Review	Define	Express	Understand
Define head and neck cancer and review treatment side effects and management	Review de-escalated treatment side effects and management	Define survivorship for head and neck cancer	Express the important role APP's and RN's play in survivorship	Understand the current state of HPV vaccination in the United States

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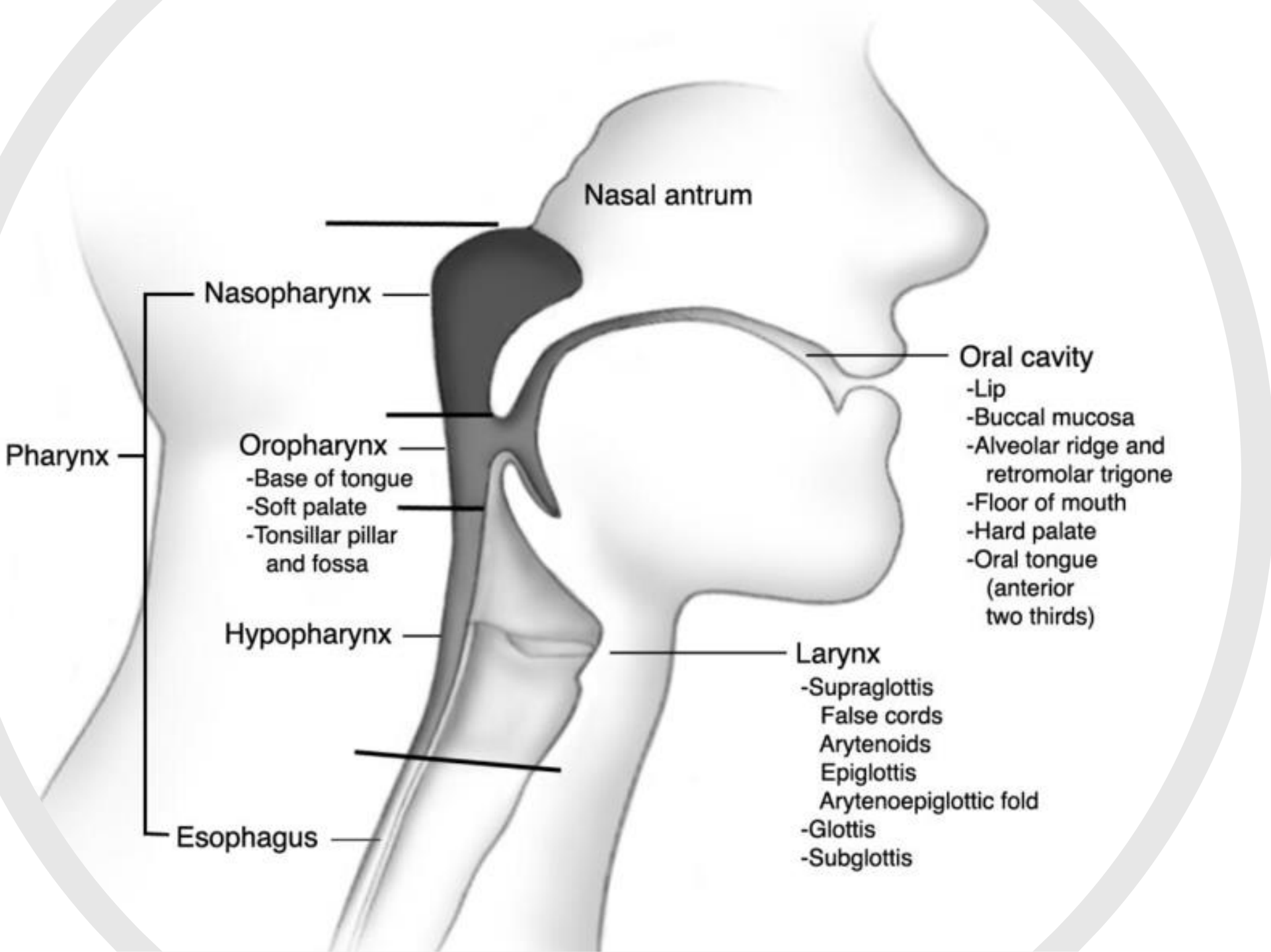
Nasal antrum
Nasopharynx
Pharynx
Oropharynx
-Base of tongue
-Soft palate
-Tonsillar pillar and fossa
Hypopharynx
Esophagus
Oral cavity
-Lip
-Buccal mucosa
-Alveolar ridge and retromolar trigone
-Floor of mouth
-Hard palate
-Oral tongue (anterior two thirds)
Larynx
-Supraglottis
False cords
Arytenoids
Epiglottis
Arytenoepiglottic fold
-Glottis
-Subglottis

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What Causes Head and Neck Cancer

- Alcohol and tobacco are major risk factors for cancers of the head and neck.
- About **70% of cancers in the oropharynx** (which includes the tonsils, soft palate, and base of the tongue) are linked to **human papillomavirus (HPV),** a common sexually transmitted virus.
- Occupational exposures or being exposed to certain substances while on the job, can increase the risk of getting cancers in the nasopharynx.
- An infection with the **Epstein-Barr Virus**, can raise the risk of cancers in the nose, behind the nose, and cancers of the salivary glands.
- Radiation treatments to the head and neck can cause head and neck cancers.
- About **twice as many men** as women get head and neck cancers. They are more likely to be diagnosed in people who are over 50 years of age.

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Symptoms of Head and Neck Cancer

- In the **mouth**, cancer can cause—
  - A white or red sore that does not heal on the gums, tongue, or lining of the mouth.
  - Swelling in the jaw.
  - Unusual bleeding or pain in the mouth.
  - A lump or thickening.
  - Problems with dentures.
- At the **back of the mouth (pharynx)**, cancer can cause—
  - Trouble breathing or speaking.
  - A lump or thickening.
  - Trouble chewing or swallowing food.
  - A feeling that something is caught in the throat.
  - Pain in the throat that won't go away.
  - Pain or ringing in the ears or trouble hearing.
- In the **voice box (larynx)**, cancer can cause—
  - Pain when swallowing.
  - Ear pain.
- In the **sinuses and nasal cavity**, cancer can cause—
  - Blocked sinuses that don't clear.
  - Sinus infections that do not respond to treatment with antibiotics.
  - Bleeding through the nose.
  - Headaches.
  - Pain and swelling around the eyes.
  - Pain in the upper teeth.
  - Problems with dentures

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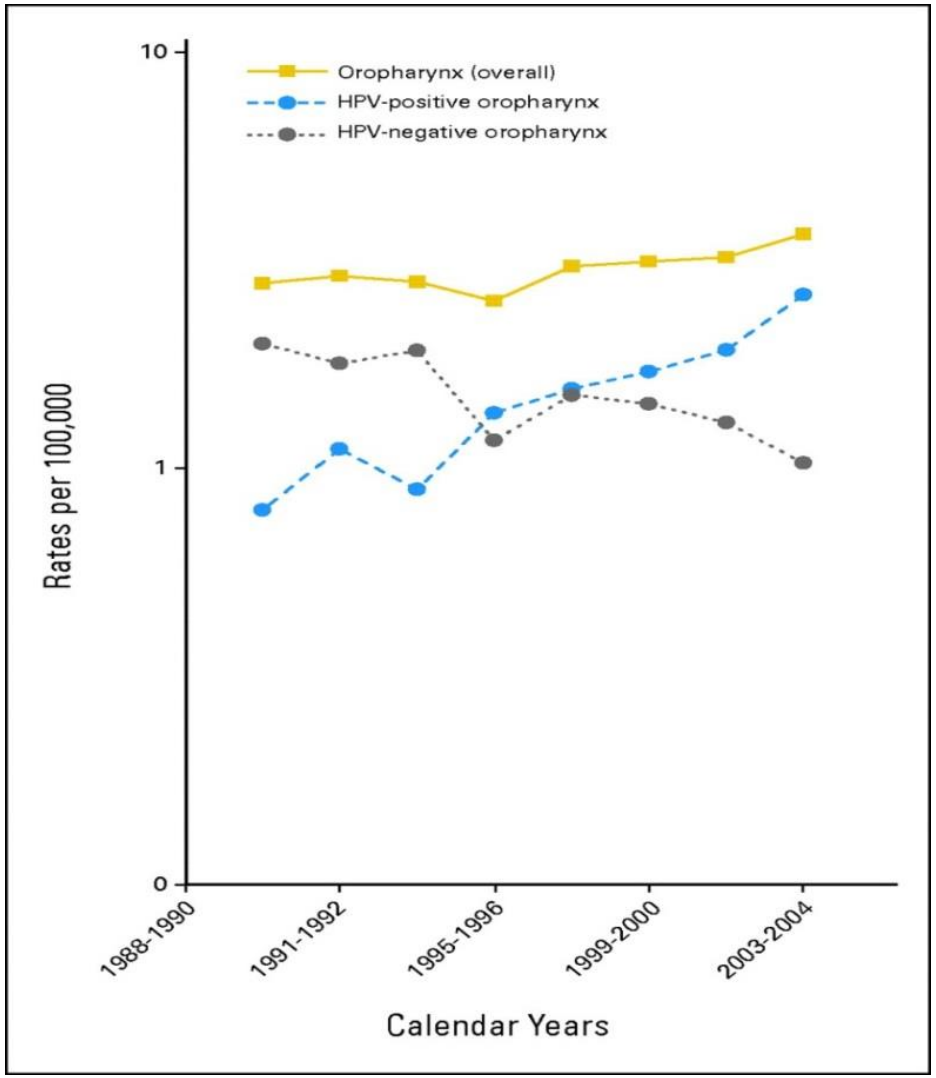
Rising incidence of HPV+ oropharynx cancer: SEER data 1984-2004



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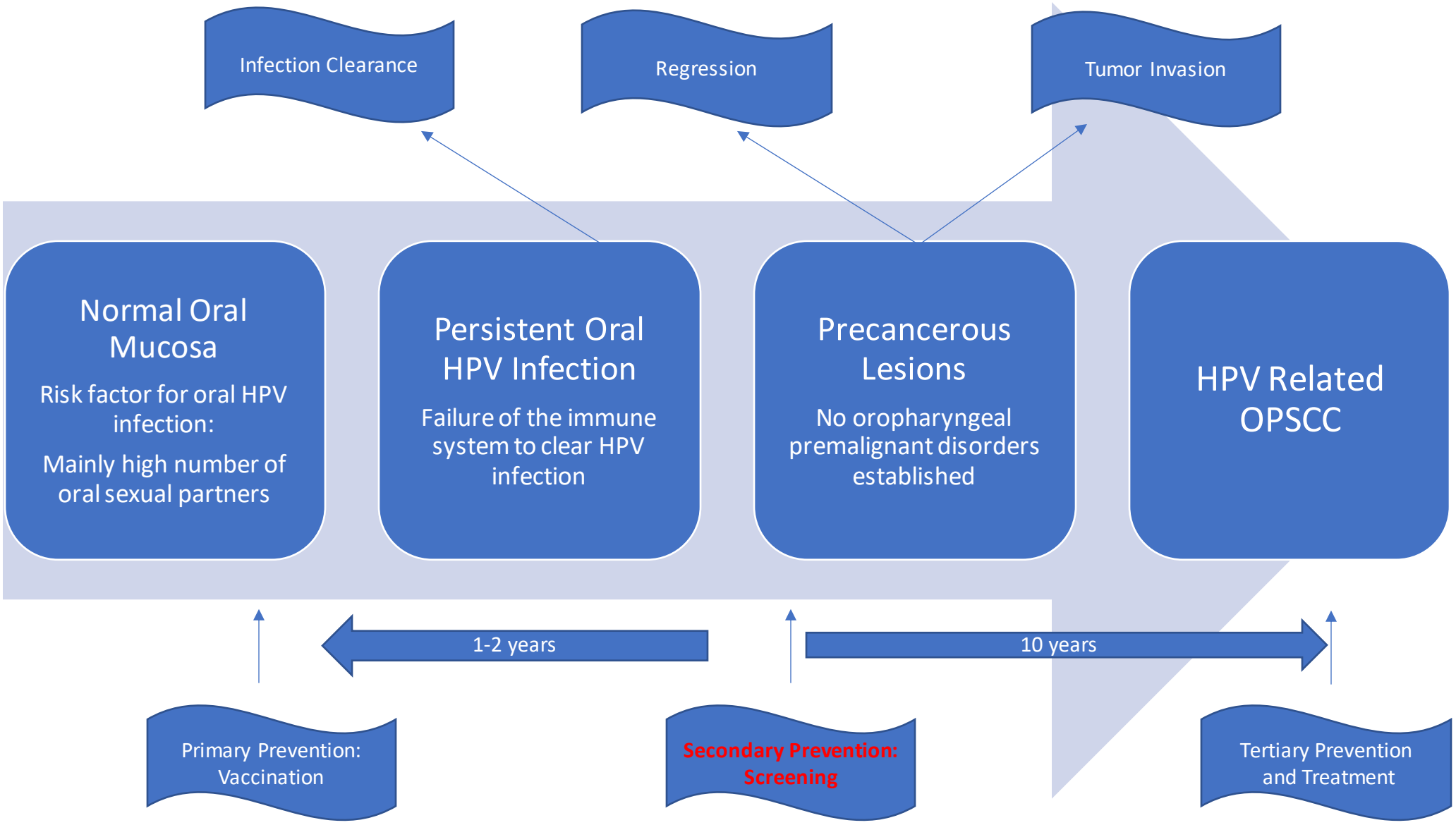
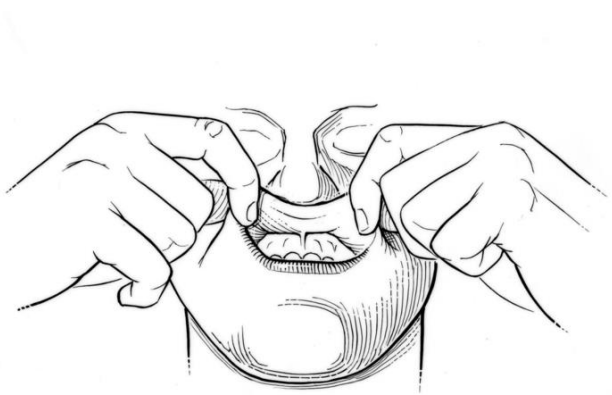
Natural history of Human Papilloma Virus oral infection

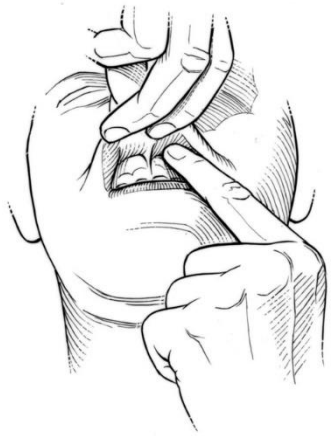


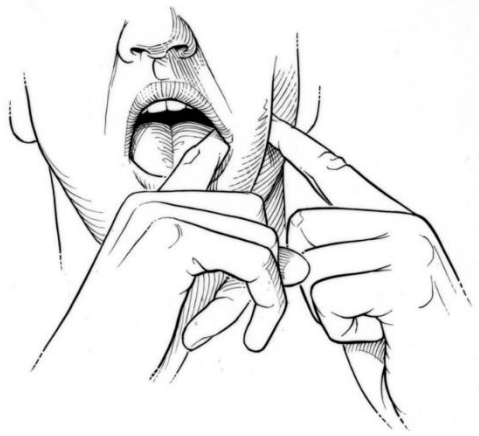
Screening for Head and Neck Cancer

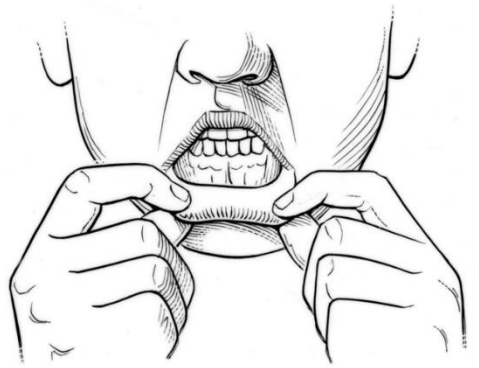
- Dental Exam (oral cavity exam)
- Regular health screening
- There are currently no HNSCC screening guidelines from the American Cancer Society, the National Comprehensive Cancer Network (NCCN), or the National Cancer Institute.
- Future of Screening?
  - Biomarkers detectable in blood and saliva for HPV DNA
  - Naveris™: NavDx® The first and only clinically validated circulating TTMV® DNA blood test that aids in the detection of HPV-driven cancer.
  - Screening for nasopharyngeal cancer using the EBV antibody test or EBV DNA test has been studied.

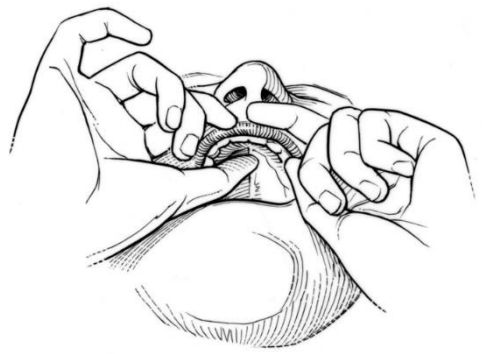
Oral Cavity Exam

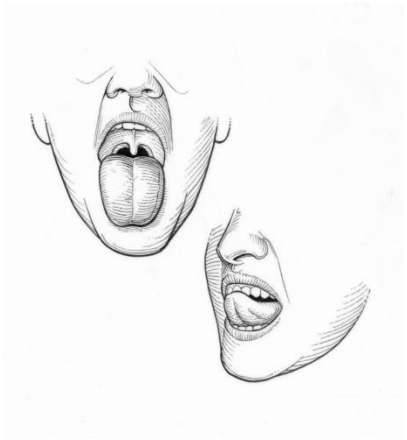


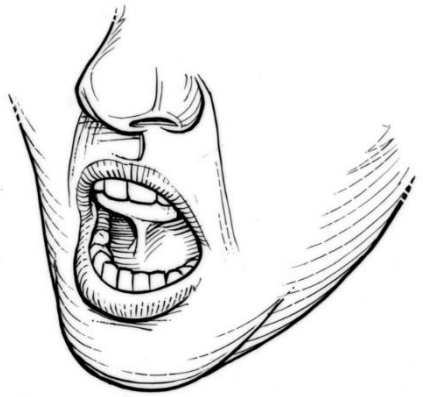


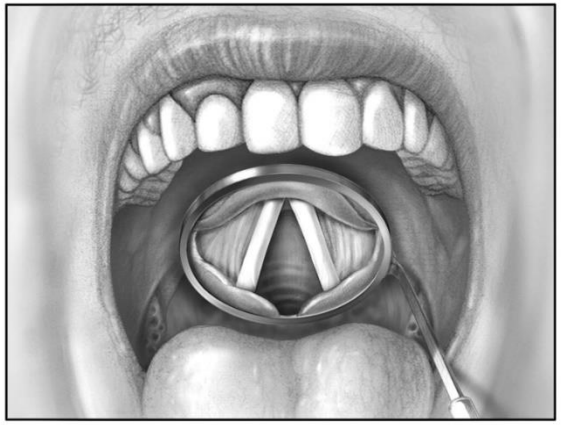












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Treatment

Multidisciplinary team discussion regarding patient treatment options with goal of maximizing survival with preservation of form and function.

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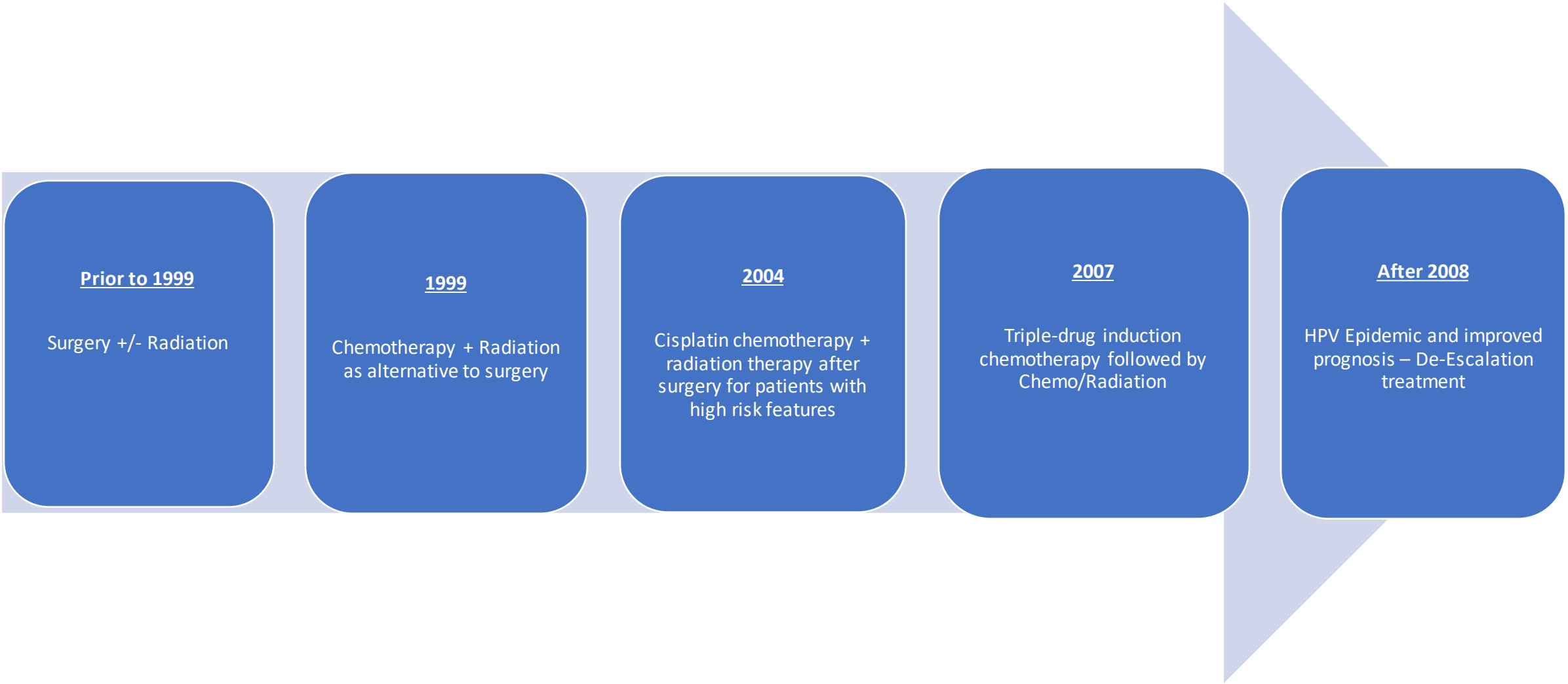
Evolution of Treatment



Multidisciplinary Care

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Multidisciplinary Care

- Medical oncology, Radiation Oncology, ENT Surgery all come together for a collaborative approach to cancer treatment
- Other team members include:
  - Physical therapy/Occupational therapy
  - Speech/Language Pathology
  - Audiology
  - Dietician/Nutrition
  - Dental
  - Psychology/Psychiatry

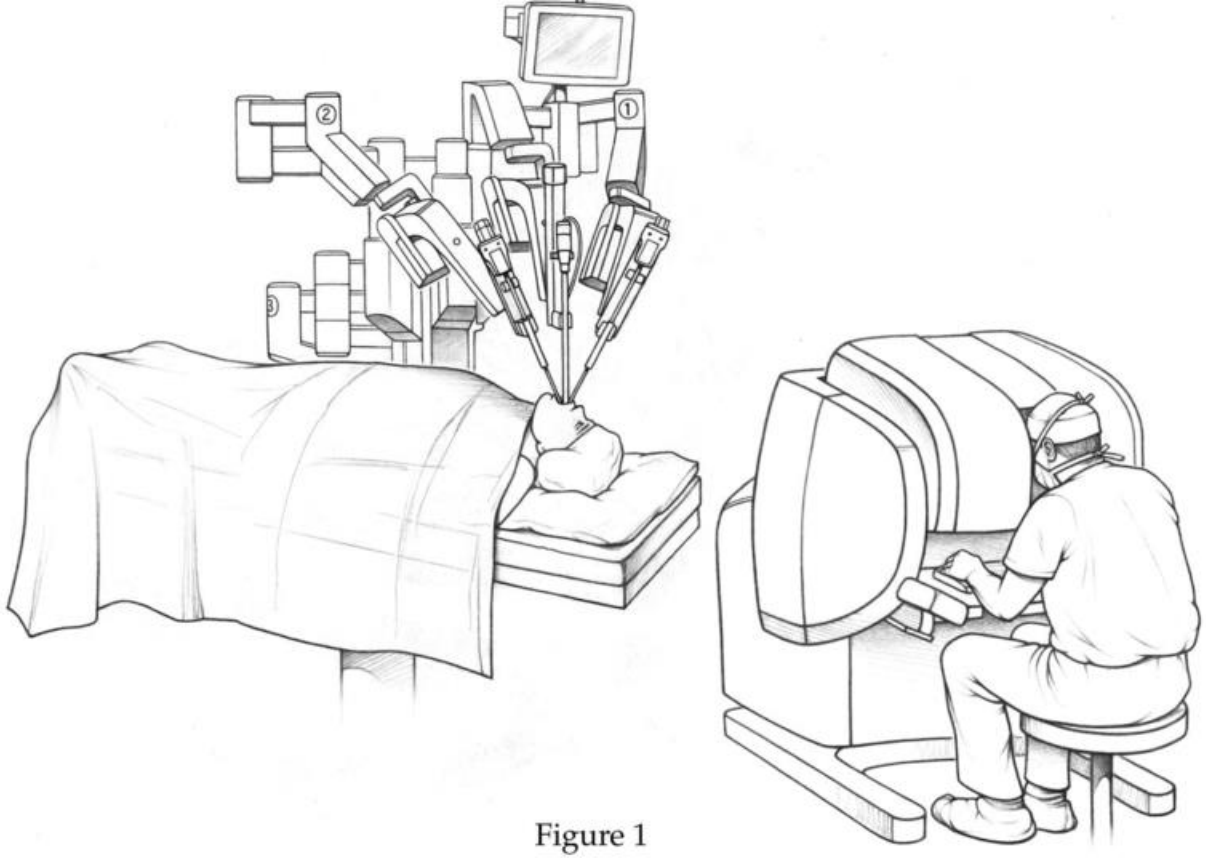

Figure 1

Surgery

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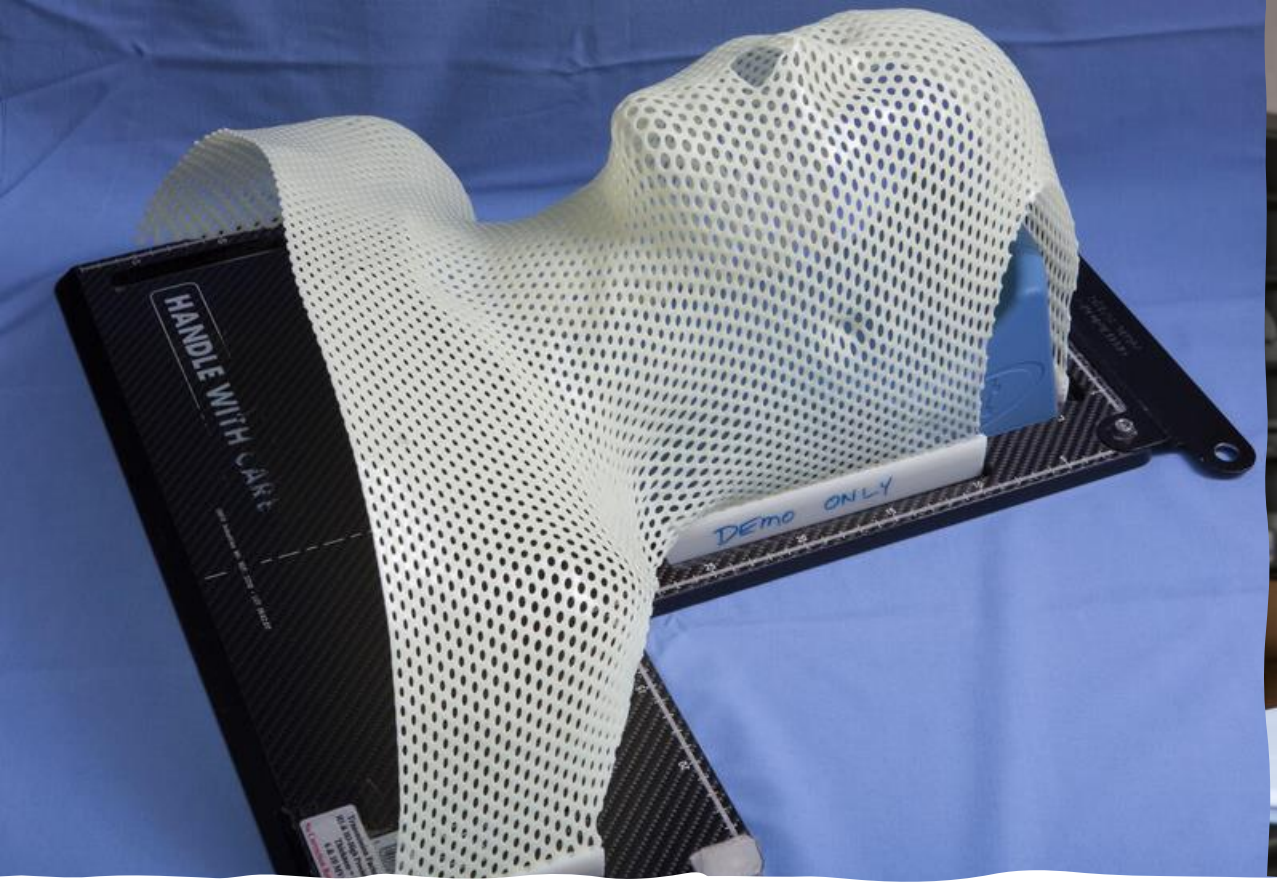
Surgery

- All patients should be evaluated by a head/neck surgeon to determine if primary tumor is resectable, unresectable, or inoperable.
- Goal is to have complete tumor resection with histologic verification of tumor free margins
- Neck dissections
  - Tumor sites that frequently have bilateral lymphatic drainage often should have both sides of the neck dissected.
  - Type of neck dissection is defined according to preoperative clinical staging and is determined at the discretion of the surgeon.
  - Lymph node dissection aids in treatment decisions based on extracapsular extension



Radiation Therapy

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Radiation Therapy

- **IMRT:** Intensity-Modulated Radiation Therapy refers to a method of assigning different dose levels to different structures within the same treatment.
- **Proton Beam:** Proton therapy is the predominate particle therapy under active clinical investigation. Proton therapy has typically been used to treat patients with the most challenging disease, for which other RT options were not felt to be safe or of any benefit.

Chemotherapy

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Chemotherapy

- Induction:
  - Cisplatin based induction chemotherapy can be used followed by radiation based locoregional treatment with concurrent chemotherapy.
  - After induction chemotherapy, multiple options can be used for the radiation based portion of therapy.
  - Examples of induction include:
    - Cisplatin/Docetaxel/5-FU
    - Cisplatin/Paclitaxel/5-FU
    - Following induction, systemic agents with concurrent radiation typically include: weekly Carboplatin, weekly Cisplatin or weekly Cetuximab.
- Definitive Chemoradiation Therapy:
  - **First Line Treatment: Cisplatin (High dose or Weekly)**
- Recurrent/Metastatic:
  - Immunotherapy alone (pending PDL-1 CPS Score) or in combination with chemotherapy.

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Common Side Effects From Treatment

- Disfigurement
- Dysphagia
- Hearing Loss/Tinnitus
- Lymphedema
- Mucositis
- Malnutrition
- Neuropathy
- Osteoradionecrosis/Dental Decay
- Trismus
- Radiation Fibrosis
- Recurrent Candiasis
- Xerostomia/Taste Changes

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De-Escalation Treatment

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original report

Phase II Evaluation of Aggressive Dose De-Escalation for Adjuvant Chemoradiotherapy in Human Papillomavirus–Associated Oropharynx Squamous Cell Carcinoma

Daniel J. Ma, MD[1]; Katharine A. Price, MD[1]; Eric J. Moore, MD[1]; Samir H. Patel, MD[2]; Michael L. Hinni, MD[2]; Joaquin J. Garcia, MD[1]; Darlene E. Graner, SLPD[1]; Nathan R. Foster, MS[1]; Brenda Ginos, MS[1]; Michelle Neben-Wittich, MD[1]; Yolanda I. Garces, MD[1]; Ashish V. Chintakuntlawar, MBBS, PhD[1]; Daniel L. Price, MD[1]; Kerry D. Olsen, MD[1]; Kathryn M. Van Abel, MD[1]; Jan L. Kasperbauer, MD[1]; Jeffrey R. Janus, MD[1]; Mark Waddle, MD[3]; Robert Miller, MD[3]; Satomi Shiraishi, PhD[1]; and Robert L. Foote, MD[1]

Ma, D.J., et al

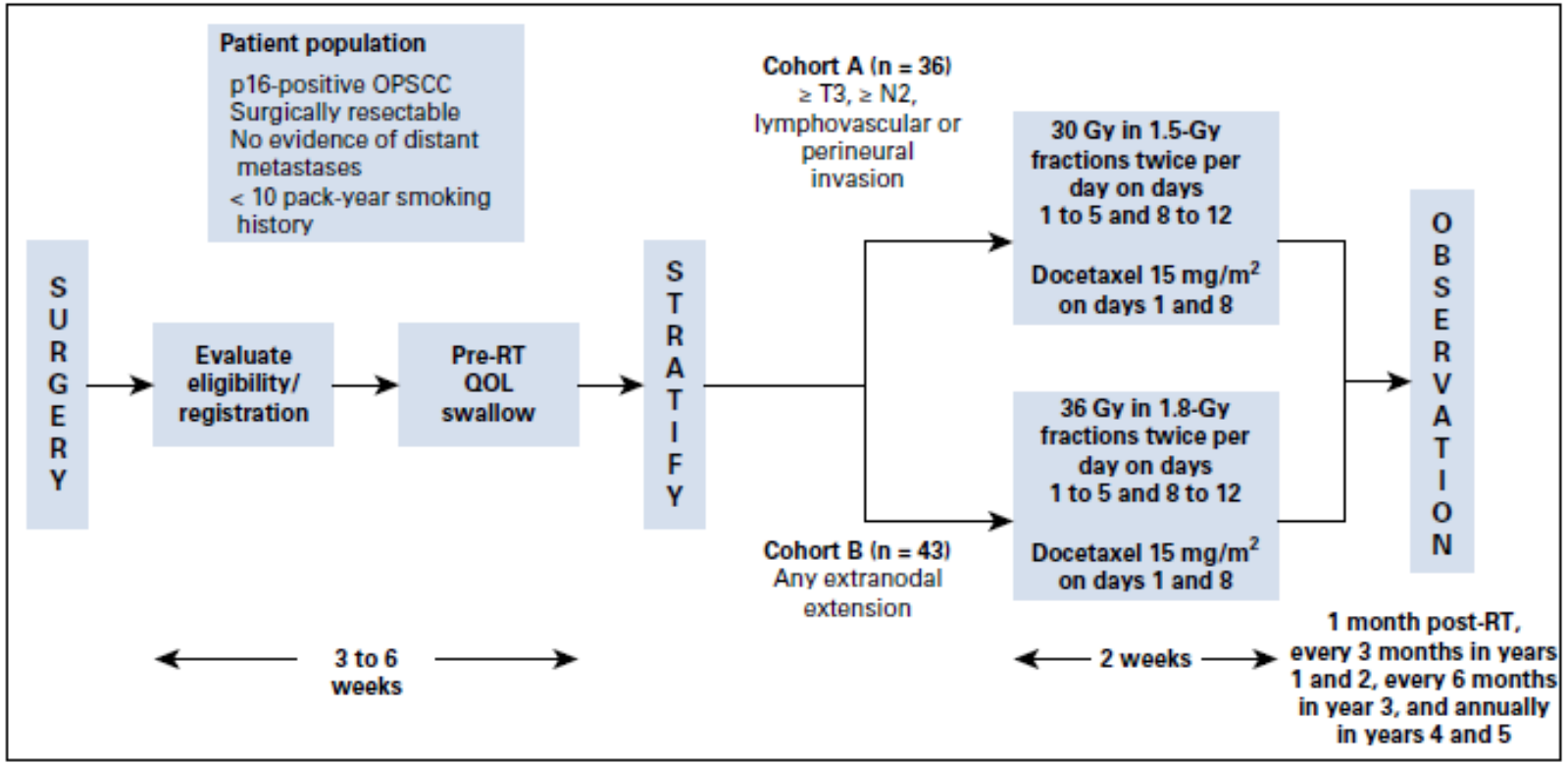

FIG 1. Protocol schema. OPSCC, oropharyngeal squamous cell carcinoma; QOL, quality of life; RT, radiotherapy.

MC1273:Radiation Therapy and Docetaxel in Treating Patients With HPV-Related Oropharyngeal Cancer

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TABLE 3. Most Common Postbaseline Adverse Events by Grade and Cohort

	Grade							
	1		2		3		4	
Adverse Event by Cohort	No.	%	No.	%	No.	%	No.	%
Dry mouth								
A	27	75	8	22.2				
B	31	72.1	11	25.6				
Fatigue								
A	27	75	5	13.9	1	2.8		
B	30	69.8	8	18.6				
Dysphagia								
A	15	41.7	10	27.8	2	5.6		
B	23	53.5	10	23.3	1	2.3		
Superficial soft tissue fibrosis								
A	20	55.6	3	8.3				
B	28	65.1	2	4.7				
Mucositis oral								
A	14	38.9	4	11.1	3	8.3		
B	18	41.9	8	18.6	2	4.7		
Oral pain								
A	13	36.1	6	16.7	1	2.8		
B	24	55.8	5	11.6				
Lymphedema								
A	15	41.7	2	5.6	1	2.8		
B	23	53.5	3	7				
Nausea								
A	13	36.1	3	8.3				
B	10	23.3	3	7				
Pharyngitis								
A	10	27.8	3	8.3				
B	15	34.9						
Lymphocyte count decreased								
A			2	5.6	1	2.8		
B			1	2.3				
Radiation dermatitis								
A					1	2.8		
Osteonecrosis of jaw								
A			1	2.8				
Vasovagal reaction								
B							1	2.3

"Aggressive radiation dose de-escalation in the adjuvant setting for selected patients with HPV-associated

OPSCC achieved LRC rates comparable to historical controls while producing toxicity and QOL outcomes superior to those of standard adjuvant treatment."

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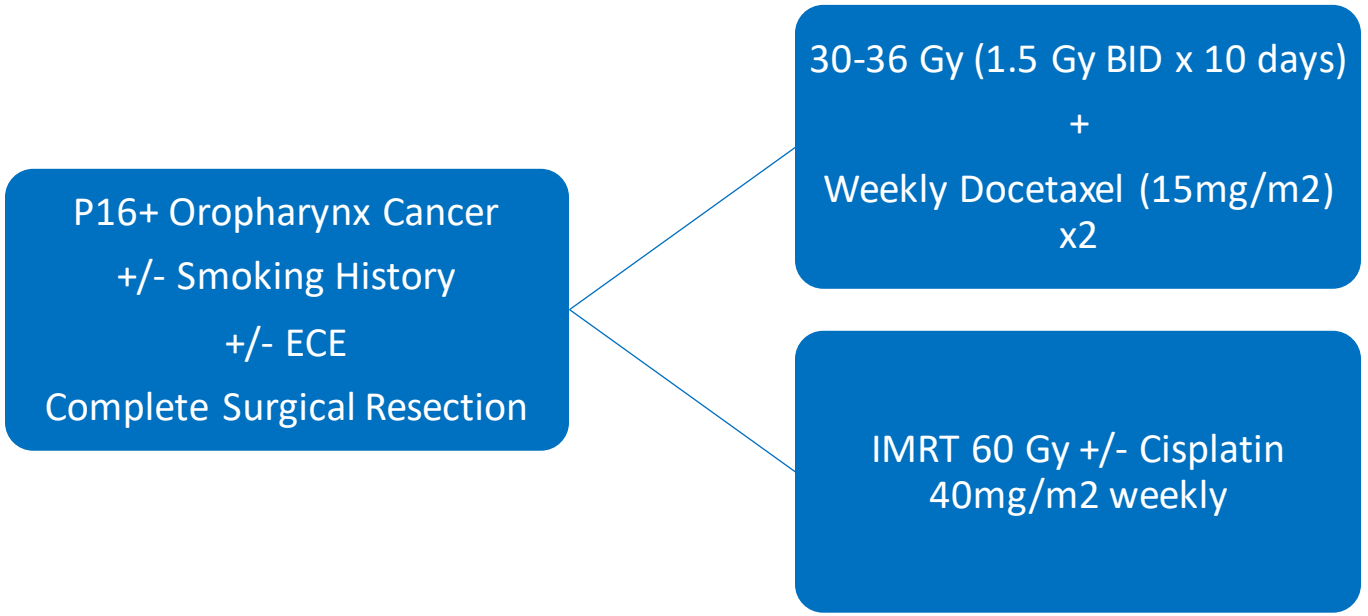
MC 1675: De-escalated Adjuvant Radiation Therapy for HPV Associated Oropharynx Cancer



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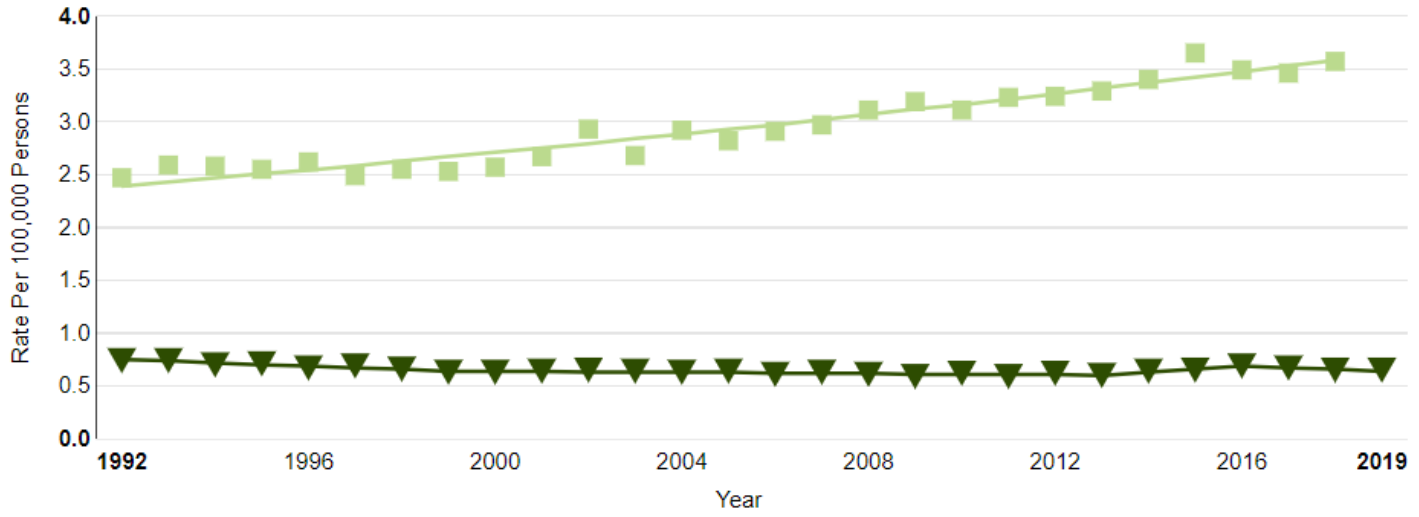
Survivorship

Estimated New Cases in 2021	17,960
% of All New Cancer Cases	0.9%

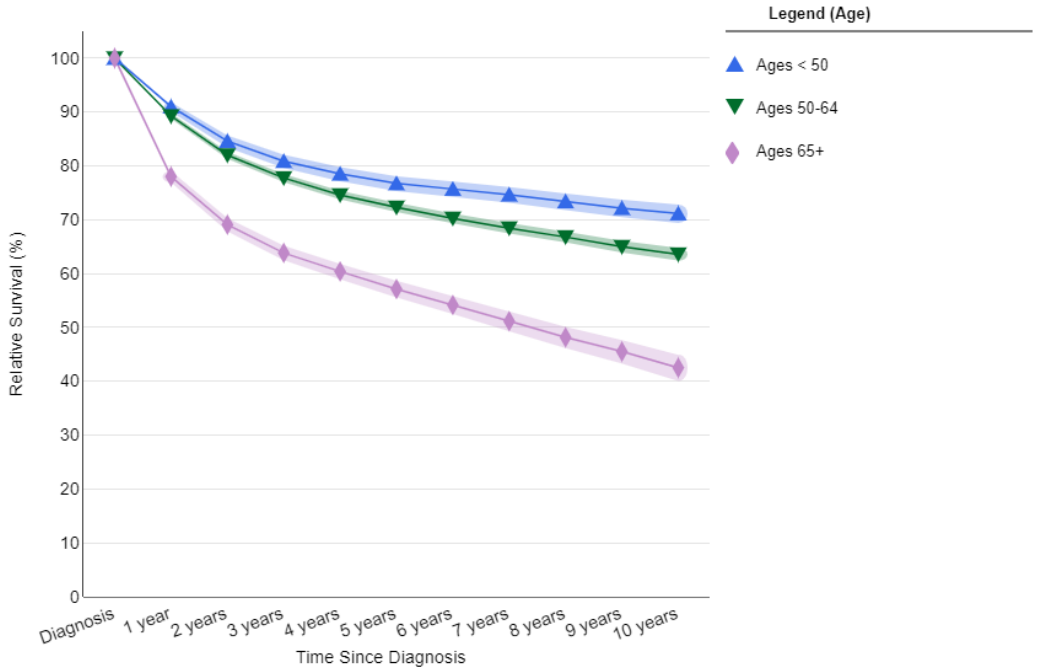
Estimated Deaths in 2021	2,870
% of All Cancer Deaths	0.5%

5-Year Relative Survival
68.1%
2011–2017



https://seer.cancer.gov/statfacts/html/tongue.html

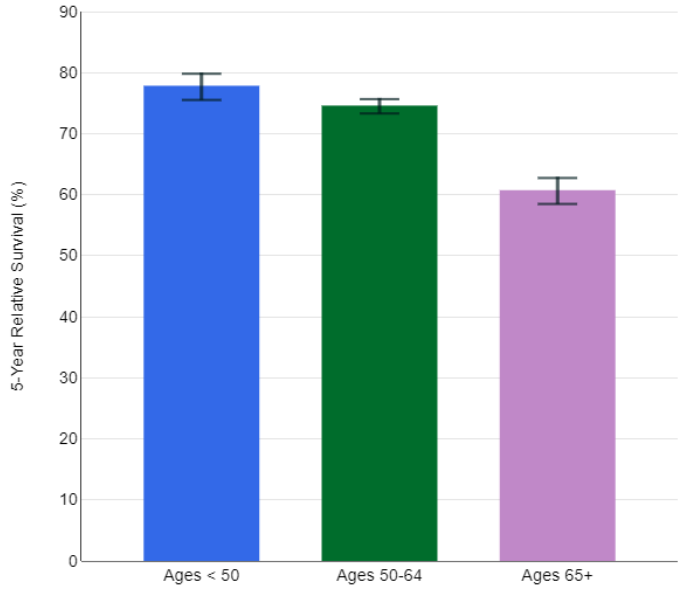
Oropharynx & Tonsil
SEER Relative Survival Rates by Time Since Diagnosis, 2000-2017
By Age, Both Sexes, All Races (includes Hispanic), All Stages



Created by https://seer.cancer.gov/explorer on Mon Feb 28 2022.
SEER 18 areas [http://seer.cancer.gov/registries/terms.html] (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana, New Jersey, and Georgia excluding ATL/RG).
Expected Survival Life Tables [https://seer.cancer.gov/expsurvival/] by Socio-Economic Standards.
The relative survival rates are calculated using monthly intervals.
Rates for American Indians/Alaska Natives only include cases that are in a Purchased/Referred Care Delivery Area (PRCDA).
See SEER Race Recode Documentation for American Indian/Alaskan Native Statistics [http://seer.cancer.gov/seerstat/variables/seer/race_ethnicity/#ai-an].
Hispanics and Non-Hispanics are not mutually exclusive from whites, blacks, Asian/Pacific Islanders, and American Indians/Alaska Natives. Incidence data for Hispanics and Non-Hispanics are based on the NAACCR Hispanic Latino Identification Algorithm (NHIA) and exclude cases from the Alaska Native Registry. See SEER Race Recode Documentation for Spanish-Hispanic-Latino Ethnicity [http://seer.cancer.gov/seerstat/variables/seer/race_ethnicity/#hispanic].
See SEER*Explorer Cancer Site Definitions [https://seer.cancer.gov/explorer/cancer-sites.html] for details about the coding used for SEER Incidence data.

https://seer.cancer.gov/statfacts/html/tongue.html

Oropharynx & Tonsil
SEER 5-Year Relative Survival Rates, 2011-2017
By Age, Both Sexes, All Races (includes Hispanic), All Stages



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Expected Survival Life Tables [https://seer.cancer.gov/expsurvival/] by Socio-Economic Standards.
The five-year survival rates are calculated using monthly intervals.
Rates for American Indians/Alaska Natives only include cases that are in a Purchased/Referred Care Delivery Area (PRCDA). See SEER Race Recode Documentation for American Indian/Alaskan Native Statistics [http://seer.cancer.gov/seerstat/variables/seer/race_ethnicity/#ai-an].
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https://seer.cancer.gov/statfacts/html/tongue.html

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What is Survivorship?

- The word “survivorship” means different things to different people. Common definitions include:
  - Having no signs of cancer after finishing treatment.
  - Living with, through, and beyond cancer.
    - According to this definition, cancer survivorship begins at diagnosis and includes people who continue to have treatment over the long term, to either reduce the risk of recurrence or to manage chronic disease.
- Survivorship is one of the most complicated parts of having cancer. This is because it is different for everyone.

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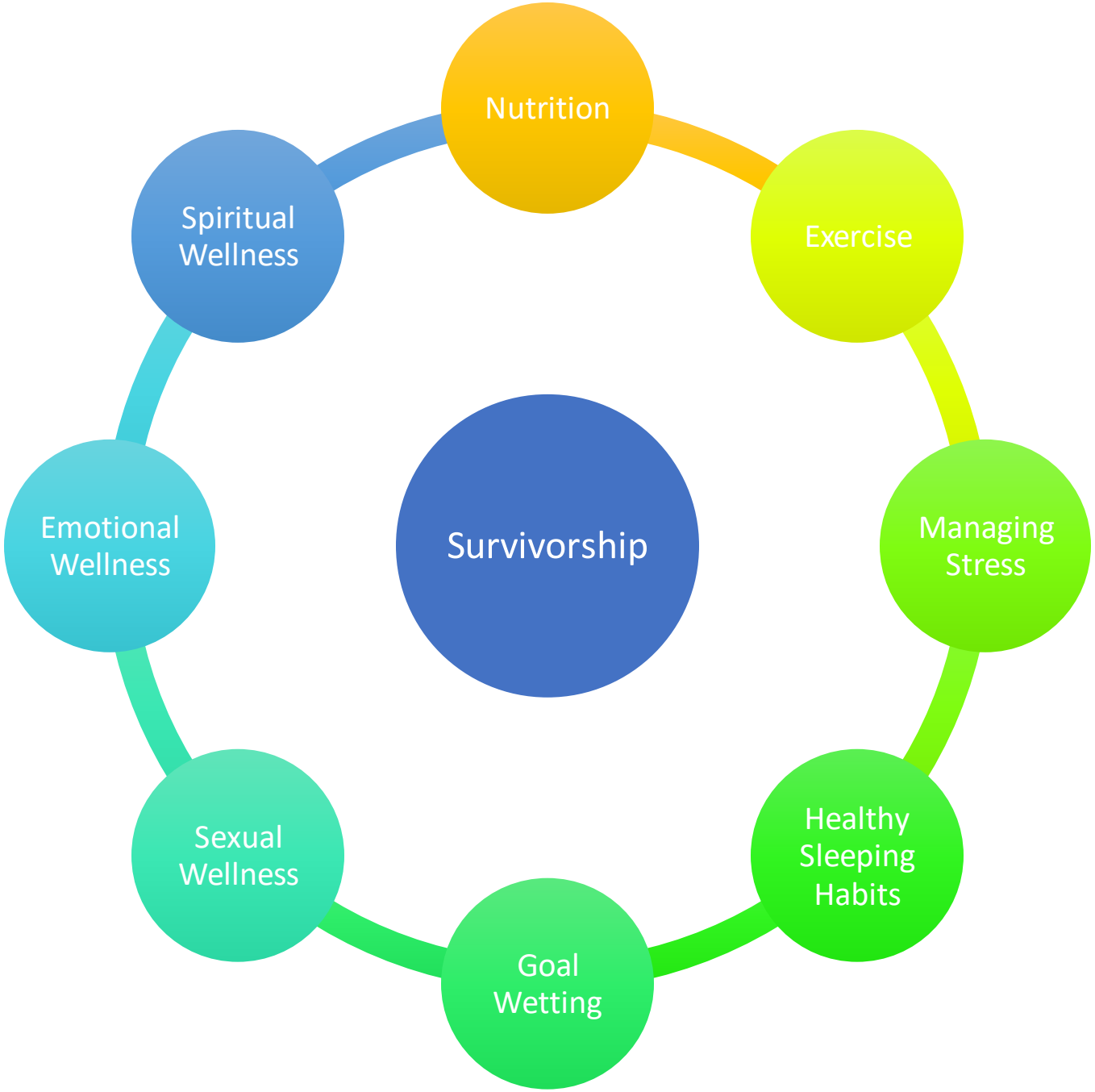

Nutrition
Exercise
Managing Stress
Healthy Sleeping Habits
Goal Wetting
Sexual Wellness
Emotional Wellness
Spiritual Wellness
Survivorship

The Role of the APP

- Routine history and physical exam
- Review scan and blood work results
  - PET, MRI, CT
  - TSH
- Identity and address new concerns
- Validate feelings/emotions around Fear of Recurrence

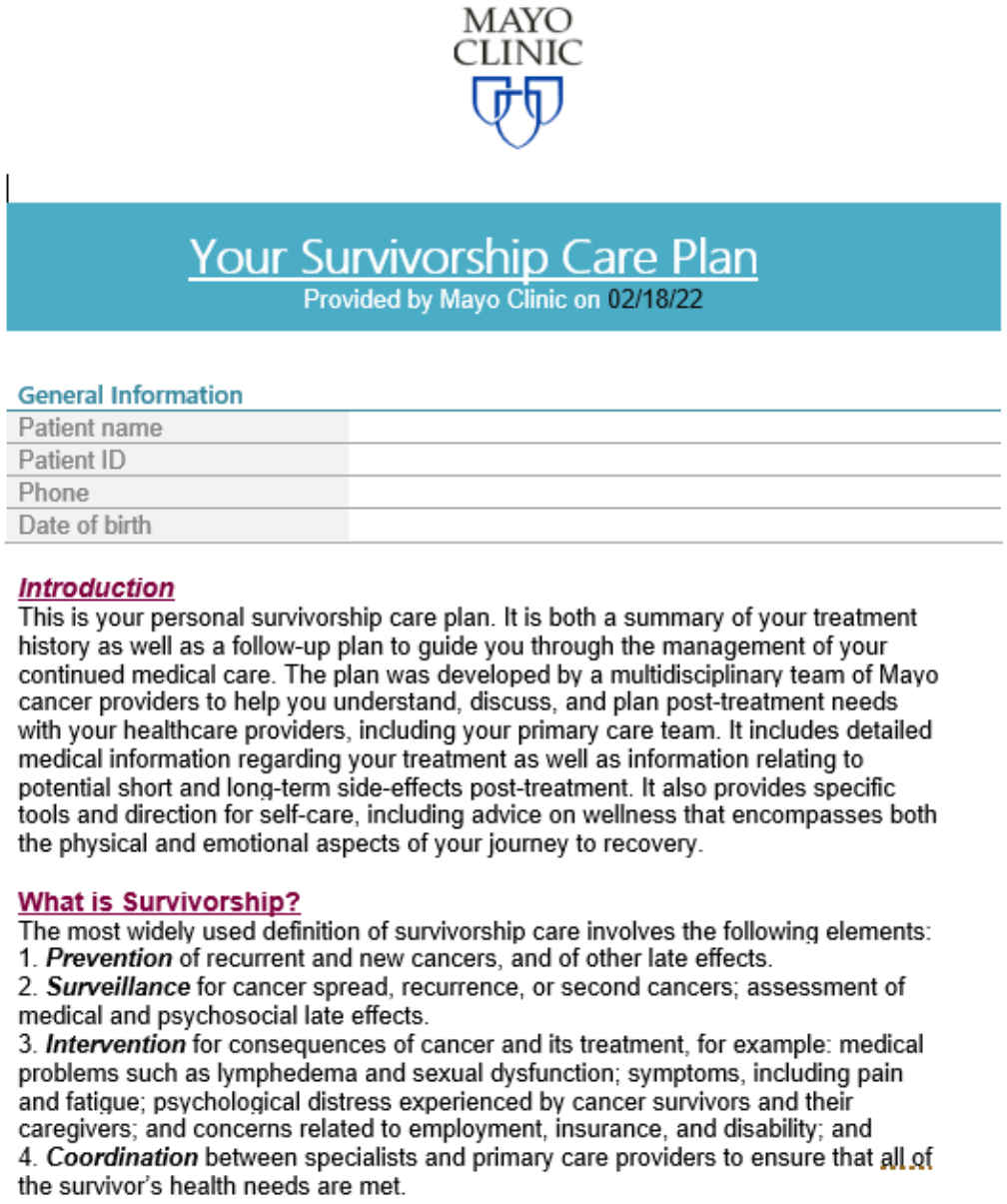
The Role of the RN

- Three-month post treatment visit
- Multi-modality patients meet with a medical or radiation oncology nurse to review their individualized Cancer Treatment Summary (CTS).
- Review cancer treatment team, staging, side-effects, who to call and when to call.
- Encourage sharing with local primary care provider

Cancer Treatment Summary (CTS)

- The CTS describes the pt's diagnosis, stage, treatment received, side effects, follow up schedule, and standard health maintenance guidelines, according to the National Comprehensive Cancer Network (NCCN).
- Pts are provided two copies of the CTS, one personal and one for their primary care provider.

Cancer Treatment Summary



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Your Survivorship Care Plan

Provided by Mayo Clinic on 02/18/22

General Information

Patient name	
Patient ID	
Phone	
Date of birth	

Introduction

This is your personal survivorship care plan. It is both a summary of your treatment history as well as a follow-up plan to guide you through the management of your continued medical care. The plan was developed by a multidisciplinary team of Mayo cancer providers to help you understand, discuss, and plan post-treatment needs with your healthcare providers, including your primary care team. It includes detailed medical information regarding your treatment as well as information relating to potential short and long-term side-effects post-treatment. It also provides specific tools and direction for self-care, including advice on wellness that encompasses both the physical and emotional aspects of your journey to recovery.

What is Survivorship?

The most widely used definition of survivorship care involves the following elements:
1. ***Prevention*** of recurrent and new cancers, and of other late effects.
2. ***Surveillance*** for cancer spread, recurrence, or second cancers; assessment of medical and psychosocial late effects.
3. ***Intervention*** for consequences of cancer and its treatment, for example: medical problems such as lymphedema and sexual dysfunction; symptoms, including pain and fatigue; psychological distress experienced by cancer survivors and their caregivers; and concerns related to employment, insurance, and disability; and
4. ***Coordination*** between specialists and primary care providers to ensure that all of the survivor's health needs are met.

Cancer Treatment Summary

Care Team	
Medical Oncologist or Hematologist	**Medical Oncologist**
	Your oncologist is your point of contact for any questions regarding the adverse effects of intravenous (I.V.) and oral cancer treatments (e.g. Nausea, vomiting, tingling in your hands/feet).
Surgeon	**Surgeon**
	Your surgeon is your point of contact for any questions regarding your incision.
Radiation Oncologist	**Radiation Oncologist**
	Your radiation oncologist is your point of contact for any questions you have regarding radiation therapy including skin issues, swallowing, pain, and bowel habits related to radiation therapy
Primary Care Physician	**Primary Care Provider**

Cancer Diagnosis Information	
Diagnosis	
Diagnosis date	
Staging information	**Cancer Staging**

Background Information	
Family history	
Significant medical conditions	
Alcohol use	
Tobacco use	

Oncology History

Cancer Treatment Summary

Making Healthy Choices

- Healthy food choices include a wide variety of fruits, vegetables, whole grains, poultry, and fish while minimizing refined grains, processed and red meats, desserts, and high-fat dairy products.
- Exercise after cancer treatment improves quality of life, fatigue, mood, muscle strength, and physical functioning. It also decreases the risk of cardiovascular disease. Work up to exercising 30 minutes/day at least 5 days/week and strive to achieve a healthy weight (BMI 18.5–25).
- Minimize alcohol, and if you drink, do not drink more than 1 alcoholic beverage per day (5 oz of wine, 12 oz of beer, or 1 ounce of liquor). For some specific cancer types, alcohol use may increase the risk of recurrence; please talk with your provider.
- Tobacco use may also increase your risk of cancer recurrence or a new cancer. If you smoke, talk to your doctor to help you quit. The Mayo Clinic Nicotine Dependence Center can help.
- Stress management tools such as meditation, prayer, and breathing exercises may be helpful. If you develop feelings of worry, anxiety, sadness, or hopelessness that persist for > 2 weeks, talk to a health care provider.
- Sleep is important for healing and well-being. Most adults require 7–9 hours of sleep/night. If you are having difficulty sleeping, talk to your provider

Schedule of Surveillance Testing and Visits

The frequency and nature of follow-up care is individualized based on the type of cancer, the type of treatment received, and the person's overall health, including possible treatment-related problems.

At follow-up appointments, the doctor may recommend tests to check for recurrence or to screen for other types of cancer. In many cases, it is not clear that special follow-up tests improve survival or quality of life. This is why it is important for the doctor to help determine what follow-up care plan is appropriate. The doctor may not need to perform any tests if the person appears to be in good physical condition and does not have any symptoms. It is important for the patient to talk with the doctor about any questions or concerns related to the follow-up care plan.

Cancer Treatment Summary

	With whom	For how long
Medical Oncology or Hematology visits	***	First year post treatment
		Second year post treatment
		Third year post treatment and beyond
Lab tests	***	First year post treatment
		Second year post treatment
		Third year post treatment and beyond
Imaging	***	First year post treatment
		Second year post treatment
		Third year post treatment and beyond

Follow-up care with your Primary Care Physician (PCP)
Follow-up care with your primary care physician is recommended for age-appropriate cancer screening, for monitoring blood pressure, cholesterol, blood sugar, weight, and for other medical conditions.

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Symptoms to watch for
Possible late and long-term effects of cancer treatment can include:

- Bone thinning
- Numbness and tingling of the hands and feet
- Heart problems
- Fatigue

Please talk to your care team about ways to manage these side effects. In addition, please contact your healthcare provider with any new symptoms that may signify a cancer recurrence including pain that lasts more than a few weeks, difficulty breathing, or unintentional weight loss.

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APP Survivorship Clinic (APHNS)

- Advanced Providers for Head/Neck Survivors (APHNS)
- Combined clinic with Medical oncology, Radiation Oncology, and ENT surgery APP's
- Patients >2 years from multimodality treatment
- Clinic open weekly (currently Thursday PMs)
- 30-minute appointments, 6 patients per clinic
- Reduces duplicate work
- Scope examination performed by ENT
- Laboratory and imaging studies scheduled and reviewed based on NCCN guidelines
- Physician colleagues available for consultation

APP Survivorship Clinic

- Future Plans: utilizing the nurse navigator to contact pts prior to their survivorship visit to assess concerns and arrange coordinated appointments with related specialities (e.g. audiology, lymphedema therapy, dentistry). We anticipate this will provide timely, holistic care for HNC pts.

- Goals: Increased patient satisfaction, increased provider satisfaction, decreased appointment times, decrease duplicate work.

Common Survivorship Topics

- Physical/Psychosocial Effects
- Body Image
- Carotid Artery Stenosis
- Cervical Dystonia
- Cognitive Impairment
- Depression
- Dysphagia, Aspiration, Stricture
- Gastroesophageal Reflus Disease
- Hypothyroidism
- Sexuality and Intimacy
- Lymphedema
- Neurosensory Disorders
- Oral Complications, Dental Decay
- Osteoradionecrosis
- Radiation Fibrosis
- Shoulder Dysfunction
- Sleep
- Taste
- Xerostomia
- Tobacco Use
- Sureillance Education

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Depression

- **One in 4** patients with any cancer diagnosis may experience depression.
- The risk of developing depression is particularly high in patients with head & neck cancer.
- Even though nearly 50% of patients with head & neck cancer experience symptoms of depression, this problem is often under recognized or ignored.
- Many patients may also experience addiction to tobacco, alcohol, and other substances, which can increase the risk of depression during treatment.
- Symptoms of depression may include:
  - persistent feelings of sadness, emptiness, irritability, or anxiety; feelings of hopelessness or pessimism; feelings of guilt, worthlessness, helplessness, or shame; loss of interest or pleasure in hobbies/activities; decreased energy, fatigue, being “slowed down” (also a side effect of radiation); difficulty with concentration, memory, decision making (also a side effect of chemotherapy); loss of sleep, early morning awakening, oversleeping; appetite and/or weight changes (gain or loss, though weight loss is also a side effect of cancer treatment); thoughts of death, self-harm; suicide attempts; restlessness, and other persistent physical symptoms.

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Depression

- Help can take many forms including talking about it with friends, family and healthcare providers, engaging social support, or joining a support group.
- You may consider meeting with a behavioral health provider to discuss strategies for coping with cancer diagnosis and treatment.
  - Behavioral therapy and counseling may be helpful in the management of depression.
- Based on recommendations by your health care providers, anti-depressant medications may be useful in the prevention of depression in patients newly diagnosed with head & neck cancer.
  - Remeron (Mirtazapine) commonly used in our practice as it helps increase appetite
- NEED URGENT HELP? If you have feelings of harming yourself or others, or if you need urgent help, please call 911, or call the National Suicide Prevention Lifeline at: 1-800-273-TALK (8255) or www.suicidepreventionlifeline.org

Anxiety

- Fear of recurrence (FoR)
  - Fear of recurrence (FoR) is a phenomenon commonly experienced by cancer survivors.
  - Defined as the *'fear associated with the possibility that the cancer will return or progress in the same place or in another part of the body'*
  - New symptoms and time of routine follow-up outpatient appointments increase FoR.
  - Highest risk of recurrence in the first 2 years post-treatment
  - It often returns where it initially occurred, which is called locoregional recurrence.
    - It can recur in the oral cavity, tongue, lip, pharynx (throat behind the mouth and nasal cavity stopping above the esophagus and the larynx), or larynx (right below the pharynx). It can also recur in the salivary glands, sinuses, or nasopharynx (upper part of the throat behind the nose).
    - If you have advanced disease, it could recur in a distant organ, usually the lungs, and, less frequently, in bone.

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Dysphagia, Aspiration, Stricture

- Dysphagia refers to difficulty swallowing.
- Signs or symptoms of dysphagia:
  - Coughing or choking when eating or drinking
  - Sensation of food getting stuck
  - Food or liquid passing into or out of the nose with swallowing
  - Decreased ability to chew or swallow solids
  - Unintended weight loss
  - Increased time required to eat a meal
  - Effortful swallowing
  - Difficulty swallowing pills or tablets
  - Recurring pneumonias from aspiration

- Studies have shown that continuing to use the muscles and to stimulate the tissues of the throat during treatment results in improved swallowing function.
- Speech pathologist are individuals who are trained to test swallowing function, provide recommendations on a safe diet, and perform swallow therapy.
- A small percentage of patients have severe swallowing issues that necessitate the use of a *permanent feeding tube or esophageal dilations.*

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Lymphedema

- Condition marked by swelling of the soft tissues due to accumulation of lymph.
- Up to 75% of patients will manifest some signs and symptoms of lymphedema after treatment for head and neck cancers.
- Lymphedema is typically seen as doughy and diffuse swelling of the neck.
  - More pronounced over an incision or in the area under the chin.
  - Seen along the jaw-line, in the cheeks, and even in the eyelids.
  - Worse first thing in the morning and after periods of inactivity. It tends to improve with being upright and mobile.
- Complete decongestive therapy, or CDT.
  - (1) Form of massage known as manual lymph drainage (MLD)
  - (2) Compression bandages/clothing with special padding
  - (3) Exercises to improve the flow of lymph
  - (4) Skin care of the affected areas.

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Radiation Fibrosis and Shoulder Dysfunction

- Radiation Fibrosis Syndrome (RFS) refers to the signs and symptoms of soft tissue injury resulting from radiation therapy. All of the soft tissues within the field of radiation can be affected, including skin, connective tissue, muscles, nerves and blood vessels.
  - Approximately 25% of patients who receive radiation to the jaw muscle region experience difficulty opening their mouths (trismus) that is severe enough to impact normal function.
- Tightness, pain and neck spasms are common patient-reported experiences
- Radiation therapy alone or in combination with surgery may also play a significant role in causing shoulder dysfunction. Shoulder dysfunction ultimately leads to an inability to completely raise your arm above your shoulder.
  - Many surgeons may know after surgery the extent to which the accessory nerve was involved or affected
  - Shoulder dysfunction is treated with physical therapy and occupational therapy.

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Oral Complications and Osteoradionecrosis

- Salivary glands can be removed or damaged leading to decreased salivary flow which is instrumental to our oral health defenses.
- Common problems related to poor oral health include cavities, tooth loss, exposed bone, painful non-healing wounds and jaw fracture.
- Symptoms of oral complications or poor oral health may include
  - Dry mouth, foul smelling breath, oral pain, pain with swallowing, difficulty with chewing food, alteration of taste, bleeding, dental caries, loose teeth, exposed bone, or inability to open your mouth.
- Frequent dental evaluation is key to prevention
- ORN is best prevented by early removal of unsalvageable teeth at least 2 weeks before radiation is scheduled to begin
  - If a patient treated with head and neck radiation requires dental extraction, hyperbaric oxygen treatments before and after the dental extract are sometimes recommended to help prevent ORN

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Taste Changes and Xerostomia

- 90-100% of head and neck cancer patients treated with radiation will develop some degree of oral complication, with dry mouth being the most common.
- Dry mouth is due to direct damage to the salivary glands by radiation
- Saliva plays an important role in the health of the mouth, including cleansing of the oral lining, protection of teeth, as well as antibacterial activity.
- Patients with dry mouth should do the following to minimize symptoms and side effects:
  - Maintain hydration with water intake
  - Salivary substitutes or salivary stimulants
  - Use alcohol-free mouth rinses
  - Maintain routine dental visits
  - Use fluoride trays or drink fluoridated tap water
- Taste is affected in all patients with head and neck cancers that are treated with radiation with/without chemotherapy.

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Issues with Sexuality and Intimacy

- Dry mouth can have a substantial effect upon physical intimacy.
- Up to 20% of patients treated with radiation to the skull will also have reduced pituitary gland function – which can also lead to physical problems with sexual performance
  - Issues such as reduced libido, changes in menstrual cycles, hot flashes, vaginal dryness, and erectile dysfunction may be present in the context of pituitary gland dysfunction.
- Patients with Human Papillomavirus (HPV)-related tumors are fearful of transmitting the virus to their partners. As a result, most patients will experience a reduction in the frequency of sexual activity after treatment.

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Surveillance Education

- NCCN Guidelines
  - Year 1: Every 1-3 months
  - Year 2: Every 2-6 months
  - Years 3-5: Every 4-8 months
  - >5 Years: Every 12 Months
- Imaging
  - Post treatment (consider repeating pre-treatment baseline scan) within 3-6 months of treatment completion.
  - Chest CT for patients with smoking history
  - Routine annual imaging (Repeat of pre-treatment baseline scan) (pending insurance approval)
- Thyroid Stimulating Hormone every 6-12 months
- Dental Evaluation

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HPV Vaccine

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HPV Vaccine

- The HPV vaccine was developed to prevent cervical and other cancers of the reproductive system. The vaccine protects against the types of HPV that can cause cervical cancers, so it may also prevent oropharyngeal cancers. But studies have not been done to show this.
- CDC recommends that 11- to 12-year-old boys and girls get two doses of HPV vaccine. The second dose should be given 6 to 12 months after the first dose.
- **The Food and Drug Administration (FDA) approved expanding the use of one form of the HPV vaccine, Gardasil 9, to include people between the ages of 27 and 45.**
  - Teens and young adults who begin the vaccine series later, should continue to receive three doses of the vaccine.

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Gardasil

- FDA Approved June 2006
- GARDASIL helps protect against HPV types 6, 11, 16 and 18.
- GARDASIL is a vaccine indicated in girls and women 9 through 26 years of age for the prevention of cervical, vulvar, vaginal and anal cancers caused by HPV types 16 and 18. Genital warts caused by HPV types 6 and 11.
- GARDASIL is indicated in boys and men 9 through 26 years of age for the prevention of anal cancer caused by HPV types 16 and 18. Genital warts caused by HPV types 6 and 11.
- GARDASIL is given in three doses: 0.5-mL suspension for intramuscular injection at the following schedule: 0, 2 months, 6 months

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Cervarix

- FDA approved October 2009
- CERVARIX is indicated for the prevention of HPV types 16 and 18.
- CERVARIX is given in three doses—the second one month after the first and the third five months after that. All three shots are necessary to get the most protection.

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Gardasil 9

- FDA approved December 2014
- GARDASIL 9 is the only vaccine that helps protect against 9 types of HPV (Types 6, 11, 16, 18, 31, 33, 45, 52, and 58). These 9 types are responsible for the majority of HPV-related cancers and diseases.
- GARDASIL-9 is given in three separate doses over the course of six months. The second shot is given two months after the first, and the last dose is given four months after that. It's important to get all three shots for the vaccine to have maximum efficacy.
- FDA states that GARDASILl-9 is indicated for girls and women ages to prevent cervical, vulvar, vaginal, and anal cancer; and genital warts caused by HPV types 6 and 11, as well as a number of precancerous lesions. It's also indicated in boys and men ages 9 through 26 for preventing anal cancer caused by HPV types 16, 18, 31, 33, 45, 52, and 58, as well as genital warts and precancerous anal lesions.

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APP Fellowship Opportunities

Mayo Clinic Nurse Practitioner or Physician Assistant Hematology/Medical Oncology Fellowship (Minnesota)

- Two Tracks
  - Hematology
  - Medical Oncology
- 12 months training in desired speciality
  - Can apply to both tracks but will only be accepted into one.
- 1 fellow accepted per track, total of 4 fellows per year combined.
  - March Start
  - August Start
- Stipend and benefits included
- Certificate of completion upon graduation – opportunities for job placement

https://college.mayo.edu/academics/health-sciences-education/nurse-practitioner-or-physician-assistant-hematology-fellowship-minnesota/

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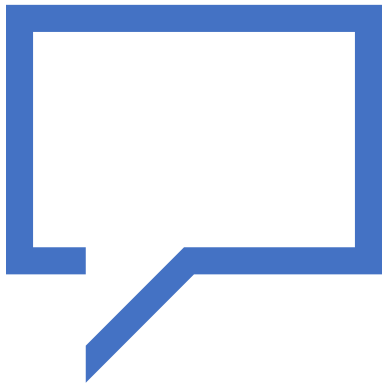
QUESTIONS & ANSWERS



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