

# **Open Wide! Look Inside!**

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**December 1, 2017**

# Objectives:

- **Discuss some basic pathologic terms**
- **Understand how to perform a comprehensive oral examination that visualizes all of the oral soft tissues.**
- **Review oral lesions associated with HIV and other systemic/STDs.**
- **Discuss the detection, risk factors and pathological presentation of oral cancer.**
- **Review some of the new technology that may be useful in detecting oral cancer.**
- **Review the risk of osteonecrosis of the jaw in patients taking bisphosphonates and dental management of these patients.**

# Patient Evaluation

## What do we need to know about every patient??

- Chief complaint
- History of present illness
- Medical history
  - Including a ROS
  - List of all medications
    - OTC, herbal, other
- Relevant dental history
- Social history

# Patient Evaluation

## What do we need to know about every patient??

- Listening to the patient's description of the condition is essential to make an accurate diagnosis
  - Let the patient explain what is going on
- Do not lead questioning or put word into patients mouth

Chief Complaint:  
What Is the Problem?

History of Present Illness  
What can you tell me about the  
problem?

# History of Present Illness

- **Symptomatic or asymptomatic**
  - Does it hurt?
  - Where?
  - When does it hurt?
- **Onset**
  - When did it start?
  - When did you first notice the problem?
- **Length of time**
  - How long has it been there?

# History of Present Illness

- Is this the first time this has happened or has it happened before?
  - Initial
  - Recurrent
    - If so when and how often?
    - What causes it?
- Is it unilateral or bilateral
- Is these a single lesion (problem) or more than one?
  - If multiple, how many?
- Is these a single lesion (problem)
  - Getting better or worse?
  - Increasing/decreasing in size?
  - Does it hurt more, less or about the same?

# History of Present Illness

- Do you know what caused the problem?
- Is there a related history of the problem to any of the following:
  - Trauma
  - Habits
  - Tobacco
  - Alcohol
  - Medication(s)
  - Systemic disease
- Have you had any previous treatment of lesion/problem?
  - If so, what?
  - Was it successful?



# Medical History

- Multiple formats
  - Printed / Written
  - Electronic
    - All HIPAA protected.
      - Insure adequate protection of information
      - Medical fraud growing in popularity
- Check-the-blanks vs verbal Q & A
  - Investigate positive responses
  - Do not ask leading questions
  - Don't rush, getting the correct information may take some time

# Medical History General Review

- Very personal interaction between dentist and patient.
  - Confidential information shared
  - Must uphold highest standards of professionalism
  - May have to justify rationale for obtaining information
    - Why does a dentist need to know this??
  - Best obtained with patient seated in an upright position
    - Maintain good eye contact

# Medical History General Review

- How do you rate your overall health?
  - Review of systems
  - Hospitalizations
  - Surgery, operations
  - Illnesses
  - Medications
  - Allergies

# Medical History Health Questionnaire

- Updated
- Signed and dated  
patient and  
practitioner

# Date and Signature

**Date:**

**Patient/Parent Signature:**

- The patient's signature is a positive affirmation that the medical history is complete and accurate***

# Medical History

- **Standard review of past medical history**
  - Review of systems
- Hospitalizations
- Surgery, operations
- Illnesses
  - Cancer, tumors
  - Chemotherapy, radiation, both
- Medications
  - Rx
  - OTC, herbal, diet control drugs

# Dental History

- Assessment of caries risk
- Overall Oral Hygiene
- Oral Hygiene Regimen
  - Use/Type of dentifrice
  - Use/type/frequency of mouthrinse
- History of bleaching, veneers, implants, etc.

# Comprehensive Oral Examination

- Examination Overview;
  - Head and neck exam should be a routine part of dental and medical check-ups
  - Take a history of alcohol consumption and tobacco use
  - Follow-up on suspicious signs



# Comprehensive Oral Examination

- Examination requires only:
  - Proper lighting
  - Dental mouth mirror
  - Gauze squares
  - Gloves
  - 5 minutes of time

# Comprehensive Oral Examination

- Begin assessment as soon as you set eyes on the patient.
  - Check for asymmetry, swelling, lesions, lumps/masses
  - Look for any changes in a person's face and body
    - Weight loss, anorexia and/or fatigue, may be the first sign of a cancer/disease.
  - Listen to the quality of the voice
    - Raspy, hoarse

# Comprehensive Oral Examination

- Closely examine the face and look for asymmetry, swelling, discoloration or ulceration.
  - Including entire face, scalp and behind the ears
    - Common place for melanoma
  - Palpate facial structures for any asymmetry or masses.
- Eyes:
  - Evaluate the eye for normal movement.
  - Note any redness and/or swelling of eye/eyelid
    - Refer PRN
- Nose
  - Is there nasal discharge?
  - Asymmetry between R & L side of the nose
  - Lesions on or around nose

# Comprehensive Oral Examination

- **The Oral Cavity:**
  - **Adequate light source must be utilized to visualize difficult to see areas**
    - FOM, posterior lateral border of the tongue.
  - **All dental prostheses must be removed.**
    - Lesions can hide under these
  - **Use bimanual palpation to detect indurated and fixated masses within the tissues**
  - **Carefully visualize all intraoral surfaces**
    - Oral and oropharyngeal cancers may appear either red and/or white (leukoplakia) lesions
      - In order to maximize subtle color changes on mucosal surfaces , gently dry those surfaces with a gauze or air syringe.

# Comprehensive Oral Examination

- **Lips:**
  - **Thoroughly examine the upper and lower lips with the mouth both open and closed**
  - **Inspect for any abnormalities in symmetry, contour, color or texture.**
    - **Vermilion border of the lower lip is common site for oral cancers.**
  - **Pull down the lower lip and inspect the inner surface.**
    - **Mucosa should be smooth and uniform in color.**
      - **Document any ulcerations, red or white discolorations or texture variations on the labial mucosa.**
  - **Evaluate other oral structures such as the teeth and gingival mucosa.**
  - **Repeat process for the upper lip.**

# Comprehensive Oral Examination

- **The Buccal Mucosa:**
  - **Examine the inside of the each buccal mucosa**
    - **Stretch tissue away from the teeth to visualize the gingival sulcus**
      - **Note linea alba**
  - **Look for any irregularity in texture or color or other signs of disease**
    - **Stenson's duct from the parotid gland is a small protrusion in this area opposite the Mx 2nd molar**
      - **Should secrete clear saliva from both sides when the parotid gland is milked.**
  - **Palpate the buccal mucosa for any hidden masses.**

# Comprehensive Oral Examination

- **Tongue:**
  - **Have patient open wide while relaxing the tongue;**
    - **Look for any ulcerations, swellings, or other abnormalities.**
  - **Have patient stick out tongue and move it from side to side.**
    - **Observe movement and note deviation, lack of motion or asymmetry.**
  - **Observe the dorsum of the tongue, noting any discolorations, irregularities, or limitations to movement.**

# Comprehensive Oral Examination

- **Tongue:**
  - Carefully view lateral borders of the tongue
    - One of the most common sites of oral cancer
    - Note the circumvallate papillae and lingual tonsils
  - The proper visualization requires use of gauze to pull the tongue out and roll it from side to side while retracting the cheek with a tongue blade.
    - Two tongue blade method can be use to push the tongue away from the teeth.
- Use a dental mirror to examine the base of the tongue & oropharynx.
- Finally, have the patient touch the roof of their mouth with the tip of their tongue.
  - Allows for examination of the ventral surface of tongue



# Comprehensive Oral Examination

- **Floor of the Mouth:**
  - **Inspect FOM while the tongue is elevated.**
    - **Examine lingual frenulum in the midline and the ducts from the submandibular glands symmetrically on either side.**
      - **Beneficial to dry this area with a gauze before looking for any surface abnormalities.**
  - **Bimanually palpate the submandibular glands and the entire submental region.**
    - **Any mass that feels firm or fixed in position**
      - **Should be evaluated to r/o OPC.**

# Comprehensive Oral Examination

- The Neck
  - Bimanually palpate the neck,
  - Compare both sides simultaneously for signs of enlargement.
  - Palpate carefully for enlarged lymph nodes.
    - Use two deeply placed fingers to palpate along the course of the sternomastoid muscles, underneath the mandible and down to the clavicle.

# Comprehensive Oral Examination

- Hard and Soft Palate:
  - Examine hard and soft palate
    - Look for ulcerations red and/or white lesions
- Tonsils:
  - Have patient open wide, breathe in and out saying “Ahhh”.
    - Tongue relaxes viewing oropharynx.
    - May need tongue blade to depress tongue.
    - Look for ulcerations, masses, swelling

# Resources Oral Examination

- **NIDCR**
  - <http://www.nidcr.nih.gov/OralHealth/Topics/OralCancer/>
- **ADA**
  - <http://www.ada.org/prof/resources/pubs/jada/reports/oralcancer.asp>
- **CDC**
  - <http://www.cdc.gov/OralHealth/topics/cancer.htm>
- **Oral Cancer Foundation**
  - <http://www.oralcancerfoundation.org/>

# Basic Terminology to Describe Lesions

# Clinical Features

- **Location, location, location**
  - Predilection for certain sites
  - May have effect on prognosis
- **Size**
  - Size does matter
  - 3 measurements
    - Width, length & depth
- **Surface texture**
  - Smooth vs. rough
  - Ulcerated

# Clinical Features

- Consistency
  - Soft vs. firm
  - Fluctuant
- Margins
  - Well circumscribed and freely movable
  - Indurated
  - Color changes at margin
- Color:
  - Mucosal colored
  - White
  - Red
  - Red and white
  - Yellow
  - Brown
  - Blue/purple

# Types of Lesions

- Macule
- Plaque
- Papule
- Vesicle

- Nodule
- Bulla
- Ulcer
- Erosion



## Early Detection

It is important to find oral cancer as early as possible when it can be treated more successfully.

An oral cancer examination can detect early signs of cancer. Oral cancer exams are painless and quick — and take only a few minutes.

Your regular dental check-up is an excellent opportunity to have the exam. During the exam, your dentist or dental hygienist will check your face, neck, lips, and entire mouth for possible signs of cancer.

Some parts of the pharynx are not visible during an oral cancer exam. Talk to your dentist about whether a specialist should check your pharynx.

### For additional copies of this pamphlet contact:

National Institute of Dental and  
Craniofacial Research  
National Oral Health  
Information Clearinghouse  
1 NOHIC Way  
Bethesda, MD 20892-3500  
301-402-7364  
www.nidcr.nih.gov

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**NATIONAL  
CANCER  
INSTITUTE**

NIH Publication No: 06-5032  
Reprinted July 2006

# Oral Cancer

Are You at Risk?

What Are the Signs  
& Symptoms?

Should You Have an  
Oral Cancer Exam?

U.S. DEPARTMENT OF HEALTH  
AND HUMAN SERVICES  
National Institutes of Health  
National Institute of Dental and Craniofacial Research  
National Cancer Institute

# Oral Cancer Estimates: 2008

## American Cancer Society

- **The ACS estimates the in 2008 there will be:**
  - **35,310 new cases of oral cancer.**
  - **7,590 will die from the disease.**
  - **Five-year relative survival rate for localized stage: 82%.**
  - **Five-year relative survival rate for all stages combined: 59%.**

# Oral or Pharyngeal Cancer

- Incidence and Survival:
  - > 35,000 new cases diagnosed each year in USA
  - Almost 8,000 deaths/year
    - 5,180 men
    - 2,370 women
  - AAs are especially vulnerable;
    - Incidence rate is 1/3 higher than whites
    - Mortality rate is almost twice as high.
  - 5-year survival rate:

# Oral Cancer

## Possible Signs & Symptoms

- See a dentist or physician if any of the following symptoms lasts for more than two weeks.
  - A sore, irritation, lump or thick patch in your mouth, lip, or throat
  - A white or red patch in your mouth
  - A feeling that something is caught in your throat
  - Difficulty chewing or swallowing
  - Difficulty moving your jaw or tongue
  - Numbness in your tongue or other areas of your mouth
  - Swelling of your jaw that causes dentures to fit poorly or become uncomfortable
  - Pain in one ear without hearing loss

# Oral Cancer

- Primary Risk Factors:
  - Tobacco use
  - Beverage alcohol
    - Consumption; not topical
    - Long-term, excessive
    - Moderate alcohol consumption does not increase risk
      - Moderate alcohol use is defined as up to two drinks per day.\*

## Smoking: Negative Effect on Health and Productivity

- The annual toll on the nation's economy is estimated to be:
  - Direct medical costs:  
*\$75 billion*
  - Lost productivity:  
*\$82 billion*

# American Academy of Pediatric Dentistry (AAPD)

## **Policy statement**

The AAPD opposes the use of all forms of tobacco including cigarettes, pipes, cigars, and smokeless tobacco and alternative nicotine delivery systems (ANDS), such as tobacco lozenges, nicotine water, nicotine lollipops, or “heated tobacco” cigarette substitutes.<sup>1</sup> The AAPD supports national, state, and local legislation that eliminates tobacco advertising and promotions that appeal to or influence children, adolescents, or special groups. The AAPD supports prevention efforts through merchant education and enforcement of state and local laws prohibiting tobacco sales to minors. As ETS is a “known human carcinogen” and there is no evidence to date of a “safe” exposure level to second-hand smoke,<sup>13</sup> the AAPD also supports the enactment and enforcement of state and local clean indoor air and/or smoke-free policies or ordinances prohibiting smoking in public places.

# American Academy of Periodontology

*Position Paper*

## **Tobacco Use and the Periodontal Patient\***

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This paper was prepared by the Research, Science and Therapy Committee of The American Academy of Periodontology and is intended for the information of the dental profession. The purpose of the paper is to provide the reader with a general overview of the relationship of tobacco use and periodontal diseases. This paper will review the epidemiological and clinical findings that have led to our understanding of the role of tobacco use in relation to periodontal diseases and their treatment. In addition, this paper will review the possible underlying mechanisms for these effects from tobacco use. The practitioner can use this information in treatment decisions and in giving advice to the patients who use tobacco products. *J Periodontol 1999;70:1419-1427.*

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**This position paper addressed the causal relationship between tobacco use and periodontal disease.**



# Smoking and Oral Health

- Smoking causes:
  - Oral malodor/halitosis
  - Tooth/tissue staining
  - Calculus accumulation
  - Increased periodontal disease
  - Leukoplakia
  - Oral cancer

# Smokeless Tobacco Use and Oral Health

- Smokeless tobacco use causes:
  - Gingival recession
  - Bone loss
  - Abrasion
  - Tooth/tissue staining
  - Leukoplakia
  - Oral cancer

# How much do you care about your patients?

- **Encouraging a patient to quit smoking can help improve both their oral and general health.**
  - Lessens the chance of developing oral cancer
  - Improves prognosis of periodontal TX
  - Lessens impact on respiratory & CV diseases
    - *No matter how much someone smokes or how long they smoked, there is a health benefit to quitting.*

# Tobacco Cessation

- **Quitting tobacco reduces the risk of oral cancer.**
  - **Also, quitting reduces the chance that a person with oral cancer will get a second cancer in the head and neck region.**
  - **People who stop smoking can also reduce their risk of cancer of the lung, larynx, mouth, pancreas, bladder, and esophagus.**
- **There are many resources to help smokers quit:**
  - **The Cancer Information Service at 1-800-4-CANCER can talk with callers about ways to quit smoking and about groups that offer help to smokers who want to quit. Groups offer counseling in person or by telephone.**
  - **Also, your doctor or dentist can help you find a local smoking cessation program.**
    - **Your doctor can tell you about medicine (bupropion) or about nicotine replacement therapy, which comes as a patch, gum, lozenges, nasal spray, or inhaler.**
    - **The "National Cancer Institute Information Resources" section has information about the Federal Government's smoking cessation Web site, <http://www.smokefree.gov>.**

# Oral Cancer

- Tenth most common malignancy in USA
  - 31,000 new cases/year
  - 9,700 deaths
    - 4% of all cancers;
    - 2.4% of cancer deaths
- 50% of those diagnosed with oral cancer; die as a result of the disease
- Survival rates increase with early diagnosis
  - 5 year survival with early detection; tumor < 3 cm
    - 80%
  - 5 year survival with metastasis
    - 19%

# Oral Cancer

- 90% of cancer in persons > 45
  - Men have about twice the oral cancer as women
- There has been a nearly five-fold increase in incidence in oral cancer patients under age 40
  - Many with no known risk factors
- The incidence of oral cancer in women has increased significantly, largely due to an increase in women smoking.
  - In 1950 the male to female ratio was 6:1; by 2002, it was 2:1
- Five year survival rate 52%
  - Breast cancer: 62%;
  - Colorectal cancer: 77%
    - No improvement in 5 year survival rate in the last 30 years
- 73% of oral cancer is in Stage III or IV at the time of diagnosis
  - Cure rate reduced by 50% when metastasis is present

lymph node

# Oral Cancer

- More common than:
  - Leukemia, skin melanoma, Hodgkin's Disease and cancers of the brain, liver, bone, stomach, thyroid, ovaries and cervix
- Primary cause:
  - Long-term tobacco and alcohol usage
- 90% successful Tx if Dx in early stages
  - Without early Dx, metastasis common
  - Grim Px for advanced/metastatic lesions

# Oral Cancer

- Risk Factors:
  - Exposure to sunlight
  - Age
    - Most > 45
  - Gender
    - Men twicw rate of women
  - Race
    - AA 3 times white
    - AA poorer prognosis



# Oral Cancer

- Possible Warning Signs:
  - Lump or thickening of oral soft tissue
  - Difficulty moving jaw or tongue
  - Swelling of jaw

# Oral Cancer

- Possible Warning Signs:
  - Soreness or “lump” in throat
  - Difficulty chewing or swallowing
  - Ear pain
    - Unilateral hearing loss
  - Numbness of tongue or mouth

# New Technology to Aid in the Detection of Oral Cancer

- Oral CDX
- VELscope
- ViziLite

# OralCDx<sup>®</sup> BrushTest<sup>™</sup>:

- The BrushTest is a quick and painless method that dentists use to test the common small white and red oral spots that most people have in their mouth at one time or another.
- The BrushTest is used to determine if a common oral spot contains abnormal cells (known as dysplasia) that, if left alone for several years, may develop into oral cancer.
- What is the BrushTest?
  - The BrushTest consists of 2 components:
    - 1) a specially designed brush that a dentist uses to painlessly obtain a sample of an oral spot.
    - The BrushTest requires no anesthesia, causes no pain and minimal or no bleeding.
  - 2) the analysis of that sample at a specialized laboratory where specially-trained pathologists use highly sophisticated computers to help detect abnormal cells. A complete report is faxed to your dentist.

# VELscope

- **System Features:**

- **Painless, non-invasive, with no rinses or stains required**
- **An examination with the VELscope® System takes only one or two minutes and is easy to incorporate into your workflow**
- **Oral lesion mapping, tracking and patient management forms available online. Optional third-party photo-documentation solutions also available**
- **Flexible positioning: space-saving vertical or low profile horizontal orientation... your choice**
- **Disposable VELsheath/Barrier ensures asepsis**
- **Disposable anti-fog VELcap helps maintain asepsis and protects the Handpiece special filtering optics**
- **Convenient disposable VELtractor assists clinicians as a “third hand” during the examination and also serves as a measuring guide**

# NIDCR Press Release

**April 10, 2006 - Novel Device Shows Potential in Better Detecting Oral Cancer**

**EMBARGOED FOR RELEASE**

**Monday, April 10, 2006, 9:00 a.m., ET**

**CONTACT:**

**Bob Kuska, (301) 594-7560**

**[kuskar@nidcr.nih.gov](mailto:kuskar@nidcr.nih.gov)**

**Researchers supported by the National Institute of Dental and Craniofacial Research, part of the National Institutes of Health, report today their initial success using a customized optical device that allows dentists to visualize in a completely new way whether a patient might have a developing oral cancer.**

**Called a Visually Enhanced Lesion Scope (VELScope), this simple, hand-held device emits a cone of blue light into the mouth that excites various molecules within our cells, causing them to absorb the light energy and re-emit it as visible fluorescence. Remove the light, and the fluorescence of the tissue is no longer visible.during the examination and also serves as a measuring guide**

# ViziLite

- ViziLite Plus with TBlue™ is an oral lesion identification and marking system that is used as an adjunct to the conventional head and neck examination.
- It is comprised of a chemiluminescent light source (ViziLite) to improve the identification of lesions and a blue phenothiazine dye to mark those lesions identified by ViziLite.
  - ViziLitePlus with TBlue™ is designed to be used in a patient population at increased risk for oral cancer.

# ViziLite

- In clinical trials involving 13,000 female patients, abnormal squamous epithelium in the cervical complex appears distinctly white after washing the cervix with a dilute acetic acid solution and viewed under chemiluminescent light (Speculite®).
- Similarly, examination of the oral cavity under chemiluminescent light (ViziLite) after rinsing with a dilute acetic acid solution, abnormal squamous epithelium tissue will appear distinctly white.
- Lumenoscopy™ has demonstrated in numerous studies to improve the ability to visualize mucosal lesions and initially identify clinically suspicious lesions.



# Resources Oral Cancer & Smoking Cessation

- National Cancer Institute
  - <http://www.smokefree.gov>
- DHHS
  - <http://www.ahrq.gov/clinic/tobacco/tobaqrg.pdf>
- NIDCR
  - <http://www.nidcr.nih.gov/OralHealth/Topics/OralCancer/>
- ADA
  - <http://www.ada.org/prof/resources/pubs/jada/reports/oralcancer.asp>
- CDC
  - <http://www.cdc.gov/OralHealth/topics/cancer.htm>
- Oral Cancer Foundation
  - <http://www.oralcancerfoundation.org/>

# Fungal Infections

# Oral Candidiasis

- Oral infection due primarily to the yeast of the *Candida* spp.
- Types of oral Candidiasis
  - Pseudomembranous
  - Erythematous
  - Hyperplastic
  - Angular cheilitis

# **Pseudomembranous Candidiasis**

- **White or yellow plaques on mucosa;**
  - **Leaves raw, bleeding surface upon wiping plaque away**

# Erythematous Candidiasis

- Mucosal erythema;
  - Red macules or patches
  - Cytology smear or culture is positive for Candida/yeast

# Angular Cheilitis

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- The clinical presentation of Angular cheilitis (AC) is erythema and/or fissuring of the corners of the mouth.
- AC can occur with or without the presence of erythematous and/or pseudomembranous candidiasis.
- Treatment involves the use of a topical antifungal cream directly applied to the affected areas four times a day for the two-week treatment period.

# Available Medications Used in the Management of OPC

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- Topical agents
  - Clotrimazole troches 10 mg:
    - Dispense 70,
    - Dissolve one troche in mouth 5 times a day X 14 days
  - Nystatin oral suspension 500,000 units:
    - Swish 5 mls in mouth as long as possible then swallow, 4 times a day for 14 days
  - Nystatin pastilles 100,000 units:
    - Dispense 56,
    - Dissolve 1 in mouth 4 times a day for 14 days

# Available Medications Used in the Management of OPC

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- Systemic agents
  - Fluconazole 100mg:
    - Dispense 15 tablets,
    - Take 2 tablets on day 1 followed by 1 tablet a day for the remainder of the 14 day treatment period
  - Itraconazole oral suspension 10mg/10ml:
    - Dispense 140ml,
    - Swish and swallow 10ml per day for 7 to 14 days. Take medication without food.



# Viral Infections

# Human Herpesviruses

- **Alpha Herpesviruses:**
  - Herpes Simplex Virus Type 1 (HSV-1)
  - Herpes Simplex Virus Type 2 (HSV-2)
  - Varicella Zoster Virus (HZV)
- **Beta Herpesviruses:**
  - Cytomegalovirus (CMV)
  - Human Herpesvirus Type 6 (HHV-6)
  - Human Herpesvirus Type 7 (HHV-7)
- **Gamma Herpesviruses:**
  - Epstein-barr Virus (EBV)
  - Human Herpesvirus Type 8 (HHV-8)
    - Kaposi's Sarcoma Asso. Herpesvirus

# Oral Viral Lesions

## Herpes Simplex Virus 1 and 2 (HSV-1,2)

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### Herpes Simplex 1 and 2

- **Vesicular lesions which rupture becoming painful, irregular ulcerations;**
  - **HSV-1 (oral; perioral) and HSV-2 (genital) infection clinically identical**
  - **Most oral lesions are caused by HSV-1; an HSV-2 etiology usually secondary to oral-genital contact**
  - **Must be sub-typed in lab**



# Oral Viral Lesions

## Varicella Zoster Virus (VZV)

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### Herpes Zoster (Shingles)

- Activation of *Varicella zoster* virus which has been dormant in sensory nerve
- Activation of VZV in trigeminal nerve can result in lesions appearing intraorally or extraorally
- **ALWAYS UNILATERAL**

# Oral Viral Lesions

## Varicella Zoster Virus (VZV)

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### Shingles

- **Begin as painful vesicular lesions that rupture and crust over; clinically appearing ulcerated**
- **Initial chief complaint may be pain or toothache with patient unable to specify which tooth is causing pain**

# Herpes Viruses

- EBV (HHV-4):
  - Infects > 85% of population;
  - Agent of infectious mononucleosis
  - Cause of oral hairy leukoplakia;
  - Oncogenic: Burkitt's Lymphoma;
  - Linked to:
    - Hodgkin's Disease
    - Nasopharyngeal carcinoma
    - Other malignancies

# Herpes Viruses

- HHV-8
  - Kaposi's Sarcoma associated virus
  - Strong evidence for KS etiology
  - Clearly STD
  - Shed in virtually all body fluids
  - Present in 12% of blood donors
  - Need immunosuppression to cause disease
  - Other suspected oncogenic roles
    - HHV-8 gene products promote spindle cell proliferation and angiogenesis and therefore may eventually lead to neoplasia.
  - Possible link to prostate cancer

# Oral Viral Lesions

## Herpes Hominus Virus (HHV-8)

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### Kaposi's Sarcoma (KS)

- **HHV-8 is a recently discovered herpesvirus that been found to be a co-factor in AIDS related as well as non-AIDS related KS**
- **This reactive lesion is a malignant neoplasm of blood vessels; usually red to purple or bluish-red in appearance**



# Oral Viral Lesions

## HHV-8

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### Kaposi's Sarcoma

- Differential diagnosis includes: hemangioma; melanoma; bacillary angiomatosis; pyogenic granuloma
- Treatment: Intralesional sclerosis agents like Vinblastine; Cryotherapy; Radiation therapy; Laser or Surgical removal

# Oral Viral Lesions

## HHV-8

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### KAPOSI'S SARCOMA

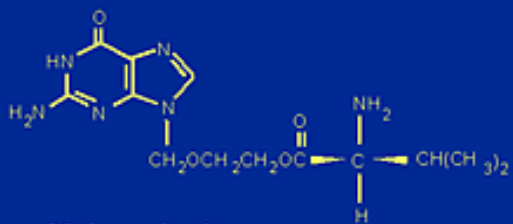
- It has been found that potent antiretroviral drug combinations used in HAART that suppress HIV replication reduce the frequency of KS in HIV-infected individuals

# Herpes Simplex Virus Treatment

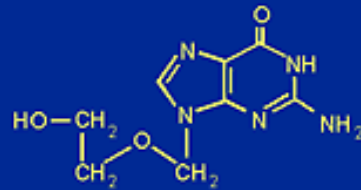
- When to treat?
  - Antivirals most effective within first 72 hours
- Stages
  - Prodrome
    - Itching, burning, tingling
  - Vesicle
  - Ulcer
  - Crust
  - Peeling crust/healing
- What to treat with?
  - Systemic
  - Topical

# Herpes Simplex Virus Treatment Systemic

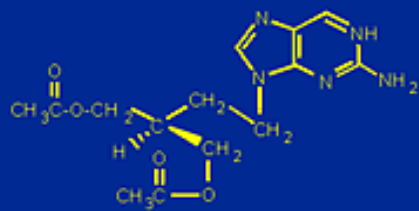
## Antiviral Therapy: Nucleoside Analogs



Valacyclovir



Acyclovir



Famciclovir



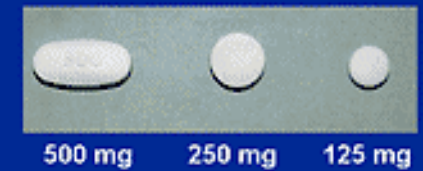
Penciclovir

## Genital Herpes: Oral Antiviral Therapy

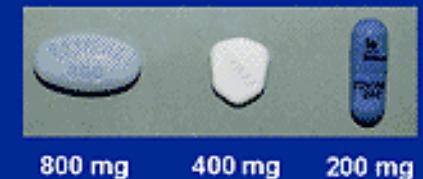
- Valacyclovir [Valtrex®]



- Famciclovir [Famvir®]



- Acyclovir [Zovirax®]



# Oral Viral Lesions

## Herpes Simplex Virus 1 and 2 (HSV-1,2)

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### TREATMENT

- **Acyclovir: 400mg tablet TID for 10 days**
- **Famciclovir: 500mg tablet TID for 10 days**
- **Valacyclovir: 1g tablet BID for 10 days**
- **Topical Penciclovir 1%**
- **50/50 mixture Liquid Benadryl & Maalox:  
swish and expectorate (palliative)**
- **Campho-Phenique®; Herpecin® (OTC)**



# Treatment Regimens

- **Initial infection**
  - Valacyclovir 1.0 g p.o. b.i.d. for 10 days
  - Famciclovir 250 mg p.o. t.i.d. for 10 days\*
  - Acyclovir 400 mg p.o. t.i.d.\* (or 200 mg p.o. 5 times daily) for 10 days
  
- **Episodic therapy for recurrence**
  - Valacyclovir 500 mg p.o. b.i.d. for 3 days
  - Famciclovir 125 mg p.o. b.i.d. for 5 days
  - Acyclovir 400 mg p.o. t.i.d. (or 200 mg p.o. 5 times daily) for 5 days
  
- **Suppressive therapy**
  - Valacyclovir 500 mg p.o. daily†
  - Famciclovir 250 mg p.o. b.i.d.
  - Acyclovir 400 mg p.o. b.i.d.

\*These are out-of-label regimens, listed by the CDC in the 2002 STD Guidelines for the Treatment of STDs.

†Use 1.0 g when  $\geq$  10 episodes per year.

# Recurrent Oral Herpes Simplex Infection Treatment

- Penciclovir 1% cream; Rx
  - Denavir 1.5 gram tube; 10mg penciclovir/gram
    - Apply every 2 hrs when awake X 4 Days\*
- Acyclovir (Zovirax) ointment (5%)
- Docosanol 10% cream; OTC
  - Apply 5x daily when awake X 4 days\*
- Valacyclovir (Valtrex)
  - PO, 2grams q12h x 1 day\*
- Viroxyn solution
  - Single application

**\*As soon as prodromal symptoms appear**

# Human Papillomavirus

- The most common STD in the world.
  - Over 60 strains identified
  - At least 50% of sexually active people are at one time infected with at least one type of HPV.
  - Can infect men and women equally
    - But women are more likely to present symptoms of disease.
- HPV is the causal agent of over 90% of all cervical cancer
  - The second leading cause of death among women worldwide.
  - However, only 1-5% of women infected with HPV will develop malignancies.



# Human Papillomavirus

- In most patients, HPV is associated with recurrent genital warts.
  - An estimated 1% of sexually active adults had visible genital wart infection
  - 15% has a subclinical infection.
- More than 90% of cervical cancer cases caused by HPV
  - HPV-16 causes half of those cases
    - More than 18% of women and 8% of men in USA carry HPV
    - The highest rate of HPV-16 is in AA women ages 20-29
    - In all, about 12.5% of Caucasians and 19.1% of AA's carry HPV-16

# Human Papillomavirus

- Strongly associated with:
  - Cervical cancer
    - Causative agent
      - HPV16 is present in 50% of all cases
      - HPV18 accounts for 20%.
      - Types 6 and 11 are commonly associated with genital warts (condyloma acuminatum) while types 2, 4, 29, and 57 occur in common skin warts.
  - Oral cancer
  - Peri-anal/testicular cancer
  - Especially severe in HIV infected

# Papilloma; Focal Epithelial Hyperplasia (FEH)

- Etiological agent:
  - Human papilloma virus (HPV)
  - “Wart”
- Clinical appearance:
  - Flat (FEH)
  - Silky
  - Cauliflower-like

# Human Papillomavirus

- Observation
- Surgical Treatment:
  - Excision
  - CO<sub>2</sub> laser surgery
  - Cryosurgery
    - Liquid nitrogen
  - Electrosurgery

## Laser/Electrosurgery Plumes and Surgical Smoke

- Destruction of tissue creates smoke that may contain harmful by-products
- Infectious materials (HSV, HPV) may contact mucous membranes of nose
- No evidence of HIV/HBV transmission
- Need further studies

# FDA Approves HPV Vaccine

- On June 8, 2006, the FDA approved Gardasil, the first vaccine developed to prevent cervical cancer, precancerous genital lesions and genital warts due to HPV types 6, 11, 16 and 18.
  - The vaccine is approved for use in females 9-26 years of age.
    - Gardasil is a recombinant vaccine (contains no live virus) that is given as three injections over a six-month period.
      - Immunization with Gardasil Gardasil is expected to prevent most cases of cervical cancer due to HPV types included in the vaccine.
      - HPV types 6, 11, 16 and 18.
    - However, females are not protected if they have been infected with that HPV type(s) prior to vaccination, indicating the importance of immunization before potential exposure to the virus.
  - Gardasil does not protect against less common HPV types not included in the vaccine
    - *Routine and regular pap screening remain critically important to detect precancerous changes in the cervix to allow treatment before cervical cancer develops.*

# *Questions?*

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