Oral Pathology Update in 90 minutes
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I have no financial conflict of interest to declare.
Diagnosis and management of common oral pathology such as dry mouth, Sjögren’s syndrome, burning mouth, lichen planus, herpes, candidiasis, and mucous membrane pemphigoid.

Case Based Diagnosis and Management:
Herpes simplex virus labialis
Dry mouth
Sjögren’s syndrome
Lichen planus
Mucous membrane pemphigoid
Candidiasis
Burning mouth/ burning mouth disorder

Evaluation of Patient
Medical History and medications/supplement
History of oral complaint Record pain level —/10 max today and at worst ___/10 max
Any triggers? Anything help? Anything worsen?
Bad taste in mouth? Food taste the same?
Clinical examination
Evaluation of oral hygiene
Management of toothbrush, appliances/prostheses
Measurement of unstimulated salivary flow, do stimulated if low

Polypharmacy
• Multiple medications used by patients, > 5 medications; pill burden;
• Average patient ≥65 yrs uses 2-6 RXs (ave 5.7) and 1-3.4 OTC products

Polypharmacy Adverse Reactions

Risk of Adverse Medication Reaction

Adverse Drug Events
Risk:
2 meds 6%
5 meds 50%
8+ meds almost 100%

Smith & Burmer; Special Care Dentist, 1994

Common oral adverse effects:
Xerostomia 80.5%
Dysgeusia 47.5%
Gingival hyperplasia
Ulcers, erosions, stomatitis (33.9%)
Allergies
Drug-induced oral reactions

- Hyposalivation/xerostomia
- Lichenoid reaction/lichen planus
- Aphthous-like ulcers
- Bullous disorders
- Pigmentation
- Fibrovascular hyperplasia
- Keratosis/epithelial hyperplasia
- Dysesthesia
- Osteonecrosis of the jaws
- Infection
- Angioedema
- Malignancy

Oral Hygiene Questions

- What type of toothpaste?
- Frequency of use
- Floss? Frequency
- Blood on floss?
- Mouthwash?
- Frequency
- Removable appliances/prostheses? Any metal?

Unstimulated Salivary Flow

Salivary flow rate: ______mL/5 min ______ min
Color: ______
MST ______/31 mm in 3 minutes
Salivary pH: ______ (Normal 7.0-7.5)
If less than 3mL/min, or Modified Schirmer Test (MST) <25mm, pH < 7.0, or the patient complains of oral dryness sensation, measure stimulated SFR

Recurrent herpes simplex labialis

ICD10 B00.1 (lip)
ICD10 B00.2 (herpetic stomatitis)
ICD10 Herpes Varicella Zoster Virus B02.9

HSV: Recurrent HSV labialis

Issues for Dentistry

- Avoid dental care with active lesion
- Dental care can precipitate lesion in patient with latent HSV
- Antiviral medications work well
- Diagnostic biopsy if lesion does not heal or HIV testing no healing in 1 month*

*http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5710a2.htm
52M Sore on lip for one year that never quite heals

Herpes Simplex Infection

Seropositivity in USA 60-95%
Clinical primary oral infection 1-15%
Subclinical infection 85-99%
Recurrent herpes labialis 35-40% 1% has lesion at any one time, 8.6% of population has 3 or more per year, (600,000 per million people)
HSV-1 in ganglion 50%
Shedding of virus in saliva 3-7%
Genital infection 3-50% orogenital contact, autoinoculation


Herpes Simplex Virus Infections

Clinical Features:
Recurrent HSV
prodrome of pain, tingling, burning or paresthesia
small blisters precede ulcers
clusters of small, 2-3 mm. round superficial ulcers
most recurrences are on the vermilion border or perioral skin (cold sores, fever blisters)
if intraoral, usually on oral mucosa bound to bone, gingiva or hard palate
recurrences may trigger erythema multiforme

HSV Activating Factors

• Stress/depression
• Fever
• Upper respiratory tract infection
• Physical trauma
• Sunlight
• Menstruation
• Immunosuppression

Viral Replication Herpes Simplex Virus
First 8 hours are critical
Begin antiviral treatment with prodromal symptoms
Vesicle formation accompanies viral replication
Vesicle formation usually continues up to 4 days, may be longer
OK to start antiviral medication as long as vesicles are present

Diagnosis of HSV

Clinical
Cytology
Histology
Culture
Rapid diagnosis kits-immunoassay
HVZV Misdiagnosed as HSV

110 patients with vesicular eruptions
Clinical Diagnosis: 45 HSV, 65 HVZV
ROC Diagnosis: 36 HSV, 74 HVZV
Zoster is misdiagnosed as HSV 12%
Usually in the trigeminal nerve distribution.
Small lesions initially, enlarge in next 2 days.

If HVZ acyclovir 800 mg 5x daily for 7-10 days.
Valacyclovir 1 gram 3x daily for 7 days and
Famciclovir 500 mg 3x daily for 7 days.
Drugs.com for dosage information

HSV Treatment

Antiviral treatment:
- reduces viral shedding
- reducing healing time
- if used for suppressive therapy, reduces frequency of recurrence

FDA approved 1 day treatments for RHHSV labialis

RX: Valtrex (valacyclovir) 1 gram
Dispense: #4
Label: Take 2 grams initially, then 2 grams 12 hours later
Refill: 1 year
Dec 2009 generic available

RX: Famvir (famciclovir) 500 mg
Dispense: #3
Label: Take 3 with prodrome.
Refill: 1 year
January 2010 generic available

Dry mouth/Xerostomia

Salivary gland hypofunction
ICD10 K11.7

36 F dry mouth
Medical Hx: Bipolar disorder, anxiety and depression. No known allergies.
Medications:
Lamictal (lamotrigine)
BuSpar (buspirone)
Latuda (lurasidone)
Viibryd (vilazodone)

Salivary gland hypofunction:
Impact on Oral Health
50% decrease in saliva (Kaplan et al. OOOOE 2009, Guggenheimer et al. 2003)
Dental Hard Tissues: Caries, erosion, abrasion
Periodontal Disease in patients with systemic disease such as diabetes and immune disease
Mucosal Disease: candidiasis, chapped dry, cracked mucosa or angular cheilitis; erythema, leukoplakia, ulceration, pain/ burning/ altered sensation/loss of taste/ altered taste
Subjective __/10 maximum today, __/10 max at worst

Inadequate saliva is an important comorbid condition in treating mucosal disease
Average amount of whole unstimulated draining saliva is 3 mL in 5 minutes
If USFR is low, or salivary pH is less than 7.0, or patient complains of oral dryness, consider salivary stimulant medication, pilocarpine or cevimeline

Three principles of treatment of dry mouth management:
1. Establish normal salivary flow if possible. Maximize suboptimal salivary flow.
2. Adequate hydration every day, no exceptions.
3. Lubricate if needed.

Reading
Pinto, A, et al. The practice of oral medicine in the US. OOOO 119(4):408-415, 2015. Salivary gland disturbances 23.7% Sjögren syndrome 34.4% (total 58.1%)
Pre-appointment
Schedule patient to be fasting (no eating, drinking, chewing gum, brushing of teeth, etc.) for 1 hour prior to appointment
Elicit history of narrow angle glaucoma—patient to check with physician if necessary prior to appointment.

Appointment Overview-1
History of MI or CVA in last 6 months, uncontrolled asthma, or narrow angle glaucoma? Current acute iritis? Known hypersensitivity to specific secretagogue? If positive, cannot use secretagogue.
Subjective assessment—If maximum discomfort is 10 on a scale of zero -10, what is your pain/discomfort/dryness right now? ______/10 maximum

Appointment Overview-2
Measure unstimulated salivary flow rate (draining + Modified Schirmer Test and pH) Average salivary flow is 3 mL/5 minutes.
If USFR is ≤ 0.1-0.2 mL/min or MST ≤ 25mm/3min or salivary pH is < 7.0 or patient complains of dryness, measure Stimulated SFR (challenge with pilocarpine or cevimeline). SSFR identifies responders/nonresponders.

Appointment Overview-3
Treatment for responders
Maximize/optimized salivary flow with secretagogue medication. Pilocarpine 5 or 7.5 or 10 mg, 4x daily or Cevimeline 30 -60 mg 3x daily.
Adequate hydration (64 – 80 oz. non caffeine/non alcoholic beverages daily)
+ Lubrication
Meticulous oral hygiene including prostheses and oral appliances, + fluoride for dentate patients; Smoking cessation.
Nonresponders: adequate water, lubrication, oral hygiene

Post-appointment
Blood tests A1C or fasting blood glucose, ANA titer and pattern if positive or ANA reflex (comprehensive profile by multiplex flow immunoassay if available); rheumatoid factor, SS-A and SS-B), TSH, T4
Salivary gland biopsy, scintigraphy, sialography, ultrasonography
Re-evaluate after three months of medication.

Volumetric: Unstimulated whole salivary flow
(≤ 0.1 – 0.2 ml or grams/5 minutes, ave 3 ml/5 min)
Do not brush teeth, eat, drink or chew gum for one hour prior to testing.
Swallow. Sit with head inclined forward and allow saliva to drain into collection cup (prewagged). Keep eyes open during test.
Cap tightly, record volume, and weight.

Tube 15 ml; Funnel 55 mm
Measuring Salivary Flow

“Coachman’s position”

Calibrated Paper Techniques

Lopez-Jornet P, Barrios-Fernoli A, Bajon-Sebastian J, Pascual-Gomez E.

Calibrated Paper: Modified Schirmer Test


Modified Schirmer Test Technique

1
2
3
4

ADA Dental/Medical Codes

American Dental Association Codes (CDT)
DD417 Sample collection $129 (40%)-$285 (95%)
DD418 Analysis of saliva sample for diagnostic purpose ex. pH $125 (40%)-$201 (95%)
DD425 Caries susceptibility test-use for patients with teeth $82 (40%)-$115 (95%)
Suggested fees — 2013 The Original National Dental Advisory Service, Yale Wasserman DMD Medical Publishers Ltd

Medical
CPT 42699 Salivary gland, unlisted service and procedures

Issues for dentistry

Need for continued care
Susceptibility for dental caries and candidiasis
Salivary gland hypofunction may get progressively worse
Sjogren’s syndrome

ICD10 M35.00

32 F cc: “dry mouth, constant bad breath” 1 year duration, RA for 2 years

32 F cc: “dry mouth, constant bad breath” 1 year duration, RA for 2 years

32 F cc: “dry mouth, constant bad breath” 1 year duration, RA for 2 years

Medications:
Methotrexate for RA
Folic acid for methotrexate tx of RA
Acyclovir 200 mg daily for HSV type 2
Cyclobenzaprine 10 mg as needed for insomnia
Pilocarpine 5 mg occasionally—no change in saliva
Portia daily birth control

58% of those with RA have reduced lacrimal/salivary gland secretions (Sullivan 1978) and 20% have RA plus Sjogrens syndrome (Greener et al. 1990).
32 F cc: “dry mouth, constant bad breath” 1 year duration, RA for 2 years

32 F cc: “dry mouth, constant bad breath” 1 year duration, RA for 2 years

Pilocarpine 7.5 mg 4x daily or
Cevimeline 30 mg 3x daily
Chlorhexidine mouthwash 0.12% 2x daily
Tongue scraper, use gently 2x daily
Prevident 1.1% sodium fluoride gel at bedtime

Lab order for SS-A and SS-B, results were negative, salivary gland biopsy recommended

32 F cc: “dry mouth, constant bad breath” 1 year duration, RA for 2 years

Salivary gland biopsy diagnosis: Focal lymphocytic sialadenitis, focus score 3, consistent with Sjogrens syndrome.

42 F, feels like she has a film covering her mouth

She gets a white film on the inside of her mouth. She uses Crest regular toothpaste 4x daily, fosses 2x daily with Nate gum, bleeding, but her gums are sore; and she uses Listerine Zero 2x daily. She has a very bad taste in her mouth. Food tastes bland. She has bad breath. She scrubs her tongue daily. She has tried changing toothpaste, has stopped using alcohol containing mouthwash and uses mouth sprays. This has been going on for 6 years, getting progressively worse.
CHIEF COMPLAINT: "mouth feels like it has a filmy covering"

CLINICAL DIAGNOSIS: Severe salivary gland hypofunction (xerostomia) 527.7 Sodium lauryl sulfate injury 947.0

Lab tests of 10/31/2013 were negative, within reference limits, or not clinically significant for: A1c, Antinuclear Antibody (ANA) and rheumatoid factor, Sjogren’s antibodies SS-A and SS-B; T4 and TSH. Next step, accessory salivary gland biopsy

DX: Lymphocytic sialadenitis, focus score 4, consistent with Sjogren’s Syndrome

Refer to physician, evaluation by rheumatologist recommended

USFR and SFR

Accessory salivary gland biopsy

Issues for continued dental care

Progressive loss of salivary function
High caries rate, tooth loss, difficulty with appliances
Frequent candidiasis
Increased risk of developing lymphoma
Lichen planus
Autoimmune, mucocutaneous
ICD10 L43.8

Reticular Lichen Planus

Management of Oral Lichen Planus
Establish diagnosis
- Clinical examination only - Reticular, bilateral, asymptomatic
- Biopsy unilateral, painful, erosive
- Biopsy multiple/high risk sites for H&E
  - Biopsy "gingival lesions only cases" - H&E, DIF

Lichen planus: 73F Skin Oct & Oral Jan

58 F
62 M

Histopathologic features of Oral Lichen Planus

Hyperkeratosis or parakeratosis*
Saw-toothed rete ridges*
Superficial band-like infiltrate of lymphocytes*
Basal cell liquifaction*
Basement membrane zone amorphous zone


78 F, long history of erosive lichen planus, painful, cannot open mouth as wide

Issues for continued care

Accurate Diagnosis  Biopsy report in patient record
Localized versus generalized lesions
Response to medication
Candidiasis secondary to corticosteroids?
Oral cancer risk
Unstimulated salivary flow rate (patient should take secretagogue if prescribed)

Oral Lichen Planus

Elimination of irritants
  - Oral Koebner phenomenon (isomorphic reactions)
  - Common occurrence in oral lichen planus
  - Lesions develop in areas of trauma (buccal mucosa)
  - Normal salivary flow rate?
  - Dental plaque and calculus, alcohol, broken teeth, candidiasis, cheek biting, sharp restorations, smoking

Treatment—Topical

*Fluocinonide gel 0.05%, apply thin film 4x daily
*Clobetasol propionate gel 0.05%, apply thin film 3x daily
Dexamethasone solution 0.5 mg/5 ml, 450 ml, Swish for 5 min and spit out TID, no food or drink for 20 min after

References for fluocinonide

Topical fluocinonide gel has been reported to be safe and efficacious for the treatment of oral erosive lichen planus. This is an off-label use supported by the literature.


Topical Tacrolimus for localized lesions

0.03 or 0.1% ointment 30 gram tube, apply 3x daily. Topical tacrolimus has been reported to be safe and efficacious for the treatment of oral erosive lichen planus in patients that do not respond satisfactorily to topical corticosteroids.


Treatment—Topical for generalized lesions

*Tacrolimus aqueous oral rinse, 1 mg Prograf capsule, dissolve in one liter water. Rinse with 10 ml, 2 min, 4x daily. Spit. Store in refrigerator. Shelf life one month. Evaluate in 3-4 months.


Treatment—Systemic

RX: Plaquinil (hydroxychloroquine sulfate) 200 mg, #30 one tab daily, may increase to #60, one tab every 12 hours. Need baseline and annual eye examination and laboratory blood tests. Eisen D. J Am Acad Dermatol 28(4):609-612, 1993.

RX: Mycophenolate mofetil 500 mg cap or tab, #60, One every 12 hours. Refill one year. If improving, we can increase the amount of MM until your lesions are healed. This can take many months of treatment. Consider getting shingles vaccination prior to starting. Dalmau J et al. J Eur Acad Dermatol Venereol 21 (2):259-260, 2007.

RX: Metronidazole 500 mg, #120, one every 12 hours for 60 days. Refill one year. Do not drink alcohol while taking and for 3 days after stopping. Evaluate on days 30 and 60. Rare irreversible neuropathy with 1000-2400 mg daily for 30 days or total dose 50 grams.


Summary

- Asymptomatic lichen planus requires diagnosis and life-long follow-up due to risk of malignancy.
- If symptomatic, accurate diagnosis will direct treatment (e.g., erosive type, superimposed candidiasis, SCCA).
- A variety of treatments, usually immuno-modulating, may be required over a lifetime.
- Regular dental treatment with excellent oral hygiene is critical, especially with gingival lesions or in patients with dry mouth.

Mucous membrane pemphigoid

Cicatricial pemphigoid
ICD10 L12.1

MMP

Classic presentation is desquamative gingivitis with gingival erythema, epithelial sloughing and blood blisters.
USFR
DX biopsy (routine in formalin for H&E, specimen in Michel's solution for direct immunofluorescent testing)

74 M diffuse gingival involvement, 6 months duration, generalized erythema with epithelial separation, positive Nikolsky sign
74 M diffuse gingival involvement, 6 months duration, generalized erythema with epithelial separation, positive Nikolsky sign

Dx: Epithelial separation suggestive of mucous membrane pemphigoid.

Comment: DIF testing to establish a definitive diagnosis. Baseline eye examination if MMP is confirmed.

CP: Blood Blister

59 F MMP and SGH

74 F ulcers, loose tissue for three months

Mucous membrane pemphigoid

DIF recommended to confirm
Baseline eye exam recommended
MMP: Direct Immunofluorescence

Direct Immunofluorescence

Mucous membrane pemphigoid

DIF recommended to confirm
DIF demonstrated focal linear IgG at the basement membrane zone, consistent with MMP
Baseline eye exam recommended

Clinical Approaches to Oral Mucosal Disorders: Part 1,

64 F Gingival erythema with positive Nikolsky sign

Clinical photos courtesy Dr. Yusuke Hamada, USD Periodontics

64 F Gingival erythema with positive Nikolsky sign

Clinical photos courtesy Dr. Yusuke Hamada, USD Periodontics

64 F Gingival erythema with positive Nikolsky sign

Clinical photos courtesy Dr. Yusuke Hamada, USD Periodontics

64 F Gingival erythema with positive Nikolsky sign

Clinical photos courtesy Dr. Yusuke Hamada, USD Periodontics
Left anterior maxillary gingiva

Right posterior maxillary gingiva

Biopsy Diagnosis

Epithelial separation suggestive of mucous membrane pemphigoid with lichenoid mucositis
Direct immunofluorescence may be of benefit in establishing a definitive diagnosis
If the patient has MMP, baseline eye examination is recommended.

42 F lichen planus suspected, initial response to topical fluocinonide, clobetasol gel in tray, dexamethasone elixir, recurred

Biopsy with DIF was bullous pemphigoid
3 month followup, no gingival lesions since starting pilocarpine 5mg 4x daily.
Lesions
Accurate diagnosis allow us to give the patient prognosis and understand that this is a chronic, noncurable problem that will always require care.
Adequate saliva reduces oral lesions in autoimmune disease with fragile epithelium.

MMP

Differential Diagnosis
No steroids for 2 weeks prior to biopsy
Diagnostic biopsy: routine formalin fixed for H&E, perilesional specimen in Michel's solution for DIF

MMP

Treatment
Evaluate USFR; treat SGH if present
Establish meticulous oral hygiene
Topical + systemic steroids
Refer for eye examination
Burning Mouth Disorder

Burning Mouth Syndrome
Dysesthesia (sensitivity, burning, dysgeusia, altered sensations without clinical signs)
ICD10 K14.6

Burning as a symptom or contributing factor(s)
Symptomatic geographic tongue 5%
Candidiasis 10%
Dry mouth/dehydration 20-50%
Diabetes mellitus 18%
Lichen planus
Anemia 8%
Hypothyroidism
Allergy 10%
GERD

Estrogen deficiency
Parkinson’s disease 24%
Burning mouth syndrome 100%
Depression/anxiety 30-70%
Meds causing xerostomia especially antihypertensives
Angiotensin converting enzyme (ACE) inhibitors (also loss of taste)
Nexium (esomeprazole)

Medications causing dysesthesia

<table>
<thead>
<tr>
<th>Medications causing</th>
<th>Chemotherapy</th>
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<tr>
<td>Hyposalivation</td>
<td>Taxanes</td>
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<tr>
<td>Macrolides</td>
<td>Platinum compounds</td>
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<tr>
<td>Antifungals</td>
<td>Thalidomide</td>
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<tr>
<td>Terbinafine 9%</td>
<td>Bortezomib</td>
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<tr>
<td>Fluoroquinolones 8%</td>
<td>Vinca alkaloids such as vincristine and vinblastine</td>
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<tr>
<td>Protein kinase inhibitors 3-5%</td>
<td>Multi-targeted kinase inhibitors (MTKIs)</td>
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<tr>
<td>Statins 3-5%</td>
<td>sunifilb 56%</td>
</tr>
<tr>
<td>ACE-inhibitors 3-5%</td>
<td>sonalinfib 26%</td>
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<tr>
<td>Proton pump inhibitors 3-5%</td>
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<td>Vismodegb 51%</td>
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Burning Mouth Syndrome: Overview

- Diagnosis of exclusion/may be multifactorial
- History and clinical examination with assessment of salivary flow rate is critical step
- Treat disease processes causing identifiable alterations to the mucosa
- If there are no lesions, order blood tests to rule out systemic disease
- Manage with topical and/or systemic medications

Patients may have both BMS and other problems that cause burning

2008-2009 76/522 (14.5%) patients referred for burning mouth/BMS
54/76 (71.0%) BMS or possible BMS
67/76 (88.1%) salivary gland hypofunction
31/76 (40.7%) candidiasis
Other: fissured tongue, geographic tongue, leukoedema, lichen planus, sodium lauryl sulfate injury, atrophic glossitis, coated tongue
49 M referred for BMS
Teeth are sore, burning/scalded feeling 2-9/10 max, worse after drinking or eating acidic food

DX: severe xerostomia, sicca syndrome, possible BMS

Hairy tongue
83 F Call from endodontist,
"I've got a patient with burning tongue, what should I do?"
CC: "burning tongue"
Smokes 1 pack/day
Salivary gland hypofunction
Salivary pH 5.0

49 F "burning tongue"

66 F, burning 10/10 max, resolved with RX: fluconazole 100 mg, #15 and pilocarpine 5mg 3x daily.
Where do you start?


SZ Steps in DX and TX
1. Clinical evaluation, if mucosal abnormality → DX + BX and TX, re-evaluate
2. Empirical treatment for oral candidiasis? (SZ 40%)
3. USFR and salivary pH → if low, treat with (SZ 88%) secretagogue 3 mo, re-evaluate; Order blood tests; If burning still present, add topical/systemic medications
4. If normal SFR, Order blood tests (A1c, ANA, RhF, SS-A, SS-B, TSH, T4); begin medications for BMS (topical/systemic); re-evaluate in one month

Burning Mouth/Lips Syndrome (K14.6)

Clinical examination
Blood tests for anemia (D53.9), diabetes (E11) and hypothyroidism (E03.9)
RX: Ranexa 100 mg, #14, one in am w/food. Call on day 14 to report progress. If this is helpful, OK to use rinses in future for recurrences. Stop any cholinergic medication while taking. Use with caution in patients on Coumadin or Vaddum. Do not use if patient takes Prinix (clopidogrel bisulfate) or Persida (dabigatran), Kaval (warfarin). Celebrex (Celecoxib), Celexa (Citalopram), Rizax (ramelteon) or amiodarone. Alternative: Clostris 10 mg troches, #70, dissolve one on tongue 3-4 daily, 14 days.
OTC: Diphenhydramine HCl 12.5 mg/5 ml, rinse with 1 teaspoon for two minutes 4x daily. Spit. Swallow doze at bedtime.
RX: Viscous lidocaine 2%, 160-450 ml. Hold in mouth for 2 min. Apply with Q-tip or mix 50:50 with Maalox (when available) or Kaopectate. Spit out any excess.


Burning Mouth/Lips Syndrome (K14.6) Treatment 1/5
Name: ____________________________ Date: ____________________________

Pain occurs: am pm other: _______ Character: __________________________
Frequency: ______ (daily, etc.)
Pain intensity now: ______/10 max. Intensity at worst: ______/10 max
What makes it worse? ____________________________
Anything helps? ____________________________
Do you have a bad taste in your mouth? ____________________________
If yes, describe bad taste: metallic, salty, bitter, ______
Does food taste the same? ____________________________
Toothpaste? _____ frequency __________ Flow? _____ frequency __________
Blood on flow? _____ Mouthwash? _____ frequency __________
Salivary flow rate? __________ mL/min __________ min Color: __________________________
MST _____/11 mm in 3 minutes Salivary pH: ______ (Normal 7.0-7.5)

Burning Mouth/Lips Syndrome (K14.6) Treatment 2/5
Try cold orange juice or cold water. Hold in mouth 1 min. Spit.
Chewing gum is helpful to many. Try Biotene gum which contains xylitol because it does not promote dental decay.

For lips: RX: Betamethasone dipropionate 0.05% and clotrimazole 1% cream. Apply to lips 2x daily. Brown RJ, Raffe SM, Haven GL, Bottomley WR. Five cases of burning mouth syndrome. Compend Contin Educ Dent 1996.
OTC: Alpha-lipoic acid (nutritional supplement neuroprotective) 600 mg daily (200 mg 3x daily for 2 months, ok to take with ranitidine 150 mg daily if you get stomach upset, then 200 mg daily to maintain. Helps 2/3 patients with BMS. Rash may occur rarely in sensitive individuals. Also GI discomfort might occur in some individuals so it should be taken with meals. Ferriano J, et al. JAMA 19: 676-678, 2004. Do not use if taking medication for hypothyroidism.
Burning Mouth/Lips Syndrome (K14.6)
Treatment 4/5
Call the office after you have been on one salivary stimulant as prescribed daily for 3 consecutive months. If you still have burning at that time, and all your lab blood tests are received, you can try RX: clonazepam 0.125 mg or 0.25 mg dissolving oral wafers, #120, 4x daily. Try this for one month. If this does not give you adequate control, you can try 0.5 mg clonazepam* tab, one tab x 3 daily. Week One: Take one tab at bedtime. If no improvement, Week Two: Take one tab every 12 hours. If no improvement, Week Three: Take one tab every 8 hours. Call me to let me know of your progress after three weeks of medication. You may increase up to 1.5 mg/daily maximum. If there is no improvement after trying systemic clonazepam for 3-4 weeks, I recommend consultation with pain management experts. You may use a copy of your consultation report as your referral. *For elderly, short acting lorazepam 1 mg at bedtime if needed, or 0.5 mg 3x daily.

Burning Mouth/Lips Syndrome (K14.6)
Treatment 5/5
Try desensitization with topical capsaicin. Capsaicin is found in Tabasco sauce. For desensitization start with one part Tabasco sauce to two to three parts of water, rinsing and expectorating, every two to three hours. Alternatively, you may apply full strength Tabasco directly to the affected areas. After one week, a daily application may be sufficient. If you cannot tolerate the burning that initially occurs after application of capsaicin containing products, rinse your mouth several times with cold milk.

Most (70%) patients with BMS experience anxiety or depression. Consultation with your family physician or a psychiatrist may be of benefit in diagnosis and management of any anxiety or depression.

If these recommendations are helpful, discuss continued care with your dentist or physician. If you do not transfer your care, please see me in one year prior to your prescriptions running out.

Candidiasis
ICD10 B37.0

54 M, painful mouth
Fluconazole, CHX and miconazole nitrate 2% cream, increased Evoxac 60 mg 3x day

Candidiasis: Etiology

Source of infection
- Endogenous, opportunistic
- Person to person

Candidiasis
Predisposing Factors:
Antibiotics
Corticosteroids
Cytotoxic drugs
Xerostomia
Diabetes mellitus
Pregnancy
Poor oral hygiene
Prosthodontic appliance
Immunosuppression

Candidiasis: Pseudomembranous Thrush

Candidiasis: Acute Erythematous

24 M

Candidiasis: Chronic Erythematous

32 F Painful 7-8/10 maximum
Angular Cheilitis

20% Candida albicans
60% Mixed C. albicans
/ Staphylococcus aureus
20% Staphylococcus aureus

Candidiasis: Diagnosis

Clinical with empirical treatment
Cytologic smear
KOH prep (10-30% potassium hydroxide)
Biopsy
Culture

Candidiasis: Histology

PAS Stain

Treatment

Topical
Over the counter (OTC)
Prescription
Systemic
Prescription

Systemic

RX fluconazole 100 mg, #14, one in am with food.
Call on day 14 to report progress. If this is helpful, OK to use refills in future for recurrences. Stop any cholesterol medication while taking. Use with caution in patients on Coumadin or Valium. Do not use if patient takes Plavix (clopidogrel bisulfate) or Pradaxa (dabigatran), Xanax (alprazolam), Celebrex (celecoxib), Celexa (citalopram), Rozerem (ramelteon) or amiodarone.
itraconazole 100 mg, #14, voriconazole 200 mg #14
Topical
RX Oravig (miconazole) 50 mg buccal tab. #14, one in am with food. Call on day 14 to report progress. If this is helpful, OK to use refills in future for recurrences. Place on upper gum, allow to dissolve slowly. Avoid if lactose intolerant.

RX clotrimazole 10 mg troches, #70, dissolve one in mouth slowly 5x daily. Avoid eating or drinking for 15 minutes after using. Call on day 14 to report progress. If this is helpful, OK to use refills in future for recurrences.

RX: nystatin oral suspension 100,000 U/mL, #300 mL, Rinse with 5 mL for 1 min, 4x daily, 14 days. Spit.

Disinfect toothbrush, tongue scraper, mouth guards, fluoride trays, removable oral appliances. Soak your non-metallic dentures, mouth guard, retainer, toothbrush, etc. in full-strength (or 1 part bleach to 10 parts water) household chlorine bleach for 10 min, set timer. Rinse thoroughly in cool water before using/wearing. Repeat weekly. If metallic components turn black with the use of bleach you may order a non-bleach product to disinfect dentures. DentaSoak, 1-800-828-7626, is designed to kill the fungal micro-organisms without harming the denture. Soak dentures in DentaSoak for 15 min. To remove concretions from the denture, place them in full strength vinegar for 10 minutes, and brush gently to remove the mineralized material. Repeat as needed until the denture surface is clean and smooth. If dental stain is a problem for you, you may want to order dental plaque disclosing tablets to help you find the plaque and remove it before it becomes stained.
http://www.oralhealthproducts.com

Eat active culture yogurt 1-2x daily or try OTC Lactinex (Lactobacillus acidophilus) chewable tablets and granules chew 4 tablets or 1 packet of granules 3x daily with meals. Keep refrigerated. This can be helpful if you get oral candidiasis when you are on antibiotics. Another option to try is Nature’s Bounty Probiotic Acidophilus with Bifidum, chewable wafers, one wafer 3x daily; or Florajen 3 (acidophilus with 2 types of bifidum, one daily). Get OTC Floragen at Walgreen’s in the pharmacy area because it needs to be refrigerated.

For angular cheilitis, apply OTC miconazole nitrate 2% cream to the corners of the mouth, 3x daily. If you cannot find miconazole nitrate at your pharmacy, ask the pharmacist to help you find it. It is often used for vaginal fungal infections. Alternatively you can try OTC clotrimazole cream 1% 4x daily. Prescription alternatives are RX: betamethasone dipropionate 0.05% and clotrimazole 1% cream or ketoconazole 2% cream, 3x daily.

For dry lips try frequent daily applications of OTC Vaseline, Aquaphor (petrolatum and lanolin), OTC Lansinol (pure lanolin), Burt’s Bees beeswax lip balm, or coconut oil.

Treatment for Candidiasis
Over The Counter (OTC):
miconazole nitrate 2%, clotrimazole 1%
Prescription:
nystatin, clotrimazole, miconazole, ketoconazole, fluconazole, itraconazole, voriconazole
Chlorhexidine mouthwash is fungicidal.

Angular cheilitis treated with miconazole nitrate 2%
19 F with Sjogren’s syndrome and rheumatoid arthritis, patient of record, developed a painful tongue

After 12 days of 100 mg fluconazole/day, patient states it started working in 2 days.

19 F, painful cracks at corners of mouth

19 F, painful cracks at corners of mouth

after using miconazole 2% cream for about 10 days

Candidiasis: Treatment

RX: Ketoconazole cream 2% (Nizoral 2% cream, Janssen)
15 gram tube ($15) Also effective against Staph. Apply 2x daily for 2-4 weeks. Apply to corners of mouth and inside surface of denture.

RX: Nystatin topical powder 100,000 units/gram (Mycostatin, Bristol-Myers Squibb)
15 grams ($2.33)
Apply a thin film to inside of prosthesis after each meal.

RX: Nystatin oral suspension 100,000 units/1 ml
200 ml ($5.50)
Hold 1 tsp (5ml) in mouth for 2 min, 4x daily. Swallow or spit. High sugar content.

Candidiasis: Treatment

RX: Lotrisone (Shering) (betamethasone dipropionate-clotrimazole) lotion or Bethamethasone dipropionate 0.05% and clotrimazole 1% cream, 15 gram tube ($19), Apply 2-3x daily.

RX: Vytone (Dermik Labs) cream 1% (hydrocortisone 1%-iodoquinol 1%), 28.4 gram tube ($2.50), Apply to affected areas 3-4x daily. Anti-inflammatory, antipruritic, antibacterial and antifungal

RX: Clotrimazole (Mycelx, Bayer) troches 10 mg, #70 ($56-59). Dissolve 1 troche slowly 5x daily. Do not eat or drink anything for 20 minutes after using.
Candidiasis: Treatment

Chlorhexidine mouthwash is fungicidal

Ellepola ANB, Samaranayake LP. Adjunctive use of chlorhexidine in oral candidiasis. Oral Diseases 7:11-17, 2001

Candidiasis: TX fluconazole

69 F Painful mouth after vacation in Mexico and antibiotic

Lactinex (Lactobacillus acidophilus)

Nutritional Supplementation:
- OTC: Lactinex (Lactobacillus acidophilus) chewable tablets and granules
- Disp: 50 tablets or packages
- Sig: Chew 4 tablets or 1 packet of granules, 3x daily with meals. Keep refrigerated. Take supplementation while on antibiotics.
- The dose above is for children > 3 years of age. May eat yogurt (2 containers a day) with active culture of Lactobacillus acidophilus. Supplementation works by increasing lactic acid and the establishment of acidic flora, which causes an unfavorable environment for fungi and certain pathogenic bacteria.

Yogurt with active cultures

Some experts suggest eating yogurt (2 containers a day) with active culture of Lactobacillus acidophilus. Supplementation works by increasing lactic acid and the establishment of acidic flora, which causes an unfavorable environment for fungi and certain pathogenic bacteria.

Nature's Bounty Chewable Probiotic Acidophilus with Bifidum

1 chewable wafer 3x daily may help to prevent oral candidiasis
Dr. Florajen3, Nature's Bounty Chewable Probiotic Acidophilus with 2 types of Bifidum (lactus and longum)

1 cap daily may help to prevent oral candidiasis

Refrigerate

Management of oropharyngeal candidiasis with localized oral miconazole therapy: efficacy, safety, and patient acceptability


Oropharyngeal candidiasis is a very common localized infection of the mucous membranes of the oropharynx that is most commonly caused by the patient's own commensal Candida albicans. It is the most common opportunistic infection affecting patients with the human immunodeficiency virus (HIV) and is also quite common in patients with hematological malignancies. Effective treatment options are of high importance given the worldwide incidence of these disease states and the potential for development of oropharyngeal candidiasis in these patients. Various systemic and topical treatment options for patients with oropharyngeal candidiasis have existed for many years. Miconazole buccal tablets have recently been approved by the US Food and Drug Administration for the treatment of oropharyngeal candidiasis. Clinical trials have demonstrated noninferiority in the treatment of oropharyngeal candidiasis when compared with clotrimazole troches in patients with HIV and against miconazole gel in patients with head and neck cancer. Miconazole buccal tablets exhibit few drug interactions because of low systemic absorption and are generally well tolerated with a safety profile similar to comparators. The once-daily dosing schedule may improve patient adherence compared with topical alternatives; however, the cost of therapy may be a barrier for some patients and should be considered by prescribers compared with alternative treatments.

Dr. Oravig in place

2010 RX: Oravig (miconazole) 50 mg buccal tabs for oral candidiasis

Tested in HIV positive patients and H&N radiation patients; 16 years and older.

One 50 mg tab daily for 14 days, adheres to gum (do not crush, chew or swallow the tab), slow release adhesive tablet.

Flavorless, odorless, does not interfere with eating or drinking.

Efficacy similar to topical clotrimazole.

Contraindicated with known hypersensitivity to miconazole or milk protein concentrate.

Adverse effects: diarrhea 6%, nausea 4.6%, dysgeusia 2.9%, upper abdominal pain 2.5%, and vomiting 2.5%.


Oravig

61% cure rate (similar to clotrimazole 5x daily dosing)

71% relapse free

Adverse effects diarrhea 6%, headache 5%, dysgeusia 2.9%, upper abdominal pain 2.5% and vomiting 2.5%.

Contraindicated in patients with known hypersensitivity to miconazole or milk protein concentrate. Can potentiate warfarin effects.


Candidiasis: Treatment Oral Prostheses

To treat oral prostheses/appliances/toothbrush:
Remove debris and concretions (ultrasonic cleaner, white vinegar)

Nonmetal appliances:
Soak in full strength (or 1 part bleach to 10 parts water) household chlorine bleach, 10 min. Set timer. Rinse thoroughly in cool water. Repeat weekly. Chau, V., et al. In-depth disinfection of acrylic reline. J Prosthet Dent. 78:306-11. 1997. The only effective disinfectant (also tested were saline, bicarbonate and Aluble 10) was a 0.52% solution of sodium hypochlorite at a 10 min immersion, penetrating the surfaces to a depth of 3 mm. May adversely affect dental alloys, acrylics and tissue-conditioning material.


Candidiasis: Treatment Oral Prostheses

Non-metal or metallic appliances
Germicide-deodorizer for removable appliances
DentaSoak (Great Lakes Orthodontics, Penawanda NY 800-828-7626. Contains sodium benzoate, citric acid, disodium phosphate, glycérin, water, FD and C blue and yellow No. 5, sodium saccharin and flavoring. pH is 3.4. Soak for 15 minutes daily to eliminate recoverable surface fungi (Candida albicans). Is not corrosive, toxic or carcinogenic. Safe if ingested. The solution may be used for one week. Cost: 2010 $45 (no cup) - $60 for one year. www.denta-soak.com

RX: Nystatin oral suspension 100,000 u/1 ml Place a few drops in water used to soak prosthesis. Change daily.
RX: Chlorhexidine gluconate 0.12% mouthrinse. Cover denture and soak overnight. Change daily.

With persistent or frequent candidiasis consider:
Medical consultation or order blood tests for:
Anemia
Diabetes
Hypothyroidism
Salivary gland hypofunction/Sjogren’s syndrome
HIV

Conclusions:
Accurate diagnosis
Treat infection 14 days
Disinfect prostheses/appliance/toothbrush, etc.
Identify predisposing factors/underlying disease and resolve if possible.
Measure unstimulated salivary flow rate before and after antifungal treatment. With active infection, it may not be possible to measure a truly “unstimulated” salivary flow rate.
Recurrence is common. If patient has frequent or recurrent candidiasis, consider and test for systemic disease such as anemia, diabetes, and immunosuppression.


http://o2preview.americanacademyoforalmedicine.org/12368877/rev/docs/clinician’s_guide_to_treatment_of_common_oral_conditions.pdf
Clinical Approaches to Oral Mucosal Disorders: Part 1,
Dental Clinics of North America Vol 57, Oct 2013

- Update on Fungal Infections
- Erythema Multiforme
- Pemphigus
- Mucous membrane pemphigoid
- Systemic Lupus Erythematosus
- Granulomatous disease of the oral tissue
- Oral lesions associated with human immunodeficiency disease
- Pigmented lesions of the oral cavity

Clinical Approaches to Oral Mucosal Disorders: Part 2,
Dental Clinics of North America Vol 58, April 2014

- Herpes Virus Infections
- Recurrent Aphthous Stomatitis
- Oral Lichen Planus and Lichenoid Mucositis
- Oral Cancer: Leukoplakia, Premalignancy and Squamous Cell Carcinoma
- Chemotherapy or Radiation-Induced Oral Mucositis
- Oral Graft-Versus-Host Disease
- Antiresorptive Drug-related Osteonecrosis of the Jaw
- The Role of Papillomavirus in Oral Disease
- Perioral Lesions and Dermatoses
- Pediatric Soft Tissue Oral Lesions