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Therapeutic Agents and Treatment Strategies for the Management of Selected Mucosal Diseases

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Footnote Key:

1. These medications are all contraindicated in microbial diseases. If given to patients with microbial diseases, microbial proliferation is usually enhanced, and systemic dissemination is possible. Candidiasis is a common side effect.

2. Systemic steroids are contraindicated or must be used with caution in a number of systemic conditions. Consultation with the patient's physician is recommended before prescribing. Tapering of prednisone is not necessary with 5-7 day burst therapy. Tapering of prednisone is not necessary with alternate day therapy (QOD) if the dosage does not exceed 20 mg QOD. In order to reduce the possibility of adrenocortical suppression, it is important that prednisone be taken in harmony with diurnal adrenocortical steroid levels. In order to accomplish this, prednisone should be taken 1-1/2 hours after normal arising time. Alternate day AM (QOD) dosage also reduces the possibility of adrenocortical suppression.

3. Whenever topical mouth rinses or ointments are prescribed, the way the medication is used is very important. The patient should be advised that the medications are effective on contact and that they should avoid anything by mouth (NPO) for 1/2-1 hour after using them to prolong medication contact time.

4. Baseline hematology laboratory studies to include platelets are necessary to monitor possible bone marrow suppression.

5. Hepatotoxicity has been reported.

- **Denotes prescription items that must be extemporaneously compounded by a pharmacist.** Usually a specialty "compounding pharmacy" is a better choice as they have more experience and knowledge regarding product formulation.

A note on compounding:

- Benefits:
  - Customization of drug delivery system, drug strength, and drug combinations
  - Localized treatment of oral conditions
  - Avoidance of large significant systemic absorption and therefore drug interactions and side effects
  - Avoidance of known irritants

- Challenges
  - Difficulty with insurance, not all insurances will pay for compounded medications.
  - Expensive – Dental Pharmacy can mail prescription patients living in Iowa and Illinois
  - Generalize lack of knowledge of what can be compounded by both prescribers and pharmacies.
    - Many pharmacies incorrectly compound intraoral products causing mucosal irritation, reduced efficacy. Make sure products are not flavored or sweetened (especially with sucrose) unless necessary!

I. CHRONIC NON-MICROBIAL MUCOSITIS

(aphthous stomatitis, erosive lichen planus, mucous membrane pemphigoid, pemphigus, erythema multiforme)

Mouth rinses: Magic mouth rinse, Miracle mouth rinse, 1, 2, 3 mouth rinse, Special mouth rinse formulas, etc.

Dilution effect from mixing commercial products renders them ineffective for treatment. May have some use for comfort only.

- *Nystatin 12,500 units/mL*
  - Normal nystatin 100,000/mL
  - 8-fold decrease from our minimum therapeutic agent
- *Benadryl 1.25 mg/mL*
  - 7.5 mg fairly low dose
  - 25 mg much more commonly used.
  - Does give a topical anesthetic effect at least in the higher concentrations.
- *Hydrocortisone*
  - Hydrocortisone 0.25 mg/mL
  - 10-fold decrease from dexamethasone 0.5mg/5ml
  - 20-fold decrease from 0.1% triamcinolone acetonide suspension
- *Maalox/Mylanta*
  - Used to restore the pH and coat the mucosa. Contains aluminum hydroxide and magnesium hydroxide.

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Return patient to baseline:

- *Decrease common possible irritants –*
  Avoid:
  - Pyrophosphates
  - Cinnamon
  - Menthols, phenols, etc.
- *Maintain "salivary pellicle*.**"**
  - Avoid sodium lauryl sulfate (SLS) in dentifrices.
  - Avoid alcohol if possible
- *Maintain saliva.*
  - Xerogenic agents
  - Hydration
- *Manage bugs.*
  - Bacteria
  - Fungi

Mouth rinses[1,3]

***RX*:** **Dexamethasone 0.5 mg/5ml oral solution**[1] (WestWard) *Disp*: 240 ml *Sig:* Rinse with 5 ml for 1 min. and expectorate QID, PC (after meals) and HS (before retiring). NPO 1\2 hr	▪ Commercial product covered by insurance companies ▪ Specify WestWard brand (Sugar and Dye Free) ▪ Others are elixirs (5% or> EtOH) ▪ Use correct strength to avoid toxicity ▪ Biologic half-life 36-54 hours
***RX*:** **Triamcinolone acetonide (micronized) 0.1 OR 0.2% aqueous suspension**[1] *Disp*: 240 ml *Sig:* Rinse with 5 ml for 1 min. and expectorate QID, PC (after meals) and HS (before retiring). NPO 1\2 hr.	▪ About 2 x stronger than the commercial dexamethasone ▪ Use the 0.2% for more severe cases. ▪ *Better effect if made with micronized powder at Dental Pharmacy vs. commercial in Kenalog® inj. (approximately $200 w/ Kenalog®)*
***RX*:** **Triamcinolone acetonide (micronized) 0.1 OR 0.2% in nystatin 100,000 U/ml sugar-free suspension** *Disp*: 240 ml *Sig:* Rinse with 5 ml for 1 min. and expectorate QID, PC (after meals) and HS (before retiring). NPO 1\2 hr.	▪ Use in patients predisposed to candidiasis ▪ Commercial nystatin suspension is 30-50% sucrose. ▪ We make a sugar-free nystatin suspension at the COD.
***RX*:** **Triamcinolone acetonide (micronized) 0.1 OR 0.2% in amphotericin-B suspension** *Disp*: 240 ml *Sig:* Rinse with 5 ml for 1 min. and expectorate QID, PC and HS. NPO 1\2 hr.	▪ Use in patients predisposed to candidiasis ▪ Our amphotericin-B suspension is sugar-free ▪ More efficacious than nystatin suspension ▪ Use amphotericin B 15mg/mL for maintenance. ▪ Use amphotericin-B 25 mg/ml for treatment.

Ointment [1, 3]

RX: **Triamcinolone acetonide 0.1% OR 0.5% ointment** *Disp*: 15 gm *Sig:* Apply thin film to inner surface of dentures or medication trays up to QID, NPO 1/2 hr. *We usually use higher potency steroids in trays*	▪ Low to medium potency steroid ▪ Use 0.1% strength on lips and dermis ▪ Still fluorinated and can thin lips or dermis long term Choose desonide instead for chronic use ▪ Seat trays for 30 min., then rinse mouth
RX: **Fluocinonide 0.05% OR clobetasol 0.05% ointment** *Disp*: 15 gm *Sig:* Apply thin film to inner surface of dentures or medication trays BID. Seat for 30 minutes	▪ High potency steroids, commercial products ▪ Instruct patients to expectorate & rinse mouth thoroughly after use

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Occlusive Ointment [1, 3]

Note: Orabase Maximum Pain Reliever Paste® (Colgate) with 20% benzocaine is no longer on the market.

- Similar products such as Oral Pain Reliever 20% Paste® (CVS Health) and RITE AID Toothache Pain Relief 20% Paste® (Rite Aid Corp.) contain 20% benzocaine and are made in an oral adhesive base but do not have the same ingredients as the original Orabase.®
- Jelene and Ora-hesive are two compounding bases used by the Dental Pharmacy. Both area muco-adherent, allowing for increased retention time at the treatment site
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RX: **Triamcinolone acet. 0.5% ointment 1:1 with Ora-hesive base** *Disp*: 20 gm *Sig:* Apply thin film to dried mucosa BID-QID, PC & HS Do not rub in. NPO 1/2 hr.	▪ Lower potency mixture due to 1:1 dilution ▪ Prescribe ointments to mix with oral adhesive bases. ▪ Rubbing may cause the product to become grainy & lose elasticity
RX: **Clobetasol 0.03%, 0.05% or 0.1% in Jelene ointment 1:1 with Oral adhesive base** *Disp*: 20 gm *Sig:* Apply thin film to dried mucosa BID. Do not rub in. NPO 1/2 hr.	▪ Allows for various concentrations of clobetasol, including higher concentrations than obtained by mixing commercial products 1:1 with oral adhesive base
RX: **Triamcinolone 0.1% Dental Paste®** *Disp*: 5 gm tube *Sig:* Apply thin film to dried mucosa QID. Do not rub in. NPO 1/2 hr.	▪ Commercially available but cost to patient without insurance is $80 per 5-gram tube! ▪ Low concentration of triamcinolone ▪ Good "bandage" effect, useful in pediatric patients ▪ Should be "pat" onto affected area, do not rub in.

Combined Anti-inflammatory & Antimycotic Topical Agents [1]

RX: **Clobetasol 0.05%, clotrimazole 2% in Jelene oint.** *Disp*: 15 g *Sig:* Apply thin film inner surface of dentures or medication trays BID. Seat for 30 minutes. Rinse mouth thoroughly after use	▪ Compounded from drug powders (not a 1:1 mixture) ▪ Allows for 2x commercial strength of clotrimazole ▪ Can customize strengths of both agents ▪ Ointment formulation is more occlusive than creams

Systemic and Intralesional Steroids

Systemic

RX: **Prednisone 5 mg, 10 mg, 20 mg tabs**[1, 2]

Disp: # based on instructions and duration

Sig: 40mg by mouth every morning (1-1/2 hrs after normal rising time) x 5 days followed by 10 mg QOD A.M. x 10 days

- Short bursts ≤ 3 weeks don't require taper
- Best taken with food

▪ Dose range 40-80 mg per day, depending on professional judgment; for severe acute cases such as erythema multiforme or initial therapy for long term unmanaged pemphigus, lichen planus or pemphigoid

▪ When daily dose is 30 mg or greater patients may experience insomnia, headache or irritability

Intralesional

RX: **Triamcinolone acetonide injectable 40 mg/ml (Kenalog®) diluted to 10 mg/ml or use Kenalog 10 mg/ml strength**[1]

Directions: Inject 10-40 mg (shake syringe immediately before use)

- Of value in management of solitary lesions recalcitrant to topical or systemic steroids

▪ Best mixed with local anesthetic with epinephrine as the diluent

▪ Area should be anesthetized before injection of triamcinolone acetonide suspension if local anesthetic is not used.

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II. MUCOUS MEMBRANE PEMPHIGOID

Anti Collagenase Agents

RX: **Doxycycline or minocycline 100 mg tabs/caps**
Disp: #30
Sig: Take QD or BID with food and plenty of water.
- Avoid taking HS – esophageal irritant

- Use as an adjunct to steroid therapy in patients
- Avoid taking with antacids, iron, calcium tablets
- Nicotinamide has similar actions but requires close monitoring by a specialist
- FDA pregnancy category: D

III. APHTHOUS STOMATITIS

Pathophysiology: Immunologic

- L*ocation: nonkeratinized, unattached mucosal surfaces*
  - Typically, buccal vestibule, lateral or ventral tongue, floor of mouth
- *Heals in a predictable manner*
  - Types: minor, major, herpetiform
  - Treatment not usually necessary for the common minor type

Precipitating Factors:

- Cinnamon Oil
- Medications
- Sodium Lauryl Sulfate (SLS)
- Genetics
- Stress
- Estrogen Shifts
- Minor Oral Trauma
- Dentifrices

Primary Prevention Factors:

- Related to maintenance of salivary pellicle or impeding the recognition of antigens to the immune system

Pharmacotherapeutic Management Choices:

Topical Route

- Treatment of choice: triamcinolone acetonide rinse - alters course of disease, increases healing rates
- Steroid ointments, pastes

Systemic Route

- Prednisone - for difficult cases, large +/or multiple ulcerations

Over-The-Counter Products

Inappropriate Chronic Treatment

- Cautery agents - do not affect course of disease (Debacterol®, silver nitrate, Negatan®, laser)
- Tetracycline rinses, oral antibiotics etc.

Sodium Lauryl Sulfate (SLS) Free Dentifrices

- Sodium lauryl sulfate (aka: sodium dodecyl sulfate, SDS) is a surfactant (foaming agent) found in most commercially available toothpastes and gels
- Causes dose-dependent epithelial desquamation
- Note: All SLS free products are not appropriate for some patients due to pyrophosphate content

Cocamidopropyl betaine (CABP or CPB) - surfactant that is less irritating to tissue than SLS

- RX: Prevident® 5000+ Dry Mouth, 100 mL bottle (only SLS free Prevident® product)
- Note: For overdenture abutments use only Prevident gel (56 g tube), not a dentifrice (does not contain surfactants or abrasives)

OTC dentifrices with CAPB

- Biotène® (GSK) Fresh Mint Original Formula
- Biotène® (GSK) Gentle Mint Formula
- Sensodyne®(GSK) products (except Deep Clean which contains SLS)

OTC dentifrices without SLS *or* CAPB

Sq*uigle® Enamel Saver Toothpaste* → Our toothpaste of choice

- Very mild dentifrice – no tartar control agents or irritating flavors (mild mint)
- Uses poloxamer as surfactant – very mild
- Can be difficult to find in retail stores, may be obtained online or mailed from the UI Dental Pharmacy

IV. CANDIDIASIS

Topical Suspensions [3]

RX:	**Nystatin oral suspension 100,000 U/ml**	▪ Poor antifungal ▪ Commercial products contain 33-50% sucrose, not recommended for this reason, especially in chronic/recurrent cases like Sjögren's, medicament xerostomia or post radiation xerostomia ▪ Viscous, will coat tissue ▪ Must be refrigerated, shorter shelf life than commercial, but not cariogenic
Disp:	12-day supply (240 ml)	
Sig:	Rinse with 5 ml for 1 minute and expectorate P.C. (after meals) and HS (before retiring) NPO 1/2 hr.	
RX:	**Nystatin oral suspension 100,000 U/ml Sugar-Free**	
Disp:	12-day supply (240 ml)	
Sig:	Rinse with 5 ml for 1 minute and expectorate P.C. (after meals) and HS (before retiring) NPO 1/2 hr.	
RX:	**Amphotericin-B oral suspension 25mg/ml**	▪Much more effective than nystatin suspension ▪ Of use for fluconazole-refractory infections or when C. *krusei or* C*. glabrata* are suspected ▪ May use 15mg/ml strength when combining with triamcinolone acetonide
Disp:	12-day supply (240 ml)	
Sig:	Rinse with 5 ml for 1 minute and expectorate P.C. (after meals) and HS. (before retiring) NPO 1/2 hr.	

Ointment [3]

***RX*:**	**Nystatin ointment 100,000 U/g**	▪ Poor antifungal ▪ Works OK under dentures, but not first line agent ▪ Bright yellow color may be objectionable for angular cheilitis
Disp:	15 gm	
Sig:	Apply thin film to inner surfaces of dentures and angles of mouth QID, PC & HS. NPO 1/2 hr.	
***RX*:**	**Clotrimazole 2% in Jelene**	▪ Useful for debilitated patients who cannot rinse ▪ Higher concentration (2%) and more occlusive than commercial creams (no commercial oint. available)
Disp:	30 g	
Sig:	Swab or apply thin film onto affected area QID, PC and HS, NPO 1/2 hr.	

Troches [3]

RX:	**Clotrimazole 10 mg oral troches**	▪ Compliance problems with 5X daily therapy ▪ 1-2 troches QD HS is useful for maintenance or prevention. ($120) ▪ Can also dissolve 2 troches in the morning, 1 in afternoon and 2 at bedtime to improve compliance. ▪ Contains sucrose, FDA pregnancy category: C
Disp:	70 troches	
Sig:	Dissolve 1 troche in mouth every 3 hours while awake (5 tabs per day). NPO 1/2 hr. after use. - Patients with decreased salivary flow should rinse mouth with water prior to use to enhance dissolution	

Buccal Tablet

RX:	**Miconazole 50mg buccal tablet (Oravig®)**	▪ Approved for patients 16 years and older ▪ Cost >$900/14 tablets, insurance usually will not cover ▪ Most pharmacies do not keep on hand, so expect at least a 1 business delay on treatment initiation
Disp:	14	
Sig:	Apply tablet to canine fossa once daily for 14 days	

Angular Cheilitis

- OTC clotrimazole 1% cream works – patient must understand that even though it is marketed for athlete's foot
- RX for clotrimazole 2% in Jelene– doubles the strength of clotrimazole

Cream [3]

RX: **Clotrimazole 1% cream (Rx, OTC as Lotrimin AF®)**
Disp: 15 gm
Sig: Apply thin film to inner surface of denture and angles of mouth QID. NPO 1/2 hr. after use.
** Continue use for 4 days after redness/symptoms resolve.

RX: **Clotrimazole 2% in mupirocin 2% ointment (Bactroban®)**
Disp: #20 g
Sig: Apply thin film to corners of mouth three times daily (after breakfast, mid-day and at bedtime. NPO for 30 min. after use

****RX:*** **Clotrimazole 1% cream 1:1 mupirocin ointment (Bactroban®)**
Disp: #15 g
Sig: Apply thin film to angles of mouth 3 times daily (after breakfast, in pm & HS). NPO 30 min. after use. Apply with cotton-tip applicator.

- Use until clear plus 4 days
- Has slight anti-staph activity
- Available OTC ($7) but labeled for athletes' foot and jock itch which may cause some patients to hesitate.
- Identical to Rx version ($28)
- XIX will cover OTC version
- This combination works well if the problem has been persistent or there is redness (secondary to skin staph and strep)
- Use until clear plus 4 days
- Most pharmacies will combine two commercial products. Commercial 1% clotrimazole is only available in cream.
- Combination of ointment & cream is not ideal, but mupirocin cream may cost >$200/15 g while ointment is $20.
- Better choice than Mycolog II which is >$100/15 g

Systemic [5]

RX: **Fluconazole 100 mg tablets**
Disp: #11-15 tabs
Sig: Take 1 tablet BID for first day, then take 1 tablet daily for 10 – 14 days.

- Loading dose results in steady state concentration in 2 days
- Price of 15 tablets is approximately $65 without insurance, cheaper to break 200 mg tablets in half
- Potent CYP2C9 inhibitor, moderate CYP3A4 inhibitor, causes QT prolongation
- Serious interactions with statin drugs, psych drugs, sulfonylureas, warfarin, some antihypertensives and many other drug classes – always check for interactions before prescribing
- FDA pregnancy category: X Even single doses in 1st or 2nd trimester can cause miscarriage

V. HERPES & HERPES ZOSTER INFECTIONS

Herpes Labialis (Cold Sores, Fever Blisters)

- Virus remains dormant within the dorsal root ganglia until activated
- Asymptomatic viral shedding occurs for several days before the prodromal period & after lesions heal
- Specific triggers:
  - Sunlight (ultraviolet radiation) UVB
  - Tissue injury & inflammation
  - Physical or emotional stress: malnutrition, fever, colds, influenza, menstruation, exposure to extremes in temperature

Systemic Treatment of Herpes Labialis (Immunocompetent Patients)

RX: **Valacyclovir 1 g tablets (Valtrex®, g)**
Disp: 4 tablets
Sig: 2 tablets at onset of symptoms, then 2 tablets 12 hours after first dose

- **Drug of choice**
- Price of 4 tablets $20
- A prodrug of acyclovir which is 3 times more bioavailable than acyclovir, may use in patients ≥ 12 years of age
- *WARNING:* Use with caution in renal disease, has not been studied in pre-pubescent children
- Headache &/or nausea are dose related side effects (15%)
- Best taken within 48 hours of symptom onset
- Can cause headaches, dizziness, GI upset
- Efficacy & safety haven't been established in patients under 18 years of age, adjust dosage in renal impairment

RX: **Famciclovir 500 mg tablets**
Disp: 3 tablets
Sig: Take 3 tablets (1500 mg) at onset of prodome

- Symptom duration decreased by 1.7 days when taken within an hour of onset of prodome

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Topical Treatment of Herpes Labialis (Immunocompetent patients)
Ointments and Creams

- *Topicals are MUCH less efficacious than oral (systemic) therapy, prohibitively expensive and **not recommended** but included here for completeness.*
- Topical creams and ointments are not appropriate for intraoral use

OTC: **Docosanol 10% cream (Abreva®)**
2 gm tube
Directions: Apply 5 times daily at onset of symptoms until lesions heal

- Recurrent HSV labialis studies (2) demonstrate mean duration of lesions & pain ↓ by ½ to 1 day

RX: **Penciclovir 1% cream (Denavir®)**
Disp: 5 gm tube
Sig: Apply every 2 hrs (9 times/day) during waking hours for 4 days beginning at the onset of symptoms

- 1997 study demonstrate↓ mean duration of lesions & pain ↓ by 1 day.
- More efficacious than acyclovir ointment
- Cost: >$895/5 g tube

RX: **Acyclovir 5% cream or ointment (Zovirax®)**
Disp: 5 gram tube cream (Zovirax®) 5 gram tube ointment
Sig: Apply thin film every 3 hrs (six times daily) at the onset and continue for 7 days

- Little benefit, duration of Sx. decreased by ½ day
- Recurrent HSV labialis shows no clinical benefit, but some ↓ in viral shedding
- Is NOT effective in prevention of recurrent herpes labialis

Oral buccal tablet

RX: **Acyclovir 50 mg buccal tablet (Sitavig®)**
Disp: 2
Sig: Apply tablet to the upper gum region (canine fossa) within 1 hr after onset of prodromal symptoms.

- Single application per episode
- Contraindication: allergy to casein (milk protein)
- Study: mean duration of herpes labialis episodes were decreased by ½ day compared to placebo ($315/2 tablets)
- Patients experienced 35% aborted episodes
- Place on canine fossa and hold in place with slight pressure on the upper lip for 30 sec. to ensure adhesion.
- Apply to ipsilateral to symptoms

Systemic Agents for Primary & Recurrent HSV Gingivostomatitis (Immunocompetent Patients)

- Acute herpetic gingivostomatitis can occur on both movable and attached oral mucosa. Recurrent infections in healthy patients are usually limited to attached gingival and hard palate
- *It is important to note that the duration of treatment for a primary case of HSV gingivostomatitis vs a recurrent case is different. Recurrent cases require shorter durations of treatment!!!*
- Short term therapy is indicated for patients who get recurrent herpetic after prolonged sun exposure, dental treatment, etc. Therapy must be initiated before exposure to any triggers. Start the day before trigger exposure and continue for a full course of treatment as listed below.

RX: **Valacyclovir 500 mg or 1 g (Valtrex®, g) caplet**
Primary HSV Gingivostomatitis :
Sig: 1 gram BID x *7-10 days*
Recurrent HSV Gingivostomatitis:
Sig: 500mg BID x *3 days* **Or** 1 g once daily x *5 days*

- *WARNING:* Use with caution in renal & hepatic disease
- Approved for 12 years of age and older, limited data in children 2-<12 years of age. Pediatric consult needed for children age 2-6
- Headache & nausea are dose related side effects (15%)

RX: **Famciclovir 250 mg or 500 mg tablets**
Primary Gingivostomatitis HSV:
Sig: 250 mg TID x *7-10 days*
Recurrent Gingivostomatitis HSV:
Sig: 1000 mg BID x *1 day* **Or** 125 mg BID x *5 days*

- Can cause headaches, dizziness, GI upset
- Best taken within 48 hours of symptom onset
- Efficacy & safety haven't been established in patients under 18 years of age

***RX*: Acyclovir 400 mg (Zovirax®, g) tablet**
Primary HSV Gingivostomatitis:
Sig: 400 mg 3 times daily for *7-10 days*
Recurrent HSV Gingivostomatitis:
Sig: 400 mg 3 times daily for *5 days*
Or 800mg 3 times daily for *2 days*

- Only effective if initiated very early in recurrence
- *WARNING:* Use with caution in renal impairment, dehydration
- FDA pregnancy category B
- Pediatric consult needed for children ages 2-6.
  - Primary gingivostomatitis in children: Acyclovir 20mg/kg PO QID (max of 400 mg per dose) for seven days based on limited data – low level of evidence

Prophylaxis for Recurrent HSV Infections (Immunocompetent Patients)
Prophylaxis for recurrent herpes labialis (RHL) and gingivostomatitis using oral antivirals:

- Long term prophylaxis is indicated if patients have at least six or more herpetic outbreaks per year. Reassess need every 6 – 12 months.

***RX:* Valacyclovir 500 mg (Valtrex®, generic)**
Disp: 30 caplets
Sig: Take 500 mg daily
***RX:* Famciclovir 500 mg (Famvir®, generic)**
Disp: 30 tablets
Sig: Take 500 mg BID

- Doesn't appear to have large advantage over acyclovir, but regimen is easier
- Regimen for patients with >9 episodes/year is 1 gram QD
- No evidence that famciclovir prevents RHL
- Use valacyclovir

<u>Varicella Zoster Virus (VZV) Infections</u>

- 25-fold decrease in zoster after immunization
- Patients with prior varicella zoster virus infection have a 10% chance of acquiring shingles
- Increased risk of stroke within 6 months of episode, antivirals may have protective effect
- For patients >50 years add prednisone to decrease pain in acute phase of disease
  - Does not decrease incidence of post-herpetic neuralgia
- Trials showing benefit of RX therapy only in patients treated within 3 days of onset of rash.

***RX:* Valacyclovir 1 gram (Valtrex®, generic) tablets**
Disp: 21 caplets
Sig: Take 1 caplet TID for *7 days*

- **Agent of choice**

***RX:* Famciclovir 500 mg tablets**
Disp: 21 tablets
Sig: Take 1 tablet every 8 hours for *7 days*

- Prodrug of penciclovir, approximately same efficacy and safety as acyclovir

***RX:* Acyclovir 800 mg (Zovirax®, generic) tablets**
Disp: 35 - 50 tablets
Sig: Take 1 tablet q 4 hours (5 tablets per day) for *7-10 days*

- Patients should begin treatment within 48 hours of the onset of symptoms.
- More effective than acyclovir for acute pain cessation and decreasing the frequency of persistent pain.
- *WARNING:* Use with caution in renal impairment
- Patients should begin treatment within 48 hours of onset of symptoms, efficacy after 72 hours is questionable
- *WARNING:* Use with caution in renal function impairment, has not been approved in children <18 years of age
- Equivalent to acyclovir in reduction of acute pain and incidence of PHN
- Therapy is most effective if started within 48 hrs after the onset of symptoms
- Meta-analysis: acyclovir accelerated by 2-fold pain resolution and reduced incidence of PHN at 3 & 6 months
- Don't use.

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VI. LIP CONDITIONS - SUMMARY AND EXAMPLES

NOTE: EVERY PATIENT IS UNIQUE AND WE INDIVIDUALIZE ALMOST ALL THE EXAMPLES GIVEN IN THIS SECTION.

Chapped lips and baseline therapy for other lip problems

- *Moisturizer: Lanolin*
  - Use 3-4 times a day
  - Brand names Lansinoh® or Purelan100® (venture into the breast feeding aisle)
  - Ultra-pure (HPA) brands are less allergenic and more efficacious than generic lanolin products

- *Lip balm with SPF:*
  - PROBABLY NOT NECESSARY UNLESS GOING OUT IN THE WIND or SUN
  - Prefer Banana Boat® Aloe with Vitamin E (SPF 45), Blistex® Complete Moisture® (SPF 15), or Pamer's (SPF 15)
    - Use when in sun or wind once or twice if in the sun frequently
    - Put this on immediately after the lanolin

Ulcerative conditions of the lips, including idiopathic, lichen planus, pemphigoid etc.

- *Steroids (ointments on vermilion)*
  - Use only nonfluorinated steroids and limit these steroids ONLY for inflammatory or ulcerative conditions confined to the lipstick portion of the lips
  - Rx: Desonide 0.05% ointment. Apply very thin layer to lips twice a day
    - PUT ON AFTER LANOLIN
    - DON'T apply to corners of lips

- *Apply for three weeks or until the ulcer is gone*
  - Do not prescribe these products for use > 3 times per year
    - If ulcer resolves but erythema remains start decreasing the application of the steroid cream, per outline below or until erythema resolves
    - First to once a day x 10-14 days, then every other day x 10-14 days, then every third day x 10-14 days
    - If ulcer resolves without residual erythema steroids may be discontinued completely

- *IF THE ULCER IS STILL THERE IN 3 weeks may consider short term ultrapotent steroid:*
  -  1:1 clobetasol 0.03%, clotrimazole 2% in mupirocin 2% ointment

Conditions of the lips occurring outside the vermilion border

- *NON-STEROIDAL AGENTS IN PERIORAL/CIRCUMORAL REGION*
  - Steroids are NOT indicated for circumoral or perioral dermatitis
  - Likewise angular cheilitis cases (covered below) only rarely requires anti-inflammatory agents

- *Creams are preferred on skin surfaces*
  - In these areas outside the vermilion pimecrolimus or tacrolimus may be used
  - NOTE: Due to the "black box" warning associated with these medications, this handout summary will not cover these. If clinician is familiar with restrictions and limitations, they may be mixed and used with mupirocin and clotrimazole similar to the clobetasol 1:1:1 mixture above.

- *Treatment of angular cheilitis*
  - Use 2% clotrimazole cream and 2% mupirocin cream (mixed in 1:1 ratio)
    - Apply to lip first thing in the morning and last thing at night
    - After the morning application wait about a half hour to apply the lanolin or an SPF lip balm if going outside.
  - <u>Don't</u> use the desonide while using this mixture unless consultation for complicating factors is performed. There are numerous cofactors including vertical dimension, obsessive compulsive disorders and perioral rhytides.