

# Useful Medications for Oral Conditions\*

*DISCLAIMER: Drug information is constantly changing and is often subject to interpretation. While care has been taken to ensure the accuracy of the information presented, the AAPD is not responsible for the continued currency of the information, errors, omissions, or consequences resulting from the use of these medications. Decisions about drug therapy must be based upon the independent judgment of the clinician, changing drug information, and evolving healthcare practices.*

\* Pediatric dosage should not exceed adult dosage.

## Analgesics

### Mild / Moderate Pain

#### Acetaminophen

Both acute and chronic doses of acetaminophen are associated with hepatotoxicity. For this reason, this drug has been reformulated so the products are limited to 325 mg per dosage unit.

Forms: Liquid, tablet, oral disintegrating tablet, caplet, rectal suppository, injectable

Usual oral dosage:<sup>1,2</sup>

Children <12 years: 10-15 mg/kg/dose every 4-6 hours as needed (maximum 90 mg/kg/24 hours,<sup>3</sup> but not to exceed 2.6 g/24 hours<sup>1,2</sup>)

OR

Age	Weight		Dosage mg <sup>3</sup>
	lbs	kg	
0-3 months	6-11	2.7-5	40
4-11 months	12-17	5.1-7.7	80
1-2 years	18-23	7.8-10.5	120
2-3 years	24-35	10.6-15.9	160
4-5 years	36-47	16-21.4	240
6-8 years	48-59	21.5-26.8	320
9-10 years	60-71	26.9-32.3	400
11 years	72-95	32.4-43.2	480

Children ≥12 years and adults: 325-650 mg every 4-6 hours

OR 1000 mg 3-4 times/day as needed (maximum 4 g/24 hours)

#### Acetaminophen with codeine

*Important:* This drug may have undesirable consequences including death, especially in infants and children.<sup>4-6</sup> Patients might be an ultra-fast metabolizer of codeine with higher conversion to morphine; therefore, use of this pain medication should be prescribed with caution. Other children may be poor metabolizers of codeine with lower conversion to morphine and, consequently, under-respond to the narcotic.<sup>7</sup> For these patients, repeated doses of codeine/acetaminophen combinations sooner than six hours may result in acetaminophen overdose.

Forms:

Liquids: 120 mg acetaminophen and 12 mg codeine/5 mL (*Note: The elixir and solution, but not suspension, contain alcohol.*)

Tablet: No. 2: 300 mg acetaminophen and 15 mg codeine

No. 3: 300 mg acetaminophen and 30 mg codeine

No. 4: 300 mg acetaminophen and 60 mg codeine

Usual oral dosage:<sup>2,8</sup>

Children ≤12 years: 0.5-1 mg codeine/kg/dose every 4-6 hours as needed; 10-15 mg acetaminophen/kg/dose every 4-6 hours as needed (maximum 90 mg acetaminophen/kg/24 hours, but not to exceed 2.6 g acetaminophen/24 hours)<sup>3</sup>

OR 3-6 years: 5 mL elixir 3-4 times/day as needed

7-12 years: 10 mL elixir 3-4 times/day as needed

>12 years: 15 mL elixir every 4 hours as needed

Adults: Based on codeine 30-60 mg dose every 4-6 hours as needed (maximum 4 g acetaminophen/24 hours)

OR 1-2 tablets every 4 hours as needed (maximum of 12 tablets/24 hours)

## Ibuprofen

Forms: Liquid, tablet, injectable

Usual oral dosage:<sup>1,2,8</sup>

Children <12 years: 4-10 mg/kg/dose every 6-8 hours as needed (maximum 40 mg/kg/24 hours)

OR

ALTERNATIVE DOSING BASED ON AGE OF CHILD <sup>2</sup>			
Age	Weight		Dosage mg
	lbs	kg	
6-11 months	12-17	5.1-7.7	50
12-23 months	18-23	7.8-10.5	75
2-3 years	24-35	10.6-15.9	100
4-5 years	36-47	16-21.4	150
6-8 years	48-59	21.4-26.8	200
9-10 years	60-71	26.9-32.3	250
11 years	72-95	32.4-43.2	300

Children ≥12 years: 200 mg every 4-6 hours as needed (maximum 1.2 g/24 hours)

Adults: 200-400 mg/dose every 4-6 hours as needed (maximum 1.2 g/24 hours)

## Naproxen

*Dosage expressed as 200 mg naproxen base is equivalent to 220 mg naproxen sodium. For acute pain, naproxen sodium may be preferred because of increased solubility leading to faster onset, higher peak concentration, and decreased adverse drug events.*

Forms: Suspension, tablet

Usual dosage:<sup>2</sup>

Children >2 years up to 12 years: 5-7 mg/kg every 8-12 hours as needed

Children ≥12 years: 200 mg every 8-12 hours as needed; may take 400 mg for initial dose (maximum 600 mg/24 hours)

Adults: Initial dose of 500 mg, then 250 mg every 6-8 hours as needed (maximum 1250 mg/24 hours)

## Moderate/Severe Pain

### Acetaminophen with hydrocodone

*For pediatric patients, the practitioner should consider prescribing in accordance to body weight (mg/kg) and in 5 mL dosage increments.*

Forms:

Liquids: 300 mg acetaminophen and 10 mg hydrocodone/15 mL

325 mg acetaminophen and 7.5 mg hydrocodone/15 mL

325 mg acetaminophen and 10 mg hydrocodone/15 mL

Higher strengths of acetaminophen are available but are not recommended for children

*(Note: The elixir and solution contain alcohol.)*

Tablet: 300 mg acetaminophen in combination with 5 mg, 7.5 mg, or 10 mg hydrocodone

325 mg acetaminophen in combination with 5 mg, 7.5 mg, or 10 mg hydrocodone

Higher strengths of acetaminophen are available but are not recommended for children

Usual oral dosage:<sup>1,2</sup>

BASED ON	AGE	OR	WEIGHT	DOSAGE	MAXIMUM
Child	2-13 years		<50 kg	0.1-0.2 hydrocodone/kg/dose every 4-6 hours as needed	6 doses hydrocodone/day OR maximum recommended acetaminophen dosage
Child	>13 years		>50 kg	2.5-10 mg hydrocodone every 4-6 hours as needed	60 mg hydrocodone/day OR 4 g acetaminophen/24 hours
Adult			>50 kg	5-10 mg hydrocodone 4 times/day as needed	60 mg hydrocodone/day OR 4 g acetaminophen/24 hours

## Ibuprofen and hydrocodone

*The pharmacokinetics of hydrocodone/ibuprofen tablets has not been evaluated in pediatric patients. It is not recommended for use in patients <16 years of age.*

**Form:** Tablet: Ibuprofen 200 mg in combination with 2.5 mg, 5 mg, 7.5 mg, or 10 mg hydrocodone

**Usual oral dosage:**<sup>2</sup>

Adolescents ≥16 years and adults: 2.5-10 mg hydrocodone every 4-6 hours as needed (maximum 5 tablets/24 hours; short-term use recommended <10 days)

## Acetaminophen with oxycodone

**Form:**

Solution: 325 mg acetaminophen and 5 mg oxycodone/5 mL (*Note: The solution contains alcohol.*)

Tablet: 300 mg acetaminophen in combination with 5 mg, 7.5 mg, or 10 mg oxycodone

325 mg acetaminophen in combination with 2.5 mg, 5 mg, 7.5 mg, or 10 mg oxycodone

**Usual oral dosage:**<sup>2</sup> (limited by the total daily maximum of acetaminophen)

Children: 0.05-0.2 mg oxycodone/kg/dose every 4-6 hours as needed. May titrate up to 5 mg/dose oxycodone every 4-6 hours (acetaminophen maximum 90 mg/kg/24 hours,<sup>3</sup> but not to exceed 2.6 g/24 hours<sup>1,2</sup>)

Adults: 2.5-10 mg oxycodone every 4-6 hours as needed (maximum 4 g acetaminophen/24 hours)

## Ibuprofen with oxycodone

*The safety and effectiveness of the currently manufactured dosage form of oxycodone/ibuprofen have not been studied or established in pediatric patients <14 years of age.*

**Form:** Tablet: 400 mg ibuprofen in combination with 5 mg oxycodone

**Usual oral dosage:**<sup>2</sup>

Adolescents ≥14 years and adults: 5 mg oxycodone every 6 hours as needed (maximum 4 tablets/24 hours; do not take for longer than 7 days)

## Systemic Antibiotics

### Amoxicillin

**Forms:** Suspension, chewable tablet, tablet, capsule

**Usual oral dosage:**<sup>1-3</sup>

Children >3 months and <40 kg: 20-40 mg/kg/day in divided doses every 8 hours  
OR 25-45 mg/kg/day in divided doses every 12 hours

Children >40 kg and adults: 250-500 mg every 8 hours  
OR 500-875 mg every 12 hours

Endocarditis prophylaxis:<sup>9</sup> 50mg/kg (maximum 2 g) 30-60 minutes before procedure

### Amoxicillin clavulanate potassium

*Use the lowest dose of clavulanate combined with amoxicillin available to decrease gastrointestinal adverse drug events.*

**Forms:** Suspension, chewable tablet, tablet

**Usual oral dosage:**<sup>1,2</sup> (based on amoxicillin component):

Children >3 months of age up to 40 kg: 25-45 mg/kg/day in doses divided every 12 hours  
(prescribe suspension or chewable tablet due to clavulanic acid component)

Children >40 kg and adults: 500-875 mg every 12 hours (prescribe tablet)

### Azithromycin

*This drug is one of two options for patients with Type I allergy to penicillin and/or cephalosporin antibiotics.*

*Caution: This drug can cause cardiac arrhythmias in patients with pre-existing cardiac conduction defects.*

**Forms:** Tablet, capsule, suspension, injectable

**Usual oral dosage:**<sup>1,2</sup> (*Note: Doses may vary for extended release suspension depending on the reason for prescribing the antibiotic.*)

Children ≥6 months up to 16 years: 5-12 mg/kg 1 time/day (maximum 500 mg/day)  
OR 30 mg/kg as a single dose (maximum 1500 mg)

Children ≥16 years and adults: 250-600 mg 1 time/day  
OR 1-2 g as a single dose

Endocarditis prophylaxis:<sup>1,9</sup> 15 mg/kg (maximum 500 mg) 30-60 minutes before procedure

## Cephalexin

*Caution:* This antibiotic should not be prescribed to patients with Type I allergic reactions to penicillin antibiotics.

**Forms:** Suspension, tablet, capsule

**Usual oral dosage:**<sup>1,2</sup>

Children >1 year: 25-100 mg/kg/day in divided doses every 6-8 hours (maximum 4g/day)

Adults: 250-1000 mg every 6 hours (maximum 4g/day)

Endocarditis prophylaxis:<sup>2,9</sup> 50 mg/kg (maximum 2 g) 30-60 minutes before procedure

## Clindamycin

*Note:* This is one of two options for patients with Type I allergic reactions to penicillin and/or cephalosporin antibiotics. This antibiotic is effective for infections (e.g., abscesses) with gram-positive aerobic bacteria and gram-positive or gram-negative anaerobic bacteria.

**Forms:** Suspension, capsule, injectable

**Usual oral dosage:**<sup>2,3</sup>

Children: 8-20 mg/kg/day in 3-4 divided doses as hydrochloride

OR 8-25 mg/kg/day in 3-4 divided doses as palmitate

Adults: 150-450 mg every 6 hours (maximum 1.8 g/day)

Endocarditis prophylaxis:<sup>2,9</sup> 20 mg/kg (maximum 600 mg) 30-60 minutes before procedure

## Doxycycline

*Important:* This drug may cause permanent tooth discoloration, enamel hypoplasia in developing teeth, and hyperpigmentation of the soft tissues. Due to these and other side effects, women who are pregnant and children <8 years old should not use this drug.

**Forms:** Suspension, tablet, delayed release tablet, capsule, injectable

**Usual oral dosage for necrotizing ulcerative gingivitis:**<sup>1,8</sup>

Children >8 years who weigh <45 kg: 2.2 mg/kg every 12 hours on day 1, then 2.2 mg/kg once/day; for severe infections, 2.2 mg/kg every 12 hours until infection resolves

Children >8 years who weigh >45 kg and adults: 100 mg every 12 hours on day 1, then 100 mg once/day; for severe infections, 100 mg every 12 hours until infection resolves

## Metronidazole

*Important:* Metronidazole is a useful addition to an antibiotic regimen when coverage of anaerobic bacteria is needed. Patients should avoid ingestion of alcohol as a beverage or ingredient in medications while taking metronidazole.

**Forms:** Tablet, tablet extended release, capsule, injectable

**Usual oral dosage:**

**For anaerobic skin and bone infection:**<sup>1,3</sup>

Children: 30/mg/kg/day in divided doses every 6 hours (maximum 4 g/24 hours)

Adolescents and adults: 7.5 mg/kg every 6 hours (maximum 4 g/24 hours)

**For periodontal disease, including necrotizing ulcerative gingivitis:**<sup>2,3</sup>

Adolescents and adults: 250 mg every 6-8 hours for 10 days

OR 500 mg every 8 hours for 8 days

**For aggressive oral infections, may be used in combination with amoxicillin:**

250 mg 3 times/day with amoxicillin (250-375 mg 3 times/day) for 7-10 days

## Penicillin V Potassium

*Caution:* The practitioner should use penicillin cautiously in patients with renal impairment or history of seizures. Anaphylactic reactions have been demonstrated in patients receiving penicillin, most notably those with a history of beta-lactam hypersensitivity, sensitivity to multiple allergens, or prior IgE-mediated reactions (e.g., angioedema, urticaria, anaphylaxis).<sup>2</sup> This antibiotic should be taken on an empty stomach because it is degraded by acid and enzyme activity in the stomach associated with ingestion of food.

**Forms:** Liquid, tablet

**Usual oral dosage:**<sup>1,2,8</sup>

Children <12 years: 25-50 mg/kg/day in divided doses every 6-8 (maximum 3 g/day)

Children ≥12 years and adults: 250-500 mg every 6-8 hours

## Systemic Antifungal Agents for Oral Candidiasis

### Fluconazole

**Important:** The drug requires acidic pH in the stomach to disintegrate and dissolve for oral absorption; therefore, absorption is decreased by medications that increase gastric pH. Also, prescribe with caution for patients taking other medications metabolized by CYP enzymes because fluconazole is a hepatic enzyme inhibitor.

**Form:** Suspension 10 mg/mL, 40 mg/mL; tablet: 50 mg, 100 mg, 150 mg, 200 mg; injectable 200 mg, 400 mg

**Usual dosage:**<sup>1,2</sup>

Neonates >14 days: Single dose of 6 mg/kg on day 1; then decrease to 3 mg/kg once/day for 7 to 14 days

Adolescents and adults: Single dose of 200 mg on day 1; then decrease to 100 mg once/day for 14 days

### Ketoconazole

**Form:** Tablet, 200 mg

**Usual oral dosage:**<sup>1,8</sup>

Children >2 years: 3.3-6.6 mg/kg once/day (maximum 400 mg/day) until infection has resolved

Adults: 200 mg once/day; for a serious infection, may increase to 400 mg once/day

---

## Topical Antifungal Agents

### *Topical agents for angular cheilitis*

#### Clotrimazole

**Form:** Cream 1%

**Usual dosage:**<sup>1</sup>

All ages: Apply a thin layer to the corners of the mouth 4 times/day for 14 days or until complete healing.

#### Miconazole nitrate

**Forms:** Ointment 2%; cream 2%

**Usual dosage:**<sup>1</sup>

Children >2 years and adults: Apply a thin layer to the corners of the mouth 4 times/day for 14 days or until complete healing.

#### Nystatin

**Forms:** Ointment, cream (100,000 units/g)

**Usual dosage:**<sup>1</sup>

For all ages: Apply a thin layer to angles of mouth 4 times/day for 14 days or until complete healing.

#### Nystatin, triamcinolone acetonide

**Forms:** Ointment, cream (100,000 units nystatin/g and 0.1% triamcinolone acetonide)

**Usual dosage:**<sup>1,3</sup> (*Note: Not for use in patients <2 months of age.*)

Apply a thin layer to the angles of the mouth 4 times/day for no longer than 2 weeks.

### *Topical or transmucosal agents for oral candidiasis*

#### Clotrimazole

**Form:** Lozenge 10 mg

**Usual dosage:**<sup>1,2</sup> (*Note: Not for use in patients <3 years of age.*)

Dissolve one troche 4-5 times/day for 14 days. Treatment may extend beyond clinical resolution.

#### Miconazole (Oravig<sup>®</sup>)

**Form:** Buccal tablet 50 mg

**Usual dosage:**<sup>1,3</sup>

Adolescents >16 years and adults: One tablet/day for 14 days; apply to the gum region, just above the upper lateral incisor.

## Nystatin

**Form:** Suspension (100,000 units/mL)

**Usual oral dosage:**<sup>1,3</sup>

Neonates: 100,000 units (1 mL) 4 times/day; ½ of dose is placed in each side of mouth

Infants: 200,000 units (2 mL) 4 times/day; ½ of dose placed in each side of mouth

Children and adults: Swish 400,000-600,000 units (4-6 mL) 4 times/day for several minutes and swallow; continue at least 48 hours after symptoms resolve

## Systemic Antiviral Agents

### *Systemic agent for primary herpetic gingivostomatitis*

#### **Acyclovir (not FDA-approved for this use)**

**Forms:** Suspension 200 mg/5 mL; tablets 400 mg, 800 mg; capsules 200 mg; injectable 50 mg/mL

**Usual dosage:**<sup>3</sup>

Children: 15 mg/kg 5 times/day for 7 days (maximum 200 mg/dose)

Immunocompromised children: 1000 mg/day orally in 3-5 divided doses for 7-14 days (maximum 80 mg/kg/day)

Adolescents and adults: 400 mg 3-5 times/day for 10 days or until clinical resolution occurs

OR 800 mg every 8 hours for 7-10 days

OR 200-400 mg 5 times/day for 10 days

### *Systemic agents for herpes labialis*

#### **Acyclovir (not FDA-approved for this use)**

**Form:** Suspension 200 mg/5 mL; tablets 400 mg, 800 mg; capsules 200 mg; injectable 50 mg/mL

**Usual dosage:**<sup>1,3</sup> (Begin treatment at the earliest signs/symptoms)

Children >2: Optimal dose has not been determined for healthy children.

Immunocompromised children: 1000 mg/day orally in 3-5 divided doses for 7-14 days (maximum 80 mg/kg/day)

Adolescents and adults: 400 mg three times/day for 5 days

OR 200 mg 5 times/day (approximately every 4 hours) for 5 days

OR 800 mg 2 times/day for 5 days

#### **Famciclovir**

**Form:** Tablet 125 mg, 250 mg, 500 mg

**Usual dosage:**<sup>1,3</sup>

Children: Safety and efficacy have not been established.

Adolescents and adults: 1500 mg as a single dose at the first sign or symptom of infection (maximum has not been established for adolescents; maximum 2 g/day orally for adults for one-day regimens or 1500 mg/day orally for multiple-day regimens)

#### **Valacyclovir**

**Form:** Tablet 500 mg, 1 g

**Usual oral dosage:**<sup>1,2</sup>

Children >12 years and adults: 2 g for 2 doses, 12 hours apart (maximum 4 g/day for one-day regimens or 3 g/day for multiple-day regimens)

## Topical Agents for Herpes Labialis

### Docosanol (Abreva<sup>®</sup> – over-the-counter agent)

Form: Cream 10%

Usual dosage:<sup>1,3</sup>

Children >12 years and adults: Apply a thin layer on the lesion 5 times/day for up to 10 days.

### Acyclovir

Form: Cream 5%

Usual dosage:<sup>1,3</sup>

Children >12 years and adults: Apply a thin layer on the lesion 5 times/day for 4 days.

### Acyclovir with hydrocortisone (Xerese<sup>®</sup>)

Form: Cream (5% acyclovir with 1% hydrocortisone)

Usual dosage:<sup>1,3</sup>

Children >12 years and adults: Apply a thin layer on the lesion 5 times/day for 5 days.

### Penciclovir

Form: Cream 1%

Usual dosage:<sup>1,3</sup>

Children >12 years and adults: Apply a thin layer on the lesion every 2 hours while awake for 4 days.

## Topical Anti-inflammatory/Coating Agent

### Diphenhydramine hydrochloride and aluminum hydroxide, magnesium hydroxide, simethicone (not FDA-approved for this use)

*Important:* This suspension may be compounded with viscous lidocaine (2% solution) for a greater topical anesthetic effect. There is a potential for lidocaine toxicity if oral suspension is overused, and there is an increased risk for aspiration if used in children who cannot expectorate.

Form: Suspension [needs to be compounded by pharmacist; 50/50 mixture of liquid diphenhydramine hydrochloride (12.5 mg/5 mL) with aluminum hydroxide, magnesium hydroxide, simethicone suspension]

Usual dosage:<sup>1,3</sup>

Children and adults: Rinse with 5-10 mL every 2-4 hours for 2 minutes and expectorate.

*Note:* Maximum dose of diphenhydramine hydrochloride in case the suspension is swallowed:

Children 2 to <6 years: 37.5 mg/day

Children 6 to <12 years: 150 mg/day

Children ≥12 years: 300 mg/day

Adults: 400 mg/day

## Topical Antibacterial/Antimicrobial Agents

### Chlorhexidine gluconate

Forms: Dental solution 0.12% (*Note:* Most brands contain alcohol.)

Usual dosage for gingivitis/periodontitis and stomatitis (off label use for stomatitis):<sup>1,3</sup>

Adolescents and adults: Rinse with 15 mL 2 times/day (after breakfast and before bed) for 30 seconds and expectorate.

### Mupirocin

Forms: Ointment 2%; cream 2%

Usual dosage for localized impetigo or skin infection:<sup>1,3</sup> (*Note:* For external use only; not for use in patients <2 months of age)

Apply a small amount of ointment to the affected area 3 times/day. Treatment usually is continued for 1-2 weeks.

## Topical Corticosteroids for Aphthous Ulcers

### **Triamcinolone acetonide (a medium potency corticosteroid)**

**Form:** Dental paste

**Usual dosage:**<sup>1,2</sup>

Adolescents and adults: Apply paste to ulcers 3 times/day, after meals and at bedtime, not to exceed 7 day course.

### **Fluocinonide (a high potency corticosteroid; not FDA-approved for oral application)**

**Form:** Gel, ointment 0.05%

**Usual dosage:**<sup>1,2</sup>

Adolescents and adults: Apply thin amount of gel or ointment to ulcers 2-4 times a day, not to exceed 7 day course.

### **Dexamethasone (a high potency corticosteroid; not FDA-approved for oral application)**

**Form:** Elixir, solution (contains alcohol)

**Usual dosage:**<sup>1,2</sup>

Adolescents and adults: Rinse with 5 mL 4 times/day for 2 minutes and expectorate; not to exceed 7 day course.

### **Clobetasol (a super-high potency corticosteroid; not FDA-approved for oral application)**

**Form:** Gel, ointment 0.05%

**Usual dosage:**<sup>1,2</sup>

Adolescents and adults: Apply thin amount of gel or ointment to ulcers 2-4 times/day, not to exceed 7 day course.

## References

1. Jaske AH. Mosby's Dental Drug Reference, 11th edition. Elsevier/Mosby, St. Louis, Missouri; 2014.
2. Wynn RL, Meiller TF, Crossley HL. Drug Information Handbook for Dentistry, 20th edition. Lexi-Comp, Hudson, Ohio; 2014.
3. Clinical Pharmacology. Gold Standard Inc/Elsevier. Tampa, Fl. Available at: "<http://www.clinicalpharmacology-ip.com>". Accessed June 29, 2015.
4. Voronov P, Przybylo HJ, Jagannathan N. Apnea in a child after oral codeine: A genetic variant—An ultrarapid metabolizer. *Paediatr Anaesth* 2007;17(7):684-7.
5. Madadi P, Ross CJ, Hayden MR, et al. Pharmacogenetics of neonatal opioid toxicity following maternal use of codeine during breast-feeding: A case-control study. *Clin Pharmacol Ther* 2009;85(1):31-5.
6. American Academy of Pediatric Dentistry. Policy on Pediatric Pain Management. *Pediatr Dent* 2014;36(special issue):78-9.
7. Bernard S, Neville KA, Nguyen AT, et al. Interethnic differences in genetic polymorphisms of CYP2D6 in the US population: Clinical implications. *Oncologist* 2006;11(2):126-35.
8. Engorn B, Flerlage J: The Harriet Lane Handbook, 20th edition. Saunders/Elsevier, Philadelphia, Pa; 2015.
9. Wilson W, Taubert KA, Gewitz M, et al. Prevention of infective endocarditis: Guidelines from the American Heart Association. *Circulation* 2007;116(15):1736-1754. Correction: *Circulation* 2007;116:e376-e377.