NEW STRATEGIES FOR TARGETING ANTIBIOTIC USE IN CLINICAL DENTISTRY

Karen Baker, B.S., R.Ph, M.S.
The University of Iowa Colleges of Dentistry & Pharmacy

I. TARGETED INDICATIONS IN DENTAL PRACTICE

A. Therapeutic Indications

1. Acute cellulitis of dental origin
2. Acute pericoronitis with elevated temperature and trismus
3. Deep fascial space infections
4. Open fractures of the mandible and maxilla
5. Extensive, deep, or old (>6hours) orofacial lacerations
6. Dental infection or oral surgery in the compromised host

B. Prophylactic Indications

1. Prosthetic heart valve or valve repair
2. Hx of endocarditis or severe congenital abnormality
3. Total Joint Arthroplasty – www.Orthoguidelines.org/AUC

C. Antibiotics NOT Generally Appropriate

1. Reversible or Irreversible Pulpitis
2. Acute Apical Periodontitis
3. Draining Sinus Tract
4. Gingival or Periodontal Abscess
5. ANUG or NUG
6. Uncomplicated Alveolar Osteitis
7. Localized Pericoronitis

D. Comparing the Characteristics of Cellulitis versus Abscess

Cellulitis	Abscess
• Acute	Chronic
• More Painful	Less painful
• Large and Widespread	Localized, well-defined
• Soft to Indurated	Fluctuant (varying firmness)
• Dangerous in advanced stages	Less Dangerous
• Pus Absent	Pus Can Be Drained
• Aerobic early/↑Anaerobic later	Anaerobic predominantly

E. When to Refer to a Specialist

- Rapidly progressive infection
- Difficulty in breathing
- Difficulty in swallowing
- Fascial space involvement
- Elevated temperature (greater than 101^{o}F)
- Severe Trismus (less than 10 mm)
- Toxic appearance
- Compromised host defenses

II. TARGETED PATIENTS AT INCREASED RISK OF OROFACIAL INFECTIONS

A. Patient-Specific Risk Factors

1. **Immunocompromised** by drug therapy or disease process
   a. drug therapy – TNFIs, Biologics, systemic prednisone > 10mg/day
      organ transplant rejection drugs, etc.

   b. disease process – SLE, rheumatoid arthritis, malnutrition, neoplastic disease,
      poor glycemic control in diabetics (A1c > 8%)

2. **Impaired by trauma, surgery, reduced circulation, or implanted device**
   a. hematomas and scar tissue – promote bacterial proliferation
   b. reduced circulation – may prevent antibiotic from reaching site
   c. implanted devices – intravascular devices are the leading cause of nosocomial
      infections and increase risk of endocarditis in some cases

3. **Renal Insufficiency**

   a. Tetracycline and minocycline are contraindicated in renal failure
   b. Dosage reduction necessary for amoxicillin, cefuroxime, cephalexin, and fluoroquinolones
   c. No dosage reduction necessary for azithromycin, cefaclor, clindamycin, dicloxacillin, doxycycline, erythromycin, metronidazole
   d. **Renal failure is defined as:**

4. **Diabetic Glycemic Control**

Correlation Between A1c and Mean Plasma Glucose

A1c (%)	Mean plasma glucose	
6	126mg/dl	
7	154mg/dl	
8	183mg/dl	
9	212mg/dl	⇐ **Patient Risks Increased**
10	240mg/dl	
11	269mg/dl	
12	298mg/dl	

Importance of Glycemic Control in Dental Patients

Prevention of hyperglycemia
Nonketotic hypertonicity/ketoacidosis
Impaired wound healing
Increased risk of oral infection
Delayed gastric emptying could lead to aspiration during a procedure
Prevention of hypoglycemia

5. **Considerations for Responsible Antibiotic Use in Dentistry- JADA,August 2016**

CLINICAL TIPS FOR ANTIBIOTIC PRESCRIBING BY DENTISTS.

PRETREATMENT CONSIDERATIONS

- Make the correct diagnosis of an oral bacterial infection.
- Recognize that antibiotics are rarely helpful for effective control of a localized oral infection.
- Therapeutic management interventions, such as I&D, extraction, or endodontic therapy, are appropriate first steps in treating most oral bacterial infections. Weigh the potential benefits and risks of antibiotics before prescribing. Toxicity, allergy, adverse effects, and Clostridium difficile infection can occur even with a single dose.
- Prescribe antibiotics (and all other prescriptions) only for patients of record.
- Prescribe antibiotics only for bacterial infections you have been trained to treat.
-Do not prescribe antibiotics for oral viral infections, fungal infections, or oral ulcerations related to trauma or aphthae.
- Understand and implement national recommendations for antibiotic prophylaxis for the medical concerns for which guidelines exist (for example, cardiac defects).
- Review the patient's medical history to
- assess medication allergies, drug-drug interactions, and the potential for other adverse drug events;
- review pregnancy status and medical conditions that would affect antibiotic selection.

CHAIRSIDE PRESCRIBING

-Ensure that antibiotic expertise or references are available and can be accessed during patient visits.
- Avoid prescribing based on
- **nonevidence-based historical practices;**
- **patient demand or expectations;**
- **convenience of clinician or patient;**
- **pressure from other health care professionals.**

- Make and document the diagnosis, treatment steps, and, if prescribed, the rationale for antibiotic use in the patient chart.
- Prescribe only when clinical signs and symptoms of a bacterial infection suggest systemic spread, such as fever or malaise along with localized oral swelling.
-Use the most targeted (narrow-spectrum) antibiotic for the shortest duration possible (2-3 days after the clinical signs and symptoms subside) for otherwise healthy patients.
- For empirical treatment, revise antibiotic regimens on the basis of patient progress and, if needed, culture results.
-Consider a conversation about antibiotic use with referring specialists about their own antibiotic prescribing protocols.

ENGAGING THE PATIENT

- Educate your patients about
- taking the antibiotic exactly as prescribed;
- taking only antibiotics prescribed for themselves;
- not saving antibiotics for future illness.

6. Reasons Why Antibiotics Fail

- Inadequate drainage or debridement
- Antibiotic does not reach infection site
- Physical obstruction or open access
- Systemic disease alters host response
- Foreign body reaction
- Patient noncompliance
- Inadequate dose or duration
- Wrong antibiotic is chosen
- Development of bacterial resistance
- Concomitant therapy interferes

7. Pitfalls in Antibiotic Prescribing

- Antibiotic adverse effects not considered
- Cost of antibiotic not considered
- Rapid and inappropriate therapy changes
- Patient is not counseled or monitored
- Trying to treat viral infections
- Inappropriate drug or dosage selection
- Infecting agent not documented
- Failure to correct contributing factors

III. TARGETED ANTIBIOTIC SELECTION

A. Mechanism of action and spectrum of activity

BACTERIOSTATIC	***BACTERICIDAL***	*SPECTRUM OF ACTIVITY*		
		Narrow	**Extended**	**Broad**
Tetracyclines	**Penicillins**	Penicillin VK	Amoxicillin	Tetracyclines
Sulfonamides	**Cephalosporins**	Azithromycin	Cephalosporins	Sulfonamides
Macrolides	**Metronidazole**	Clarithromycin	Fluoroquinolones	Amox/Clav
Clindamycin(static/Cidal)	**Fluoroquinolones**	Clindamycin		(Augmentin)
		Metronidazole		

B. Activity Against Common Oral Pathogens

Aerobic Bacteria	Frequency	Anaerobic Bacteria	Frequency
Gram-positive cocci		Gram-positive cocci	
Streptococcus		**Peptostreptococcus**	**common**
Viridans	**very common**		
B-Hemolytic	unusual	Gram-negative bacilli	
Staphylococcus	rare	**Porphyromonas (Bacteroides)**	**rare**
		Prevotella (Bacteroides)	**very common**
		Fusobacterium	**common**
		Bacteroides fragilis	rare

1. The typical odontogenic infection is composed of a mix of aerobic and anaerobic species
2. The timeline of infection may show: AEROBES-------MIXED--------ANAEROBES.
3. Obtain cultures & sensitivities for: antibiotic failures, recalcitrant infections, suspected osteomyelitis, impaired host defenses, post-op wound infections, etc.

IV. ANTIBIOTIC THERAPY GUIDELINES

A. Antimicrobial prescribing in the USA is 80 % empirical therapy.

1. Target causative organism -empirical or lab
2. Patient drug and medical history - ALLERGIES vs ADVERSE REACTIONS??
3. Patient counseling - adverse effects, compliance, therapeutic endpoints, cost
4. Positive response expected in 48 hours, continue therapy 72 hours after symptom resolution
5. Combination therapy: 3 possible effects - indifferent (additive) - synergism – antagonism
   Cidal + Cidal *or* Static + Static
6. Best combination: penVK qid + metronidazole qid, or amoxicillin tid + metronidazole tid

V. ANTIBIOTIC CLASSES

A. ORAL PENICILLINS – FDA Pregnancy Category B

ORAL PENICILLINS USEFUL IN DENTISTRY

Classification	$t^1/_2$ (h)	OK with food?	Pediatric Dose	Activity against oral pathogens: Gm^+ Aerobes	Gm^+ Anaerobes	Gm^- Anaerobes
Natural						
Penicillin G	1	no	150-250K U/kg/d	+	+	+
Penicillin VK	1	yes	25-50mg/kg/day	+	+	+.-
Penicillinase-Resistant						
Dicloxacillin	.75	no	12-25mg/kg/day	staph only	-	-
Nafcillin	.75	no	37mg/kg q 6h	staph+strep	-	-
Aminopenicillins						
Amoxicillin	1.5	yes	40-50mg/kg/day	+	+	-
Amox/potassium clavulanate(Augmentin,G)	1.5	yes	40-45mg/kg/day	+	+	+
Ampicillin	1.5	no	50-100mg/kg/day	+	-	+,-

1. INDIVIDUAL AGENTS

Amoxicillin advantages over penicillin
- more complete absorption
- longer duration of activity
- TID administration

Amoxicillin disadvantages over Pen VK
-broader spectrum
-poor anaerobe activity
-more side effects/less efficacy

2. ADVERSE EFFECTS

Hypersensitivity

- 3 - 10 % of population is allergic to penicillins (more frequently with IV/IM than PO route)
- IgE Mediated acute reaction - PCN binds to protein and acts as a hapten to which Ab develop
- True anaphylactic reactions to penicillin are 1/7,000 to 1/25,000 instances of PCN use
  - *mortality occurs once in every 50,000 - 60,000 treatment courses
  - * sx. begin 10-20 min. after ingestion, antihistamines are of little effect
- Cross-reactivity to cephalosporins occurs in 3-5% of patients
  - *Cephalosporins are contraindicated with pt history of severe or immediate penicillin reaction (urticaria, angioedema, anaphylaxis)

3. DRUG INTERACTIONS

Bacteriostatic antibiotics
Oral contraceptives
Methotrexate

B. ORAL CEPHALOSPORINS – FDA Pregnancy Category B

Oral Cephalosporins Useful in Dentistry						
Classification	$t^1/_2$(min)	OK with food?	Pediatric Dose	activity against oral pathogens Gm⁺ Aerobes	Gm⁺ Anaerobes	Gm⁻ Anaerobes
First Generation						
Cephalexin (Keflex,g)	50-80	yes	25-50mg/kg/d (4)	+	-	-
Cefadroxil(Duricef,Ultracef,g)	78-96	yes⁺	30mg/kg/day (1)	+	-	-
Cephradine(Anspor,Velosef,g)	48-80	yes	25-50mg/kg/day (4)	+	-	-
Second Generation						
Cefaclor (Ceclor,G)	35-54	yes	20-40mg/kg/day (3)	+	+	+
Cefuroxime (Ceftin,G))	80	yes⁺	10-15mg/kg bid (2)	+	+	+,+
Cefprozil (Cefzil,G)	78	yes⁺	15-30mg/kg/day (2)	+	+	+
Loracarbef (not available now)	60	no	15-30mg/kg/day (2)	+	+	+
Third Generation						
Cefdinir (Omnicef)	100	yes	14mg/kg/day (1-2)	+	-	-
Cefixime (Suprax)	180-240	yes	8mg/kg/day (1-2)	+	-	-
Cefpodoxime (Vantin)	120-180	yes⁺	10mg/kg/day (2)	+	+	-
Ceftibuten (Cedax)	144	no	4.5mg/kg bid	+,-	-	-
Cefditoren (Spectracef)	96	yes	None given	+++	-	+,-

1. INDIVIDUAL AGENTS

1st generation: best gram + coverage of all cephalosporins
2nd generation: best anaerobe coverage of all cephalosporins
3rd generation: oral agents provide NO oral anaerobe activity

2. ADVERSE EFFECTS

Hypersensitivity
Oral candidiasis

3. DRUG INTERACTIONS

Bacteriostatic antibiotics
Anticoagulants
Antacids, H_2 blockers, PPIs (cefdinir, cefuroxime)

C. ORAL MACROLIDES – FDA Pregnancy Category B (except clarithromycin = C)

Oral Macrolides Useful in Dentistry						
Drug	Tpeak(h)	OK with food?	Pediatric Dose	activity against oral pathogens Gm⁺ Aerobes	Gm⁺ Anaerobes	Gm⁻ Anaerobes
Erythromycin Base						
Abbott Filmtab	3	no	30-40mg/kg/day	+	-	-
Boots E-Mycin (EC)	6	yes	(3-4)	+	-	-
Abbott Ery-Tab (EC)	3f, 2nf	yes	(3-4)	+	-	-
Abbott PCE (PC)	3	no?	(3-4)	+	-	-
P-D ERYC (EC)	3	no	(3-4)	+	-	-
Erythromycin Ethylsuccinate						
Abbott E.E.S., generic	2	yes	Base dose x 1.6	+	-	-
Erythromycin Stearate						
Abbott Erythrocin	3	no	30-40mg/kg/day	+	-	-
Azithromycin (Zithromax,g)	2-3	Caps-no Tabs-yes	Day 1: 10mg/kg Days 2-5: 5mg/kg	+	+,-	+,-
Clarithromycin (Biaxin,g) Preg C	1.7	yes	15mg/kg/day (1-2)	+	+,-	+
Dirithromycin (Dynabac,g)	6	yes	Not given	+	-	-

1. INDIVIDUAL AGENTS

Clarithromycin (Biaxin) advantages over erythromycin base:

- 3% GI irritation as opposed to 30% for older agents, BID dosing
- better activity against *S. pyogenes* than erythromycin, cefaclor or doxycycline
- better anaerobe coverage than erythromycin

Azithromycin (Zithromax): 2-4 fold less active than erythromycin against most strains of strep.HAS risk of QT interval prolongation. Azalide has limited drug interactions compared to macrolides

2 ADVERSE EFFECTS

Cholestatic jaundice (estolate salt = Ilosone)
Gastrointestinal disturbances
Taste disturbances (Clarithromycin)
Oral candidiasis

3. DRUG INTERACTIONS

Alfentanil
Anticoagulants
Azole antifungals
Bromocriptine
Carbamazepine
CCBs (diltiazem, verapamil)
Cyclosporine
Disopyramide
Ergotamine
"Statins"
Theophylline
Tolterodine

D. ORAL FLUOROQUINOLONES – FDA Pregnancy Category C

Oral Fluoroquinolones Available in the USA

Drug*	$t^1/_2$ (h)	OK with food?	Usual Adult Dose	activity against oral pathogens Gm^+ Aerobes	Gm^+ Anaerobes	Gm^- Anaerobes
Ciprofloxacin (Cipro, G)	5	yes	500mg bid	-	-	-
Gemifloxacin (Factive,G)	7	yes	320mg qd	+	+	+,-
Levofloxacin (Levaquin,G)	8	yes	500mg q24 h	++	+	-
Moxafloxacin (Avelox,G)	10	yes	400mg qd	+	+	+,-
Norfloxacin (Noroxin)	6	no	400mg q 12h	-	-	-
Ofloxacin (Floxin)	8	yes	400mg q12h	+,-	+	-

*not indicated for children or adolescents except for cystic fibrosis

1. ALL FLUOROQUINOLONES HAVE A BLACK BOX WARNING FOR ACHILLES TENDON RUPTURE!!

2. ADVERSE EFFECTS

Arthropathies: contraindicated for children, adolescents, pregnant or lactating women
CNS stimulation/toxicity
Gastrointestinal disturbances
Photosensitivity-worst with sparfloxacin
QT interval prolongation risk

3. DRUG INTERACTIONS

Antacids (Fe, sucralfate, zinc)
Antiarrhythmics (Spar)
Anticoagulants
Antineoplastics
Cimetidine
Cyclosporine
NSAIDS (increased CNS stimulation)
Probenecid
Theophylline
Caffeine (Cipro)

E. MISCELLANEOUS AGENTS

Miscellaneous Oral Agents

Drug	$t^1/_2$ (h)	OK with food?	Pediatric Dose	activity against oral pathogens Gm^+ Aerobes	Gm^+ Anaerobes	Gm^- Anaerobes
Clindamycin (Cleocin,g) FDA B	2	yes	15-30mg/kg/day (3-4)	+	+	+
Metronidazole (Flagyl,g) FDA B	8	yes	30mg/kg/day (3-4)	-	+	+
Tetracyclines FDA D						
Tetracycline HCL(Sumycin,g)	6-12	no	25-50mg/kg/d (4)	-	+	+,-
Doxycycline (Vibramycin,g)	15-25	yes	2-4mg/kg/day (2)	-	+	+,-
Minocycline (Minocin,g)	11-18	yes	4mg/kg x 1 day, 2mg/kg/day	-	+	+,-

1 . CLINDAMYCIN is Pregnancy Category B

a). Cross-reaction with erythromycins because they are all "mycins"?? – doesn't happen
b). Adverse effects:
Gastrointestinal disturbances & morbilliform skin eruptions

c)BLACK BOX WARNING: *Clostridia Difficile Induced Colitis (CDIC)*

caused by overgrowth of Clostridia difficile which produces a toxin

Four requirements for CDIC:

1. Presence of Clostridia difficile in GI tract
2. Altered gastrointestinal flora
3. Presence of Toxin A and B
   - must have toxin receptors in gut
4. Predisposing factors

* potential adverse effect of all antimicrobial agents - especially ones that affect obligate anaerobes (ampicillin, Augmentin, cephalosporins)
* S/Sx: profuse, watery diarrhea 1-20 times/day, bloody diarrhea in 5-10 % of cases, foul smelling, abdominal cramping, nausea, fever and leukocytosis
* risk factors: recent hospitalization, recent broad-spectrum antibiotic use, history of colitis, advanced age, recent instrumentation of lower bowel

* may occur up to 10 weeks after discontinuation of the antimicrobial agent

d). Drug interactions

Succinylcholine	Erythromycin	Kaolin-Pectin

2. METRONIDAZOLE

a.) **BLACK BOX WARNING**: Metronidazole has been shown to be carcinogenic when given chronically to rats and mice. Avoid use in children except for approved indication (amebiasis).

b.) Adverse effects – taste disturbances, peripheral neuropathy, GI irritation
- mutagenic effect demonstrated with in vitro assays as well, turns urine reddish

c.) Interaction with ethanol and disulfuram (Antabuse) may lead to gastrointestinal distress and N/V. Avoid alcohol during and for 1 day after discontinuing metronidazole.Preg Category B

d). Drug interactions

Anticoagulants	Disulfuram	Ethanol (IV diazepam, IV SMZ/TMP)
Lithium	Phenytoin	

3 . TETRACYCLINES

a). Adverse effects

Esophageal ulceration
Toxicity -outdated tetracycline
Pregnancy – hepatotoxicity. Pregnancy Category D due to pediatric tooth discoloration

b). Drug interactions

ALL TETRACYLINES	*DOXYCYCLINE*	*TETRACYCLINE*
Antacids, bismuth	Phenobarbital	Food (milk, dairy)
Iron salts	Phenytoin	Cholestipol
Oral contraceptives		Zinc sulfate

c). Periodontal infections

Advantages in periodontal infections:
- high concentration in GCF
- good activity against A.A
- binds to root surfaces
- anticollagenase activity

d). Periodontal abscesses – tetracyclines are NOT the drugs of choice

e). Compliance considerations: cost, GI irritation, doses per day

4. OXALODINONES – Linezolid (Zyvox) 400mg and 600mg tablets

a) reserved for resistant gram positive pneumonias and CA-MRSA
b) NOT effective for oropharyngeal anaerobes

F. PATIENT-SPECIFIC ANTIBIOTIC SELECTION CRITERIA

1. History of allergy to penicillin
   a. Avoid all penicillins
   b. Avoid cephalosporins if hives, angioedema, anaphylaxis, or unknown history is reported

2. History of antibiotic-associated diarrhea
   a. Use narrow spectrum agent if possible-consider flora support with Florajen3 probiotic supplement
      Best choice is pen VK with /without metronidazole
   b. Avoid 2nd and 3rd generation cephalosporins
   c. Avoid clindamycin and amoxicillin/clavulanic acid (Augmentin,G)

3. Inadequate response to penicillin VK
   a. Add metronidazole 1000-2000mg/day in four divided doses to pen VK
   b. Stop pen VK and initiate clindamycin 300mg qid or q 6h.
   c. Stop pen VK and initiate Augmentin 500/125 tid or q 8h.

4. Allergy or intolerance to penicillins, cephalosporins, macrolides, clindamycin
   a. Reserve agents include levofloxacin or moxafloxacin
   b. May combine fluoroquinolone with metronidazole for resistant anaerobic infections

5. Patient may be pregnant
   a. Use penicillins, cephalosporins, clindamycin
   b. Avoid clarithromycin, all fluoroquinolones and tetracyclines
   c. Macrolides may be too hard on gut

G. APPROACH TO PRESCRIBING ANTIBIOTCS FOR ODONTOGENIC INFECTIONS

I. Establish a clear need for antibiotics

Patient presents with malaise, fever, chills, trismus, rapid respirations, swelling, lymphadenopathy, or hypotension
Signs an sx of infection have escalated rapidly over the past 24 to 48 hours
Oral soft tissue swelling appears to be spreading
Patients presenting with signs of impending airway obstruction, marked trismus (<25mm), dehydration, malaise, disorientation, tachycardia, and hypotension SHOULD BE ADMITTED TO THE HOSPITAL for urgent care.

2. Determine the Patient's Health Status

Systemic Considerations
History of Adverse Drug Reactions
Potential Drug-Drug Intx

3. Select appropriate agent with narrow spectrum and limited toxicity (if you can)

Immune status of patient determines static vs cidal
Empiric therapy based on most likely organisms associated with odontogenic infections
Culture and sensitivity testing if patient compromised or resistance is suspected
Establish a dosage regimen based on Sanford Guide, Dental Lexi-Drugs, Micromedex,etc
Consider severity and compliance issues
Follow up in 48 hours to check compliance and response to treatment
Monitor patient for adverse effects

Antimicrobial Adult Regimens for Odontogenic Infections

PENICILLINS

NAME	USUAL DOSAGES	USUAL REGIMENS
PENICILLIN VK (generic)	**Tablet**: 250MG, 500MG	500MG TAB QID OR Q 6 HOURS UNTIL GONE.
AMOXICILLIN (generic)	**Capsules**: 250MG,500MG **Tablets**:250MG CHEWABLE **Tablets**: 875MG	500MG CAP TID OR Q 8 HOURS UNTIL GONE. DON'T USE 875mg BID DUE TO SHORT DURATION.
AMOXICILLIN/POTASSIUM CLAVULANATE (AUGMENTIN,G)	**Tablets**: 250 mg amoxicillin with 125 mg clavulanate, 500 mg amoxicillin with 125 mg clavulanate, 875 mg amoxicillin with 125 mg clavulanate.	500MG/125MG TID OR Q 8 HOURS UNTIL GONE. DON'T USE 875mg BID DUE TO SHORT DURATION OF AMOXICILLIN

CEPHALOSPORINS

NAME	USUAL DOSAGES	USUAL REGIMENS
Cefaclor (Ceclor, generic)	**Capsule**: 250 MG, 500 MG **Powder for Suspension**: 125 MG/5 ML, 187 MG/5 ML, 250 MG/5 ML, 375 MG/5 ML **Tablet, Extended Release**: 500 MG	250mg-500mg TID OR Q 8 HOURS UNTIL GONE.
Cefuroxime (Ceftin, generic)	**Powder for Suspension**: 125 MG/5 ML, 250 MG/5 ML **Tablet**: 125 MG, 250 MG, 500 MG	250mg-500mg BID OR Q 12 HOURS UNTIL GONE.
Cefazil (Cefzil,generic)	**Powder for Suspension**: 125 MG/5 ML, 250 MG/5 ML **Tablet**: 250 MG, 500 MG	250mg-500mg BID OR Q 12 HOURS UNTIL GONE.
Loracarbef (Lorabid)	**Capsules:** 200mg, 400mg **Powder for Suspension:**100mg/5ml, 200mg / 5ml	200mg-400mg BID or Q 12 HOURS UNTIL GONE.

MISCELLANEOUS

Clindamycin (Cleocin, generic)	***Capsules:***75mg,150mg,300mg **Suspension:**	150-450mg QID OR Q 6 HOURS UNTIL GONE.
Metronidazole (Flagyl,generic)	**Capsules**: 375mg **Tablets**: 250mg, 500mg	1-2 GRAMS DAILY AS: 250MG QID OR 375MG TID OR 500MG TID – QID.

MACROLIDES

Name	Usual Dosages	Usual Regimens
Clarithromycin (Biaxin, generic)	**Oral Powder for Suspension**: 125 MG/5 ML, 250 MG/5 ML **Oral Tablet**: 250 MG, 500 MG **Oral Tablet**, Extended Release: 500 MG	250mg-500mg BID OR Q 12 HOURS UNTIL GONE.

Azithromycin (Zithromax Z-Pak)	**Oral Powder for Suspension:** 1 GM/Packet, 100 MG/5 ML, 200 MG/5 ML **Oral Tablet**: 250 MG, 500 MG, 600 MG	500mg on Day 1, followed by 250mg daily for 4 more days.

FLUOROQUINOLONES

Name	Usual Dosages	Usual Regimens
Levofloxacin (Levaquin,generic)	Oral Tablet: 250 MG, 500 MG, 750 MG	250mg-500mg QD UNTIL GONE
Moxifloxacin (Avelox,generic)	Oral Tablet: 400mg	400mg QD UNTIL GONE

Clinical features of odontogenic orofacial and peripharyngeal "space" infections

Space infections	Usual site of origin	Clinical features				
		Pain	Trismus	Swelling	Dysphagia	Dyspnea
Masticator						
Masseteric and pterygoid	Molars (especially 3rd)	+	+++	May not be evident (deep)	-	-
Temporal	Post. maxillary molars	+	-	Face, orbit (late)	-	-
Buccal	Bicuspids, molars	±	±	Cheek (marked)	-	-
Canine	Maxillary canines, incisors	++	-	Upper lip, canine fossa	-	-
Infratemporal	Post. maxillary molars	+	-	Face, orbit (late)	±	±
Submental parotid	Mandibular incisors	++	-	Chin (firm)	-	-
Submandibular	Masseteric spaces	+++	-	Angle of jaw (marked)	-	-
Sublingual	2nd, 3rd mandibular molars	+	±	Submandibular (brawny)	-	-
Lateral pharyngeal						
Anterior	Mandibular incisors	+	±	Floor of mouth (tender)	+ (if bilateral)	+ (if bilateral)
Posterior	Masticator spaces	+++	+++	Angle of jaw	+	±
Retropharyngeal (and "danger")	Masticator spaces	±	±	Post. pharynx	+	+++
	Lateral pharyngeal space, distant via lymphatics	+	±	Post. pharynx (midline)	+	+
Pretracheal	Retropharyngeal space, anterior esophagus	+	-	Hypopharynx	+	+++

±: minimal or occasional; +: present; ++: moderate; +++: prominent or severe.