Antibiotics in Dentistry

The latest from the experts on which antibiotics to use for oral infections

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Antibiotics in Dentistry:

While antibiotics have been extensively discussed in past issues, a noted author and clinical expert in Oral Medicine, Dr. Robert Fazio (Greater New York Meeting 2001), makes the muddled picture of which drugs to use much clearer. In this section are his antibiotic recommendations which are based on two categories of infections:

1. **Localized**: Pain in tooth, infection visible on radiograph, only slight swelling.
2. **Spreading**: Moderate to significant facial swelling, swelling closing eye, swollen naso-labial fold, pronounced intra-oral swelling.

If the infection is deemed #1 then Fazio believes one should start with the traditional, inexpensive penicillin type drugs. If the infection is categorized #2 then his recommendation is to begin with some "big gun" type antibiotics (usually more expensive) since you have less margin for error. A table follows the discussion below to help simplify the choices.

**Localized Infection, Non-allergy Patients:** penicillin and amoxicillin continue to be the first drugs of choice due to their safety and effectiveness against oral infections. They both have the same spectrum of coverage however amoxicillin is slightly more effective against endodontic and periodontal infections. The usual dosage is 500mg qid. Fazio notes however, that patient compliance with taking medications properly to completion is the KEY issue in their effectiveness. He cites a study in which less than 50% of patients complied with taking Pen VK 500mg qid but over 75% complied taking amoxicillin 875mg bid. Patients can better remember to take their medication when only required to do so twice a day. Therefore, for the localized, non-allergy patient, the drug of choice is **amoxicillin 875mg, bid, dispense 14**. If the patient does not improve after 3 days then consider "piggy-backing" the remainder of the amoxicillin with metronidazole (Flagyl™) 500mg, bid. The metronidazole is effective against resistant anaerobic bacteria and works well when taken with amoxicillin. No alcohol can be consumed while on metronidazole as severe gastric cramping will occur. Metronidazole is contraindicated with coumadin also.

**Spreading Infection, Non-allergy Patients:** the first drug of choice is **Augmentin 875mg, bid, dispense 16**. Side effects of Augmentin can include diarrhea.

**Localized Infection, Allergy to Penicillin Patients:** the first drug of choice is **doxycycline 100mg bid, dispense 14**. It is absorbable with food (tetracycline is not) and has few side effects (erythromycin is notorious for GI side effects). When you combine erythromycin's GI disturbances with its relative ineffectiveness against oral bacteria, it is Fazio's opinion that erythromycins have no place in treating dental infections.

**Spreading Infection, Allergy to Penicillin Patients:** the drugs of choice are Biaxin® (clarithromycin) and Zithromax® (azithromycin) which are second generation erythromycin drugs and ARE effective against oral pathogens and are also broad spectrum like Augmentin. The best choice in this category is **Zithromax®** as it does not have the long list of drug interactions as Biaxin®. It comes in an excellent patient compliance package called **Z Pak™** and is taken two the first day then one per day for five days after. Also if the patient is not allergic to penicillin but DOES have a history diarrhea problems with antibiotics, you may want to give them Z Pak instead of Augmentin simply on the side effects issue. Another benefit of Z Pak is that while the dosage ends after 5 days, the drug remains effective for up to 10 days total.

**Not Recommended for Oral Infections:** the cephalosporins (Keflex™, Ceclor™) are not a good choice for infections of dental origin. They basically cover the same spectrum as the penicillins. In addition, ciprofloxacin (Cipro™) cannot be given to anyone under 18 years of age as it will destroy the cartilage in joints.


**Other Antibiotics of Interest:** clindamycin (Cleocin™) is used by some in penicillin allergy patients but should not be the first choice in routine, moderate oral infections due to the rare but debilitating colitis side effect. The drug is inexpensive which makes it effective and affordable for low income patients. This may not seem to be a key issue but many patients will not get medications filled if they are too expensive. Therefore, cost of the drug is also one of the variables in patient compliance. Patients should be warned to stop taking the drug if they contract diarrhea and consult with physician if it occurs. The usual dosage is **clindamycin 150mg, bid, dispense 14,** or for severe infections: **300mg, bid, dispense 14.** Note that the 150mg dose is available generically, thus is cheap. The 300mg dose is not available generically and is expensive. Therefore, prescribe the lower dose and double the tabs.

Baumgartner (Amer Academy of Endodontics Annual Meeting 2002) has a slightly differing opinion from the above recommendations. With regard to severe infections when other antibiotics aren't working or in penicillin allergy patients with severe infections of dental origin, clindamycin is Baumgartner's "ace in the hole." His recommended dosage is 600mg STAT then 300mg q6h for 5-7 days. He notes that the pseudo-membranous colitis side effect of clindamycin most often occurs in hospital settings using large IV doses of clindamycin, NOT with oral use.

Ceftin™ (250-500mg; bid) and Lorabid™ (200-400mg; bid) are two broad spectrum antibiotics which are also effective against anaerobes. Lorabid has become the drug of choice with ENTs to treat maxillary sinusitis. A summary of the antibiotics and their uses follows in the table (below):

<table>
<thead>
<tr>
<th>Infection Type</th>
<th>Antibiotic</th>
<th>Instructions</th>
<th>Cost</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localized</td>
<td>amoxicillin 875mg</td>
<td>bid; disp14</td>
<td>cheap</td>
<td>good compliance</td>
</tr>
<tr>
<td>Localized; Pen Allergy</td>
<td>doxycycline 100mg</td>
<td>bid; disp14</td>
<td>cheap</td>
<td>can take with food</td>
</tr>
<tr>
<td>Spreading</td>
<td>Augmentin 875mg</td>
<td>bid; disp 16</td>
<td>expensive</td>
<td>diarrhea</td>
</tr>
<tr>
<td>Spreading; Pen Allerg .</td>
<td>Z Pak Lorabid 200-400mg Ceftin 250-500mg</td>
<td>pre-packaged bid; disp 14 bid; disp 14</td>
<td>expensive</td>
<td>staph effective tx for max sinusitis broad spect+anerob</td>
</tr>
<tr>
<td>Alternative Drugs</td>
<td>clindamycin 150-300mg (Cleocin™) metronidazole 500mg (Flagyl™)</td>
<td>tid; disp 21 bid; disp 14</td>
<td>cheap if 150mg dose expensive</td>
<td>use if amoxicillin or Z Pak not working; colitis side effect No alcohol; use with amoxicillin</td>
</tr>
</tbody>
</table>

**Yea, But Do They Really Kill The Bugs?**

A new study (Baumgartner, J: J Endodon 2003; 29(1):44-47) demonstrated the effectiveness of these popular antibiotics used in dental infections. Ninety-eight species of bacteria from endodontic infections were isolated and then tested for antibiotic susceptibility. Against the 98 strains, penicillin V was 85% effective, amoxicillin was 91% effective, Augmentin™ was 100% effective, clindamycin was 96% effective, metronidazole was only 45% effective but when piggy-backed with amoxicillin, the effectiveness increased to 99%.

Proper therapeutic use of antibiotics is a challenge for today’s busy practitioner to stay current. As bacteria become resistant and as new drugs become available, newer treatment regimens will need to be implemented.