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AMERICAN DENTAL ASSOCIATION and AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS
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ADVISORY STATEMENT

Antibiotic prophylaxis for dental patients with total joint replacements

AMERICAN DENTAL ASSOCIATION; AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS

Approximately 450,000 total joint arthroplasties are performed annually in the United States. Deep infections of these total joint replacements usually result in failure of the initial operation and the need for extensive revision. Owing to the use of perioperative antibiotic prophylaxis and other technical advances, deep infection occurring in the immediate postoperative period resulting from intraoperative contamination has been reduced markedly in the past 20 years.

Patients who are about to have a total joint arthroplasty should be in good dental health prior to surgery and should be encouraged to seek professional dental care if necessary. Patients who already have had a total joint arthroplasty should perform effective daily oral hygiene procedures to remove plaque (for example, by using manual or powered toothbrushes, interdental cleaners or oral irrigators) to establish and maintain good oral health. The risk of bacteremia is far more substantial in a mouth with ongoing inflammation than in one that is healthy and employing these home oral hygiene devices.1

Bacteremias can cause hematogenous seeding of total joint implants, both in the early postoperative period and for many years following implantation.2 It appears that the most critical period is up to two years after joint placement.3 In addition, bacteremias may occur in the course of normal daily life4-6 and concurrently with dental and medical procedures.6 It is likely that many more oral bacteremias are spontaneously induced by daily events than are dental treatment–induced.6 Presently, no scientific evidence supports the position...
that antibiotic prophylaxis to prevent hematogenous infections is required prior to dental treatment in patients with total joint prostheses.\(^1\) The risk/benefit\(^7,8\) and cost/effectiveness\(^7,9\) ratios fail to justify the administration of routine antibiotic prophylaxis. The analogy of late prosthetic joint infections with infective endocarditis is invalid, as the anatomy, blood supply, microorganisms and mechanisms of infection are all different.\(^10\)

It is likely that bacteremias associated with acute infection in the oral cavity,\(^11,12\) skin, respiratory, gastrointestinal and urogenital systems and/or other sites can and do cause late implant infection.\(^12\) Any patient with a total joint prosthesis with acute orofacial infection should be vigorously treated as any other patient with elimination of the source of the infection (incision and drainage, endodontics, extraction) and appropriate therapeutic antibiotics when indicated.\(^1,12\) Practitioners should maintain a high index of suspicion for any unusual signs and symptoms (such as fever, swelling, pain, joint that is warm to touch) in patients with total joint prostheses.

Antibiotic prophylaxis is not indicated for dental patients with pins, plates and screws, nor is it routinely indicated for most dental patients with total joint replacements. This position agrees with that taken by the ADA Council on Dental Therapeutics\(^13\) and the American Academy of Oral Medicine\(^14\) and is similar to that taken by the British Society for Antimicrobial Chemotherapy.\(^15\) There is limited evidence that some immunocompromised patients with total joint replacements (Table 1) may be at higher risk of experiencing hematogenous total joint infection.\(^12,16-23\) Antibiotic prophylaxis for such patients undergoing dental procedures with a higher bacteremic risk (as defined in Table 2) should be considered using an empirical regimen (Table 3). In addition, antibiotic prophylaxis may be considered when the higher-risk dental procedures (again, as defined in Table 2) are performed on dental patients within two years post–implant surgery,\(^3\) on those who have had previous prosthetic joint infections and on those with some other conditions (Table 1).

Occasionally, a patient with a total joint prosthesis may present to the dentist with a recom-

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**TABLE 1**

<table>
<thead>
<tr>
<th>PATIENT TYPE</th>
<th>CONDITION PLACING PATIENT AT RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>All patients during first two years following joint replacement</td>
<td>N/A (^1)</td>
</tr>
<tr>
<td>Immunocompromised/immunosuppressed patients</td>
<td>Inflammatory arthropathies such as rheumatoid arthritis, systemic lupus erythematosus, Drug- or radiation-induced immunosuppression</td>
</tr>
<tr>
<td>Patients with comorbidities(^2)</td>
<td>Previous prosthetic joint infections, Malnourishment, Hemophilia, HIV infection, Insulin-dependent (type 1) diabetes, Malignancy</td>
</tr>
</tbody>
</table>

* Based on Ching and colleagues,\(^12\) Brause,\(^16\) Murray and colleagues,\(^17\) Poss and colleagues,\(^18\) Jacobson and colleagues,\(^19\) Johnson and Bannister,\(^20\) Jacobson and colleagues\(^21\) and Berbari and colleagues.\(^22\)
† N/A: Not applicable.
‡ Conditions shown for patients in this category are examples only; there may be additional conditions that place such patients at risk of experiencing hematogenous total joint infection.

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Any perceived potential benefit of antibiotic prophylaxis must be weighed against the known risks of antibiotic toxicity; allergy; and development, selection and transmission of microbial resistance.
mendation from his or her physician that is not consistent with these guidelines. This could be due to lack of familiarity with the guidelines or to special considerations about the patient’s medical condition that are not known to the dentist. In this situation, the dentist is encouraged to consult with the physician to determine if there are any special considerations that might affect the dentist’s decision on whether or not to premedicate, and may wish to share a copy of these guidelines with the physician if appropriate. After this consultation, the dentist may decide to follow the

### TABLE 2

**INCIDENCE STRATIFICATION OF BACTEREMIC DENTAL PROCEDURES.***

<table>
<thead>
<tr>
<th>INCIDENCE</th>
<th>DENTAL PROCEDURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher incidence</td>
<td>Dental extractions</td>
</tr>
<tr>
<td></td>
<td>Periodontal procedures, including surgery, subgingival placement of antibiotic fibers/stripes, scaling and root planing, probing, recall maintenance</td>
</tr>
<tr>
<td></td>
<td>Dental implant placement and replantation of avulsed teeth</td>
</tr>
<tr>
<td></td>
<td>Endodontic (root canal) instrumentation or surgery only beyond the apex</td>
</tr>
<tr>
<td></td>
<td>Initial placement of orthodontic bands but not brackets</td>
</tr>
<tr>
<td></td>
<td>Intraligamentary and intraosseous local anesthetic injections</td>
</tr>
<tr>
<td></td>
<td>Prophylactic cleaning of teeth or implants where bleeding is anticipated</td>
</tr>
<tr>
<td>Lower incidence†‡§¶</td>
<td>Restorative dentistry* (operative and prosthodontic) with/without retraction cord</td>
</tr>
<tr>
<td></td>
<td>Local anesthetic injections (nonintraligamentary and nonintraosseous)</td>
</tr>
<tr>
<td></td>
<td>Intracanal endodontic treatment; post placement and buildup</td>
</tr>
<tr>
<td></td>
<td>Placement of rubber dam</td>
</tr>
<tr>
<td></td>
<td>Postoperative suture removal</td>
</tr>
<tr>
<td></td>
<td>Placement of removable prosthodontic/orthodontic appliances</td>
</tr>
<tr>
<td></td>
<td>Taking of oral impressions</td>
</tr>
<tr>
<td></td>
<td>Fluoride treatments</td>
</tr>
<tr>
<td></td>
<td>Taking of oral radiographs</td>
</tr>
<tr>
<td></td>
<td>Orthodontic appliance adjustment</td>
</tr>
</tbody>
</table>

* Adapted with permission of the publisher from Dajani AS, Taubert KA, Wilson W, et al. 23
† Prophylaxis should be considered for patients with total joint replacement who meet the criteria in Table 1. No other patients with orthopedic implants should be considered for antibiotic prophylaxis prior to dental treatment/procedures.
‡ Prophylaxis not indicated.
§ Clinical judgment may indicate antibiotic use in selected circumstances that may create significant bleeding.
¶ Includes restoration of carious (decayed) or missing teeth.

### TABLE 3

**SUGGESTED ANTIBIOTIC PROPHYLAXIS REGIMENS.***

<table>
<thead>
<tr>
<th>PATIENT TYPE</th>
<th>SUGGESTED DRUG</th>
<th>REGIMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients not allergic to penicillin</td>
<td>Cephalexin, cefradine or amoxicillin</td>
<td>2 grams orally 1 hour prior to dental procedure</td>
</tr>
<tr>
<td>Patients not allergic to penicillin and unable to take oral medications</td>
<td>Cefazolin or ampicillin</td>
<td>Cefazolin 1 g or ampicillin 2 g intramuscularly or intravenously 1 hour prior to the dental procedure</td>
</tr>
<tr>
<td>Patients allergic to penicillin</td>
<td>Clindamycin</td>
<td>600 milligrams orally 1 hour prior to the dental procedure</td>
</tr>
<tr>
<td>Patients allergic to penicillin and unable to take oral medications</td>
<td>Clindamycin</td>
<td>600 mg intravenously 1 hour prior to the dental procedure*</td>
</tr>
</tbody>
</table>

* No second doses are recommended for any of these dosing regimens.
physician’s recommendation or, if in the dentist’s professional judgment antibiotic prophylaxis is not indicated, may decide to proceed without antibiotic prophylaxis. The dentist is ultimately responsible for making treatment recommendations for his or her patients based on the dentist’s professional judgment. Any perceived potential benefit of antibiotic prophylaxis must be weighed against the known risks of antibiotic toxicity; allergy; and development, selection and transmission of microbial resistance.

This statement provides guidelines to supplement practitioners in their clinical judgment regarding antibiotic prophylaxis for dental patients with a total joint prosthesis. (Editor’s note: The patient handout on page 899 can be duplicated to provide patients with an overview of these guidelines.) It is not intended as the standard of care nor as a substitute for clinical judgment, as it is impossible to make recommendations for all conceivable clinical situations in which bacteremias originating from the oral cavity may occur. Practitioners must exercise their own clinical judgment in determining whether or not antibiotic prophylaxis is appropriate.

Address reprint requests to the ADA Council on Scientific Affairs, 211 E. Chicago Ave., Chicago, Ill. 60611.


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See accompanying sidebar.
Your joint replacement, dental procedures and antibiotics

For the first two years after a joint replacement, all patients may need antibiotics for all high-risk dental procedures. After two years, only high-risk patients may need to receive antibiotics for high-risk procedures.

The bacteria commonly found in the mouth may travel through the bloodstream and settle in your artificial joint. This increases your risk of contracting an infection. Ask your dentist about preventive antibiotics for high-risk procedures.

You may need preventive antibiotics before all high-risk dental procedures if:
- you had a joint replacement less than two years ago.
- you’ve had previous infections in your artificial joint.
- you have an inflammatory type of arthritis, type 1 diabetes or hemophilia.
- you have a suppressed immune system or are malnourished.
- you have a history of prior or present malignancy.

These dental procedures have a high risk of bleeding or producing high levels of bacteria in your blood:
- all dental extractions;
- all periodontal procedures;
- dental implant placement and replantation of teeth that were knocked out;
- some root canal work;
- initial placement of orthodontic bands (not brackets);
- certain specialized local anesthetic injections;
- regular dental cleanings (if bleeding is anticipated).

One of these preventive antibiotics may be prescribed for you:
- if you are not allergic to penicillin:
  2 grams of amoxicillin, cephalaxin or cephradine (orally) OR 2 grams of ampicillin or 1 gram of cefazolin (intramuscularly or intravenously) 1 hour before the procedure.
- if you are allergic to penicillin:
  600 milligrams of clindamycin (orally or intravenously) 1 hour before the procedure.

These guidelines were developed by the American Academy of Orthopaedic Surgeons and the American Dental Association. They are designed to help practitioners make decisions about preventive antibiotics for dental patients with artificial joints. They are not a standard of care or a substitute for the practitioner’s clinical judgment. Practitioners must exercise their own clinical judgment in determining whether or not preventive antibiotics are appropriate. Pediatric doses may be different.

Date of joint surgery _______________________
Orthopaedic surgeon _______________________
Phone number: (____) _______________________