ANTIBIOTIC PROPHYLAXIS FOR DENTAL PATIENTS WITH TOTAL JOINT REPLACEMENTS

AMERICAN DENTAL ASSOCIATION; AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS

ABSTRACT

An expert panel of dentists, orthopaedic surgeons and infectious disease specialists convened by the American Dental Association and the American Academy of Orthopaedic Surgeons, or AAOS, performed a thorough review of all available data to determine the need for antibiotic prophylaxis to prevent hematogenous prosthetic joint infections in dental patients who have undergone total joint arthroplasties. The result is this report, which has been adopted by both organizations as an advisory statement. The panel’s conclusion: 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. However, it is advisable to consider premedication in a small number of patients who may be at potential increased risk of hematogenous total joint infection.

Approximately 450,000 total joint arthroplasties are performed annually in the United States. Deep infections of these joint replacements usually result in failure of the initial operation and the need for extensive revision. Due 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 markedly reduced 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, 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.

Bacteremias can cause hematogenous seeding of total joint implants, both in the early postoperative period and for many years following implantation. It appears that the most critical period is up to 2 years after joint placement. In addition, bacteremias may occur in the course of normal daily life and concurrently with dental and medical procedures. It is likely that many more oral bacteremias are spontaneously induced by daily events than are dental treatment-induced. 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. The risk/benefit and cost/effectiveness 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.

It is likely that bacteremias associated with acute infection in the oral cavity, skin, respiratory, gastrointestinal and urogenital systems and/or other sites can and do cause late implant infection. 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, endodon-
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 and the American Academy of Oral Medicine, and is similar to that taken by the British Society for Antimicrobial Chemotherapy. There is limited evidence that some immunocompromised patients with total joint replacements (Box, “Patients at Potential Increased Risk of Hematogenous Total Joint Infection”) may be at higher risk for hematogenous infections. Antibiotic prophylaxis for such patients undergoing dental procedures with a higher bacteremic incidence (as defined in the box “Incidence Stratification of Bacteremic

**Patients at Potential Increased Risk of Hematogenous Total Joint Infection.**

<table>
<thead>
<tr>
<th>Immunocompromised/Immunosuppressed Patients</th>
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<tbody>
<tr>
<td>- Inflammatory arthropathies: rheumatoid arthritis, systemic lupus erythematosus</td>
</tr>
<tr>
<td>- Disease-, drug- or radiation-induced immunosuppression</td>
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</tbody>
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<table>
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<tr>
<th>Other Patients</th>
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<tbody>
<tr>
<td>- Insulin-dependent (Type 1) diabetes</td>
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<tr>
<td>- First 2 years following joint placement</td>
</tr>
<tr>
<td>- Previous prosthetic joint infections</td>
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<tr>
<td>- Malnourishment</td>
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<tr>
<td>- Hemophilia</td>
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</tbody>
</table>

* Based on Ching and colleagues, Brause, Murray and colleagues, Poss and colleagues, Jacobson and colleagues, Johnson and Bannister and Jacobson and colleagues.

**Incidence Stratification of Bacteremic Dental Procedures.**

**Higher Incidence**
- Dental extractions
- Periodontal procedures including surgery, subgingival placement of antibiotic fibers/strips, scaling and root planing, probing, recall maintenance
- Dental implant placement and reimplantation of avulsed teeth
- Endodontic (root canal) instrumentation or surgery only beyond the apex
- Initial placement of orthodontic bands but not brackets
- Intraligamentary local anesthetic injections
- Prophylactic cleaning of teeth or implants where bleeding is anticipated

**Lower Incidence**
- Restorative dentistry (operative and prostodontic) with or without retraction cord
- Local anesthetic injections (nonintraoral)
- Intracanal endodontic injections; postplacement and buildup
- Placement of rubber dam
- Postoperative suture removal
- Placement of removable prostodontic/orthodontic appliances
- Taking of oral impressions
- Fluoride treatments
- Taking of oral radiographs
- Orthodontic appliance adjustment

* Adapted from Dajani and colleagues. Reprinted with permission of The Journal of the American Medical Association.

† Prophylaxis should be considered for patients with total joint replacement that meet the criteria in the box, “Patients at Potential Increased Risk of Hematogenous Total Joint Infection.” No other patients with orthopedic implants should be considered for antibiotic prophylaxis prior to dental treatment/procedures.

‡ Prophylaxis not indicated.

§ This includes restoration of carious (decayed) or missing teeth.

**Clinical judgment may indicate antibiotic use in selected circumstances that may create significant bleeding.**
Dental Procedures”) should be considered using an empirical regimen (Box, “Suggested Antibiotic Prophylaxis Regimens”). In addition, antibiotic prophylaxis may be considered when the higher-bacteremic-incidence dental procedures (again, as defined in the box "Incidence Stratification ...") are performed on dental patients within 2 years post-implant surgery, on those who have had previous prosthetic joint infections and on those with some other conditions (Box, “Patients at Potential Increased Risk ...”).

Occasionally, a patient with a total joint prosthesis may present to the dentist with a recommendation 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 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. 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 Clifford W. Whall Jr., Ph.D., Council on Scientific Affairs, American Dental Association, 211 E. Chicago Ave., Chicago, Ill. 60611.
A LEGAL PERSPECTIVE ON ANTIBiotic PROPHYLAXIS

The Advisory Statement on Antibiotic Prophylaxis for Dental Patients with Total Joint Replacements reflects growing concern about the development of microbial resistance owing to the inappropriate use of antibiotics and recognizes that there are risks as well as benefits involved in the use of antibiotics. It delineates the limited circumstances in which antibiotic prophylaxis should be considered for dental patients who have had total joint replacements and cautions physicians and dentists to weigh the perceived potential benefits of antibiotic prophylaxis against the known risks of antibiotic toxicity, allergies, and the development of microbial resistance.

But what should the dentist do if the patient brings to the appointment a recommendation for premedication from his or her physician with which the dentist disagrees? Should the dentist ignore the physician's recommendation or simply defer to the physician's judgment?

Neither approach is prudent from a risk management perspective. On the one hand, the physician's recommendation may be based on facts about the patient's medical condition that are not known to the dentist. On the other, the physician may not be familiar with this advisory statement or that premedication may be indicated for some dental procedures but not for others. The careful dentist will attempt to ascertain the basis for the physician's recommendation and to acquaint the physician with the reasons why the dentist disagrees. Ideally, consensus can be reached. Most dentists would be uncomfortable with the thought of the physician testifying in a malpractice suit that the dentist failed to follow the physician's treatment recommendation.

However, the dentist who blindly follows the physician's recommendation, even though it conflicts with the dentist's professional judgment, will not be able to defend himself or herself by claiming "the devil made me do it" if the patient sues. The courts recognize that each independent professional is ultimately responsible for his or her own treatment decisions.

The answer to this dilemma may lie in the concept of informed consent, which acknowledges the patient's right to autonomous decision making. Informed consent usually can be relied on to protect from legal liability the practitioner who respects the patient's wishes, as long as the practitioner is acting within the standard of care. However, for informed consent to be legally binding, it is incumbent on the practitioner to inform the patient of all reason-
able treatment options and the risks and benefits of each. In the situation in question, the dentist would be prudent to inform the patient when the dentist’s treatment recommendations differ from those of the patient’s physician and even encourage the patient to discuss the treatment options with his or her physician before making a decision. All discussions with the patient and the patient’s physician should be well documented. Of course, allowing the patient to choose assumes that both the dentist’s and the physician’s treatment recommendations are acceptable.

Dentists are not obligated to render treatment that they deem not to be in the patient’s best interest, simply because the patient requests it. In such circumstances, referral to another practitioner may be the only solution.

—Kathleen M. Todd, J.D., Associate General Counsel, ADA Division of Legal Affairs, American Dental Association

The above information should not be construed as legal advice or a standard of care. A dentist should always consult his or her own attorney for answers to the dentist’s specific legal questions.

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