1. What are the two most common causes of prosthetic joint infections?
The majority of prosthetic joint infections are the result of wound contamination occurring during placement of the prosthesis. Signs and symptoms of infection may occur immediately after joint placement or may arise weeks to months later. A smaller proportion of prosthetic joint infections are attributed to hematogenous spread of bacteria from distant sites of infection.

2. What major change in the surgical technique of prosthetic joint replacement is responsible for the low rate of postoperative infection?
Prophylactic antibiotic therapy is the single most important change in surgical technique and is mostly responsible for the low incidence (about 1%) of postoperative infections involving prosthetic joints. Prophylactic antibiotic therapy significantly decreases the risk of both early and late infections caused by wound contamination at the time of joint prosthesis placement. Antibiotic-impregnated cement used in the retention of the prosthesis and improvements in aseptic technique are contributing factors.

3. What bacteria most commonly are cultured from infected prosthetic joints?
*Staphylococcus aureus* and *Staphylococcus epidermidis*, because the majority of infections involving prosthetic joints are caused by staphylococcal contamination during the placement of the prosthesis.

4. Which bacteria have been identified in cases of infected prosthetic joints arising by hematogenous spread of infection to the prosthesis from oral sites of infection? *Streptococcus viridans* and *Streptococcus sanguis*.

5. Which medical conditions place patients with prosthetic joints at high risk for developing hematogenous infection of the prosthetic joint?
- Active rheumatoid arthritis
- Systemic lupus erythematoses
- Severe type 1 insulin-dependent diabetes mellitus
- Steroid therapy
- Hemophilia
- Immunosuppressive disease
- First 2 years after joint placement

6. What conditions seem to predispose a prosthetic joint to development of infection?
- Loose prosthesis
- First 2 years after joint placement
- Second or third prosthesis in place
- Previous infection involving the joint
- Acute skin infections

7. Late infections involving prosthetic joints are associated with acute infections of which major organ systems?
- Oral cavity
- Skin
- Respiratory system
- Urogenital
- Gastrointestinal

8. Which bacteria most commonly cause infected prosthetic joints in the “high risk” group of patients?
*S. aureus* and *S. epidermidis*. The origin of the bacteria causing the joint infection is not different in this group.

9. What criteria are used to establish a diagnosis of hematogenous infection in prosthetic joint replacement?
The same strain of bacteria must be cultured from the following three sites:
- Infected joint
- Primary focus of infection
- Blood

10. What are the treatment options for a patient with an infected prosthetic joint?
- Remove the joint prosthesis.
- Salvage the prosthesis with surgical debriement and antibiotic therapy.
- Salvage the prosthesis with aspiration of pus and antibiotic therapy.

11. When can transient oral bacteremias occur?
- During mastication
- During tooth brushing and flossing, and dental prophylaxis
- Sporadically in patients with moderate to severe periodontal disease
- Sporadically in patients with moderate to severe odontogenic infections
- During invasive dental and otolaryngology procedures

12. Which bacteria have been associated with transient oral bacteremias?
*S. viridans* and *S. sanguis*.

13. Which dental procedures have the highest incidence of bacteremia?
- Dental extractions
- All periodontal procedures
- Endodontic instrumentation
- Initial placement of orthodontic bands
- Intraligamentary injections of local anesthesia
- Dental prophylaxis of teeth or implants where bleeding is expected
14. Which dental procedures have the lowest incidence of bacteremia?
- Restorative dentistry:
  - With or without retraction cord
  - Placement of post and core buildup
  - Placement of rubber dam
  - Placement of removable appliances
- Injections of local anesthetic (except intraligamentary injections)
- Suture removal
- Taking oral impressions
- Fluoride treatments
- Taking oral radiographs
- Orthodontic bracket placement and adjustment

15. What are the risks of antibiotic therapy?
- Gastrointestinal upset
- Cross reactions with other drugs
- Emergence of resistant bacterium
- Allergic reactions
  - Anaphylaxis
  - Hearing loss
  - Death

16. What steps can be taken to minimize transient oral bacteremia in the prosthetic joint replacement patient?
- Elimination of active dental and periodontal disease before the joint replacement surgery
- Oral rinsing with chlorhexidine solution before dental, periodontal, and dental extraction procedures
- Aggressive treatment of acute dental and oral infections with antibiotics, surgery, and culture and sensitivity testing

17. What are the current recommendations of the American Dental Association and the American Academy of Orthopedic Surgeons regarding the use of antibiotic prophylaxis for routine dental procedures in patients with prosthetic joint replacements?
- Antibiotic prophylaxis is not indicated for dental patients with pins, plates, or screws, nor is it routinely indicated for most dental patients with total joint replacements.
- Empiric prophylactic antibiotic therapy should be considered for patients who are considered to be at high risk for developing hematogenous prosthetic joint infection.
- The dentist is encouraged to consult with the orthopedic surgeon regarding the decision of whether to treat with antibiotic prophylaxis.

18. What are the current antibiotic prophylaxis guidelines recommended by the American Dental Association for dental patients with prosthetic joint replacements?
See Table 25-1.

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Table 25-1 American Dental Association Antibiotic Prophylaxis Guidelines for Patients with Prosthetic Joint Replacements

<table>
<thead>
<tr>
<th>PATIENT STATUS</th>
<th>ANTIBiotic</th>
<th>DOSE</th>
<th>ADMINISTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to take oral penicillin</td>
<td>Cephalexin</td>
<td>2 g</td>
<td>PO 1 hr before dental procedure</td>
</tr>
<tr>
<td></td>
<td>Cephradine</td>
<td>2 g</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Amoxicillin</td>
<td>2 g</td>
<td>IM or IV 1 hr</td>
</tr>
<tr>
<td>Unable to take oral medications</td>
<td>Cefazolin</td>
<td>1 g</td>
<td>before dental procedure</td>
</tr>
<tr>
<td></td>
<td>Ampicillin</td>
<td>2 g</td>
<td></td>
</tr>
<tr>
<td>Allergic to penicillin</td>
<td>Clindamycin</td>
<td>600 mg</td>
<td>1 hr before dental procedure</td>
</tr>
<tr>
<td>and unable to take oral medications</td>
<td>Clindamycin</td>
<td>600 mg</td>
<td>IV 1 hr before dental procedure</td>
</tr>
</tbody>
</table>

PO, orally; IM, intramuscularly; IV, intravenously.

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BIBLIOGRAPHY