### COLLEGE OF DENTAL HYGIENISTS OF ONTARIO ADVISORY

#### ADVISORY TITLE

Use of the dental hygiene interventions of scaling of teeth and root planing including curetting surrounding tissue, orthodontic and restorative practices, and other invasive interventions for persons with joint replacement.

#### ADVISORY STATUS

Cite as  
*College of Dental Hygienists of Ontario, CDHO Advisory Joint Replacement, 2019-07-25*

#### INTERVENTIONS AND PRACTICES CONSIDERED

Scaling of teeth and root planing including curetting surrounding tissue, orthodontic and restorative practices, and other invasive interventions (“the Procedures”).

#### SCOPE

**DISEASE/CONDITION(S)/PROCEDURE(S)**

*Joint replacement*

**INTENDED USERS**

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<th>Advanced practice nurses</th>
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**ADVISORY OBJECTIVE(S)**

To guide dental hygienists at the point of care relative to the use of the Procedures for persons who have joint replacement, chiefly as follows.

1. Understanding the medical condition.
2. Sourcing medications information.
3. Taking the medical and medications history.
4. Identifying and contacting the most appropriate healthcare provider(s) for medical advice.

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1 Persons includes young persons and children
5. Understanding and taking appropriate precautions prior to and during the Procedures proposed.
6. Deciding when and when not to proceed with the Procedures proposed.
7. Dealing with adverse events arising during the Procedures.
8. Keeping records.

TARGET POPULATION

Middle Age (45 to 64 years)
Aged (65 to 79 years)
Aged 80 and over
Male
Female

Parents, guardians, and family caregivers of children, young persons and adults with joint replacement.

MAJOR OUTCOMES CONSIDERED

For persons who have joint replacement: to maximize health benefits and minimize adverse effects by promoting the performance of the Procedures at the right time with the appropriate precautions, and by discouraging the performance of the Procedures at the wrong time or in the absence of appropriate precautions.

RECOMMENDATIONS

UNDERSTANDING THE MEDICAL CONDITION

Terminology used in this Advisory

Resources consulted

- [Total Hip Replacement: American Academy of Orthopaedic Surgeons](#)
- [Total Hip Replacement: Cleveland Clinic](#)
- [Total Joint Replacement: American Academy of Orthopaedic Surgeons](#)
- [Total Knee Replacement: American Academy of Orthopaedic Surgeons](#)

1. Arthroplasty, alternative term for joint replacement.
2. Bacteremia, the transient presence of bacteria in the blood that
   a. is the principal means by which local or superficial infections spread to the body’s internal organs and structures
   b. often results from simple cuts or scratches
   c. may occur after oral healthcare procedures, minor surgery or other invasive procedures
   d. normally elicits a vigorous immune response to prevent the bacteria from spreading
   e. in the presence of an impaired immune system may be dangerous.
3. Hematogenous seeding of artificial joints when, in bacteremia, bacteria pass from the blood stream into artificial joints, which
   a. may
i. occur as **early infections**
ii. occur as **late infections**
iii. be associated with acute infection in the oral cavity
iv. arise during
   1. normal daily life
   2. dental, urological and other surgical and medical procedures
b. does not parallel infective endocarditis (**CDHO Advisory**) because, in the development of infective endocarditis the anatomy, blood supply, microorganisms and mechanisms of infection differ fundamentally.

4. Infection phases in joint replacement comprise
   a. early infections, which
      i. occur in the days or weeks following joint replacement
      ii. are generally easier to treat than late infections
   b. late infections, which
      i. occur months or years following joint replacement
      ii. almost always require
         1. removal of the implant and subsequent **revision surgery**
         2. intensive antibiotic treatment.

5. Joint replacement, total joint replacement, in which a biological joint is surgically replaced by an artificial joint.

6. Megaprostheses, which
   a. are used to reconstruct bones as well as joints affected by disease, such as cancer, or major injury
   b. are subject to infection, a common complication.

7. **Prosthesis**, in the context of orthopaedics, is a device used to replace
   a. a diseased joint or bone
   b. a damaged joint or bone.

8. Revision surgery, chiefly
   a. replacement of an existing artificial joint with a new one because it is infected, worn out, loosened, or associated with bone fracture
   b. needed after expiry of the service life-time of an artificial joint, which
      i. ranges from ten to fifteen years
      ii. may be shortened by mechanical stress related to obesity or excessive physical activity.

9. **Synovial joint**, a type of joint that in most instances permits substantial movement, in which
   a. the articulating bones are separated by cavity containing synovial fluid
   b. the ends of the bone are covered with articular cartilage.

**Overview of joint replacement**

**Resources consulted**

- **Antibiotics for Prevention of Periprosthetic Joint Infection Following Dentistry: Time to Focus on Data | Clinical Infectious Diseases**
- **Canadian Dental Association**
- **Canadian Dental Association: Comment on the 2009 American Academy of Orthopaedic Surgeons’ Information Statement on Antibiotic Prophylaxis for Bacteremia in Patients with Joint Replacements**
Overview of interpretations of infection risk in joint replacement and the role of antibiotic prophylaxis

See also Chronology

The American Academy of Orthopaedic Surgeons and the American Dental Association Evidence-Based Guideline

In December 2012, the American Academy of Orthopaedic Surgeons in conjunction with the American Dental Association conducted a systematic review and released a joint evidence-based clinical practice guideline.

1. The AAOS and ADA joint evidence-based clinical practice guideline at December 7, 2012,
   a. explains that a systematic review was conducted between October 2010 and July 2011 that demonstrated where there was good evidence, where evidence was lacking, and what topics future research should target to improve the prevention of orthopaedic implant infection in patients undergoing dental procedures
   b. notes that a clinical practice guideline was created and based on a systematic review of published studies related to the prevention of orthopaedic implant infection in patients undergoing dental procedures
   c. encourages readers to consider the information presented in the guidelines
   d. advises that
      i. the statement represents AAOS’ and the ADA’s current recommendations on antibiotic prophylaxis
      ii. AAOS regularly reviews and updates all informational statements as new technology, evidence, or policy is developed
      iii. the guidelines are not intended to be a fixed protocol as some patients may require more or less treatment or different means of diagnosis and 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 may occur
      iv. the guidelines are not intended to stand alone. Treatment decisions should be made in light of all circumstances presented by the patient. Treatments and procedures applicable to the individual patient rely on mutual communication between patient, physician, dentist and other healthcare practitioners
   e. recommends that
      i. the practitioner might consider discontinuing the practice of routinely prescribing prophylactic antibiotics for patients with hip and knee
prosthetic joint implants undergoing dental procedures (Limited recommendation)²

ii. they are unable to recommend for or against the use of topical oral antimicrobials in patients with prosthetic joint implants or other orthopaedic implants undergoing dental procedures

iii. in the absence of reliable evidence linking poor oral health to prosthetic joint infection, it is the opinion of the work group that patients with prosthetic joint implants or other orthopaedic implants maintain appropriate oral hygiene.

Patients who may be at potentially higher risk for joint infection were not specifically examined in this systematic review, therefore, clinicians should use their professional judgment and clinical decision-making skills to identify those patients who may be at a greater risk (e.g., immunocompromised) and consult with the most appropriate healthcare provider(s).

In 2014, a panel of experts convened by the ADA Council on Scientific Affairs developed an evidence-based clinical practice guideline (CPG), released in January 2015, on the use of prophylactic antibiotics in patients with prosthetic joints who are undergoing dental procedures.

2. The clinical practice guideline at January 2015,
   a. was intended to clarify the “Prevention of Orthopaedic Implant Infection in Patients Undergoing Dental Procedures: Evidence-based Guideline and Evidence Report,” which was developed and published by the American Academy of Orthopaedic Surgeons and the American Dental Association (the 2012 Panel);
   b. noted that evidence failed to demonstrate an association between dental procedures and prosthetic joint infection or any effectiveness for antibiotic prophylaxis;
   c. advised that the above information, in conjunction with the potential harm from antibiotic use, led the panel to conclude that, in general, using antibiotics before dental procedures is not recommended to prevent prosthetic joint infection; and further advised that the dental practitioner and patient should consider possible clinical circumstances that may suggest the presence of a significant medical risk in providing dental care without antibiotic prophylaxis; and
   d. also concluded that additional case-control studies were needed to increase the level of certainty in the evidence to a level higher than moderate.

² A Limited recommendation means the quality of the supporting evidence that exists is unconvincing, or that well-conducted studies show little clear advantage to one approach versus another. Evidence from two or more “Low” strength studies with consistent findings, or evidence from a single Moderate quality study recommending for or against the intervention or diagnostic.

Implications: Practitioners should be cautious in deciding whether to follow a recommendation classified as Limited, and should exercise judgment and be alert to emerging publications that report evidence.
The Canadian Dental Association Position (2013)

The Canadian Dental Association (Position Statement – June 2013)
1. concurred with the systematic review of the AAOS and ADA evidence-based 2015 guideline which determined that there was no direct evidence that dental procedures cause orthopaedic implant infections.
2. suggested that
   a. patients should not be exposed to the adverse effects of antibiotics when there is no evidence that such prophylaxis is of any benefit
   b. routine antibiotic prophylaxis is not indicated for dental patients with total joint replacements, nor for patients with orthopaedic pins, plates and screws
   c. patients should be in optimal oral health prior to having total joint replacement and should maintain good oral hygiene and oral health following surgery. Orofacial infections in all patients, including those with total joint prostheses, should be treated to eliminate the source of infection and prevent its spread.

The Canadian Orthopaedic Association/Canadian Dental Association/Association of Medical Microbiology and Infectious Disease Canada -- Consensus Statement: Dental Patients with Total Joint Replacement (2016)

The COA, CDA, and AMMI
1. reviewed the current best available evidence on the effectiveness of dental antibiotic prophylaxis in the reduction of orthopaedic prosthetic joint infections, in the context of the issue of emerging antimicrobial resistance and the critical role of all healthcare providers to steward appropriate use of antimicrobial drugs.
2. concluded that
   a. most transient bacteremia or oral origin occurs outside of dental procedures
   b. the significant majority of prosthetic joint infections are not due to organisms found in the mouth
   c. few prosthetic joint infections have an observable and clearly defined relationship with dental procedures
   d. there is no reliable evidence that antibiotic prophylaxis prior to dental procedures prevents prosthetic joint infections.
3. recommended the following with regard to management of dental patients/clients with orthopaedic devices
   a. patients/clients should not be exposed to the adverse effects of antibiotics when there is no evidence that such prophylaxis is of any benefit
   b. routine antibiotic prophylaxis is not indicated for dental patients/clients with total joint replacements, nor for patients/clients with orthopaedic pins, plates, and screws
   c. patients/clients should be in optimal oral health prior to having total joint replacement and should maintain good oral hygiene and oral health following surgery
   d. orofacial infections in all patients/clients, including those with total joint prostheses, should be treated to eliminate the source of infection and prevent its spread.
The American Academy of Orthopaedic Surgeons and the American Dental Association --
Appropriate Use Criteria for the Management of Patients With Orthopaedic Implants

Undergoing Dental Procedures (9/23/2016 and 10/24/2016)

The AAOS Board of Directors and the ADA Council on Scientific Affairs adopted appropriate
use criteria for antibiotic prophylaxis in 2016. In contradistinction to the 2016
COA/CDA/AMMI Consensus Statement, the AAOS/ADA criteria allowed for antibiotic
prophylaxis in a limited subset of patients/clients with joint replacements who have certain
co-morbidities and/or past history of peri-prosthetic or deep prosthetic joint infections.
Included in the AAOS/ADA document was adjustment of the 2007 statement of the
American Heart Association on prevention of infective endocarditis
(https://www.ahajournals.org/doi/full/10.1161/circulationaha.106.183095) to reflect
removal of clindamycin and cefazolin as antibiotic prophylaxis options for joint replacement,
based on more recently published literature.

Purposes of joint replacement

**Joint replacement**

1. is performed
   a. chiefly on the hip, knee, and shoulder joints
   b. less commonly on the elbow, wrist, and ankle joints
   c. when osteoarthritis or rheumatoid arthritis
      i. is painful enough to undermine the quality of life
      ii. impairs the ability to work or undertake important activities of a
          normal life
   d. to restore function after severe trauma
   e. when other forms of treatment, such as physiotherapy, are no longer sufficient
   f. as revision surgery
   g. when comorbid conditions such as obesity require it

2. involves surgery that
   a. removes the impaired cartilage and bone from the joint
   b. implants the artificial joint, which is cemented into bone or installed with a
      special coating to promote adherence to the bone through growth of new bone.

Occurrence of joint infection associated with joint replacement

**Joint replacement** infection is a devastating complication, which

1. may not be adequately combated by the body’s immune system because
   a. the immune system’s normal function of defending tissues against bacteria is
      impaired by the material implanted into the joint
   b. bacteria are difficult to eliminate from the implanted joint

2. is rare though
   a. its occurrence is the subject of uncertainty
   b. the 2010 study, *Antibiotics for Prevention of Periprosthetic Joint Infection
      Following Dentistry: Time to Focus on Data*, reports that
      i. the infection
         1. occurs after
            a. total hip replacement in 0.3 to 1 percent of patients
            b. total knee replacement in 1 to 2 percent of patients
         2. is associated with the hematogenous route in 35 to 40 percent
            of instances
Patients/clients considered by various authorities at various times to be at potentially elevated risk of prosthetic joint infections – not necessarily related to dental/dental hygiene procedures – include those with: history of complications with their joint replacement surgery; previous prosthetic joint infections; recent joint replacement surgery (first 2 years); disease-, drug-, or radiation-induced immunosuppression; inflammatory arthropathies (such as rheumatoid arthritis or systemic lupus erythematosus); type 1 diabetes; malnutrition; and hemophilia.

According to the American Dental Association (ADA; 2017), compared with previous recommendations, there are relatively few patient subpopulations for whom antibiotic prophylaxis may be indicated prior to invasive dental/dental hygiene procedures. Similarly, the American Academy of Orthopaedic Surgeons (AAOS; 2016) now does not recommend prophylactic antibiotic premedication, regardless of the oral procedure, for most patients/clients with prosthetic joint implants. The AAOS does allow, however, for antibiotic prophylaxis in a limited subset of patients/clients with joint replacements who have certain co-morbidities and/or past history of peri-prosthetic or deep prosthetic joint infections.
Signs and symptoms of joint infection following Joint replacement include
1. chills
2. drainage from the wound
3. increasing redness, tenderness, or swelling of the wound
4. warmth to the touch of the skin over the replaced joint
5. pain, which increases with activity and rest
6. persistent fever
7. swelling.

Medical investigation and treatment of joint infection
Joint replacement investigation and treatment
1. involves a high index of suspicion for any change or unusual signs and symptoms in persons with a history of joint replacement
2. embraces
   a. early infections
   b. late infections
3. requires for any person with signs and symptoms of joint infection prompt and vigorous investigation and treatment, including
   a. elimination of the source of the infection
   b. appropriate therapeutic antibiotics.

Prevention of joint infection risk
Joint replacement joint infection risks of
1. early infections are prevented by
   a. antibiotics
      i. given within one hour of the start of joint replacement surgery
      ii. continued for a short period following the joint replacement surgery
   b. strict adherence to sterile procedure
   c. oral healthcare inspection, including dental hygiene, and necessary treatment some weeks prior to the orthopaedic surgery
2. late infections are not necessarily prevented by antibiotic prophylaxis for dental/dental hygiene procedures, although antibiotic prophylaxis is sometimes prescribed for dental/dental hygiene procedures
   a. as a non-evidence-based precaution for some patients/clients with a history of joint replacement
   b. in accordance to certain prevailing recommendations (such as those of the American Academy of Orthopaedic Surgeons [2016], which are at odds with those of the Canadian Orthopaedic Association, the Canadian Dental Association, and the Association of Medical Microbiology and Infectious Disease Canada [2016]).

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4 There is no reliable evidence that antibiotic prophylaxis prior to dental/dental hygiene procedures prevents prosthetic joint infections (as per 2016 COA/CDA/AMMI Consensus Statement). Routine antibiotic prophylaxis is not indicated for dental/dental hygiene patients/clients with total joint replacements, nor for patients/clients with orthopaedic pins, plates, and screws.
**Prognosis for joint infection**

Joint replacement infection is associated with a prognosis that includes

1. serious disability
2. revision surgery that is premature relative to the expected service life-time of the replacement joint.

**Multimedia and images**

- Hip joint replacement - series
- Knee joint replacement prosthesis

**Comorbidity, complications and associated conditions**

Comorbid conditions are those which co-exist with joint replacement but which are not believed to be caused by it. Complications and associated conditions are those that may have some link with it. Distinguishing among comorbid conditions, complications and associated conditions may be difficult in clinical practice.

Comorbid conditions, complications and associated conditions for joint replacement that, at various times and by various authorities, were thought to require special consideration because they were thought to potentially place patients at risk were (but not limited to)

- immunocompromised/immunosuppressed patients
- inflammatory arthropathies, such as
  - rheumatoid arthritis (CDHO Advisory)
  - systemic lupus erythematosus (CDHO Advisory)
- drug-induced immunosuppression (CDHO Advisory)
- radiation-induced immunosuppression (CDHO Advisory)
- patients with comorbidities, including
  - diabetes (CDHO Advisory)
  - obesity
  - HIV (CDHO Advisory)
  - smoking
- previous prosthetic joint infections
- malnourishment (CDHO Advisory)
- hemophilia (CDHO Advisory)
- HIV infection (CDHO Advisory)
- insulin-dependent (Type 1) diabetes (CDHO Advisory)
- malignancy
- megaprostheses

However, according to the American Dental Association (ADA; 2017), compared with previous recommendations, there are relatively few patient subpopulations for whom antibiotic prophylaxis may be indicated prior to invasive dental/dental hygiene procedures. Similarly, the American Academy of Orthopaedic Surgeons (AAOS; 2016) now does not recommend prophylactic antibiotic premedication, regardless of the oral procedure, for most patients/clients with prosthetic joint implants. The 2016 Consensus Statement of the Canadian Orthopaedic Association, the Canadian Dental Association, and the Association of Medical Microbiology and Infectious Disease Canada is even more definitive: there is no reliable evidence that antibiotic prophylaxis prior to dental/dental hygiene procedures
prevents prosthetic joint infections, and therefore patients/clients should not be unnecessarily exposed to the adverse effects of antibiotics, and thus routine antibiotic prophylaxis is not indicated for dental/dental hygiene patients/clients with total joint replacements, nor for patients/clients with orthopaedic pins, plates, and screws.

**Oral health considerations**

**Chronology**

In 1997, the American Academy of Orthopaedic Surgeons together with the American Dental Association developed an information statement on antibiotic prophylaxis for patients who have undergone joint replacement. It was collaboratively revised and republished in 2003.

The 2003 statement’s recommendations limited the use of antibiotic prophylaxis to the first two years following joint replacement surgery, with certain important exceptions such as a weakened immune system. For the exceptions, antibiotic prophylaxis was stipulated regardless of the length of time after the joint replacement surgery. In 2007, the Canadian Dental Association reaffirmed its support for the 2003 statement.

In 2009, the American Academy of Orthopaedic Surgeons released a new Information Statement, which was developed independently of the American Dental Association. The statement was offered as an educational tool based on the opinion of the authors.

The Educational tool’s recommendations differed from the 2003 statement by recommending antibiotic prophylaxis prior to any invasive procedure that may produce bacteremia, regardless of the length of time after the joint replacement surgery. The removal of the time limitation for antibiotic prophylaxis led to debate among dental authorities.

In 2009, the Canadian Dental Association confirmed that it stood by its 2007 position and therefore, that of the American Academy of Orthopaedic Surgeons, developed jointly with the American Dental Association in 2003.

In 2010, the American Academy of Orthopaedic Surgeons released a revised Information Statement. This was developed as an educational tool based on the opinion of the authors, and its readers “are encouraged to consider the information presented and reach their own conclusions.”

Also in 2010, the American Academy of Orthopaedic Surgeons / American Dental Association Collaboration on antibiotic prophylaxis in bacteremia in patients with joint replacements was launched at their Introductory Meeting of November 20 and 21. The Collaboration was reported in 2012.

On December 7, 2012, the systematic review from the American Academy of Orthopaedic Surgeons / American Dental Association Collaboration on antibiotic prophylaxis in bacteremia in patients with joint replacements was released. The systematic review found no direct evidence that dental procedures cause orthopaedic implant infections. The review also yielded joint evidence-based guidelines which recommended (with a limited grade) that

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5 Dr Euan Swan, Manager Dental Programs, Canadian Dental Association, personal communication, 2009-10-21.
the practitioner might consider discontinuing the practice of routinely prescribing prophylactic antibiotics for patients with hip and knee prosthetic joint implants undergoing dental procedures.

In June 2013, the Canadian Dental Association’s Position paper on Dental Patients with Total Joint Replacement agreed with the 2012 American Academy of Orthopaedic Surgeons / American Dental Association systemic review on antibiotic prophylaxis in bacteremia in patients with joint replacements – that there was no direct evidence that dental procedures cause orthopaedic implant infections. The Canadian Dental Association took the position that routine antibiotic prophylaxis is not indicated for dental patients with total joint replacements, nor for patients with orthopaedic pins, plates and screws. This differed slightly from the ADA/AAOS clinical practice guideline which advised dentists to consider discontinuing the practice of routinely prescribing prophylactic antibiotics for dental patients with total joint replacements.

In 2014, a panel of experts convened by the ADA Council on Scientific Affairs was assembled which developed an evidence-based clinical practice guideline for dental practitioners titled The use of prophylactic antibiotics prior to dental procedures in patients with prosthetic joints. This was intended to clarify the “Prevention of Orthopaedic Implant Infection in Patients Undergoing Dental Procedures: Evidence-based Guideline and Evidence Report,” which was developed and published by the American Academy of Orthopaedic Surgeons and the American Dental Association (the 2012 Panel). The clinical practice guideline was released in January 2015 in the Journal of the American Dental Association. This guideline concluded that evidence failed to demonstrate an association between dental procedures and prosthetic joint infection or any effectiveness for antibiotic prophylaxis. This information, in conjunction with the potential harm from antibiotic use, led to the conclusion that, in general, using antibiotics before dental procedures is not recommended to prevent prosthetic joint infection (with the caveat that the dental practitioner and patient should consider possible clinical circumstances that may suggest the presence of a significant medical risk in providing dental care without antibiotic prophylaxis). The guideline also concluded that additional case-control studies were needed to increase the level of certainty in the evidence to a level higher than moderate.

In June/July 2016, the Canadian Orthopaedic Association, the Canadian Dental Association, and the Association of Medical Microbiology and Infectious Disease released an evidence-based Consensus Statement that concluded that routine antibiotic prophylaxis is not indicated for dental patients/clients with total joint replacements, nor for patients/clients with orthopaedic pins, plates, and screws.

In September/October 2016, the American Association of Orthopaedic Surgeons and the American Dental Association adopted appropriate antibiotic prophylaxis use criteria that allowed for prophylaxis in a limited subset of patients/clients with joint replacements who have certain co-morbidities and/or past history of peri-prosthetic or deep prosthetic joint infections. Included in the AAOS/ADA document was adjustment of the 2007 statement of the American Heart Association on prevention of infective endocarditis to reflect removal of clindamycin and cefazolin as antibiotic prophylaxis options for joint replacement, based on more recently published literature.
Considerations for dental hygienists

Relative to the Procedures, the dental hygienist should take account of the following considerations.

1. Good oral health and hygiene status
   a. prevents disease in the mouth and other parts of the body
   b. decreases bacteremia of oral origin
   c. should be advocated to persons who
      i. have a history of joint replacement
      ii. are likely to undergo joint replacement.

2. All routine dental hygiene, including the Procedures, should be delayed for several weeks after joint replacement or revision surgery or, if doubt exists, until clearance is given by the surgeon.

3. For a patient/client with a history of one or more of the comorbidities, complications or associated conditions listed above, the dental hygienist, prior to performing any of the Procedures, should normally seek the advice of the orthopaedic surgeon, whether directly or through the family physician.

MEDICATIONS SUMMARY

Sourcing medications information

1. Adverse effect database
   - Health Canada’s Marketed Health Products Directorate
toll-free 1-866-234-2345
   - Health Canada’s Drug Product Database

2. Specialized organizations
   - US National Library of Medicine and the National Institutes of Health Medline Plus Drug Information

3. Medications considerations
   All medications have potential side effects whether taken alone or in combination with other prescription medications, or as over-the-counter (OTC) or herbal medications.

4. Information on herbals and supplements
   - US National Library of Medicine and the National Institutes of Health Medline Plus Drug Information All Herbs and Supplements

5. Complementary and alternative medicine
   - National Center for Complementary and Integrative Health

Types of antibiotics used for antibiotic prophylaxis

The 2016 Appropriate Use Criteria for the Management of Patients With Orthopaedic Implants Undergoing Dental Procedures published by the American Academy of Orthopaedic Surgeons (and endorsed by the Council on Scientific Affairs of the American Dental Association) listed antibiotics that include
1. a single oral dose of 2 g, one hour prior to the procedure, of
   - amoxicillin, a penicillin-like antibiotic
2. as a substitute for oral penicillins (such as amoxicillin) or parenteral ampicillin to avoid allergy-related side effects
   - azithromycin, a macrolide antibiotic
   - cephalaxin*, a cephalosporin antibiotic
   - clarithromycin, a macrolide antibiotic.

*Cephalosporins should not be used in a patient/client with a history of anaphylaxis, angioedema, or urticaria with penicillins (including amoxicillin and ampicillin).

Side effects of medications for antibiotic prophylaxis

See the links above to the specific medications.

THE MEDICAL AND MEDICATIONS HISTORY

The dental hygienist in taking the medical and medications history-taking should
1. focus on screening the patient/client prior to treatment decision relative to
   a. key symptoms
   b. medications considerations
   c. contraindications
   d. complications
   e. comorbidities
   f. associated conditions
2. explore the need for advice from the primary or specialized care provider(s) about the need for antibiotic prophylaxis
3. inquire about
   a. pointers in the history of significance in joint replacement, such as prior history of infection of a replaced joint
   b. symptoms possibly indicative of active infection in joint replacement, such as recent pain and swelling
   c. the patient/client’s understanding and acceptance of the need for oral healthcare
   d. medications considerations, including over-the-counter medications, herbals and supplements
   e. problems with previous dental/dental hygiene care
   f. problems with infections generally and specifically associated with dental/dental hygiene care
   g. the patient/client’s current state of health
   h. how the patient/client’s current symptoms relate to
      i. oral health
      ii. health generally
      iii. recent changes in the patient/client’s condition.

IDENTIFYING AND CONTACTING THE MOST APPROPRIATE HEALTHCARE PROVIDER(S) FOR ADVICE

Identifying and contacting the most appropriate healthcare provider(s) from whom to obtain medical or other advice pertinent to a particular patient/client

The dental hygienist should
1. record the name of the physician/primary care provider most closely associated with the patient/client’s healthcare, and the telephone number
2. obtain from the patient/client or parent/guardian written, informed consent to contact the identified physician/primary healthcare provider
3. use a consent/medical consultation form, and be prepared to fax the form to the provider
4. include on the form a standardized statement of the Procedures proposed, with a request for advice on proceeding or not at the particular time, and any precautions to be observed.

UNDERSTANDING AND TAKING APPROPRIATE PRECAUTIONS

Infection Control

Dental hygienists are required to keep their practices current with infection control policies and procedures, especially in relation to
1. the CDHO’s Infection Prevention and Control Guidelines (2019)
2. relevant occupational health and safety legislative requirements
3. relevant public health legislative requirements
4. best practices or other protocols specific to the medical condition of the patient/client.

DECIDING WHEN AND WHEN NOT TO INITIATE THE PROCEDURES PROPOSED

For a healthy patient/client there is no contraindication to the Procedures provided that any requirements for antibiotic prophylaxis are fulfilled.

The dental hygienist may postpone the Procedures pending medical advice, which may be needed if the patient/client has
1. a history of
   a. joint replacement
   b. having received antibiotic prophylaxis in connection with oral healthcare procedures or minor surgery
   c. of any of the comorbid conditions, complications and associated conditions for joint replacement that may place patients at increased risk
2. not received or complied with pre-medication as directed by the prescribing physician
3. not, where appropriate, recently or ever sought and received medical advice relative to dental procedures
4. recently changed medications, under medical advice or otherwise
5. recently experienced changes in his/her medical condition.

The vast majority of patients/clients with joint replacements do not require antibiotic prophylaxis. As per the 2016 COA/CDA/AMMI Consensus Statement, routine antibiotic prophylaxis is not indicated for dental/dental hygiene patients/clients with total joint replacements, nor for patients/clients with orthopaedic pins, plates, and screws.

DEALING WITH ANY ADVERSE EVENTS ARISING DURING THE PROCEDURES

Dental hygienists are required to initiate emergency protocols as required by the College of Dental Hygienists of Ontario’s Standards of Practice, and as appropriate for the condition of the patient/client.

First-aid provisions and responses as required for current certification in first aid.
RECORD KEEPING

Subject to Ontario Regulation 9/08 Part III.1, Records, in particular S 12.1 (1) and (2) for a patient/client with a history of joint replacement, the dental hygienist should specifically record
1. a summary of the medical and medications history
2. any advice received from the physician/primary care provider relative to the patient/client’s condition
3. the decision made by the dental hygienist, with reasons
4. compliance with the precautions required
5. all Procedure(s) used
6. any advice given to the patient/client.

ADVISING THE PATIENT/CLIENT

Healthcare policy places responsibility on a person with joint replacement for taking steps to prevent infection following surgery. The responsibility of the person includes warning any surgeon or other healthcare professional who proposes any invasive intervention or test that he or she has a history of joint replacement or has one pending.

The dental hygienist should
1. urge the patient/client to alert any healthcare professional who proposes any intervention or test
   a. that he or she has a history of joint replacement
   b. to the medications he or she is taking
2. should discuss, as appropriate
   a. the importance of the patient/client’s
      i. self-checking the mouth regularly for new signs or symptoms
      ii. reporting to the appropriate healthcare provider any changes in the mouth
   b. the need for regular oral health examinations and preventive oral healthcare
   c. oral self-care including information about
      i. choice of toothpaste
      ii. tooth-brushing techniques and related devices
      iii. dental flossing
      iv. mouth rinses
      v. management of a dry mouth
   d. the importance of an appropriate diet in the maintenance of oral health
   e. for persons at an advanced stage of a disease or debilitation
      i. regimens for oral hygiene as a component of supportive care and palliative care
      ii. the role of the family caregiver, with emphasis on maintaining an infection-free environment through hand-washing and, if appropriate, wearing gloves
      iii. scheduling and duration of appointments to minimize stress and fatigue
   f. comfort level while reclining, and stress and anxiety related to the Procedures
   g. medication side effects such as dry mouth, and recommend treatment
   h. mouth ulcers and other conditions of the mouth relating to joint replacement, comorbidities, complications or associated conditions, medications or diet
   i. pain management.
BENEFITS/HARMS OF IMPLEMENTING THE RECOMMENDATIONS

POTENTIAL BENEFITS

1. Promoting health through oral hygiene for persons who have joint replacement.
2. Reducing the risk of hematogenous seeding of bacteria onto artificial joints resulting from bacteremia arising from the Procedures by
   a. seeking advice from the appropriate specialist or primary care provider about the need for antibiotic prophylaxis when warranted
   b. generally increasing the comfort level of persons in the course of dental hygiene interventions
   c. using appropriate techniques of communication
   d. providing advice on scheduling and duration of appointments.
3. Reducing the risk that oral health needs are unmet.

POTENTIAL HARMS

1. Causing hematogenous seeding of bacteria onto artificial joints resulting from bacteremia arising from the Procedures (although most transient bacteremia of oral origin occurs outside dental/dental hygiene procedures, and the majority of prosthetic joints infections are not due to organisms found in the mouth).
2. Performing the Procedures at an inappropriate time, such as
   a. too proximate to joint replacement surgery (some orthopaedic surgeons request that their patients/clients not undergo dental procedures within 6 to 8 weeks prior to their joint replacement surgery)
   b. too soon after joint replacement surgery (all routine office-based dental hygiene, including invasive procedures, should be delayed for several weeks after joint replacement surgery or revision surgery unless clearance is given by the orthopaedic surgeon; some surgeons adopt 6 weeks post-surgery as reasonable for dental/dental hygiene procedures, with other adopting 3 to 6 months)
   c. scheduling appointments for treatment without reference to recommendations for antibiotic prophylaxis (bearing in mind that routine antibiotic prophylaxis is not indicated for dental/dental hygiene patients/clients with total joint replacements, nor for patients/clients with orthopaedic pins, plates, and screws).
3. Disturbing the normal dietary and medications routine of a person with joint replacement.
4. Inappropriate management of pain or medication.

CONTRAINDICATIONS

CONTRAINDICATIONS IN REGULATIONS

Identified in the Dental Hygiene Act, 1991 – O. Reg. 218/94 Part III

ORIGINALLY DEVELOPED

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