

Supplementary Table S1. Selected existing recommendations for antimicrobial prophylaxis during dental procedures in patients with artificial joints.

Year	Ref	Country/Society	Recommendations and selected text sections/citations	Type of recommendation
		USA		
1997	[55]	American Dental Association, American Academy of Orthopaedic Surgeons	<p>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.</p> <p>Prophylaxis should be considered for patients with total joint replacement who meet the following criteria:</p> <p><i>Patients at potential increased risk of haematogenous infection:</i></p> <p>Immunocompromised/immunosuppressed patients:</p> <ul style="list-style-type: none"> • Inflammatory arthropathies: rheumatoid arthritis, systemic lupus erythematosus • Disease-, drug- or radiation-induced immunosuppression <p><i>Other patients:</i></p> <ul style="list-style-type: none"> • Insulin-dependent (type 1) diabetes • First 2 years following joint placement • Previous prosthetic joint infections • Malnourishment • Haemophilia <p>plus at least one of the following criteria:</p> <p><i>Higher incidence of bacteraemia during/after dental procedures:</i></p> <ul style="list-style-type: none"> • Dental extractions • Periodontal procedures, including surgery, subgingival placement of antibiotic fibres/strips, scaling and root planing, probing, recall maintenance • Dental implant placement and reimplantation of avulsed 	Advisory statement

			<p>teeth</p> <ul style="list-style-type: none"> • Endodontic (root canal) instrumentation or surgery only beyond the apex • Initial placement of orthodontic bands but not brackets • Intraligamentary local anaesthetic injections • Prophylactic cleaning of teeth or implants when bleeding is anticipated 	
2003	[56]	American Dental Association, American Academy of Orthopaedic Surgeons	<p>The 2003 statement includes some modifications of the classification of patients at potential risk and of the incidence stratification of bacteraemic dental procedures, but no changes in terms of suggested antibiotics and antibiotic regimens.</p> <p><i>Patients at potential increased risk of haematogenous infection:</i></p> <p>The 1997 patient comorbidity list was extended by addition of the following:</p> <ul style="list-style-type: none"> • Malignancy • HIV infection <p>A footnote to the term ‘patients with comorbidities’ was added: “Conditions shown for patients in this category are examples only; there may be additional conditions that place such patients at risk of experiencing haematogenous total joint infection.”</p>	Advisory statement
2009	[57]	American Academy of Orthopaedic Surgeons	<p>Clinicians should consider antibiotic prophylaxis for all total joint replacement patients prior to any invasive procedure that may cause bacteraemia.</p>	Patient Safety Committee opinion
2012	[58]	American Dental Association, American Academy of Orthopaedic Surgeons	<p>Recommendation 1: The practitioner might consider discontinuing the practice of routinely prescribing prophylactic antibiotics for patients with hip and knee prosthetic joint implants undergoing dental procedures. (Grade of recommendation: limited)</p> <p>Recommendation 2: We are unable to recommend for or against the use of topical oral antimicrobials in patients with</p>	Evidence-based guidelines and evidence report

			<p>prosthetic joint implants or other orthopaedic implants undergoing dental procedures. (Grade of recommendation: inconclusive)</p> <p>Recommendation 3: 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. (Grade of recommendation: consensus)</p>	
2015	[59]	American Dental Association	<p>In general, for patients with prosthetic joint implants, prophylactic antibiotics are <i>not</i> recommended prior to dental procedures to prevent prosthetic joint infection. For patients with a history of complications associated with their joint replacement surgery who are undergoing dental procedures that include gingival manipulation or mucosal incision, prophylactic antibiotics should be considered only after consultation with the patient and orthopaedic surgeon. For assessing a patient's medical status, a complete health history is always recommended when making final decisions regarding the need for antibiotic prophylaxis.</p>	Update on evidence-based guidelines and evidence report from 2012 [58] on the basis of four case-control studies
		UK (and Canada in [60])		
2003	[61]	British Orthopaedic Association, British Dental Association	<p>Routine antibiotic prophylaxis should not be offered to all patients undergoing dental treatment.</p> <p>Antibiotic prophylaxis is advised in patients with systemic immunosuppressive disease, e.g.:</p> <ul style="list-style-type: none"> • Diabetes (types I and II) • Rheumatoid arthritis • Haemophilia • Malignancy (either from the immunosuppressive effects of the malignancy or those of treatment) <p>Prophylaxis is clearly indicated when there is overt oral sepsis, e.g., any kind of pre-existing oral infection that could</p>	National guidelines and opinion

			<p>lead to metastatic spread.</p> <p>Prophylaxis should be considered when dental treatment is invasive, complex and of long duration (≥ 45 minutes).</p> <p>If there is concern about a dental-induced bacteraemia, then chlorhexidine mouthwash 1–2 minutes before the procedure is likely to be more effective than antibiotic prophylaxis.</p>	
2015	[60]	Review article	<p>The use of antibiotic prophylaxis without risk stratification is expensive and may contribute to antibiotic resistance and adverse drug reactions.</p> <p>Most authors support the use of antibiotic prophylaxis in high-risk patients. There is need for consensus regarding antibiotic prophylaxis before dental procedures in patients with in situ lower limb prostheses.</p>	Conclusion of review
		Australia and New Zealand		
2003	[62]	New Zealand Dental Association	<p>All patients scheduled for prosthetic joint replacement should have a dental examination, and treatment as required, to reduce and remove sources of oral bacteraemia.</p> <p>Patients with a prosthetic joint replacement should have a regular dental examination, and treatment as required, to remove sources of oral bacteraemia.</p> <p>Routine use of antibiotic prophylaxis for all patients with a prosthetic joint replacement is not justified.</p> <p>Antibiotic prophylaxis could be considered for dental procedures producing a significant bacteraemia in patients at increased risk of prosthetic joint replacement infection.</p> <p><i>Patients at increased risk of prosthetic joint infection:</i></p> <ul style="list-style-type: none"> • Inflammatory arthropathies, e.g., rheumatoid arthritis, systemic lupus erythematosus • Immunocompromised and immunosuppressed 	Code of practice

			<ul style="list-style-type: none"> • Diabetes mellitus • Steroid replacement therapy • Malnourishment • Haemophilia • Previously infected prosthetic joints • Prosthetic joint replacement surgery within the past 2 years <p><i>Dental procedures producing a significant bacteraemia:</i></p> <ul style="list-style-type: none"> • In general, any procedure that causes bleeding from the gingiva, mucosa or bone • Periodontal procedures, including probing, scaling, root planing and surgery • Endodontic instrumentation or surgery beyond the apex • Application of matrix bands below the gingival margin • Subgingival placement of gingival retraction cords/strips • Placement of orthodontic bands, but not brackets • Intraligamentary local anaesthetic injections • Reimplantation of avulsed teeth and repositioning of teeth after trauma • Oral surgical procedures, including biopsy procedures and raising of mucosal flaps • Surgical drainage of dental abscesses • Extraction of teeth 	
2005	[50]	Arthroplasty Group, Australian Orthopaedic Association Review article	<p>Prior to placement of the first artificial joint:</p> <ul style="list-style-type: none"> • Referral to a dental practitioner for comprehensive dental examinations, including radiographs • Appropriate treatments as indicated to make the patient orally fit • On request, dentist gives a written opinion that the patient is orally fit with no evidence of oral infection • Arrangements made for regular dental review <p>Dental problem in the first 3 months following artificial joint placement:</p>	Expert recommendation, conclusion of review

			<ul style="list-style-type: none"> • <i>Infection with abscess formation:</i> Urgent and aggressive treatment of the abscess. Remove the cause (exodontics or endodontics) under antibiotic prophylaxis. • <i>Pain:</i> Provide emergency dental treatment for pain. Antibiotics are indicated if a high- or medium-risk dental procedure is performed. • <i>Non-infective dental problem without pain:</i> Defer non-emergency dental treatment until 3 to 6 months after prosthesis replacement. <p>Dental treatment ≥ 3 months in a patient with a normally functioning artificial joint:</p> <ul style="list-style-type: none"> • Routine dental treatment including extraction: No antibiotic prophylaxis required • Regular dental review desirable <p>Dental treatment for patients with significant risk factors for artificial joint infection</p> <p><i>Immunocompromised patients include:</i></p> <ul style="list-style-type: none"> • Those with insulin-dependent diabetes • Those taking immunosuppressive treatment for organ transplants or malignancy • Those with systemic rheumatoid arthritis • Those taking systemic steroids (e.g., patients with severe asthma, dermatological problems) <p>Consultation with the patient's treating physician is recommended.</p> <p><i>Failing, particularly chronically inflamed, artificial joints:</i> Consultation with the patient's treating orthopaedic surgeon is recommended. Defer non-essential dental treatment until orthopaedic problem has resolved.</p> <p><i>Previous history of infected artificial joints:</i></p> <ul style="list-style-type: none"> • Routine non-surgical dental treatment – no prophylaxis 	
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			<p>indicated.</p> <ul style="list-style-type: none"> • Antibiotic prophylaxis recommended for all extractions, deep periodontal scaling • Regular dental reviews mandatory <p><i>Established infection by oral organisms on an artificial joint:</i></p> <ul style="list-style-type: none"> • Urgent referral to dentist to determine and eliminate any oral cause • Aggressive treatment by removal of the cause, extraction or endodontics under antibiotic prophylaxis 	
		France		
2011/ 2012	[51]	<p>French health authorities (AFSSAPS/ANSM) Review article</p> <p>Experts on osteo-articular prosthetic infection (OAPI)</p>	<p>No antibiotic prophylaxis in oro-dental procedures in joint implant bearers, whatever the age of the implant, the patient's health status or the type of procedure, putting the accent rather on the quality of oro-dental hygiene.</p> <p>The members of the latest consensus conference on the management of OAPI came to no decision, but did advise treating any infection site before joint replacement, particularly in the case of possible dental infection sites (decay, parodontopathy and especially dental abscess, etc.)</p> <p>In the absence of proven efficacy of antibiotic prophylaxis covering oro-dental surgery in joint implant bearers, regardless of immune status, and in the absence of any harmful effect of abstention, French experts have recommended ceasing such protocols in favour of guidelines for optimizing oro-dental hygiene.</p>	<p>Advisory statement</p> <p>Expert opinion recommendation</p>
		Italy		
2009	[63]	Review article	<p>No evidence supports the prescription of antibiotic prophylaxis in healthy individuals.</p> <p>General dental practitioners, family physicians and patients should be knowledgeable about the potential role of this transient bacteraemia in the development of distant</p>	Conclusion of review

			<p>complications, as well as the importance of maintaining oral health through adequate preventive measures (mechanical and chemical control of bacterial plaque, diet, prompt treatment of dental/periodontal lesions).</p> <p>In the presence of further systemic diseases, administration of antibiotic prophylaxis should be considered on the basis of a careful evaluation of risks and benefits, after a multi-specialist consultation (i.e., general practitioner, cardiologist, nephrologist, diabetologist, immunologist, orthopaedist and neurologist).</p>	
		Switzerland		
2005	[64]	Swiss Society for Infectious Diseases Review	<p>No antibiotic prophylaxis is recommended.</p> <p>Consider risk groups on the basis of a single-patient evaluation</p> <p><i>Patient risk group:</i></p> <ul style="list-style-type: none"> • Age of joint prosthesis ≤12 months • Rheumatoid arthritis with immunosuppressive therapy • Rheumatoid arthritis with additional risks (e.g., diabetes mellitus, revision prosthesis) • Haemophilia <p><i>Intervention-associated risks:</i></p> <ul style="list-style-type: none"> • Long duration of dental treatment (≥45 minutes) • Dental procedure in case of poor condition of gingiva 	Expert opinion, conclusion of review
2010	[65]	CME article, review	<p>Routine antibiotic prophylaxis is not recommended and should be clearly distinguished from the antibiotic treatment required in the case of established oral cavity infection.</p> <p>Constant optimal oral and dental hygiene is more important in terms of prevention and should be routinely recommended to every patient with a joint arthroplasty.</p>	Expert opinion, conclusion of review

This list is not exhaustive.