Antibiotic Prophylaxis for Bacteraemia in Patients with Joint Replacements

This Information Statement is based on the current recommendations from the American Academy of Orthopaedic Surgeons (AAOS) and represents a review of the currently available literature.

More than 60,000 total joint arthroplasties are performed annually in Australia, of which approximately 7 percent are revision procedures.

Deep infections of total joint replacements usually result in failure of the initial operation and the need for extensive revision. Due to the use of peri-operative antibiotic prophylaxis and other technical advances, deep infection occurring in the immediate postoperative period resulting from intra-operative contamination has been markedly reduced in the past 20 years.

Bacteraemia from a variety of sources can cause haematogenous seeding of bacteria onto joint implants, both in the early postoperative period and for many years following implantation.

It is likely that bacteraemia 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. Practitioners should maintain a high index of suspicion for any change or unusual signs and symptoms (e.g. pain, swelling, fever, joint warm to touch) in patients with total joint prostheses. Any patient with an acute prosthetic joint infection should be vigorously treated with elimination of the source of the infection and appropriate therapeutic antibiotics.

Patients with joint replacements who are having invasive procedures or who have other infections are at increased risk of haematogenous seeding of their prosthesis. Patients with pins, plates and screws, or other orthopaedic hardware that is not within a synovial joint are not at increased risk for haematogenous seeding by microorganisms.

Prophylactic antibiotics prior to any procedure that may cause bacteraemia are chosen on the basis of its activity against endogenous flora that would likely to be encountered from any secondary other source of bacteraemia, its toxicity, and its cost. In order to prevent bacteraemia, an appropriate dose of a prophylactic antibiotic should be given prior to the procedure so that an effective tissue concentration is present at the time of instrumentation or incision in order to protect the patient’s prosthetic joint from a bacteraemia induced peri-prosthetic sepsis. Current prophylactic antibiotic recommendations for these different procedures are listed in Table 2.
**Routine dental treatment after 3 months in a patient with a normally functioning artificial joint requires no antibiotic prophylaxis unless a reason to suspect a bacteraemic episode is present.**

† If a tourniquet is used the entire dose of antibiotic must be infused prior to its inflation.

This statement 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 bacteraemias may occur. The treating clinician is ultimately responsible for making treatment recommendations for his/her patients based on the clinician’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. Practitioners must exercise their own clinical judgment in determining whether or not antibiotic prophylaxis is appropriate.
References:

1. Number of Patients, Number of Procedures, Average Patient Age, Average Length of Stay - National Hospital Discharge Survey 1998-2005. Data obtained from: U.S. Department of Health and Human Services; Centers for Disease Control and Prevention; National Center for Health Statistics.


5. Guntheroth WG: How important are dental procedures as a cause of infective endocarditis? Amer J Cardiol 1984;54:797-801.


