National Institute for Health and Clinical Excellence: prophylaxis against infective endocarditis

Summary and list of all recommendations on antimicrobial prophylaxis against infective endocarditis in adults and children undergoing interventional procedures – issued March 2008

Adults and children with structural cardiac defects at risk of developing infective endocarditis

Healthcare professionals should regard people with the following cardiac conditions as being at risk of developing infective endocarditis:

- acquired valvular heart disease with stenosis or regurgitation
- valve replacement
- structural congenital heart disease, including surgically corrected or palliated structural conditions, but excluding isolated atrial septal defect, fully repaired ventricular septal defect or fully repaired tetralogy of Fallot arteriosus, and closure devices that are judged to be endothelialised
- previous infective endocarditis
- hypertrophic cardiomyopathy

Patient advice

Healthcare professionals should offer people at risk of infective endocarditis clear and consistent information about prevention, including:

- the risks of undergoing invasive procedures, including urological, gynaecological and obstetric procedures, and childbirth
- the benefits and risks of antibiotic prophylaxis in this setting.

Prophylaxis against infective endocarditis

Antibiotic prophylaxis against infective endocarditis is NOT recommended:

- for people undergoing dental procedures
- for people undergoing non-dental procedures at the following sites:
  - upper and lower respiratory tract
  - genitourinary tract; this includes urological, gynaecological and obstetric procedures, and childbirth
  - upper and lower respiratory tract; this includes ear, nose and throat procedures and bronchoscopy.

Chlorhexidine mouthwash should not be offered as prophylaxis against infective endocarditis to people at risk of infective endocarditis undergoing dental procedures.

Infection

Any episodes of infection in people at risk of infective endocarditis should be investigated and treated promptly to reduce the risk of endocarditis developing.

If a person at risk of infective endocarditis is receiving antimicrobial prophylaxis because they are undergoing a gastrointestinal or respiratory procedure at a site where there is a suspected infection, the person should receive an antibiotic that covers organisms that cause infective endocarditis.

Overview

Antimicrobial prophylaxis against infective endocarditis in adults and children undergoing interventional procedures

Interventricular endocarditis (IE) is an inflammation of the endocardium, particularly affecting the heart valves, caused mainly by bacteria, and sometimes by other infectious agents. It is a rare condition, with an annual incidence of fewer than 10 per 100,000 cases in the normal population. Despite advances in diagnosis and treatment, IE remains a life-threatening disease with significant mortality (approximately 20%) and morbidity.

The predisposing factors for the development of IE have changed in the past 50 years, mainly with the decreasing incidence of rheumatic heart disease and the increasing impact of prothetic heart valves, nosocomial infection and intra-venous drug misuse. However, the potentially serious impact of IE on the individual has not changed (Prestegard et al. 2006).

Published medical literature contains many case reports of IE being prevented by an interventional procedure, most frequently dentistry. IE can be caused by several different organisms, many of which could be transferred into the blood during an interventional procedure. Streptococcus, Staphylococcus aureus and enterococci are important causative organisms.

It is accepted that many cases of IE are not caused by interventional procedures (Brincat et al. 2006), but with such a serious condition it is reasonable to consider that any cases of IE that can be prevented should be prevented. Consequently, since 1955, antibiotic prophylaxis that aims to prevent endocarditis has been used in at-risk patients. However, the evidence base for the use of antibiotic prophylaxis has relied heavily on extrapolation from animal models of the disease (Pallach 2005) and the applicability of these models to people has been questioned. With a rare but serious condition such as IE, it is difficult to plan and execute research in a way that gives clearly defined outcomes.

Consequently, the evidence available in this area is limited, being drawn chiefly from observational (case–control) studies.

The rationale for prophylaxis against IE is that IE is a disease that can cause endocarditis, certain interventional procedures cause bacteriaemia with organisms that can cause endocarditis, these bacteria are usually sensitive to antibiotics; therefore, antibiotics should be given to patients with predisposing heart disease before the intervention that may cause bacteremia (Durack 1995).

For prophylaxis to be effective, certain requirements must be fulfilled: identification of patients at risk, identification of the procedures that are liable to provoke bacteremia, and choice of a suitable antibiotic regimen. There should also be a favourable balance between the risks of side-effects from prophylaxis and development of the disease (Moreillon et al. 2004). Underlying these principles is the assumption that antibiotic prophylaxis is effective for the prevention of IE in dental and non-dental procedures. However, many researchers consider this assumption to be not proven (Prestegard et al. 2006), which has led to calls to significantly reduce the use of antibiotic prophylaxis in this setting.

This shift in opinion is reflected in national and international clinical guidelines for prophylaxis against IE. Guidelines used to recommend antibiotic prophylaxis for IE patients with a wide range of cardiac conditions have given way to a range of interventional procedures, both dental and non-dental. They now tend to recommend that only those with one of a small number of high-risk cardiac conditions should receive prophylaxis when they undergo a limited number of specified dental procedures.

The full report (CG64 Prophylaxis against infective endocarditis: NICE guidance) and guidance for patients can be seen at: www.nice.org.uk