The new NICE guidance on antimicrobial prophylaxis against infective endocarditis

New guidance from NICE on antimicrobial prophylaxis against infective endocarditis offers best practice advice that is vastly different from current practice. Nick Cooley discusses the new NICE guideline and compares it with previous guidance from other sources.

The latest guideline produced by the National Institute for Health and Clinical Excellence (the second “short” guideline) has been developed to offer best practice advice to the NHS in England, Wales and Northern Ireland on antimicrobial prophylaxis against infective endocarditis (IE) before an interventional procedure. It caters for adults and children in primary dental care, primary medical care, secondary care and care in community settings.1

In contrast to other recently published national and international guidelines,2-3 the NICE guideline explicitly considers the likely cost-effectiveness as well as the clinical effectiveness of antibiotic prophylaxis. As a result, the guidance represents a major shift from current accepted practice and therefore it is essential that both appropriate and consistent information is provided to healthcare professionals and patients alike.

The following commentary explains some of the rationale for these decisions and highlights the key recommendations.

What is infective endocarditis?
Endocarditis is a term that describes inflammation and/or infection of the endocardium (heart lining), and particularly the heart valves. However, other structures may also be involved, ie, non-valvular areas or implanted mechanical devices (eg, artificial heart valves, pacemakers, implantable defibrillators).

Infective endocarditis is predominantly caused by bacteria (Streptococcus, Staphylococcus aureus and enterococci) as these micro-organisms are known to cause endocarditis. However, fungi or other infectious micro-organisms can also be responsible. It is a rare condition with an annual incidence of approximately four people per 100,000 population.4 However, it is associated with significant morbidity and mortality (approximately 20 per cent) affecting three times more males than females.

Until the late 1970s, rheumatic heart disease and congenital cardiotrophies were the most common predisposing factors for infective endocarditis. With the eradication of rheumatic disease, the incidence of infective endocarditis due to this disease gradually disappeared, but was instead replaced by the emergence of infective endocarditis due to other factors, namely, prosthetic heart valves, healthcare-acquired infection and intravenous drug misuse. However, the potentially serious impact of infective endocarditis on the individual has not changed. This has led to various risk stratification attempts by numerous guideline groups, resulting in some confusion.

In an effort to simplify this NICE now recommends that patients are considered as being either at increased risk or not. The cardiac conditions associated with a patient being at increased risk of developing infective endocarditis are:

- 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 patent ductus arteriosus, and closure devices that are judged to be endothealised
- Previous infective endocarditis
- Hypertrophic cardiomyopathy

Previous guidelines
In 1955 the American Heart Association’s committee on rheumatic fever outlined guidelines featuring antibiotic prophylaxis in the prevention of infective endocarditis, based on consensus opinion at the time and extrapolation from animal models (the applicability of these models to humans has been questioned).5

Since then, both national and international guidelines have, in an attempt to prevent this disease, continued to recommend antibiotic prophylaxis before dental and certain non-dental interventional procedures to patients deemed at increased risk of developing infective endocarditis, although over the years there have been dramatic changes in both the procedures for which antibiotic prophylaxis has been recommended and the type, duration, dosage and route of antibiotic given.

Previous guidelines have supported the use of prophylactic antibiotics on the argument that endocarditis usually follows a bacteremia and that certain interventional procedures may cause a bacteremia with organisms that are known to cause endocarditis. These bacteria are usually sensitive to antibiotics and therefore antibiotics should be given to patients with predisposing heart disease before procedures that may cause bacteremia.6

In the most recently published guidelines by the British Society for Antimicrobial Chemotherapy and the American Heart Association,7 these traditional clinical beliefs have been challenged, highlighting the low prevalence of bacteremias that arise from everyday activities such as chewing and tooth-brushing, the lack of association between episodes of infective endocarditis and prior interventional procedures and the lack of efficacy of antibiotic prophylaxis regimens.

Key recommendation
These factors, in combination with the heightened awareness of unnecessary antibiotic use and associated resistance, and the recognised risks that patients are exposed to when administered antibiotics (ie, adverse events related to antibiotic use, such as anaphylaxis) have led to the NICE guideline’s key recommendation that antibiotic prophylaxis is no longer generally recommended before dental procedures.

Become involved with NICE
The Royal Pharmaceutical Society is actively working to increase the profile of and properly reflect pharmacy issues within National Institute for Health and Clinical Excellence guidance. To do this, we need to input into NICE consultations and/or participate in the development groups. Pharmacists are already members of most NICE guideline development groups, but NICE regularly requires pharmacists with clinical experience and specialist knowledge to participate in these groups. If you work in a particular specialty, I would highly recommend participating in the consultation process and applying to sit as a member of a guideline development group when the opportunity arises.

If you are interested in getting involved in NICE guideline development groups or consultations, contact Meghna Joshi at the Society for further information (tel 020 7572 2612; e-mail meghna.joshi@rpsgb.org).

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Sources of patient information on infective endocarditis

Useful patient information can be found in the NICE information leaflet “Understanding NICE guidance: preventing infective endocarditis”, available from the NICE website (www.nice.org.uk). Other useful sources of patient literature include the following:

- The British Heart Foundation (www.bhf.org.uk)
- The British Dental Health Foundation (www.dentalhealth.org.uk)
- The Children’s Heart Foundation (www.childrens-heart-fed.org.uk)
- The Faculty of General Dental Practice (UK) lay advisory group (www.fgdp.org.uk/patient_info)
- The Grown Up Congenital Heart Patients Association (www.guch.org.uk).

References

5. Wilson W, Taubert K, Gewitz M, Lockhart PB, Baddour LM, Levison M, et al. Prevention of infective endocarditis: guidelines from the American Heart Association; a guideline from the American Heart Association Atherosclerotic, Rheumatic, and Kawasaki disease committee, and the Royal College of Physicians recommended using prophylactic chlorhexidine mouthwash. However, following a detailed literature search, it was demonstrated that the use of chlorhexidine in this manner did not significantly reduce the level of bacteraemia following dental procedures. The guideline therefore states that it should not be offered as prophylaxis to people at increased risk of infective endocarditis undergoing dental procedures.

Patient advice and education

One area that should not be overlooked is that of patient advice and education. These guidelines differ dramatically from what many patients have been told for many years and so may impact hugely on their expectations. Thus it is vital that clear and consistent information is offered to all people considered at increased risk of infective endocarditis and in particular the need for information and support to help achieve and maintain good oral health. The NICE guideline recognises the following topics as important discussion points:

- The benefits and risks of antibiotic prophylaxis and an explanation of why it is no longer routinely recommended
- The importance of maintaining good oral hygiene
- Symptoms that may indicate infective endocarditis and when to seek expert advice
- The risks of undergoing invasive procedures, including non-medical procedures such as body piercing or tattooing

Some sources of useful patient information on infective endocarditis are shown in the Panel above.

Summary

In summary, these guidelines recommend that antibiotic prophylaxis solely to prevent IE should not be given to people who are at increased risk of IE when they undergo dental and non-dental procedures. This is a vast shift from current practice. Ensuring that patients and clinicians are aware of the evidence for this change will be the largest hurdle.

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