

# Study supports the use of antibiotic prophylaxis in high-risk dental patients

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New research has revealed the impact a change in US guidelines had on the prescribing of antibiotic prophylaxis (AP) to prevent a life-threatening heart condition infective endocarditis (IE) in patients before

undergoing invasive dental treatment.

The findings of the international research provide further evidence that the UK's National Institute of Health and Care Excellence (NICE) were wrong to call for a complete ban on the use of AP before invasive dental procedures – even for those considered to be at high risk of IE such as patients with artificial or repaired heart valves or a previous history of IE.

The study is the largest and most comprehensive research into the 2007 American Heart Association's (AHA) recommendations that AP should continue to be given to patients at high risk of developing IE, but not to those at moderate risk.

The research showed a large fall in AP prescribing for those at moderate risk of IE (64 percent). However, it also identified a concerning fall in AP prescribing to those at high risk (20 percent) – despite the AHA's recommendation that high-risk individuals should continue to receive AP before invasive dental treatment.

In parallel, the study also identified a significant increase in IE (177 percent) in those at high risk but only a barely significant increase in those at moderate risk.

Lead author, Professor Martin Thornhill from the University of Sheffield's School of Clinical Dentistry, said: "Although the data do not prove a cause-effect relationship between AP reduction and IE increase, they are very supportive of the AHA recommendation to give AP to those at high risk but not to those at moderate risk of endocarditis."

"It also provides further evidence that the 2008 NICE recommendation that AP should cease completely in the UK, was probably wrong and should be changed."

Professor Thornhill added: "Current NICE guidance on the use of AP to prevent IE is confusing and unhelpful for clinicians and patients, and probably wrong."

"In the absence of clear and sensible advice from NICE, the recent attempt by the Scottish Dental Clinical Effectiveness Program (SDCEP) to provide advice for dentists about how to implement the NICE guidelines – effectively suggesting they follow the AHA recommendations, is very welcome."

IE is a serious infection of the heart valves with high morbidity and mortality – 30 percent of people die within a year of being diagnosed. Previous studies have shown that approximately 40 percent of cases are likely to have been caused by bacteria from the mouth.

A large number of people with pre-disposing cardiac conditions are at increased risk of IE and some patients, for example those with prosthetic or repaired heart valves, previous history IE or certain congenital heart conditions, are at high risk of developing IE.

Consultant Cardiologist and co-author of the study, Mark Dayer from Taunton and Somerset NHS Trust, said: "The recent implementation advice by SDCEP is a timely recognition that the patient has the right to be told the arguments both for and against prophylaxis and decide whether or not they wish to take it. To my mind, the data in this study further supports the use of prophylaxis in patients at high risk of endocarditis, as recommended in America and across the rest of Europe."

Since the 1950s, the main method for preventing IE world-wide has been to give those at increased risk AP before invasive dental and medical procedures.

A lack of evidence for the efficacy of AP, concerns about the risk of adverse reactions and the development of antibiotic resistance has led guideline committees to gradually reduce the number of situations where AP is recommended.

In 2008, however, NICE recommended the complete cessation of AP in the UK, despite a lack of evidence for or against AP efficacy.

In contrast the majority of guidelines committees across the world, including the American Heart Association (AHA), recommended that individuals at high risk of IE should continue to receive AP but it should stop for those at moderate risk.

In 2015, research conducted by Professor Thornhill and his team published in *The Lancet* ([doi.org/10.1016/S0140-6736\(14\)62007-9](https://doi.org/10.1016/S0140-6736(14)62007-9)), found that the 2008 change in NICE guidelines had led to an 89 percent fall in AP prescribing in the UK.

This pioneering research also showed there had been an increase of 35 IE cases per month since the guideline change. As a result, NICE reviewed their guidance but continued to recommend against AP.

The new study provides further evidence to support the advice given by the AHA, and most other guideline committees around the world, that those at high risk of IE undergoing invasive dental procedures should receive AP. It also supports the advice recently published by the Scottish Dental Clinical Effectiveness Program (SDCEP), about how to implement the NICE guidelines – which tells dentists to discuss and offer AP to patients at high risk of IE, just like the AHA guidelines.

The results of the study will be published online in the *Journal of the American College of Cardiology* (JACC).

**More information:** Martin H. Thornhill et al. Antibiotic Prophylaxis and Incidence of Endocarditis Before and After the 2007 AHA Recommendations, *Journal of the American College of Cardiology* (2018). [DOI: 10.1016/j.jacc.2018.08.2178](https://doi.org/10.1016/j.jacc.2018.08.2178)

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