

# THE PROBE

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## Study proves link between gum and heart disease

By Hazel Swain

**A** NEW study carried out by scientists from the University of Bristol, working with the Royal College of Surgeons in Ireland, have found that bacteria entering the bloodstream via sore gums and depositing a clot-forming protein may prove a long considered link between gum disease and heart disease.

The research suggests that it is the *Streptococcus* bacteria, which is known to be responsible for causing tooth plaque and gum disease, that enters the bloodstream and forms a protein known as PadA, forcing platelets in the blood to stick together and clot.

Professor Howard Jenkinson, Professor of Oral Microbiology at the University of Bristol who lead the research, said "Our expertise lies in the cultivation of microbes from the mouth and in the study of cardiovascular diseases. The tiny cell fragments that circulate in the blood, named platelets, are responsible in the main for blood clotting. We have found that certain bacteria from the mouth can activate platelets, tricking them into clotting."

When asked about further studies which would be carried out on the relationship between gum disease and heart disease, Prof Jenkinson explained, "There have been recent studies in the Netherlands on subjects with or without gum disease, and it is very interesting to note that in

The link between gum disease and heart disease has long been recognised, but a new study has revealed a link between bacteria entering the bloodstream and a clot-forming protein. *The Probe* investigates...

those with gum disease the platelets are very sensitive to activation. This would mean that it was even more important in those subjects with gum disease to watch out for potential cardiovascular problems, and these subjects could in fact be further monitored."

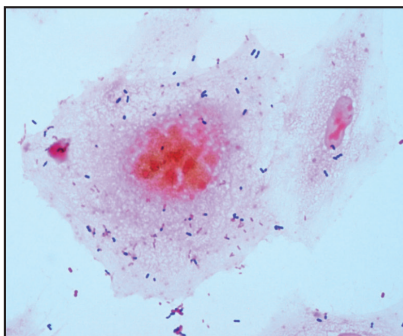
### Further emphasis

Prof Jenkinson believes that the new research will further emphasise the link between oral health and overall health. "Longer term we believe that it will be more recognised generally that bacteria in the mouth can be responsible not just for

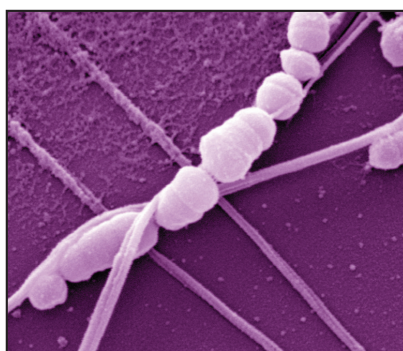
A spokesperson for the DoH, added, "This very interesting study contributes to the growing body of evidence linking periodontal disease with cardiovascular disease, which has been developing over two decades. So, while the message may not be new to patients and may not automatically prompt a significant increase in dental attendance, we would always encourage patients to visit their dentists for regular check-ups.

"Good oral health is an integral part of good general health. Many of the factors which influence heart disease also influence oral health, including lifestyle, diet and social deprivation.

Now there is sufficient evidence for dentists to start a dialogue with their patients about the possible risks of poor gum health for systemic health



Above: The bacteria attaching to a human cell from the mouth  
Below: The *Streptococcus* attaching to collagen



tooth decay and gum disease, but also for diseases of the circulation. The dental profession is already aware that some of these bacteria can be associated with infective endocarditis (formation of vegetations on the heart valves of susceptible people). But it may become more important to the profession that they recommend more strongly to subjects that they keep a healthy mouth."

Prof Jenkinson continued, "Feeling good about your mouth, your teeth, gums and breath, gives more confidence to a person, and in turn has a psychological effect on overall well-being. Also, having a clean mouth in terms of lack of dental plaque probably reduces the potential risk of bacteria getting into the blood stream. Looking after your health means also looking after your teeth and gums."

### Welcome research

The research has been welcomed by both the British Dental Health Foundation (BDHF), which constantly encourages the public to brush their teeth twice daily, and the Department of Health.

Dr Nigel Carter, chief executive of the BDHF, said, "Although more research does need to be done, this study, which is one of the first to demonstrate a causal link between gum disease and heart disease, may impact the advice dentists give their patients currently. Now there is sufficient evidence for dentists to start a dialogue with their patients about the possible risks of poor gum health for systemic health which may motivate more people to take better care of their oral health."

"It is difficult to answer the question as to whether infection derived from the mouth directly causes cardiovascular disease. There are other possible explanations of the link between oral infections and systemic diseases, that do not directly involve the bacteria themselves, but focus more upon the nature, efficacy and proportionality of the host's response to those bacteria."

### Disease levels are underestimated

As this link between gum disease and heart disease comes to light, other research carried out in America has shown that the number of US adults with periodontal disease is significantly higher than originally thought.

The study, published in the *Journal of Dental Research* and carried out by the Centers for Disease Control and Prevention (CDC) and the American Academy of Periodontology (AAP), revealed that a previous National Health and Nutrition Examination Survey (NHANES) had underestimated the level of adults affected by up to 50 per cent.

Commenting on both studies, the BDHF called for the UK population to become more aware of the prevalence of the disease. Dr Carter said, "The study shows that gum disease is a bigger problem than we previously thought and, although this news comes from across the Atlantic, it could well apply to us here in the UK as well."

He added, "As a profession, we have recognised for many years that more teeth are lost in adults through periodontal disease than decay, but this message does not always get through to our patients (...). Patients need to be able to recognise what constitutes good oral health, and what signals a potential problem in the mouth other than a painful tooth."

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