

VANDA PLAYFORD

A breeding ground for staphylococci?

bacterial count was 69 (range 0-500) colony forming units per stethoscope.

Cleaning with an alcohol soaked swab was strikingly effective: six of the 13 stethoscopes had a bacterial

count >20 colony forming units before cleaning (range 23-400); in these the mean reduction in the bacterial count after cleaning was 97% (range 87%-100%).

Comment

These results confirm that doctors' stethoscopes are often contaminated with staphylococci and as such are a potential vector of infection. This contamination is greatly reduced by simple cleaning. Stethoscopes should be cleaned frequently as an adjunct to hand-washing, especially in units where there are outbreaks of methicillin resistant *S aureus* or where there are patients with increased susceptibility to staphylococcal infections.

- 1 Thompson RL, Cabezudo I, Wenzel R. Epidemiology of nosocomial infections caused by methicillin resistant *Staphylococcus aureus*. *Ann Intern Med* 1982;97:309-17.
- 2 Waldvogel FA. *Staphylococcus aureus* (including toxic shock syndrome). In: Mandell GL, Douglas RG, Bennet JE. *Principles and practices of infectious diseases*. 3rd ed. Edinburgh: Churchill Livingstone, 1990:1489-508.
- 3 Gerken A, Cavanagh S, Winner HI. Infection hazard from stethoscopes in hospital. *Lancet* 1972;i:1214-5.
- 4 Aycliffe GA, Brumfit W, Casewell MW, et al. Revised guidelines for the control of epidemic methicillin-resistant *Staphylococcus aureus*. *J Hosp Infect* 1990;16:351-77.
- 5 Aycliff GA, Lowbury EJJ, Geddes AM, Williams JD. Decontamination of the environment, equipment and the skin. In: *Control of hospital infection—a practical handbook*. 3rd ed. London: Chapman and Hall Medical, 1992: 78-114.

O little wolves of Leeuwenhoek

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At the end of the seventeenth century, when the medical establishment ascribed all disease to an imbalance of the four humours, a brilliant mind proposed that one particular condition could be caused by "little wolves" so small that they could be seen only through his newly invented microscope. This brilliant mind did not belong to Robert Koch but to a Dutch amateur naturalist and lens maker, Anthony Leeuwenhoek. Most of us know Leeuwenhoek as the inventor of a microscope, but that was mere gadgetry; he deserves far more credit for one of the greatest eureka's in medical history.

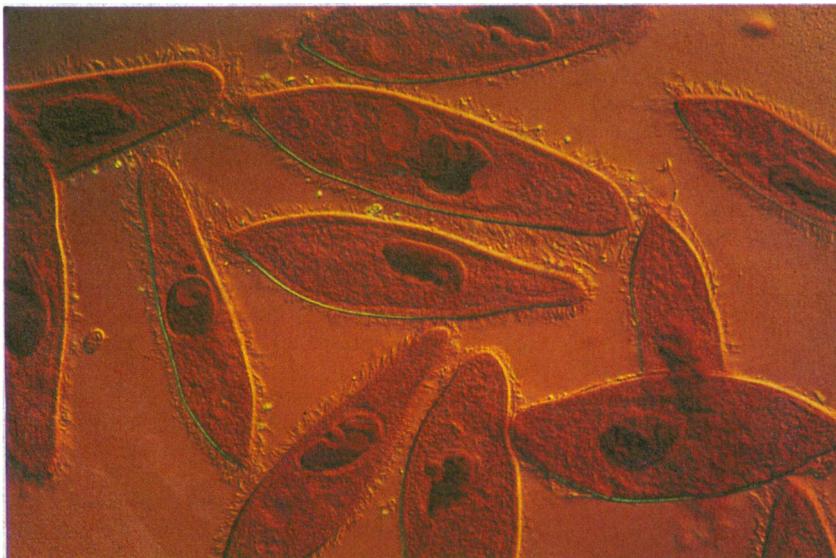
Leeuwenhoek made his observations in 1692, while studying corn dust. He published his initial reports of "little wolves" in Dutch, without any press conference,

and only the perspicacity of Bernadino Ramazzini brought his work to the attention of the rest of Europe. Ramazzini was also interested in corn dust, believing it to be the cause of premature dropsy and death among sifters and measurers of grain. After discovering Leeuwenhoek's work, Ramazzini commented:

I have often wondered how so noxious a dust can come from grain as wholesome as wheat, and I began to suspect that in that dust there must lurk minute worms imperceptible to our senses and that they are set in motion by the sifting and measuring of the grain and broadcast by the air. . . . The great Anthony Leeuwenhoek records that with his microscope he observed in corn certain minute worms which he appropriately calls "wolves" [a term drawn from the science of alchemy, used to describe aggressive substances]. So we may well believe that it is a breed of worms that so grievously afflicts these workers.¹

Ramazzini completed his work on occupational diseases in 1713; a Latin edition of Leeuwenhoek's work describing the "wolves" had been published a few years before.

We do not agree, at present, that extrinsic allergic alveolitis is caused by little wolves—or, as once thought, paramoecium. This, however, should not detract from our appreciation of the inspiration that forged the first link between inhaled small organic particles and human disease. It has the flavour of a true bite from the muse: a leap towards a new truth without logical stepping stones. Later scientists like Jack Pepys made a chain that could bear the weight of sceptics, and they deserve full credit for this. An increasing number of agents derived from cereals and their flora and fauna has been shown to cause disease. But we should also remember Leeuwenhoek, in justice, and so that we bear in mind the possibility that great medical insights may come from non-medical people.



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Paramoecium— is this what Leeuwenhoek saw?

- 1 Ramazzini B. *De morbis artificum*. Padua: J B Conzattum, 1713. (Third edition; English translation published by Hafner, 1964.)
- 2 Van Leeuwenhoek A. *Arcana naturae*. Delft: letter, 1695:17.