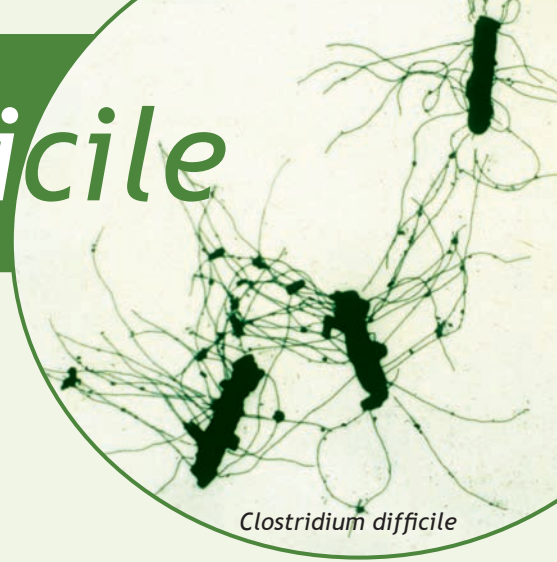


Clostridium difficile

- ▶ hospital-acquired infection more common than MRSA
- ▶ 51,690 cases in the over 65s in England alone in 2005
- ▶ estimated cost per case is greater than £4,000



Clostridium difficile

Where does it come from?

Clostridium difficile is a bacterium found in the environment, but it is most common in hospitals and areas where symptomatic patients have been present. It is carried in the guts of a wide range of animals, as well as up to 3 % of humans. It is often found in young babies where it is usually harmless. *C. difficile* rarely causes problems in children or healthy adults, because it is kept under control by the normal bacteria (flora) in the intestine. Elderly people are more at risk of infection, but a recent Europe-wide survey showed that about 45 % of cases occurred in the under 60s.

Hardy spores

When the bacteria encounter unfavourable conditions they produce spores. In people carrying the bacterium, this takes place in the gut. These spores can survive on surfaces and floors for long periods - perhaps years - and are resistant to many disinfectants and antiseptics.

Clostridium difficile-associated disease

The use of antibiotics can upset the balance of the normal gut flora. This allows *C. difficile* to become established in the gut, multiply quickly and produce the two toxins that cause disease.

Symptoms

Symptoms vary in severity from mild to serious diarrhoea, loss of appetite, nausea, abdominal pain, fever and even life-threatening inflammation of the bowel and possible perforation. Some people may be infected with *C. difficile*, but have no symptoms. This occurs in wards for the elderly and other hospital situations where antibiotics are used intensively.

Diagnosis and treatment

Infection is confirmed by testing for *C. difficile* toxins in stool samples.

Normally, the antibiotics metronidazole or vancomycin are used to treat infection. However, 20 - 30 % of patients relapse and other treatments may be required:

- ▶ re-establishment of the normal gut flora with probiotics
- ▶ re-population of the gut with healthy faeces from a relative (faecal transplants)
- ▶ antibodies from *C. difficile* vaccinated cows (whey therapy) or normal human antibodies
- ▶ adsorbent agents used to bind the toxins in the gut before they cause disease.

Currently, there is no vaccine to protect against infection with this bacterium.

Spread and prevention

Healthcare workers are being urged to wash hands with soap and water, as the alcohol gels used to combat MRSA do not work against the hardy spores of *C. difficile*. Rigorous cleaning of surfaces and floors, especially around toilets, with warm water and disinfectant is probably the most effective way to remove the spores from contaminated environments.

Hypervirulent strain emerges

In 2004 a new strain was reported in Canada, the USA and England, and more recently in some other European countries, that causes more serious disease. *C. difficile* 027 makes the toxins quicker and at higher levels than other strains. It is also resistant to the commonly used quinolone antibiotics.

MICROBIOLOGY AWARENESS CAMPAIGN

The Society for General Microbiology (SGM) Microbiology Awareness Campaign aims to highlight the important issues relating to microbiology. Through its many members, the SGM can offer impartial and expert information on all microbiological topics. Enquiries are welcome. Contact SGM, Marlborough House, Basingstoke Road, Spencers Wood, Reading RG7 1AG (t 0118 988 1843; f 0118 988 5656; e pa@sgm.ac.uk).

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