A simple guide to *C.difficile*

This guide explains what *C.difficile* is, how it developed and ways in which it can cause infection.

What is *C.difficile*?

C.difficile is an abbreviation of *Clostridium difficile* and it is the major cause of antibiotic-associated diarrhoea and colitis, an infection of the intestines. It is part of the *Clostridium* family of bacteria, which also includes the bacteria that cause tetanus, botulism, and gas gangrene. It is an anaerobic bacterium (i.e. it does not grow in the presence of oxygen) and produces spores that can survive for a long time in the environment. It most commonly affects elderly patients with other underlying diseases.

C.difficile – background and a short history

Although *C. difficile* was first described in the 1930s, it was not identified until the late 1970s as the cause of diarrhoea and colitis following antibiotic therapy. Even once this was recognised, laboratory diagnosis was difficult and the number of cases was not monitored.

Lab tests have identified over 100 different types of *C.difficile*. One of these, type 027, is of particular concern because it causes a greater proportion of severe disease and appears to have a higher mortality. It also seems to be very capable of spreading between patients. Type 027 was found to be the main cause of infection in the outbreaks of *C.difficile* at Stoke Mandeville Hospital and elsewhere that have been investigated since 2005.

Since January 2004, *C.difficile* has been part of the mandatory surveillance programme for healthcare associated infections.

What does *C.difficile* cause in patients?

C difficile can cause diarrhoea, ranging from a mild disturbance to a very severe illness with ulceration and bleeding from the colon (colitis) and, at worst, perforation of the intestine leading to peritonitis. It can be fatal.

Most of those affected are elderly patients with serious underlying illnesses. Most infections occur in hospitals (including community hospitals), nursing homes etc, but it can also occur in primary care settings.

How do patients become infected?

C.difficile bacteria can be found living in the large intestine of a small proportion (less than 5%) of the healthy adult population. It is also common in the intestine

of babies and infants. It is normally kept in check by the 'good' bacterial population of the intestine. But when these good bacteria have been killed off by antibiotics, *C.difficile* is able to multiply in the intestine and produces two toxins that damage the cells lining the intestine. The result is diarrhoea.

Because it develops in this way, the patients who are most at risk of infection with *C.difficile* are those who have been treated with broad spectrum antibiotics (those that affect a wide range of bacteria, including intestinal bacteria).

Although some people can be healthy carriers of *C.difficile*, in most cases the disease develops after cross-infection from another patient, either through direct patient to patient contact, via healthcare staff, or via a contaminated environment. A patient who has *C.difficile* diarrhoea excretes large numbers of the spores in their liquid faeces. These can contaminate the general environment around the patient's bed (including surfaces, keypads, equipment), the toilet areas, sluices, commodes, bedpan washers, etc. They can survive for a long time and be a source of hand-to-mouth infection for others. If these others have also been given antibiotics, they are at risk of *C. difficile* disease.

What can we do to prevent infection?

- Always wash your hands after you have had any physical contact with a patient. Do not rely solely on alcohol gel as this does not kill *C.difficile* spores.
- To keep cases of *C.difficile* down, healthcare workers should look to avoid prescribing broad spectrum antibiotics, as far as possible, so that patients' natural protection is not weakened
- If you suspect infection, there is a simple diagnostic test that can be done on a sample of diarrhoeal faeces to see if *C. difficile* toxins are present. It gives a result within a few hours. In outbreaks, or for surveillance of the different strains circulating in the population, *C. difficile* can be cultured from faeces and the isolates sent to the Anaerobe Reference Laboratory (National Public Health Service ,Wales; Microbiology, Cardiff) or HPA Regional Laboratories for typing and testing for susceptibility to antibiotics.
- Infected patients should be isolated and healthcare workers dealing with them should wear gloves and aprons, especially when dealing with bedpans, etc
- Environments should be kept clean at all times. Where there are cases of *C. difficile* infection, a disinfectant containing chlorine or other sporicidal agent should be used to reduce environmental contamination with the spores.

Visit www.clean-safe-care.nhs.uk for further copies of this Simple Guide.