INTERVENTIONS TO REDUCE CLOSTRIDIUM DIFFICILE INFECTION

**AUTHOR** Sian Watkins, MA, BSc, DipN, RN, is matron, Norfolk and Norwich University Hospital NHS Trust; Judy Ames, BSc, DipN, RN, is infection control nurse specialist, Norfolk PCT.


_Clostridium difficile_ is the major cause of antibiotic-associated diarrhoea in older people. The implications of increasing levels of this infection were recognised on a medical ward for older people at an acute teaching hospital. Measures were identified and implemented by different members of the healthcare team. This article discusses the steps taken to reduce _C. difficile_ infection, which improved outcomes for patients. This is a summary: the full paper can be accessed at nursingtimes.net.

In November 2003 the medical ward for older people at the Norfolk and Norwich University Hospital NHS Trust was identified by the infection control team as having an increase in the number of patients developing _C. difficile_ – in line with national trends. As the patients were frail and elderly, it was felt the situation could not be allowed to continue.

Antibiotic prescribing was scrutinised and changes made where appropriate. The ward was effectively closed to new admissions for a short period, all rooms were clinically cleaned and soft furnishings were laundered. The infection control specialist nurse delivered an education programme for nursing staff.

In October 2004 the situation was revisited following mandatory surveillance data collection and it became apparent that further measures were needed. A collaboration was set up between the infection control team, the cleaning contract provider and nursing staff, and measures were put in place in an attempt to reduce the incidence of _C. difficile._

**INTERVENTION**

Seven measures aimed at reducing the level of _C. difficile_ were implemented. They were:

- Increased ward cleaning;
- Review of antibiotic prescribing;
- Increased awareness of the management of patients infected with _C. difficile;_
- Promotion of handwashing;
- Improved isolation management;
- Improved documentation with the introduction of the Bristol Stool Chart;
- Use of probiotics.

Cleaning occurred principally in the morning. There was additional cleaning in the evening but this was mainly to ensure bins were emptied and disposables were topped up. The toilets were spot-checked but not necessarily cleaned. This system left the ward with little or no cleaning for a long period. We suggested that a sustained clean over the 24-hour period, rather than an intensive clean for a few hours, would be a better use of resources. This suggestion was accepted and the resources for an additional couple of hours’ cleaning were found.

In addition to the high numbers of _C. difficile_ bacteria in faeces during disease, the profuse diarrhoea that is usually present often coincides with faecal incontinence. This leads to skin contamination with _C. difficile_ spores, which will then be released into the environment, probably on skin scales and fabric lint. In 1981 Kim _et al_ reported that a small number of _C. difficile_ survived for five months in an unused hospital room. Floors and bathroom surfaces were found to show the heaviest contamination in one study (Kaatz _et al_, 1988), but another piece of research (McFarland _et al_, 1989) showed that floors, bedrails and nurses’ call buttons were the commonest areas to be contaminated. This evidence supported our suggestion to use the cleaning resources differently.

The ward pharmacist was already reviewing antibiotic prescribing. This included ensuring regimens of appropriate length, checking that conversion from IV to oral route was done as soon as possible and generally monitoring adherence to the trust antibiotic prescribing policy.

Nurse education about _C. difficile_ was carried out by the infection control specialist nurse. The training was supported by written information. She also introduced a small whiteboard on which nurses could identify which patients had _C. difficile._

Handwashing is vital as there is no evidence that alcohol-based handrubs are effective in killing spores. When patients are placed in
Clostridium difficile can have a serious effect on patients’ well-being and in some cases can be fatal; it is also costly for healthcare providers, both in terms of increased length of hospital stay and prescribing expenses.

Recognising the risk factors and introducing simple measures, such as cleaning, handwashing, use of probiotic drinks and careful prescribing of antibiotics, could reduce patients’ risk of infection.

Working in collaboration with other healthcare teams can benefit patients. Documents such as the Bristol Stool Chart can aid diagnosis and lead to consensus of opinion.

Better education of nursing staff on the issues surrounding C. difficile and the management of patients who develop diarrhoea can also help to reduce infection rates.

For surveillance purposes, microbiology laboratories should test all diarrhoeal specimens for evidence of C. difficile from patients over 65 years of age who have not been diagnosed with the bacterium in the preceding four weeks (National Clostridium difficile Standards Group, 2003).

Inevitably, there will be discrepancies about what constitutes a diarrhoeal specimen. Stool charts can give varying descriptions from ‘soft’ to ‘loose’. Diarrhoeal stools as defined by the National Clostridium difficile Standards Group (2003) are those that take the shape of their container. The introduction of the Bristol Stool Chart has led to a standardisation of reporting. A walnut-sized sample of faeces, or about 15ml of a liquid stool, is sufficient for microbial investigation and should be examined within 12 hours of collection with results usually available within 48 hours.

Since the main defence against C. difficile is the possession of normal bowel flora, it would seem plausible that the use of probiotics would be beneficial, although further research on their effects is needed. Between October 2004 and January 2005 the doctors undertook an observational study to try and determine the effects of optional supplements of Yakult for patients and its influence on C. difficile diarrhoea. Of 225 patients admitted to the ward in the trial period, 169 took Yakult. Only four (2%) of these patients developed C. difficile, compared with 9% (five out of 56 patients) of those who declined it. The length of stay for patients who developed C. difficile was 33.7 days, compared with 14.7 days for other patients. The age range of patients who contracted C. difficile was 58–100 years but 74% (167) were in the range of 80–95 years.

RESULTS
There was a decrease in the number of cases of C. difficile after the increased cleaning measures were implemented. From January to September 2004 the mean number of patients infected each month was just under 11%. After the measures were implemented in October 2004 to May 2006 it fell to 4%.

Pharmacy data
The specialist antibiotic pharmacist provided advice on antibiotic use in the treatment of C. difficile. The first-line therapy would be a course of oral metronidazole 400mg three times a day for 10 days, at a cost of £0.69. If the patient did not respond a course of oral vancomycin 125mg four times a day would be prescribed for a minimum of 10 days at a cost of £82.86. This is only used on the ward to treat C. difficile.

Cost analysis revealed that in the financial year April 2004 to March 2005 the ward spent £1,972 on vancomycin, compared with £360 in 2005–2006. The measure therefore saved the trust £1,612 per year in vancomycin prescriptions alone.


REFERENCES