

Successful control of *Clostridium difficile* outbreak on a care of the elderly (COE) ward

District general hospital, London, UK

Executive summary

In March 2009, an outbreak of an unusual strain of *Clostridium difficile* affected a care of the elderly (COE) ward at a district general hospital in London. Fifteen patients were affected in total over an eighteen month period.

The ward was subsequently closed to admissions and deep cleaned. Also, problems with the dilution of disinfectants and the inappropriate use of laxatives were corrected. However, two further clusters and some sporadic cases continued with the outbreak strain found on two contaminated surfaces.

In response, the ward was decontaminated using Bioquell hydrogen peroxide vapour (HPV). Following this treatment, no further cases occurred. HPV bio-decontamination appeared to have ended an ongoing *C. difficile* problem on this COE ward.



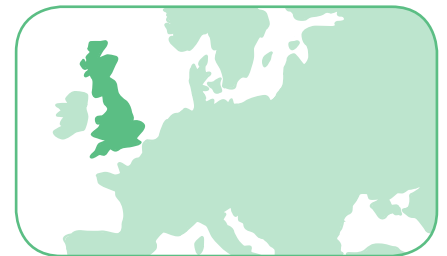
Background

An outbreak of *C. difficile* began on a COE ward in 2009. The ward included beds for older patients with fractured neck of femur, characterised by complex problems of old age, orthopaedic surgery, and frequent use of antibiotics, laxatives and proton pump inhibitors.

In March/April 2009, there was an outbreak of an unusual strain of *C. difficile* (ribotype 017) affecting three patients. Despite closing the ward to admissions, deep cleaning and correcting problems with the dilution of disinfectants and with the inappropriate use of laxatives, the ward experienced a second *C. difficile* 017 cluster affecting four patients in September/October 2009. Five sporadic *C. difficile* 017 cases occurred until a third cluster, of three cases, in July/August 2010. Environmental sampling identified *C. difficile* 017 on two of 23 sites sampled within a case patient's room. In response to these findings, it was agreed to call in Bioquell to decontaminate the whole ward using HPV.

Methods

Planning meetings for HPV decontamination involved senior nursing staff, facilities, estates, supplies and infection control. Patients and their personal effects were moved into a decant ward. All medical equipment including electronic devices were left for decontamination *in situ*. The vacated ward was also deep cleaned by facilities staff to remove soiling. Cleaning and HPV decontamination of the ward was completed in less than 24 hours without incident, after which the ward was reoccupied. In total eleven Bioquell HPV generators and nine Bioquell aeration units were deployed.



Key findings

- Environmental reservoirs of the outbreak strain of *C. difficile* were eradicated
- The whole ward was decontaminated within 24 hours
- No further cases were identified after the use of HPV

“Despite our best efforts we continued to see clusters of cases. It was only after the ward was ‘bioquelled’ that the outbreak finally stopped.”

**Consultant nurse for infection control,
district general hospital, London**

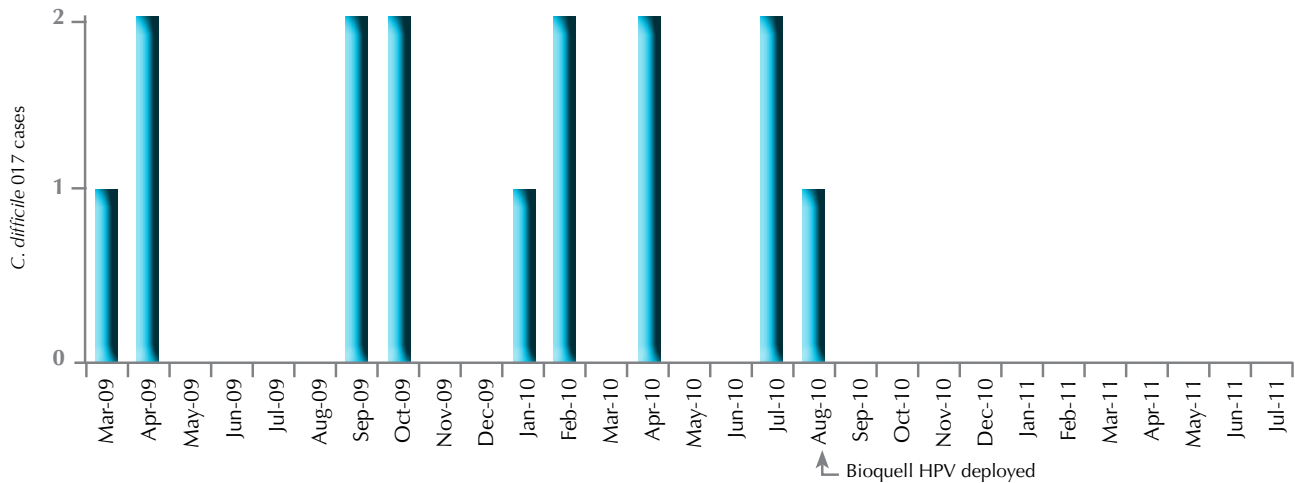


Figure 1. Number of *C. difficile* type 017 cases before and after Bioquell HPV treatment.

Results

Following the use of the HPV decontamination no new cases of *C. difficile* 017 were identified (see Figure 1).

Outcomes

Bioquell's HPV was effective in decontaminating the environment and ended an ongoing *C. difficile* problem on a COE ward.

As other potential causes had been reviewed and discounted and there were no common index patients that linked all three clusters, the environment was identified as a reservoir for ongoing transmission.

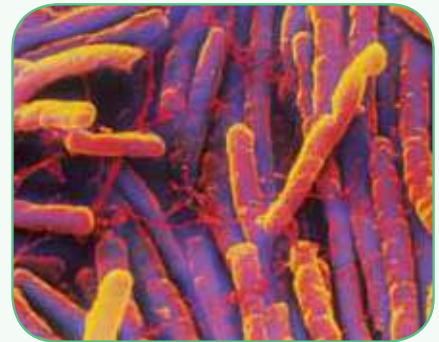
Other studies have also shown that the environment is important in the transmission of *C. difficile* and that enhanced environmental decontamination using Bioquell HPV can help to bring *C. difficile* outbreaks under control.^{1 2 3}

References

1. Otter *et al.* *Infect Control Hosp Epidemiol* 2011;32:687-699.
2. Cooper *et al.* *J Hosp Infect* 2011;78:238-240.
3. Shaughnessy *et al.* *Infect Control Hosp Epidemiol* 2011;32:201-206.

C. difficile background information

- *C. difficile* is a rod shaped, anaerobic bacterium that lives in the human intestines.
- It can produce hardy spores, which allow *C. difficile* to survive in the human gut and for extended periods on a wide variety of surfaces in the healthcare environment.
- Antibiotic use can kill off some of the other more friendly bacteria in the intestines, which allows *C. difficile* to grow to high numbers and produce a toxin that causes diarrhoea.



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