



Enhanced fingerprinting of *Clostridium difficile*



Clostridium difficile Ribotyping Network for England (CDRNE)

Introduction

Multilocus variable repeat analysis (MLVA) can be used to characterise and improve the understanding of the transmission of epidemic *C. difficile* strains within healthcare institutions. Importantly, the method can provide a high level of discrimination among epidemic *C. difficile* ribotypes, including 001, 027 and 106; these accounted for approximately 70% of more than 2000 *C. difficile* isolates ribotyped by CDRNE in 2007-08.¹ For example, MLVA can distinguish more than 20 sub-types of *C. difficile* ribotype 027.² MLVA is far superior to most other fingerprinting methods, including pulsed field gel electrophoresis, for analyzing closely related *C. difficile* strains.³

The Enhanced Fingerprinting Service

The Health Protection Agency funded the development of CDRNE in England from April 2007. The HPA is now introducing a service development to enable enhanced fingerprinting of *C. difficile* (MVLA) to be carried out. There is no charge for this service for NHS hospitals in England. Access to the service will have to be strictly controlled, in the first instance by Regional Microbiologists, given its high cost and need to balance availability with the scale of CDI challenge. MLVA is available via the Leeds laboratory (based at Leeds General Infirmary), which acts as the reference laboratory for the CDRNE service. In the East & West Midlands MLVA is available via the Birmingham (Heartlands laboratory).

Criteria Used to Determine Access to the Service

- **A hospital/trust with a high rate of CDI as identified with the local SHA; or**
- **A hospital/trusts that is failing to meet its *C. difficile* target trajectory despite implementation and audit of control measures; or**
- **A declared outbreak of CDI as agreed with the local Health Protection Unit.**

In addition:

- **Ribotyping carried out by CDRNE must have confirmed the presence of a dominant *C. difficile* ribotype;**
- **A plan should be in place of how results of *C. difficile* enhanced fingerprinting will contribute to the control of CDI;**
- **Infection Control Teams/Consultant Microbiologists will first need to agree with the Regional Microbiologist that use of the *C. difficile* enhanced fingerprinting service is merited; and**
- **Numbers of samples/isolates to be examined will be agreed with the Leeds laboratory on a case-by-case basis, taking account of the scale of CDI challenge.**

References

1. Health Protection Agency. Surveillance of Healthcare Associated Infections Report 2008: *Clostridium difficile*. Pages 26-28. Available at: http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1216193833496.
2. Fawley WN, Freeman J, Smith C, Harmanus C, van den Berg RJ, Kuijper EJ, Wilcox MH. Use of highly discriminatory fingerprinting to analyze clusters of *Clostridium difficile* infection cases due to epidemic ribotype 027 strains. *J Clin Microbiol* 2008;46:954-60.
3. Killgore G, Thompson A, Johnson S, et al. Comparison of seven techniques for typing international epidemic strains of *Clostridium difficile*. *J Clin Microbiol* 2008;46:431-7.

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