

O002

Oral Session

Lessons learned from *C. difficile* molecular epidemiology

INCREASED DIVERSITY OF *C. DIFFICILE* PCR-RIBOTYPES ACROSS EUROPEAN COUNTRIES AND DISPARITY OF 027 PREVALENCE; RESULTS OF A EUROPEAN PREVALENCE STUDY OF *CLOSTRIDIUM DIFFICILE* INFECTION (EUCLID)

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Objectives: To determine the contemporaneous epidemiology of *C. difficile* PCR-ribotypes across 20 European countries via systematic testing of all diarrhoeal in-patient stool samples sent to Microbiology laboratories in 482 hospitals.

Methods: On two days (one in winter and one in summer), all diarrhoeal in-patient faecal samples sent to microbiology departments in participating hospitals (PHs) were transferred to a national coordinating laboratory (NCL) for that country. Samples were tested using an optimised method (glutamate dehydrogenase (GDH)/toxin) for *C. difficile* infection (CDI) and samples positive for GDH and/or toxin were cultured for *C. difficile* on selective media. All *C. difficile* isolates were sent to the European coordinating laboratory (ECL) for PCR-ribotyping. Additionally, each PH was asked to submit their CDI testing rate/10,000 patient bed days for the year before the study (September 2011 to August 2012).

Results: There were 1211 *C. difficile* isolates sent for PCR-ribotyping; 633 from winter, 578 from summer. There were 138 different PCR-ribotypes across the 20 countries; 65 different PCR-ribotypes across 26 countries were previously reported in 2008. There were only two samples containing more than one PCR-ribotype. PCR-ribotype 027 was the most commonly isolated PCR-ribotype (18.4%); 88.8% of these were found in just 4/20 countries, Germany (43.5% of the total 027s), Hungary (17.5%), Poland (16.1%) and Romania (11.7%). Whilst the majority of the other countries (14/16) had a wide variety of PCR-ribotypes with no single strain dominant, 35.3% of Czech Republic PCR-ribotypes were 176 and 38.8% of Italy PCR-ribotypes were 018 (21.7%) and 356(17.1%). When Europe is divided into four zones (as per United Nations statistical division), the 027 rates (as a percentage of total isolates in that zone) are as follows; North 1.6%, South 6.0%, West 17.9% and East 37.3%. The majority of the PCR-ribotype 027 isolates in West Europe came from Germany; 97/105 (92.4%). The average CDI testing rate/10,000 patient bed days for each zone was, North 121.25, South 39.74, West 70.96 and East 29.24. There was little variation in the pattern of PCR-ribotypes observed across the 20 countries between the winter and summer sampling points.

Conclusions: The diversity of PCR-ribotypes across Europe has increased compared to previous reports, with no single strain dominating in the majority of the countries studied (14/20). There is a clear difference between European zones; the prevalence of PCR-ribotype 027 appears to correlate inversely with the level of CDI testing performed. This suggests that those countries with increased awareness of CDI have been able to reduce outbreaks associated with 027.