

**P1086**

**Paper Poster Session**

**Clostridium difficile: epidemiology and risk factors**

### **Epidemiology of Clostridium difficile infection in Ireland 2014 & 2015**

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**Background:** In 2009, the first Irish national *Clostridium difficile* infection (CDI) surveillance, typing and antimicrobial susceptibility study reported the predominance of ribotype 001, 027 and 106 in new CDI cases and with 027, 001 and 078 in recurrent cases. As *C.difficile* isolates are not routinely typed in Ireland, changing patterns of ribotype distribution over time are unknown. A similar national study was repeated in Irish healthcare facilities over the same three-month period (quarter 2) in 2014 and 2015. Results from 2014 and 2015 are presented here.

**Material/methods:** All cases of CDI identified, which were either *C.difficile* toxin or PCR positive, were included in the study. Suspected *C.difficile* colonies were identified using MALDI-TOF mass spectrometry. DNA was extracted using a commercial extraction kit and PCR-ribotyping was performed according to Bidet *et al.* Ribotypes were assigned by comparison to reference strains obtained from the Leiden University Medical Centre Library, the Netherlands. To identify the enteropathogenic properties and *C.difficile* genetically a 5-plex PCR was used to detect the presence of the genes encoding for TcdA, TcdB, CDT, GluD and 16SrDNA. Enhanced epidemiological information was collected by the Health Protection Surveillance Centre on CDI cases and compared with the ribotyping data.

**Results:** The national healthcare-associated CDI incidence rate / 10,000 bed days used (BDUs) in quarter 2 (Q2) was 2.4 cases in 2014 and 2.7 cases in 2015. In Q2, 2014 and 2015, 449(2014) and 436(2015) *C.difficile* positive faecal samples from 51 different hospitals were analysed. *C.difficile* was isolated from 380(85%) of samples in 2014 and from 408(94%) in 2015. In 2014, of the 49 distinct

PCR-ribotypes identified, the most common were 078(16%), 014/020(12%) and 015(11%). In 2015, of the 53 different PCR-ribotypes identified, 078(21%), 014/020(17%) and 002(9%) were the most common. This differs from 2009, where the most common ribotypes were 027(19%), 001(16%) and 106(13%). In 2014, TcdA and TcdB were detected in 98% of the isolates, with 22% CDT positive and 2% non-toxigenic. In 2015, TcdA and TcdB were present in 99% of the isolates with CDT detected in 29%, and 0.5% were non-toxigenic. Community-associated infection (CAI) increased from 10% in 2009 to 20% in 2014 and 21% in 2015. Ribotypes 078(14%), 014/020(14%) and 015(14%) were the most common strains linked to CAI in 2014; the commonest strains in 2015 were 014/020(22%), 078(18%) and 005(10%). Recurrent cases decreased from 18% in 2009 to 9% in 2014 and 8% in 2015.

**Conclusions:** There has been a marked shift both in the most prevalent ribotypes and the epidemiological features of CDI in Ireland since 2009. Of note, there has been a large increase in ribotype 078, and a decrease in ribotype 027. Further work is required to fully explain these changes.