**Clostridium difficile** point prevalence study, Switzerland

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**Background**

- **Clostridium difficile** has emerged as one of the most important healthcare-associated pathogens worldwide.
- Recent studies regarding **C. difficile** infection (CDI) in Europe report a mean of 7 cases of CDI per 10'000 patient-bed-days and a high proportion of undiagnosed cases due to lack of clinical suspicion.¹
- CDI-rates in Switzerland have been previously estimated at 2.3-3/10’000 patient bed-days, but current data regarding frequency and distribution of different strain types are lacking.
- We therefore aimed to determine prevalence of CDI and ribotype-distribution in different Swiss hospitals.

**Methods**

- On two different days (one in winter and one in summer) in 2015, all unformed stool specimens submitted to the microbiology laboratory as standard of care from 76 Swiss hospitals were collected (Figure 1).

**Results**

- In addition, stool samples tested positive for toxigenic **C. difficile** within the prior week of the study were also collected from all participating institutions to obtain a more detailed estimate of ribotype distribution.
- A two-stage algorithm consisting of an enzyme immunoassay (EIA) for detection of glutamate dehydrogenase (GDH) and toxins A & B (C.DIFF QUIK CHEK COMPLETE™, Techlab/ALERE, USA), and PCR for detection of toxin B (RealStar®, Altona Diagnostics) as stand-alone test were applied.
- Strain typing was performed using high-resolution capillary gel electrophoresis-based PCR ribotyping.
- Prevalence was expressed by 10’000 patient bed-days.

**Figure 1:** Distribution of participating centers in Switzerland


**Figure 2:** Distribution of ribotypes among 114 positive stool samples

- **C. difficile** testing was not requested by the clinician in 11.5% of positive samples as determined by PCR and 5.5% of positive samples as determined by EIA for GDH and toxins A & B.
- A large diversity of **C. difficile** ribotypes was identified, the largest proportion not being referenced so far (31.5%), followed by PCR ribotypes 014 (16.4%), 001 (11.0%), 012 (8.2%), and 002 (6.8%). Among presumably hypervirulent strains, PCR ribotype 078 accounted for 5.5%, while PCR ribotype 027 was not identified during our study period (Figure 2).

**Conclusions**

- Our results suggest that **C. difficile** infection rates have increased over the last decade in Switzerland as reported for other European countries, despite the lacking predominance of hypervirulent ribotypes.
- Diagnosing **C. difficile** by PCR as a stand-alone test resulted in markedly increased prevalence rates as compared to EIA testing for GDH and toxins A & B, thus underscoring the need for consistent testing algorithms to compare rates between institutions and countries.

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