CLOSTRIDIUM DIFFICILE INFECTION SURVEILLANCE IN A HEALTHCARE SETTING: STRAIN DIVERSITY AND IDENTIFICATION OF NOVEL MOLECULAR TYPES (RIBOTYPES)

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*Clostridium difficile* infection (CDI) is typically precipitated by antibiotic-mediated clearance of gut microbiota. While community-associated CDIs have been reported, few studies have parsed between hospital-acquired and hospital-precipitated CDI, especially at a molecular level. Further, the introduction of “two-step” testing in many US hospitals (housekeeping enzyme + toxin immunoassay) may further confound CDI diagnosis, since low-toxin-producing, but nonetheless toxigenic isolates may be excluded from CDI consideration. To observe *Clostridium difficile* (CD) frequency, in a tertiary medical center, and analyze isolates at a molecular level, CD prevalence was monitored in a 487-bed hospital. Patient specimens were cultured from diarrheic stool, and further characterized for molecular type (ribotype), genotype, biofilm, and toxin production. A total of 450 unique CD isolates were recovered, and to date, 108 different ribotypes were identified. The isolates belonging to the poorly-characterized, but outbreak-associated Ribotype 106. CD isolates - even those of identical ribotype, expressed a wide range of toxin levels, biofilm formation, and sometimes considerable variation in whole genome sequence. Ribotype 106 isolates were recovered at greater frequency from patients whose diarrhea commenced >72 hours after admission. A significant number of CD isolates which were toxin EIA-negative in the clinic produced CD toxins upon re-test, or testing in pure culture; some of these belonged to outbreak-associated ribotypes. CD diversity is high in BUMC, and changes over time. Patients may acquire CD in various locations, but CDI itself is likely hospital-precipitated. The GDH/Toxin EIA two-step testing algorithm at BUMC is under-diagnosing true CDIs.