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Infection Control: Clinical epidemiology of nosocomial infections

The true incidence of *Clostridium difficile* infection in the community: accurately defining its impact in a stable population from a retrospective study over 5 years

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Objectives:

Recent studies suggest that *Clostridium difficile* infection (CDI) acquired in the community is increasingly. However data on the at risk populations used to calculate the denominator is often imprecise making reasonably accurate estimates of the rates of community acquired CDI (CA-CDI) difficult. Additionally, any previous exposure to healthcare facilities may be overlooked unless complete records are available. The Channel Island of Jersey provided an ideal opportunity to better define the incidence of community-acquired CDI (CA-CDI) given its relatively stable well-defined population and single microbiology laboratory. An audit of cases of CDI in Jersey was used to help define the epidemiology of CA-CDI.

Methods:

In this retrospective audit we identified the cohort of all cases of CDI in Jersey between 2008 and 2012, confirmed by a positive CD toxin stool test. Patients were stratified into those with healthcare-associated CDI (HA-CDI), community healthcare-associated CDI (CHA-CDI), indeterminate community associated CDI (ICA-CDI) (disease onset 4–12 weeks after hospital discharge) and CA-CDI according to the classification of the European Society of Microbiology and Infectious Diseases. Previous admissions to healthcare facilities and residency in long term care facilities were available from note reviews. Population data for Jersey along with numbers of nursing, residential and hospital beds were available from national data sources. Demographics including co-morbid factors were identified from hospital cases notes and from family practitioners for those not hospitalised.

Results:

207 patients were identified in Jersey as having CDI. This includes an outbreak of ribotype 027 in 2010. 88/207 (43%) were male with a mean (sd) age of 75 (15) years. 115 were HA-CDI, 39 were CHA-CDI, 18 were ICA-CDI and 35 were CA-CDI. The incidence of HA-CDI was 0.25 (95% CI 0.20-0.30) cases per 1,000 patient bed days.

The incidence of CA-CDI was 7.7 (95% CI 5.4-10.7) cases per 100,000 person years. However, 20 individuals resided in long term care facilities so the incidence of true community acquired CDI was 3 cases per year or 3.3 (95% CI 1.9-5.5) cases per 100,000 person years. This number may be considered an over estimate as a number of these cases had had outpatient contact with hospitals. The 30-day case fatality rate of these 15 cases was 0 which was significantly lower than that of HA-CDI.

Conclusion:

Our findings suggest that although almost half the cases of CDI were not strictly defined HA-CDI, the majority of CDI originates from healthcare facilities and that community-associated disease is uncommon, with a limited contribution to the overall burden of CDI. Surveillance of infection should continue in both health care facilities and in the community. However, these data suggests that infection control measures in healthcare facilities should reduce CDI presenting in both healthcare facilities and the community.