ROLE OF C. difficile IN HOSPITAL ENVIRONMENT AND HEALTHCARE WORKERS

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BACKGROUND & OBJECTIVE

- Clostridium difficile infection (CDI) is the leading cause of hospital-acquired diarrhea in developed countries.
- CDI has traditionally been considered to be transmitted within healthcare environment, from other patients or healthcare workers (HCW).
- Our objective was to determine the extent of C. difficile contamination and to establish potential transmission routes in a tertiary teaching hospital with a new methodology for C. difficile recovery.

METHODS

- Environmental samples were taken (bed, WC, bathroom tap, door knob, alcohol gel device and call bell), from 3 different groups of patients: those with active CDI, colonized and negative for C. difficile (control group).
- Environmental sampling was performed thrice per patient: at the time a fecal sample was taken for CDI diagnosis, 48 hours after diagnosis or after diarrhea ends, and 10 days after. HCW hands were also sampled. (Figure 1)

RESULTS

- A total of 476 environmental samples were collected, 246 from rooms of active CDI or colonized patients and 230 from rooms of negative CDI patients.
- 15.61% were positive for toxigenic C. difficile (TCD) from a total of 33 patient wards (16 TCD negative patients , 17 TCD positive patients).
- 20.73% of the samples of TCD positive patients were positive for TCD and 9.57% of the samples of TCD negative patients were positive for TCD.
- When cases were analyzed by sampling time, at diagnosis 52.94% were positive, 38.46% were positive at 48h after symptom resolution (when contact precautions/isolation measures were removed) and 23.07% were positive after course of treatment. (Figure 4)
- We observed significant differences in environmental contamination between rooms from colonized and symptomatic patients (10.19% vs 25.31%; p=2.636e-05)
- Overall, the most contaminated site corresponded to the WC, followed by the bed and bathroom tap. 4.2% of HCW hands were colonized. (Figure 5)

CONCLUSIONS

- We found a significant proportion of surfaces contaminated with TCD, as well as hand colonization of HCW.
- It is notable that when isolation/precaution measures ended, in those wards remained a significant proportion of contaminated sites.
- We were not able to document any epidemiological transmission link during the study period.