



U.O. MICROBIOLOGIA
Pievesestina

EPIDEMIOLOGY MONITORING OF ENVIRONMENTAL MICROBIAL CONTAMINATION IN THREE ACUTE HOSPITALS IN EMILIA ROMAGNA REGION

M.F. Pedna ¹, M. Sanchi ², F. Congestri ¹, M. Fantini ¹, M. Mazzotti ², I. Melandri ², V. Sambri ¹

¹AUSL della Romagna, Pievesestina (FC), Italy

²Formula Servizi Società, Forlì, Italy

BACKGROUND

The role of surface contamination in the transmission of healthcare-associated pathogens is being recognized increasingly. The environment may facilitate transmission of pathogens, including vancomycin-resistant enterococci (VRE), *Clostridium difficile*, *Acinetobacter* spp., methicillin-resistant *Staphylococcus aureus* (MRSA) and Norovirus. Unrecognized environmental reservoirs may be responsible of outbreaks or ongoing sporadic transmission. Aim of the study was to monitor environmental microbial contamination after implementation of a **new enzymatic sanitizer** (Stay Clean, E'Così Fig.2) using **Surface Recovery kit** (SRK, COPAN Italia) sampling collection method Fig.1.

METHODS

Microbial contamination surveillance was performed for four weeks on Geriatric and Dialysis departments through sampling of items, equipment and general sites in bed spaces and rooms for a total of 900 points (Fig.4) after sanitization with the new enzymatic detergent at t=0 and after 24 h.



Fig. 1 Surface Recovery kit



Fig. 2 New Sanitizer

The first week was used to define the baseline of microbial contamination on surface pretreated with the routine detergent. After collection, the Flocked swab was broken into the transport tube containing 1 mL of diluent solution and sent to the laboratory for analysis. The whole 1 ml was used to inoculate Columbia Agar+5% sheep blood plate at 35°C up to 48h. Total Colony Count (TCC) at t=0 and after 24h have been monitored. The bacteria identification was performed by MALDI-TOF mass-spectrometry.

RESULTS

In the first week of monitoring in Geriatric department the average of TCC at t=0 and after 24h was 30 and 201 CFU respectively while, after three weeks of treatment with the new detergent the average of TCC at t=0 and after 24h was 17 and 151 CFU respectively. During the first week of monitoring in Dialysis the average of TCC at t=0 and after 24h was 11 and 31 CFU respectively. After three weeks of new treatment the average of TCC at t=0 and after 24h was 6 and 27 CFU respectively (Table1 & 2).

Table 1. TCC detected in Geriatric Departments

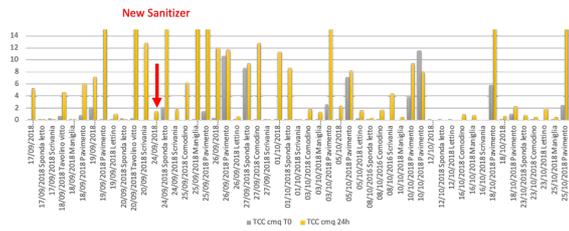
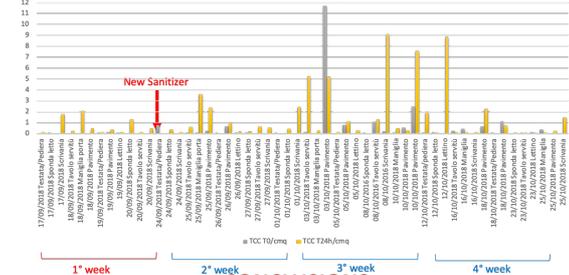


Table 2. TCC detected in Dialysis Departments



CONCLUSIONS

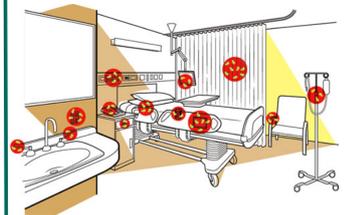
1. The enzymatic detergent was associated with a stable decreasing of surfaces pathogens compared to conventional sanitation system used. The study is on going and additional data will be provided.
2. The epidemiology of microbial contamination was different in the two departments with a high TCC/cm² in Geriatric department in comparison with Dialysis ward.
3. Significant pathogens as MSSA, MRSA, *Enterococcus faecalis* e *Aspergillus fumigatus* have been identified only before the sanitization procedures.
4. The use of SRK recovery kit has improved and simplified the procedure of sampling especially on articulated surfaces.

Departments monitored Geriatric & Dialysis



Fig. 3 Monitored Departments & Hospitals

N= 900 POINTS TESTED



- Headboard and footboard
- Bed
- Bedside boards
- Desk
- Coffee table
- Door handle
- Floor

Fig.4 Collection points tested at T=0 and after 24h post-sanitization

Sampling protocol with SRK

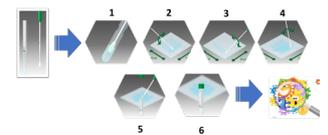


Fig.5 Protocol of sampling with SRK Kit