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The use of ATP bioluminescence assay as an educational tool to improve cleaning in ICU

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Background: High touch surfaces in patient proximity are known to be a risk for microbial cross transmission in ICU. Visual inspection does not accurately reflect the level of cleanliness achieved. Cultures are not practical due to delay in results. ATP bioluminescence assay is a practical tool because results expressed in Relative Light Units (RLU) can be shown immediately to staff.

Objective: Evaluate the usefulness of ATPBLA to obtain sustained improvement in cleaning practices in the ICU.

Methods: Phase 1: definition of 15 critical frequent touch surfaces. Standardization of sampling method. Phase 2: ATPBLA sampling was used to assess cleanliness before and after daily cleaning in one patient unit. Before/after contamination in RLUs and percentage decrease after cleaning were evaluated and discussed with cleaners. A cleaning protocol was implemented. Phase 3: Follow-up periodic (1, 6 and 12 months) repeat testing before/after and only after, to assess sustainable improvement.

Results: Before cleaning samples were on average above 1000 (max. 11,020) RLU with significant variations between critical points often related to the type of surface. After cleaning readings were consistently below 375 RLU. Percentage reductions observed were on average 75%. Only after results were less consistent (4 samples RLU > 375).

Discussion: There are no established cut-off values (500 RLU are usually considered). We considered values lower that 375 after cleaning to be acceptable because significant percentage reduction was observed. In the ICU initial contamination can vary according to the procedures undertaken but we observed a reduction in the values probably due to more efficient cleaning reducing build-up. Sampling on irregular surfaces can be difficult and some variations were observed in this type of surfaces. The low values reduction after cleaning were maintained after one year.

Conclusion: ATPBLA is an useful tool to promote good cleaning practices in the ICU.