

EVALUATION OF THE EFFECTIVENESS OF LIQUID HYDROGEN PEROXIDE ON SURFACE CONTAMINATION

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Background

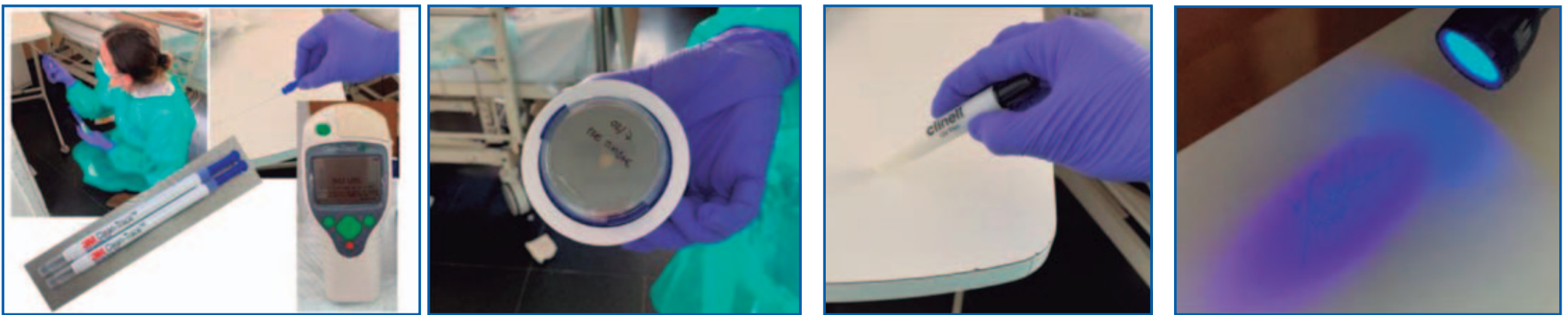
Sodium hypochlorite and quaternary ammonium plus amines are used as surfaces disinfectants. However, new improved hydrogen peroxide disinfectants are a promising alternative.

Objective

We assessed the effectiveness of liquid hydrogen peroxide (Oxivir H+®) on reducing surface contamination.

Methods

We evaluated the cleaning and disinfection effectiveness of liquid hydrogen peroxide on five high-touch hospital room surfaces (upper and lower surfaces of the food table, call button, toilet flap, and bed center) in two hospitalization units (one surgical and one predominantly medical) at the University Hospital del Mar, Spain. For each surface, both adenosine triphosphate (ATP) and aerobic colony counts (ACC) measurements were collected before and after cleaning. Mann-Whitney U test was used for assessing medians differences in the ATP and ACC. Stratified analysis by hospitalization unit, isolated status and contact surface was performed.



Results

Overall, we evaluated 161 surfaces. Compared to post-cleaning values, pre-cleaning surfaces showed a higher median of both ATP relative light units (RLU) as well as ACC (310 vs. 55 P=0.000, and 54 vs. 24 P=0.000, respectively). Surfaces in the medical unit presented higher pre-cleaning RLU rates than in the surgical one but in both cases a significant reduction was achieved after cleaning (Table 1). Notably, not isolated patient's room's surfaces revealed higher median pre-cleaning RLU and ACC values than isolated patient's room's surfaces. In both cases, a significant reduction after cleaning was attained (Table 2 and Table 3).

Table 1. Surfaces cleaning and disinfection results before and after using liquid hydrogen peroxide

Surfaces	Cleaning			Disinfection		
	ATP relative light units (median)			ACC (median)		
	Pre cleaning	Post cleaning	P vaule*	Pre-cleaning	Post cleaning	P vaule*
Bed center	748	85	0.000	77	22	0.003
Food table (lower surface)	275	59	0.000	29	21	0.902
Food table (upper surface)	358	68	0.000	57	20	0.000
Toilet flap	152	41	0.000	56	30	0.068
Call botton	265	44	0.000	60	26	0.018
Total	310	55	0.000	54	24	0.000

ATP: adenosine triphosphate. ACC: aerobic colony counts. *Mann-Whitney U test.

Table 2. Cleaning & Disinfection by Units before and after using liquid hydrogen peroxide

	Pre-cleaning (median)	Post-cleaning (median)	P value*
Medical Unit			
Adenosine triphosphate (relative light units)	325	71	0.000
Aerobic colony counts	36	13	0.000
Surgical Unit			
Adenosine triphosphate (relative light units)	245	35	0.000
Aerobic colony counts	32	10	0.000

Table 3. Cleaning & Disinfection by isolated/non isolated patients before and after using liquid hydrogen peroxide

	Pre-cleaning (median)	Post-cleaning (median)	P value*
Isolated patients			
Adenosine triphosphate (relative light units)	156	40	0.000
Aerobic colony counts	22	11	0.000
Non isolated patients			
Adenosine triphosphate (relative light units)	317	58	0.000
Aerobic colony counts	37	11	0.000

Conclusion

Our results suggest high effectiveness of liquid hydrogen peroxide for cleaning and disinfection of high-touch hospital room surfaces. Further comparison with the standard cleaning care is needed.