

## Effect of Long-term Disinfection on Dental Clinical Contact Surfaces

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**Objective:** This study measured the effect of long-term disinfection on the ability to clean dental environmental surfaces.

**Methods:** Testing included nine common dental surfaces - smooth vinyl, textured vinyl, brushed aluminum, high impact plastic (i.e. plastic light handles), smooth stainless steel, Formica, service line tubing, Plexiglas and enameled metal. Testing included five spray-type disinfectants -1:9 diluted bleach, Lysol Brand II IC, Birex, Cavicide and Discide Ultra in addition to a tap water control. The disinfection procedure involved a standardized “spray-wipe-spray” method using a paper towel. Each surface received 1,920 disinfections, an estimated yearlong exposure. Surfaces underwent a blood removal test to measure cleaning ability after each 100 disinfection procedures. Recorded was a cleaning score indicating the presence and relative amount of residual blood.

**Results:** Response to disinfection procedures varied. The surface most impacted by a loss of cleaning ability was enameled metal followed by high impact plastic, Formica, and Plexiglas. To measure the change in cleaning ability with repeated disinfection procedures, a t-test compared initial cleaning scores with those after 1,920 disinfections for each combination of surface type and disinfectant. Overall, the Birex produced the fewest statistical differences of the disinfectants tested, indicating that the initial cleaning scores were not statistically different from the final cleaning scores for all surfaces with the exception of enameled metal ( $p<0.01$ ). The water control resulted in decreased blood removal on four of the surfaces (enameled metal, Formica, Plexiglas and high impact plastic,  $p<0.05$ ). Dilute bleach affected the surfaces most severely and produced the statistical differences indicating decreased blood removal on all but three surfaces. The other three disinfectants produced results that varied depending on the surface type disinfected.

Chart: Statistical Differences between beginning and ending cleaning values  
“NS” indicates no statistical difference. A statistical difference (SS) indicates cleaning ability decreased as the number of disinfection procedures increased.

\* Indicates that cleaning values improved between the initial cleaning and final cleaning

	Water	Lysol	Bleach	Discide	Cavicide	Birex
smooth vinyl	NS	NS	SS<0.05*	NS	NS	NS
textured vinyl	NS	NS	NS	NS	NS	NS
brushed aluminum	NS	NS	SS<0.05	NS	SS<0.05*	NS
stainless steel	NS	SS<0.05	NS	SS<0.05	SS<0.05	NS
Formica	SS<0.05	SS<0.05	SS<0.05	SS<0.05	SS<0.05	NS
hosing	NS	NS	SS<0.01	NS	SS<0.05*	NS

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Plexiglas	SS<0.05	SS<0.01	SS<0.01	SS<0.01	NS	NS
enameled metal	SS<0.05	SS<0.01	SS<0.01	SS<0.01	SS<0.01	SS<0.01
high impact plastic	SS<0.01	SS<0.05	SS<0.05	SS<0.05	SS<0.05	NS

**Conclusion:** Repeated disinfection procedures resulted in surface deterioration with increased difficulty in removing blood. Results varied as to surface tested and disinfectant used with the Birex having the least impact on the test surfaces.

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