

Keyboard Cleaning Efficiency Study

Introduction

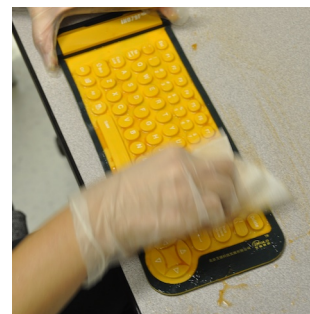
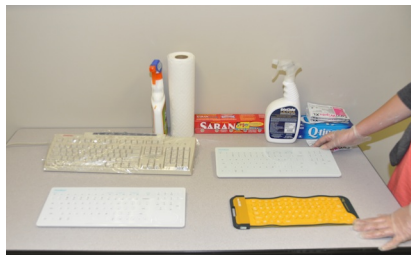
Cleanable computers have become important in many environments where infection control and cleanliness is important. In some cases, the keyboard must be cleaned several times per day. This can lead to a decrease in productivity, in proportion to the time required for each cleaning. It is therefore desirable to quantify the cleaning efficiencies of different types of hygienic keyboards.

Method

Four types of keyboards were used in the study: a standard desktop keyboard, a standard keyboard wrapped in plastic wrap, a rubber keyboard, and a Cleankeys keyboard (with an acrylic top and a glass top). Each keyboard was sprayed with a diluted ketchup solution from a dispensing bottle, and then cleaned. The time required to thoroughly clean the surface was recorded.

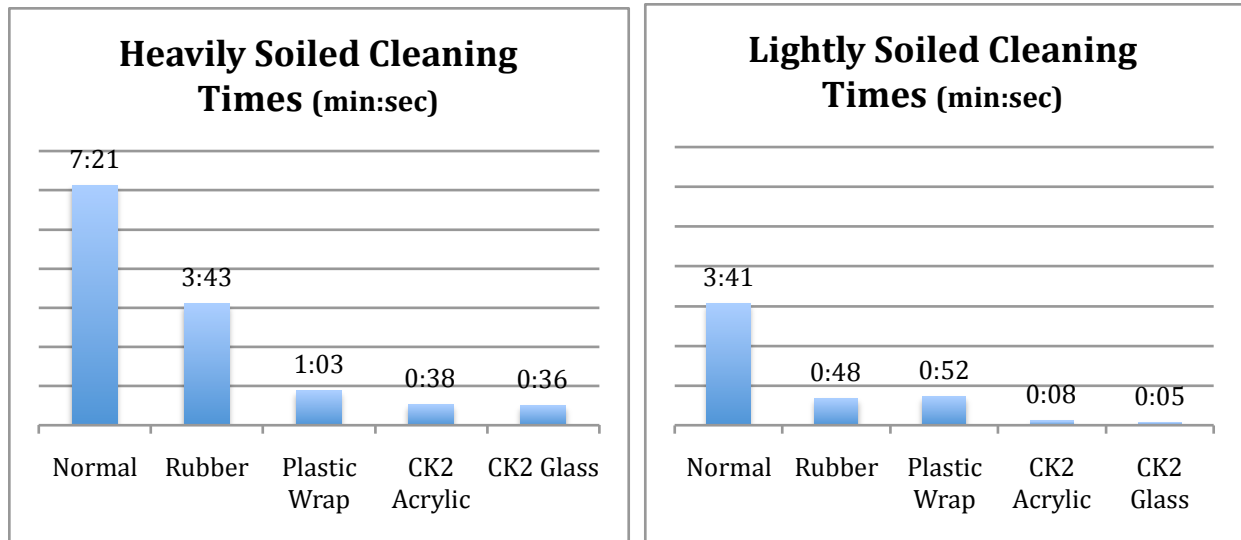
The test was conducted six times for each keyboard: three times with the surface lightly soiled (one spray of ketchup) and an additional three times with the surface heavily soiled (three long sprays). Cleaning was performed by the same person for each test, who was an independent participant who didn't know the purpose of the study. Several cleaning supplies were provided, including disinfecting wipes, Q-tips, paper towel, and a small brush.

A second person timed the cleaning on a stopwatch, and also inspected the keyboard cleaning for completeness after each test. If additional cleaning was required, the timer resumed until the cleaning was complete (deemed to be when no perceptible presence of the ketchup solution remained on the surface of the keyboard).



Results

The average times of the three cleanings for each keyboard for both lightly and heavily soiled experiments are shown in the charts below:



Observations

- Significantly more cleaning supplies were required for the Normal keyboard (including wipes, paper towel, and Q-tips).
- The rubber keyboard required the use of Q-tips to thoroughly clean between the keys.
- It took approximately the same amount of time to replace the plastic wrap on the normal keyboard as it did to clean it with the wrap still in place .
- Contaminant found its way beneath the folds of the plastic wrap, requiring the plastic to be partially unwound in order to clean it.
- The rubber keyboard was also tested by cleaning it under running water in a sink. Including the time walking to/from the sink (15m), the time to clean the rubber keyboard was cut in half for heavily soiled cleaned in the sink, and marginally longer for lightly soiled (as compared to cleaning it in place).
- It took slightly less time (2-3 seconds) to clean the glass version of Cleankeys as compared to the acrylic version.
- Cleankeys left the lowest amount of residue behind with a single wipe.
- Most cleanings required 2 cleaning wipes per keyboard (although the normal keyboard required 3 for the heavily soiled condition).

Discussion

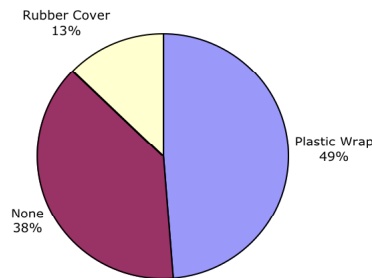
The results show that Cleankeys is many times more efficient than both the rubber and normal keyboards. When compared to the plastic wrapped keyboard, Cleankeys was about twice as efficient for heavily soiled and ten times more efficient for lightly soiled. Even though the plastic-wrapped



keyboard fared the best of the non-Cleankeys solutions, it is tedious and somewhat unprofessional looking as shown below.



Plastic-wrapped Keyboard



Survey results of 200 dentists

In a separate survey of 200 dentists¹, it was found that 49% of dentists who have keyboards in their operatories are currently using plastic wrap to protect their keyboard. This suggests that even though other solutions are available (such as rubber keyboards), most dentists have chosen to use plastic wrap. This correlates with the data of this study, which shows plastic wrap to be the most efficient choice (not including Cleankeys), albeit the least aesthetic.

Applying the survey proportions to the experimental results in this study, Cleankeys saves an average of nearly 2 minutes per cleaning (1:51). Assuming a dentist sees at least 6 patients per day in a given operatories (with the keyboard being cleaned each time), this results in a total savings of 4 ½ hours per month, or over 50 hours per year in each operatories.

In addition to being faster, it was observed that the surface of Cleankeys was also the most effective to clean (the lowest amount of residue left behind after each wipe). This translates into more effective infection control in the operatories – whether that be dental or hospital.

Conclusion

Cleankeys was the most efficient keyboard to clean of the four tested. The average time saved per cleaning was 2 minutes, which scales to over 50 hours per year for a typical dental operatories. Additionally, Cleankeys was the most effective keyboard to clean, leaving behind the least amount of residue per wipe. It also took the least amount of cleaning supplies. Cleankeys saves time, supplies, and money, yet is also the most effective aseptic keyboard solution for infection-sensitive areas.



¹ *Survey of Keyboard Protection in Dental Operatories*, reported internally by Cleankeys Inc., January 2010.