

An evaluation of an 'Air Cleaning System' to reduce aerial microbial contamination during patient treatment

Final Year Microbiology Examination Project – University of Cardiff, Wales, UK

ABSTRACT

Objectives

1. To measure both the aerosol contamination produced during different dental procedures and the baseline when no patients are present in the dental hospital.
2. To assess the extent that the "High-Performance Air Cleaning System" [IQAir® Dental Pro with Flex Vac™ source capture kit] reduces bacterial levels at baseline (when no patients are being treated).
3. To evaluate the efficiency of the "High-Performance Air Cleaning System" in reducing bacterial levels during different dental procedures.

Methodology

Microbial air sampling was carried out in three different clinics in the Dental Hospital, Cardiff. Firstly, baseline samples were taken on weekends when no patients were present in the Dental Hospital. Samples were obtained in the dental clinics, once with the Air Cleaning System (ACS) in operation and once with it switched off. Secondly, different dental procedures were carried out in three separate dental clinics and the Air Cleaning System was tested for its ability to remove aerosol contamination.

Results

1. Dental procedures were found to increase aerosol bacterial contamination.
2. There was a statistically significant reduction in bacterial aerosols at baseline in each of the three clinics examined with the ACS in operation.
3. There was a significant reduction in bacterial aerosols during dental procedures such as the placements of a restoration, scale and polish, and tooth extraction with the ACS working.
4. In two of the four dental procedures the ACS was able to reduce the mean bacterial levels around the patient to approximately background levels.

Conclusion

The "High-performance Air Cleaning System" [IQAir® Dental Pro with Flex Vac™ source capture kit] is efficient at dramatically reducing air contamination in a clinical environment.



High-efficiency air cleaning system **IQAir Dental Pro** with **FlexVac** source capture kit



Cross Section of the system's interior