

Biomedical Research Award

Dr. Carlos Flores-Mir, *University of Alberta*

2021 AAOF synopsis BRA “Biological sources and the persistence of aerosols generated by various dental procedures.”

Short Biography:

Carlos Flores-Mir was born in Peru. He completed his dental (1994) and dental specialty in orthodontics (1998) training at the Universidad Peruana Cayetano Heredia in Lima – Peru. In parallel, he also completed his BSc (1994), MSc (1997) and DSc (2002) degrees in Stomatology in the same institution. In 2002 he immigrated to Canada, where he completed a post-doctoral fellowship in the Orthodontic section at the University of Alberta (2005). Since 2005 Dr. Flores-Mir has been teaching full time at the University of Alberta in different capacities. He is currently the Interim Orthodontic Graduate Program Director and the Associate Chair, Graduate Studies. Dr. Flores-Mir has held a Canadian unrestricted orthodontic specialty licence since 2007. He has practiced extramurally since 2008.



Project Description:

Droplet aerosolization during orthodontic procedures has been a prime concern in the dental community since the start of the COVID19 pandemic. Due to the nature of such treatments, large blooms of dental spray is generated, which puts the dental personnel at risk of contracting microbial infections carried out by the dental spray. However, limited studies have been done about the sources of these generated sprays, their microbial constituents, and how long they persist in the operatory area. As such, the risk of dental aerosol generating procedures is unknown currently. During routine orthodontic procedures, the dental professional is exposed to aerosols fluids from a variety of anatomical areas (salivary glands, nose) due to the use of air/water syringes and hand pieces. Since aerosols remain in circulation for a significant amount of time after the termination of dental treatment, other patients and the dental staff can be at risk of developing a variety of illnesses based on the biological content of the circulating aerosols. Current guidelines, based on empirical data, recommend using pre-procedural mouthwashes to reduce the microbial burden in saliva. It is unclear whether the circulating aerosols contain significant microbial content from the nose, and as such would warrant additional pre-procedural antimicrobial nasal sprays.

Benefit to the Orthodontic Community

An improved understanding of the physical characteristics of the generated dental spray, their biological origin, how far they travel, and how long they are airborne is critical to assess if additional infection control procedures are needed when providing orthodontic treatment. During this pandemic times full understanding of the potential orthodontic aerosol

contamination is paramount. Results of these tests should shed some light on this critical area. Adaptation of current infection control guidelines based on these results would benefit generations of patients, orthodontic support staff and orthodontists.

Importance of AAOF support:

Laboratory tests costs associated with analyzing the collected samples are expensive. The provided AAOF grant funds are indispensable to support this project. I have been fortunate to be supported by the AAOF multiple times. I have been able to publish many publications based on AAOF funding. This support has been critical to advance my academic career.