Licensing and Technology Transfer Opportunity: Manipal University

Title of Technology Available:

TrapAero : Device for the entrapment of aerosols during dental procedures

Brief Description of Invention:

A device used for isolation of the operating field while doing dental clinical procedures on patients. This device enables the physician to get a clean visual working field with better accessibility and visibility. This will further help in infection control and to prevent nosocomial infections that can easily be spread if appropriate precautions are not taken.
TrapAero is a modification of rubber dam frame. It is a hollow frame and has perforations on the inner aspect of the frame. The frame has spikes on its posterior aspect so the rubber dam is to be attached from behind. Once the high volume suction of the dental chair is attached to this frame the aerosols that are splattered during the dental procedures will thus be sucked in and trapped inside the frame. The device can then be detached and autoclaved for reuse.

Brief Background of Invention:

Oral fluids get aerosolized during dental procedures like scaling, cavity preparation, crown preparation, periodontal procedures, air abrasion etc. and may carry microbial pathogens. These pathogens are not only harmful for the dentist but also for the other patients visiting the clinic afterwards as it stays in the environment for about 6 hours or more. Despite various precautions taken like pre procedural rinses, use of high volume suction and other infection control methods some amount of aerosol is always dispersed in the environment during dental procedure. There is some evidence for greater prevalence of respiratory diseases like tuberculosis and hepatitis B, HIV and Oral bacteria have been detected two meters from the procedure field, indicating the existence of aerosolized oral microbes in dental practice. As there is no existing device for entrapment of aerosols this device would contain the aerosols and prevent the further spread of diseases.

Describe the final product:

TrapAero is a device that can be used by dentists to prevent contamination by aerosols in the dental clinics/hospitals. The device is a modification of rubber dam frame. This device is hollow and has perforations on the inner aspect of the frame. Once the high volume suction of the dental chair is attached to this frame the aerosols from the surrounding environment will be sucked in. Thus preventing the contamination by aerosols and nosocomial infections.

TrapAero is a hollow modified rubber dam frame. This frame has a tube on one side which can be connected to the high volume suction of the dental chair. On the other side a small

opening where the suction tube can be attached and can be placed inside the patients mouth. The frame has spikes on its posterior aspect so the rubber dam is to be attached from behind. On the inner lateral aspects of the entire frame perforations are present. Thus once the frame has been put with the rubber dam and attached to the high volume suction tube all the aerosols that are splattered during the dental procedures will thus be sucked in and trapped inside the frame. These aerosols will then be discarded through the suction lines. TrapAero is an autoclavable frame and thus is a one-time investment.

Technological Domain (Keywords):
Aerosol entrapment/containment, infection control, cross contamination, nosocomial infections

Proof of Concept:

A 3D model was printed in ABS material. The prototype was tried on a phantom head in Manipal College of Dental Sciences, Mangalore.

Stage of Development:
Ideation/Prototype/Advanced Prototype/Ready to Market technology - **PROTOTYPE**

Provide Information on Competitors who manufacture and/or sell similar products: NA

What are the unique advantages your innovation has compared to the competition:

- No such product already exists in the market.
- The frame is autoclavable hence reusable for every patient.
- One time investment.
- Can be attached to any dental chair – no additional inventory required.
- Made of sturdy material that will not wear off easily.

A few potential companies who might be interested in this technology:
Dental chair suppliers, local dental equipment manufacturers

Intellectual Property Status: Indian Patent application with number **201941033573**
filed in 20 AUGUST 2019 (mention year)