Laryngoscopic Attachment

Team 32: **Ruhaan Bhagat, Zixin Guan, Zixian He, Yousuf Shehadi, Camila Zhan Jin**
Advisors: **Tommaso Ranzani, Anand Devaiah (BU Chobanian & Avedisian School of Medicine)**

The COVID-19 pandemic has greatly impacted the world, exposing societies to significant risks of contamination and transmission. How COVID-19 can be transmitted through close contact and airborne transmission made the virus highly transmissive. This also impacted the view on how to prevent contaminations during intubation, which is establishing an airway, a bedrock of medical practice, especially when COVID-19 and many other diseases commonly cause respiratory issues. The intubation process is also important for all kinds of emergencies, surgeries, airway support, respiratory support, and other life-supporting needs. While performing intubation for COVID-19 patients, it has shown us that there is a significant risk of respiratory pathogens spreading to near areas through normal breathing and coughing. Being able to actively reduce the pathogen load during intubation would be a significant risk reduction and reduce the need for other more elaborate measures to protect healthcare workers. To address the challenge, we have designed a laryngoscopic attachment that can be attached to various sizes of laryngoscope blades and connects to suction sources available in all operating rooms. Our device has undergone rigorous testing, including fluid collection tests, particle counting tests, and fast Fourier transform analysis, to evaluate the feasibility of the negative pressure environment to collect particles released from breathing and coughing. Our findings demonstrated that the laryngoscopic attachment effectively reduces the exhaled particle load from patients during intubation, enhancing the safety of medical professionals and patients alike.