

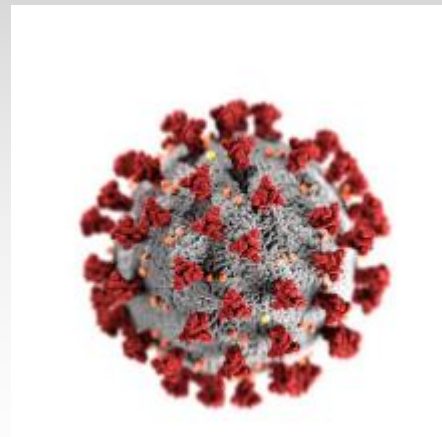
Management of Anesthesia for COVID-19 Positive Patients

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Introduction

COVID-19 remains a world-wide pandemic and shows no signs of improving in the future months. COVID-19 has been detrimental to many industries while healthcare remained in the spotlight, providing treatment, research, and in most cases end of life comfort for the patients and family positively infected. During the pandemic, the healthcare industry has been forced to make dramatic changes from the previous ways of patient care, specifically in the areas of anesthesiology, respiratory therapy, and pulmonary medicine. Being one of the deadliest airborne pandemics, with a death toll surging to over 213,000 victims (Center for Disease Control, 2020) these specialties are embarking on uncharted territory in treatment of dying patients, striving to provide uncompromised patient care while as to not fall victim themselves to the deadly virus. Proper management of the positively tested COVID-19 patient is essential to the well being of the patient, and the healthcare personnel providing care. With avoidance of contamination, isolation, and specialized protocols put into place, management of the positive COVID-19 patient will be effective.

The goal of this research is to determine what anesthesia technique is the best for COVID-19 positive patients undergoing surgery that will be most often prevent transmission of COVID-19 to health care providers.

Background

Coronavirus Disease 2019 (COVID-19) is a deadly disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus. The coronavirus family causes a variety of upper respiratory tract illnesses. Coronavirus became a known virus to the World Health Organization in early January 2020, was declared as a pandemic in March 2020, and is still deemed a pandemic in December 2020. COVID-19 is spread through respiratory droplets being introduced into an individual's system from those that are infected; this can be airborne or from contact with surfaces infected by the respiratory droplets. COVID-19 is a disease with symptoms that can vary drastically, while some may experience no symptoms at all, others may need to be hospitalized for the life-threatening state they are in, and there are many other symptoms ranging from mild to detrimental that are associated with the disease. Certain groups of people are more at risk for the more severe symptoms leading up to potential death. Of the confirmed cases data, the majority of people that contracted COVID-19 were between the ages of 18 and 64, however the percentage deaths from contracting COVID-19 rise dramatically for people ages 50 and up (Center for Disease Control, 2020). Another factor that will determine the magnitude of symptoms felt by those that contract the disease is their overall health. If A COVID-19 positive individual is immunocompromised their body may not be strong enough to fight off the disease.

Materials and Methods

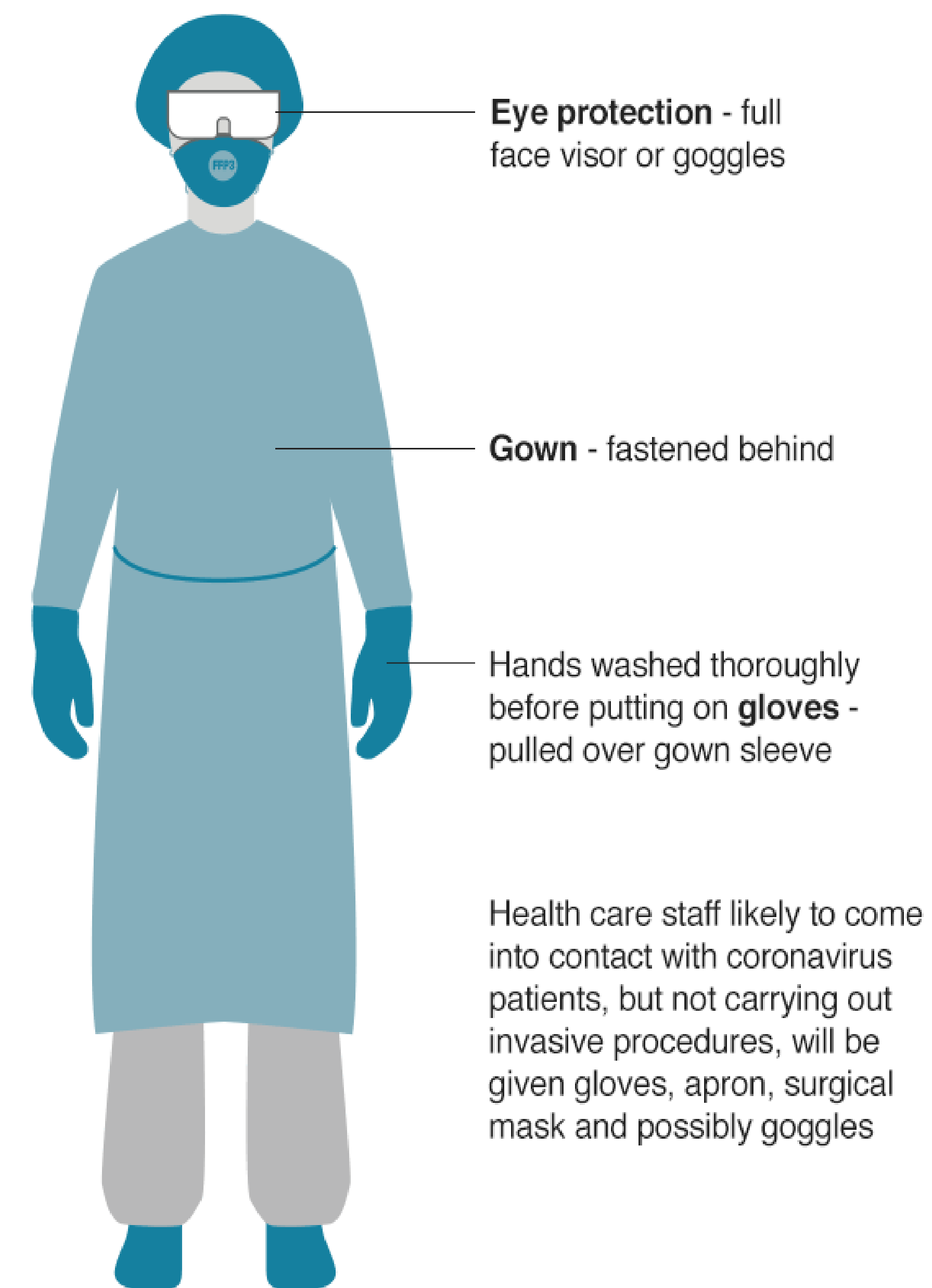
As COVID-19 is a relatively new virus, there have been minimal studies conducted that will indefinitely answer which anesthesia option is the best to minimize transmission from the COVID-19 positive patient to the health care provider. In his article Coronavirus disease 2019 (COVID-19): Anesthetic concerns, including airway management and infection control, London mentions a study that shows how likely it is for a health care provider to contract COVID-19 from a positive patient undergoing General Endotracheal Anesthesia (GETA). This study will help put into perspective how often transmission from the COVID-19 positive patient to healthcare providers can occur.

Participants

A self-reported study followed 1,718 clinicians after performing tracheal intubation during general anesthesia (GA). These clinicians were wearing the proper PPE (personal protective equipment) that anesthesia providers should wear while caring for COVID-19 positive patients. Some of these include but are not limited to N95, eye protection, gown, shoe covers, and towels to cover the neck and ears.

Personal protective equipment for health staff handling coronavirus patients

Full protective gear given to staff carrying out procedures likely to generate coughing, such as inserting a tube to aid breathing



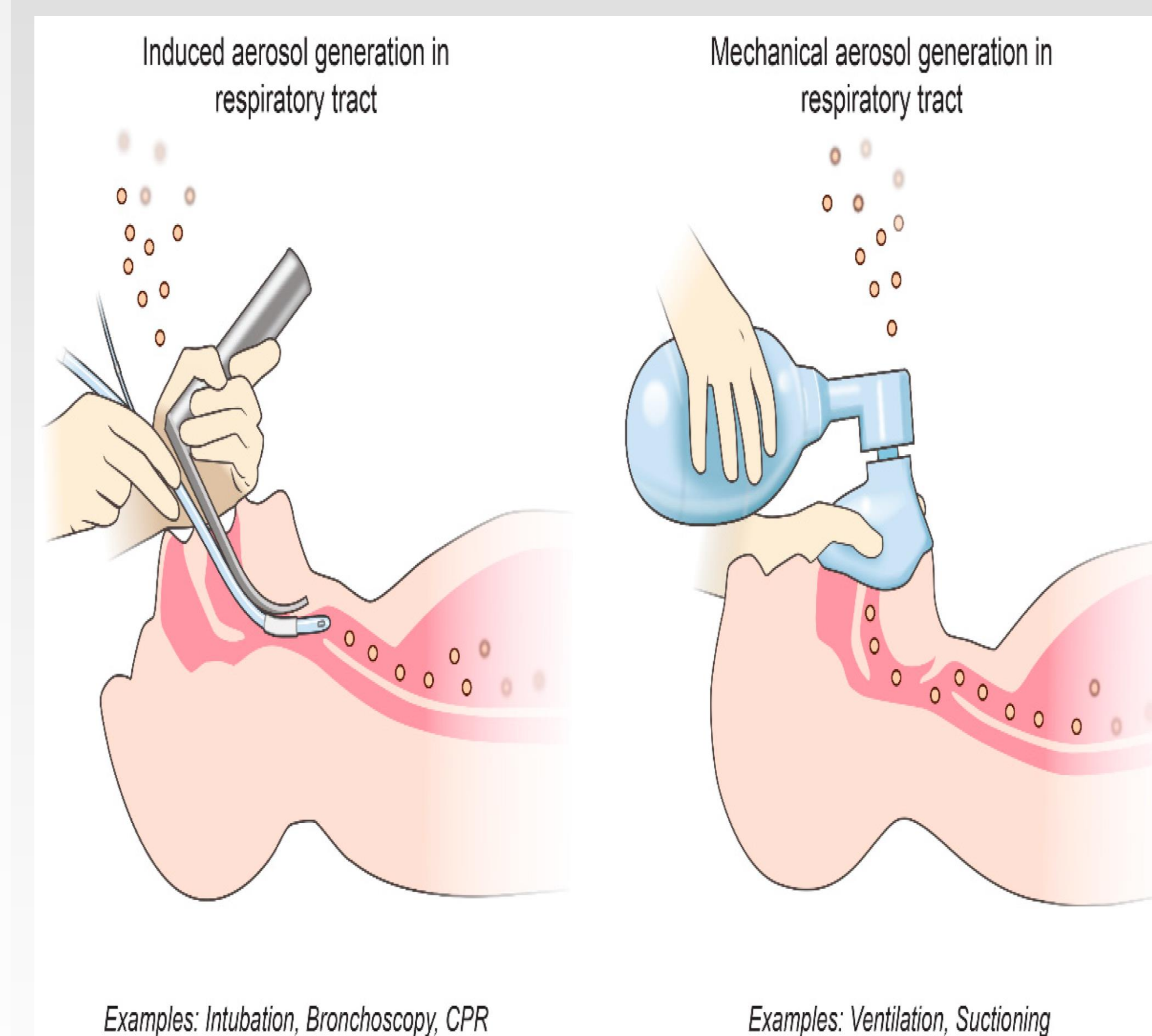
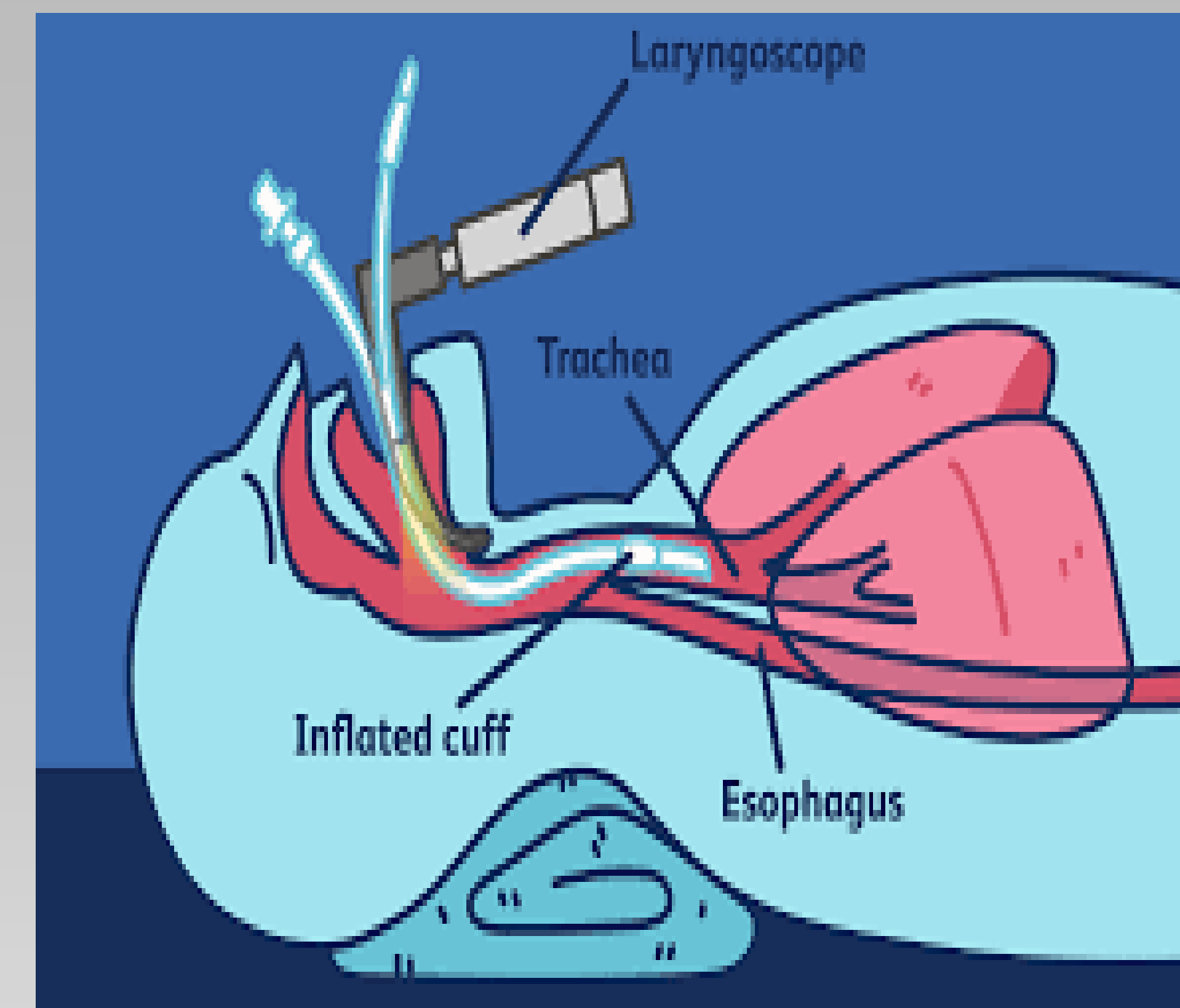
All the equipment is disposable

Source: Public Health England



Results

3% of clinicians reported positive for COVID-19 and another 8% had COVID-19 symptoms. However, because this was a self-reported study it is important to note that there is no way to know indefinitely if all clinicians used the recommended PPE properly.



Discussion

Because health care providers are most commonly exposed to the aerosol droplets from the patient during intubation and extubation GETA seems to be the type of anesthesia that will most frequently transmit COVID-19 to health care providers. Because of the high exposure to aerosol droplets during GETA it is highly recommended that the anesthetist should perform a rapid sequence induction (RSI) to minimize the exposure time. Other types of anesthesia such as Total Intravenous Anesthesia (TIVA) and Regional Anesthesia (RA) will more than likely be a better proven technique to stop the transmission from patient to provider. Gupta et al. predicts that TIVA with a spontaneously breathing patient will make a comeback as the anesthesia technique of choice due to the COVID-19 outbreak. When the anesthetist does not have control of the airway through endotracheal intubation aerosol droplets from the patient are much less likely to transmit COVID-19 to the patient care team. Lie et al. argue for the use of RA when possible for the COVID-19 positive patient. RA eliminates the need for volatile anesthetic use during surgery. RA is preferred over GETA because the patient does not need to be intubated, so that minimizes the risk for aerosol drops from the COVID-19 positive patient to reach the patient care team. Either TIVA or GA should be the first anesthesia option for COVID-19 positive patients when possible because they will minimize the risk of transmission. We have so much more to learn about the COVID-19 virus, and hopefully with further studies the risk of health care providers contracting this disease from positive patients will greatly diminish.

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