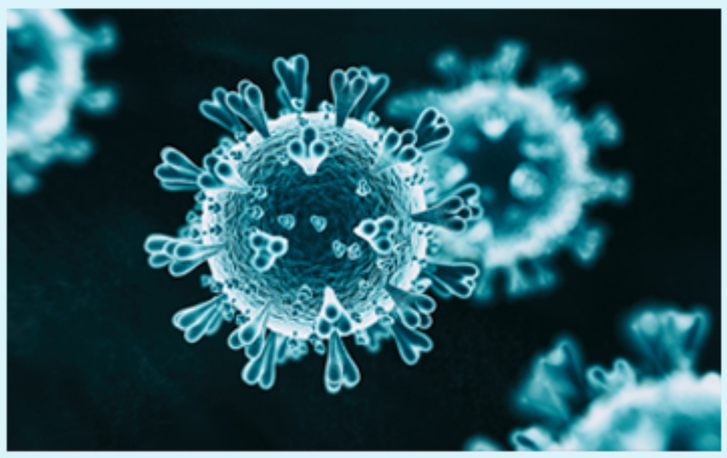
RADIUS ANESTHESIA

NEWSLETTER

How Coronavirus Impacts the Medical Device Industry



The global pandemic of COVID-19 has had far-reaching economic consequences in the medical device industry. Namely, the manufacturing of medical devices has been impacted. This is combined with the funneling of resources to treat COVID-19, resulting in a lack of elective medical procedures. Furthermore, international supply chains could be compromised. For example, some experts estimate that around 40% of US medical device supply chains from China could be impacted. FDA workers - who originally inspected goods exported from China - have also returned to the US. The FDA reports that virtual inspections are still possible with the aid of new testing strategies; however, a long-term disruption of the FDA could negatively impact patients and consumers. Due to the lack of elective surgeries, many patients are also choosing to forego or delay surgical procedures. Thus, many medical device manufacturing companies have warned investors of a potential slow-down. Finally, there are reports that major manufacturing companies Boston Scientific and Medtronic have stated that the lack of elective medical procedures in China will cause long-term impacts on financial performance.

Guidance from the Anesthesia Patient Safety Foundation (APSF) and American Society of Anesthesiologists (ASA) on Repurposing Anesthesia Machines to ICU Ventilators

Currently, the SARS-CoV-2 pandemic (COVID-19) has over 2 million cases and over 100,000 deaths. (1) COVID19 is a respiratory disease that spreads through droplet release or surface contact by contagious individuals. (1) Complications include pneumonia and organ failure, although a majority of cases demonstrate mild to moderate symptoms. (1) Mechanical ventilation has shown to be an effective treatment for patients with severe respiratory failure. Anesthesia machines, in particular, have ventilators that are equipped with these properties. Although the FDA does not approve anesthesia ventilator use for long term support, anesthesia ventilators represent a viable backup in the case of equipment shortage. The APSF and ASA has a frequently updated guide on repurposing anesthesia machines as ICU ventilators, as well as documents outlining setup/monitoring instructions, uses of volatile anesthetics for sedation of ICU patients, and advice for patient support during machine power-up. Anesthesia machines not in use can be found in local operating rooms, ambulatory surgery centers, clinic or office based practices, and through anesthesia equipment distributors. It is necessary to have an anesthesia professional available for machine servicing and monitoring while in use on ICU patients. Furthermore, an understanding of machine capability, controls, and differences is important for patient safety. The APSF/ASA maintains a 24/7 hotline at 1-800-224-1001 to provide specific support for changing anesthesia machines into ICU ventilators

3-D Printing Personal Protective Equipment during COVID-19

The COVID-19 crisis has caused a paucity of personal protective equipment for our healthcare workers and other essential workers on the front lines combating the disease. However, engineers and everyday 3-D builders have been collaborating and sharing designs to combat this shortage. 3-D printing companies and online forums, such as Prusa Research and Thingiverse, have begun providing open-source computer-aided design (CAD) files of face shields and masks for anyone with a 3-D printer to use. These printed designs consist of printed headbands and either a laser cut plastic sheet or repurposed plastic bottle template for the “shield.” The level of these at-home manufacturers range from 3rd graders printing for local businesses to those with entire workshops printing thousands per week for hospitals. The 3-D printing community is growing even more cohesive and extensive as these devices become commonplace not only in schools across the nation, but also on the common handyman’s workbench. In these times of difficulty, it is refreshing to see those with the means coming together to provide for the people pro tecting us from this debilitating disease.

Anesthesiologist Struggles with Coronavirus

In a recent interview, Dr. Steve Lee discussed the challenges that he faced while suffering from COVID-19. Several weeks ago, Dr. Lee developed a mild headache, which he attributed to dehydration. However, Dr. Lee's symptoms worsened as he began experiencing skin irritation, dry hacking, and definite fever.
Unbeknownst to Dr. Lee, he was presenting with the initial symptoms of COVID-19, which also attacks ACE2 receptors, affecting his sense of smell. Dr. Lee soon tested positive for COVID-19 and seven days on bed rest during the recovery process. Interestingly, Dr. Lee is an avid runner and cyclist and maintains a healthy diet. Despite being very healthy and not having any underlying health conditions, Dr. Lee was still severely affected by COVID-19. According to Dr. Lee, this should serve as a warning that even healthy individuals who are not in the at-risk group can still be impacted by COVID-19.

Harvard Researchers Suggest Social Distancing Necessary through 2021

An understanding of the future of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission is essential. Researchers at Harvard School of Public Health used estimates of seasonality, immunity, and cross-immunity for betacoronaviruses OC43 and HKU1 from time series data to train a model of SARS-CoV-2 transmission. Based on their model, Kissler et al predicted that recurrent wintertime outbreaks will probably occur after the initial pandemic. To avoid exceeding critical care capacities, social distancing may be necessary into 2022. Additional interventions, such as expanding critical care capacity and developing more effective therapies, would enhance the success of intermittent social distancing and expedite the acquisition of herd immunity. In the event of apparent elimination of the virus, SARS-CoV-2 surveillance should still be maintained to avoid a resurgence in the contagion, which could occur as late as 2023. To determine the extent and duration of immunity to SARS-CoV-2, additional longitudinal serological studies are critical.

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