

# **Air Superiority for the Pandemic War:**

## **Aviation Can Breathe Life into Our Nation and the World**

### **Executive Summary**

#### **Introduction**

The novel corona virus, SARS-CoV-2 (Covid-19) continues to spread around the world. As of June 18, it has infected more than 8.3 million people worldwide, and in the United States alone is projected to have killed more than 117,000. Based on infection rates, experts project up to 70% of the US population may contract Covid-19 over the next year. What does the upcoming winter look like should the flu and corona virus epidemics occur at the same time?

Current therapies aren't sufficient at overcoming the deadly hypoxemia (low oxygen) caused by this virus. While many are asymptomatic or only have minor symptoms, severely affected people require hospitalization. Currently, emergency treatment for the profound oxygen deprivation of COVID-19 respiratory crisis includes the use of mechanical ventilators which has a dismal mortality rate as high as 80%

With limited successful therapies, our only defense options have been to implement long term lock downs and social distancing. The resulting economic impact is as devastating as the disease. The Aviation Industry has seen a 95% reduction in air travel leading to the grounding of almost two-thirds of the world's passenger aircraft.

#### **Hyperbaric Oxygen Therapy (HBOT) Effective Therapy for Covid-19**

HBOT offers the distinct advantage of increasing blood oxygen levels by non-invasively increasing the atmospheric pressure of oxygen external to the patient. HBOT is regularly used as a treatment for a range of issues, from carbon monoxide poisoning to flesh eating infections and non-healing wounds. Because HBOT reduces inflammation, promotes tissue regrowth and inhibits infection, it stands to reason that HBOT makes for an ideal rapid response treatment for many other conditions. Furthermore, HBOT is very low-risk.

HBOT is being investigated nationally and worldwide as a treatment for the hypoxia and lung damage associated with Covid-19. Thus far the studies already in progress are showing 100% survival rate. These preliminary study results may lead to emergency use authorization of HBOT for Covid-19.

#### **Aircraft are HBOT Chambers**

The current supply of hyperbaric treatment facilities is limited and may not meet pandemic level requirements. Fortunately, aircraft can be utilized as rapid deployable, lifesaving HBOT chambers. The fuselage of a commercial airplane is a large hyperbaric chamber, designed to sustain the pressures of up to 9 psi in order to compensate for reduced air pressure and oxygen at high flight altitudes. Therapeutic pressures of 1.5 – 1.6 ATA (7.34 or 8.81 added psi) are safe and achievable on the ground and are well within safe structural tolerance.

Soon-to-be retired aircraft such as 757s and 767s, MD-88s and MD-90s, to name just a few, could be utilized as "Aircraft HBOT" (AHBOT) units using ground pressurization, power and air handling units. These passenger aircraft deployed to regional and executive airports would provide easy access for EMS transport to and from local hospitals. Remote hospitals could be established for patient support during HBOT treatment periods. These aircraft could mobilize and treat hundreds if not thousands of patients per day in the regions with greatest need.

#### **Recommendation**

We recommend aviation, business, and medical communities with assistance from the FDA, the Pressure Vessel for Human Occupancy (PVHO) and National Fire Protection (NFP) code bodies take swift coordinate action to deliver this life saving measure against this and future pandemics. AHBOT as a large-scale treatment strategy will provide armament "for victory over this epidemic". Together, we can breathe life into our nation, and the world.