# COVID-19 Sleep Lab Guideline
**December 2020**

## Introduction

On March 11, 2020, the World Health Organization declared the COVID-19 pandemic (WHO Director-General's Opening Remarks At The Media Briefing On COVID-19 - 11 March 2020, 2020). This event permanently altered society, including how we implement healthcare for our patients. In the field of Sleep Technology, there has been a paucity of resources written specifically to inform our approach to sleep-disorder diagnosis and treatment. The AAST has undertaken an initiative to collate the vast amount of COVID-19 recommendations into a position statement in order to document rapidly-evolving response to the pandemic. This guidance is not a standard or regulation, and it creates no new legal obligations. It contains recommendations as well as descriptions of mandatory safety and health standards. The recommendations are advisory in nature, informational in content, and are intended to assist employers in providing a safe and healthy workplace. When no published guidelines could be found, observed best practice among surveyed accredited sleep facilities was utilized.

During the public health emergency, decisions to restrict, cease, or resume sleep-related health care services should be guided by state executive orders (State Executive Orders – COVID-19 Resources For State Leaders, 2020), local transmission levels (Coronavirus Disease 2019 (COVID-19), 2020), and directives from state and local departments of health (Health Department Directories - STLT Gateway, 2020). Sleep centers should refer to this guidance and be prepared to adjust operations as local conditions change.

**How can I determine the local level of community transmission of COVID-19?**
These are the general definitions provided by the CDC for the local level of community transmission (Coronavirus Disease 2019 (COVID-19), 2020) of COVID-19:
- Substantial community transmission: Large-scale community transmission, including within communal settings (e.g., schools, workplaces)
- Minimal to moderate community transmission: Sustained transmission with high likelihood or confirmed exposure within communal settings and potential for rapid increase in cases
- No to minimal community transmission: Evidence of isolated cases or limited community transmission, case investigations underway; no evidence of exposure in a large communal setting

Trends in local transmission should be viewed over time using available county-level data. Sources for this data include the CDC (Coronavirus Disease 2019 (COVID-19) In The U.S., 2020), USA Facts (US Coronavirus Cases And Deaths, 2020), Johns Hopkins University (COVID-19 United States Cases By County - Johns Hopkins Coronavirus Resource Center, 2020), and Harvard Global Health Institute (The Path To Zero: Key Metrics For COVID Suppression – Pandemics Explained, 2020).

According to the CDC (Coronavirus Disease 2019 (COVID-19), 2020), some procedures are more likely to generate higher concentrations of infectious respiratory aerosols than coughing, sneezing, talking, or breathing. These aerosol-generating procedures (AGPs) potentially put healthcare personnel and others at an increased risk for pathogen exposure and infection.

Commonly performed medical procedures that are often considered AGPs, or that create uncontrolled respiratory secretions, include:
- Open suctioning of airways
- Sputum induction
- Cardiopulmonary resuscitation
- Endotracheal intubation and extubation
- **Non-invasive ventilation (e.g., BPAP, CPAP)**
- Bronchoscopy
- Manual ventilation

Below are a set of guidelines for reducing the risks from infection. Keep in mind that this is only a representation of how some sleep centers have responded and the approach for your area may be different. Each of the preventative measures described, while indicative of the relative level of precautions that sleep centers are taking, are not necessarily in use at every center. Preventative measures are largely influenced by a number of factors:
- The rate of community transmission, from none to high, will serve to influence the level of precaution necessary to reduce risk of infection (i.e. more comprehensive safety measures for regions with higher COVID-19 rates)
- The resources of the institution, including the availability of PPE, staffing, equipment, COVID-19 testing capability, and the existing infrastructure of the facility, will impact how well a sleep center will be able to adapt
- The triaging process may limit higher-risk AGPs in the sleep center and increase reliance on telehealth workflows, reducing the need for stringent infection control

## Patient Screening

Patient screening procedures should take place at the time of the office visit, prior to sleep center arrival, and at the sleep center. Screening procedures and questions may vary by location or organization relative to prevalence of COVID-19 in the community.
- COVID-19 Testing
  - Testing within 48-72 hours of the appointment followed by patient self-quarantine until the sleep study or limited exposure and social distancing for 14 days before the sleep study is recommended
  - Rapid testing at the sleep center may be performed if available
  - Parents or caregivers accompanying the patient should also be screened for COVID-19
- Phone call the day prior to the scheduled office visit:

- o Ask questions related to possible exposure:
    - Were you out of the country? Out of the state?
    - Were you exposed to anyone that has tested positive for COVID-19?
    - Have you had a fever of 100.4 or greater?
    - Have you had a dry cough?
    - Have you had shortness of breath?
    - Have you lost your sense of taste or smell?
    - Have you had a sore throat?
    - Have you had any headaches?
    - Have you been tested for COVID-19? Has anyone you reside with been tested?
  - o Recommended instructions to the patient:
    - You need to wear a mask that does not have exhalation ports or valves that also covers your *nose and mouth* [(Coronavirus Disease 2019 (COVID-19), 2020)](#).
    - You need to come alone (unless the patient is a minor or needs assistance)
    - Early arrival time and/or new procedures may be required
    - If you are feeling ill, please DO NOT COME IN, please call and reschedule your appointment

- Day of appointment
  - o All patients must wear a mask that does not have exhalation ports or valves that also covers their *nose and mouth*. Individuals without a mask will be offered one, if they refuse, entry to the facility may be denied.
  - o All patients will be asked:
    - Were you out of the country? Out of the state?
    - Were you exposed to anyone that has tested positive for COVID-19?
    - Have you had a fever of 100.4 or greater?
    - Have you had a dry cough?
    - Have you had shortness of breath?
    - Have you lost your sense of taste or smell?
    - Have you had a sore throat?
    - Have you had any headaches?
  - o The patient will have their temperature checked using a non-contact infrared (IR) thermometer
    - If temperature is 100.4 or greater, without the use of fever-reducing medication, the patient will be denied entry to the sleep clinic [(Communities, Schools, Workplaces, & Events, 2020)](#).

## Alternative Care Delivery

**Diagnostic testing alternatives.** The ability to safely and effectively diagnose sleep disorders using attended PSG has been complicated by increased layers of safety precautions and patient hesitancy to schedule in-lab studies during the pandemic. Last minute cancellations and no-shows have disrupted operations.

- Most sleep centers have increased the use of home sleep apnea testing (HSAT) units, and are either dispensing HSAT units through the mail or using curbside pickup and return, to reduce patient contact. In many sleep centers part of this process involves a 72-hour wait before

processing returned equipment based on limited research findings that the virus can exist on surfaces for multiple days. Manufacturer-recommended cleaning procedures should be followed to assure a safe turnover of devices.

- Some sleep centers are using a "drop-ship" method for direct delivery to the patient to avoid sleep center personnel handling the unit at any time.
- Instructional brochures and videos are widely available to ensure proper set-up, as well as safe handling of the equipment upon arrival. Virtual communication can be used for this purpose as well.

**Therapeutic treatment alternatives.** The potential for viral shedding from PAP aerosolization is a significant risk factor being addressed in sleep centers. In order to reduce the risks to sleep center personnel and other patients and caregivers related to PAP therapy, a number of alternative treatment methods are temporarily being utilized, including:

- Referrals for alternative treatments (e.g., oral appliance therapy; positional therapy) for OSA that limits higher-risk AGPs in the sleep center and should be based on a risk: benefit assessment.
- Empiric PAP or auto PAP (APAP) has been increasingly used as a follow-up to HSAT or in-lab PSG, or as a bridge until in-lab, therapeutic polysomnography can be safely performed.
- In cases where in-lab therapeutic PSG is being performed, procedural changes being used include:
  - o Mask fitting without PAP pressure
  - o Remote titration only after the sleep technologist has vacated the room
  - o Alterations to traditional equipment and componentry
    - Non-vented NIV masks available in the inpatient setting are being repurposed for use in the sleep center after altering the components to add a filter and exhalation port [(Sleep Apnea Devices Need Filter For Use In COVID-19, Yale Doctor Warns, 2020).](#)
    - Inline bacterial/viral filters are being added in some sleep centers. (Note: inline bacterial filters cannot be used with a humidifier.)
    - Some manufacturers are producing vented masks combined with an integrated, N95-type respirator [(COVID-19 Resources | American Academy Of Sleep Medicine, 2020).](#)
    - Many sleep centers are treating all masks as "single patient use" and either discarding or giving the mask to the patient after in-lab treatment.

**Mask fitting.** One of the most vexing challenges to treatment has been developing a safer selection and fitting process for PAP masks. The following strategies are being used to promote compliance with a comfortably fitting mask.

During the public health emergency, an in-person trialing of masks is being conducted at some locations *without* PAP pressure (in the sleep center, the titration can be set remotely after the technical staff leave the room). If a patient does not find one mask comfortable, another can be tried.

Remote fitting has become more common through virtual sessions conducted by the sleep center, clinic, or durable medical equipment (DME) companies. Various mask selector applications, both smartphone and desktop-based, have been developed and have grown in popularity.

# PPE and Infection Control

The use of personal protective equipment (PPE) is an important step to limit the risk of infection, and is even more so when people are potentially exposed to COVID-19. PPE provides an effective barrier, but only if the correct equipment is used properly and consistently by everyone, including patients, visitors, and healthcare workers. PPE, in conjunction with infection control measures, can limit the risk to everyone and provide a safe environment for providing healthcare services.

**PPE – Patients and Visitors:**
Universal source control measures should be implemented for all patients and visitors. This includes the use of facemasks or cloth face coverings to help prevent dispersion of respiratory secretions. These guidelines are recommended for everyone, regardless of the presence or absence of symptoms.

- Patients and visitors should wear face coverings. The exceptions are children under two years old, persons with difficulty breathing, and those who are not able to remove the mask independently (i.e. unconscious or incapacitated).
- If the patient or visitor arrives without a face covering, a facemask should be provided by the facility.
- Patients should be allowed to remove their face covering when required during hook-up and at lights out. A face covering should be worn after lights on, or whenever the technologist is present in the room.

**PPE – Sleep Center Staff:**
PPE use can be modified based on the rate of community transmission and availability of PPE. Strategies for optimizing the supply of PPE may be indicated based on the rate of community transmission and infection.

PPE for direct patient care should include, at a minimum, face shield or goggles and an N-95 or equivalent respirator to protect the airways. Additional PPE includes isolation gowns and non-sterile gloves.

PPE should be applied (donned) and removed (doffed) as outlined by the CDC.
Steps for applying (donning) PPE include:

1. Gather PPE
2. Perform hand hygiene
3. Don isolation gown
4. Don respirator or face mask
5. Don face shield or goggles
6. Don gloves

Steps for removing (doffing) PPE include:

1. Remove gloves
2. Remove gown
3. Exit patient room
4. Perform hand hygiene
5. Remove face shield or goggles

6. Remove respirator or face mask (if not worn continually)
7. Perform hand hygiene (after removing respirator or face mask)

Facilities reusing or practicing extended use of PPE may need to modify the donning/doffing procedure.

Sleep center staff with direct patient contact should wear an N-95 respirator or equivalent (or a face mask if a respirator is not available) at all times, including while in break rooms, the control room, or anywhere where there is a chance a co-worker may be encountered. This will eliminate unnecessary touching of the mask and/or face and reduce the potential for self-contamination. Additionally, continual wearing of an N-95 respirator or equivalent will not cause a delay in the event of an emergency.

Cloth face coverings are not an acceptable substitute for a respirator or facemask for patient care. Respirators with an exhalation valve do not filter exhaled air and are discouraged.

Patients and visitors should be educated about the importance of performing hand hygiene immediately before and after touching their facemask or cloth face covering. Instructional posters displayed in common areas can be effective for education and for reminding staff, patients, and visitors to perform proper hand hygiene.

**Physical (Social) Distancing:**
Physical (social) distancing (maintaining at least six feet between people) should be maintained whenever possible by all staff, patients, and visitors. Considerations include:

- Visitors should be limited
- Patient appointments should be staggered to avoid congregation in the waiting room
- Seating in the waiting room should be arranged to maintain social distancing
- Patients should be shown to their rooms upon arrival
- Group sessions should be modified to allow social distancing. This can include implementing a video format, scheduling smaller groups where social distancing can be maintained, or scheduling individual sessions. Group sessions may be suspended as indicated.

Exposure may also occur in public or common areas, such as hallways, break rooms, and restrooms. Distancing should also be maintained in these areas. Designated break areas where distancing can be maintained, especially when unmasked, should be provided.

**Specific Types of PPE:**
PPE should be selected following the CDC guidelines [(Coronavirus Disease 2019 (COVID-19), 2020):](#)

- Eye protection (goggles with no gaps between the goggles and face and face shields covering the front and sides)
- Isolation gowns
- Non-sterile gloves
- Surgical face masks (Note: home-made cloth masks are not considered PPE)

- N-95 respirators (particulate-filtering face mask capable of filtering at least 95% of airborne particles)
- Elastomeric respirators (tight fitting, non-disposable respirator with changeable filters that meets the same guidelines as the N-95 respirator)
- Power Air Purifying Respirators (PAPRs) (headgear and fan assembly designed to actively remove a significant portion of contaminants from ambient air before delivering cleaned air to the wearer)

**Infection Control:**
Infection control measures should be performed according to CDC guidelines (Coronavirus Disease 2019 (COVID-19), 2020):

Steps to limit exposure:
- Work should be performed from home whenever possible
- Visitor access should be limited or eliminated
- PPE should be worn when working with patients
- A patient care ratio or 1:1 should be considered, if possible
- Face masks should be worn at all times when inside of the building, including when the control room is shared
- A separate room should be provided for staff to take breaks and safely remove masks to eat
- Closed (hands-free) disposal receptacles should be used, if possible

A list of Environmental Protection Agency (EPA) disinfectants for use against SARS-CoV-2 (COVID-19) can be found at (List N: Disinfectants For Coronavirus (COVID-19) | US EPA, 2020).

Patient rooms:
- Each patient room should have any extra items (bed skirts, decorative and non-functional items, etc.) removed
- Bathrooms should not be shared
- Two sets of rooms can be alternated for patient use
- An HVAC professional should evaluate air flow to determine where air is vented to/from and if it is shared with other areas

PAP: The use of PAP (including overnight titrations, split studies, PAP naps, and acclimations) should be considered AGP. Additional precautions should be taken, including:
- Ideally, **PAP use and PAP testing should be performed in an Airborne Infection Isolation Room (AIIR) or negative pressure room**

- Ventilated headboards can be used in conjunction with High Efficiency Particulate Air (HEPA) filters/machines [(NIOSH Ventilated Headboard Provides Solution To Patient Isolation During An Epidemic | | Blogs | CDC, 2020)](#).
- Designate specific room(s) for PAP use only
- Dedicate equipment for suspected or confirmed COVID-19 patients
- PAP machine bacterial filters (inline and filters in back of the blower) should be used and changed between patients

Enhanced cleaning: Consistent and correct environmental cleaning and disinfection should be performed. Full PPE should be worn for cleaning and disinfection.
- Room Surfaces:
  - Ultraviolet-C (UV-C) generating machines can be used per manufacturer guidelines. UV-C generating machines should have a delay and timer to allow staff time to safely vacate and an auto shut-off to assure safe re-entry to the room after use. UV-C light only works on surfaces it reaches, so repositioning to assure all surfaces are disinfected will likely be necessary.
- Linens
  - Soiled linens should be placed directly into receptacles and not on the floor or other objects (furniture)
  - Linens should never be shaken
  - Laundering should follow facility protocol
- Reusable PPE (face shields)
  - Cleaning should be performed per manufacturer guidelines and facility protocol
  - Storage for reusable PPE should be provided
- Equipment
  - Disposable equipment and supplies (electrodes, belts, tape measure, etc.) should be used whenever possible
  - Allow up to 72 hours before cleaning and disinfection of reusable equipment; Cleaning and disinfection should be performed according to manufacturer guidelines and facility protocol
  - HSAT equipment may sit untouched for 72 hours prior to cleaning, disinfection and downloading
  - Additional equipment may be necessary to avoid disruption of testing
  - Consider treating PAP interfaces and humidifier chambers as single patient use, or omit use of heated humidification
- High touch items
  - Special attention should be given to cleaning high-touch items, such as phones, door handles, light switches, etc.
- Medical waste should be removed and disposed of per facility protocol

Considerations:
- Meals for daytime testing should be provided with disposable utensils and service ware
- Separate gown/face shield should be used for each patient and can be hung outside of the patient's room for easy access during the shift

The prevalence of COVID-19 should be monitored continuously in the community to determine the best testing strategy for COVID-19 for all patients, visitors and staff.

## Risk Mitigation

Enhanced cybersecurity measures may be needed due to an increased use of telemedicine and remote working.

Pandemics, in general, have not traditionally been addressed as part of an organization's policies and procedures. COVID-19 has changed that. There are several steps sleep center leaders and staff can take to reduce the risk of legal issues and the spread of the virus within their sleep program.

1. Complete a pandemic assessment.
2. Plan for COVID-19 effect on your patient volumes:
   a. Identify a COVID-19 coordinator and/or team with defined roles and responsibilities for preparedness and response planning.
   b. Identify essential employees and other critical items required to maintain minimum business operations.
   c. Consider the potential impact of COVID-19 on business financials.
   d. Communicate up-to-date, reliable pandemic information from community public health, emergency management, and other sources to all staff.
   e. Establish an emergency communications plan and revise periodically; include identification of key contacts (with back-ups), chain of communications (including suppliers and customers), and processes for tracking and communicating business and employee status.
   f. Implement an exercise/drill to test your plan and revise the plan periodically.
3. Plan for the impact of COVID-19 on your employees and patients:
   a. Forecast and allow for employee absences during a pandemic due to factors such as personal illness, family member illness, community containment measures and quarantines, school and/or business closures, and public transportation closures.
   b. Implement guidelines to modify the frequency and type of face-to-face contact (e.g. no hand-shaking, seating in meetings, office layout, shared workstations) among employees and between employees and patients.

c. Encourage and track annual influenza vaccination for employees.

d. Evaluate employee access to and availability of healthcare services during a pandemic and improve services as needed.

e. Evaluate employee access to and availability of mental health and social services during a pandemic, including corporate, community, and faith-based resources, and improve services as needed.

f. Identify employees with special needs and incorporate the requirements of such persons into your preparedness plan.

4. Establish policies to be implemented during a pandemic:

a. Establish policies for employee compensation and sick-leave absences unique to a pandemic (e.g. non-punitive, liberal leave), including policies on when a previously ill person is no longer infectious and can return to work after illness.

b. Establish policies for a flexible worksite (e.g., telecommuting) and flexible work hours (e.g., staggered shifts) for staff when possible.

c. Establish policies for preventing influenza spread at the worksite (e.g. promoting respiratory hygiene/cough etiquette, and prompt exclusion of patients with influenza symptoms).

d. Establish policies for employees who have been exposed to pandemic influenza, are suspected to be ill, or become ill at the worksite (e.g., infection control response, immediate mandatory sick leave).

e. Establish policies for restricting travel to affected geographic areas (consider both domestic and international sites), evacuating employees working in or near an affected area when an outbreak begins, and guidance for employees returning from affected areas based on CDC travel recommendations (CDC Newsroom, 2020).

f. Provide sufficient and accessible infection control supplies (e.g., hand-hygiene products, N95 masks, surgical masks, tissues and receptacles for their disposal) in easily accessible locations.

g. Enhance communications and information technology infrastructures as needed to support employee telecommuting and remote customer access.

5. Communicate with and educate your employees:

a. Develop and disseminate programs and materials covering pandemic fundamentals (e.g., signs and symptoms of influenza, modes of transmission), personal and family protection, and response strategies (e.g., hand hygiene, coughing/sneezing etiquette, contingency plans).

b. Anticipate employee fear and anxiety, rumors and misinformation and plan communications accordingly.

c. Ensure that communications are culturally and linguistically appropriate.

d. Disseminate information to employees about your pandemic preparedness and response plan.

## Operational Adaptations

The COVID-19 pandemic requires organizations to remain flexible operational processes.

- All operations should protect from exposure while providing access to care
- Institutions should follow CDC and state and local guidelines
- Organizations should write and adopt a formal safety plan to be provided to all employees and posted for reference

**Remote interventions.** Remote and alternative care methods should be utilized to minimize person to person contact. There has been a concerted effort to remove barriers to non-traditional healthcare resources. On March 6, Congress passed the Coronavirus Preparedness and Response Supplemental Appropriations Act [Text - H.R.6074 - 116Th Congress (2019-2020): Coronavirus Preparedness And Response Supplemental Appropriations Act, 2020). The legislation allows healthcare professionals to bill Medicare fee-for-service for patient care delivered by telehealth during the current coronavirus public health emergency. Private insurance payers are also easing access to telehealth. Many treatment and diagnostic approaches are using more remote patient monitoring (RPM) services to manage compliance and longitudinal care, including cloud-based compliance review of physiological data and interpretation, educational support, desensitization, mask selection and other interventions that would normally have taken place in person.

- Link to an updated list of codes for telehealth services which are intended for use by qualified health care professionals (QHCPs) and other clinical staff: Telemedicine CPT & HCPCS Level II Codes & Modifiers | AASM, 2020
- Remote strategies should prioritize patient education and follow up care
- In person services should only be considered when states/regions have met CDC criteria for re-opening and when the facility is able to accommodate preventative operational procedures that include screening, testing, social distancing, and infection control
- For each patient, risk of infection should be weighed against the benefit of in-lab testing

**Additional Considerations**

- At initial re-opening, patients should be prioritized by risk and/or severity
- Facilities should consider designating a patient screening area with posted signage instructing patients on precautions and flow processes.
- A phased approach to re-opening allows for adjustments to workflows and operational procedures
- HSAT may be utilized to provide diagnostic testing for OSA patients
- Operational procedures should be evaluated frequently and modified when necessary
- Staff and clinicians must be trained on appropriate use of PPE and preventative operational procedures as well as be screened daily for symptoms
- Policies should be in place for patients who self-medicate, especially using MDI and DPI (inhalers).

## REFERENCES

American Academy of Sleep Medicine – Association for Sleep Clinicians and Researchers. 2020. *COVID-19 Resources | American Academy of Sleep Medicine*. [online] Available at: <https://aasm.org/covid-19-resources/> [Accessed 2 November 2020].

American Academy of Sleep Medicine – Association for Sleep Clinicians and Researchers. 2020. *Telemedicine CPT & HCPCS Level II Codes & Modifiers | AASM*. [online] Available at: <https://aasm.org/clinical-resources/coding-reimbursement/telemedicine-codes/> [Accessed 2 November 2020].

Blogs.cdc.gov. 2020. *NIOSH Ventilated Headboard Provides Solution To Patient Isolation During An Epidemic | | Blogs | CDC*. [online] Available at: <https://blogs.cdc.gov/niosh-science-blog/2020/04/14/ventilated-headboard/> [Accessed 2 November 2020).

Cdc.gov. 2020. *CDC - Health Department Directories - STLT Gateway*. [online] Available at: <https://www.cdc.gov/publichealthgateway/healthdirectories/index.html> [Accessed 2 November 2020]

Centers for Disease Control and Prevention. 2020. *CDC Newsroom*. [online] Available at: <https://www.cdc.gov/media/index.html> [Accessed 2 November 2020].

Centers for Disease Control and Prevention. 2020. *Communities, Schools, Workplaces, & Events*. [online] Available at: <https://www.cdc.gov/coronavirus/2019-ncov/community/homeless-shelters/screening-clients-respiratory-infection-symptoms.html> [Accessed 2 November 2020].

Centers for Disease Control and Prevention. 2020. *Coronavirus Disease 2019 (COVID-19)*. [online] Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-hcf.html#footnote> [Accessed 2 November 2020].

Centers for Disease Control and Prevention. 2020. *Coronavirus Disease 2019 (COVID-19)*. [online] Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-hcf.html#footnote> [Accessed 2 November 2020].

Centers for Disease Control and Prevention. 2020. *Coronavirus Disease 2019 (COVID-19) In The U.S.* [online] Available at: <https://covid.cdc.gov/covid-data-tracker/?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fcases-updates%2Fcases-in-us.html#cases_casesper100klast7days> [Accessed 2 November 2020].

Centers for Disease Control and Prevention. 2020. *Coronavirus Disease 2019 (COVID-19)*. [online] Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/faq.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fhcp%2Finfection-control-faq.html> [Accessed 2 November 2020].

Centers for Disease Control and Prevention. 2020. *Coronavirus Disease 2019 (COVID-19)*. [online] Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control.html> [Accessed 2 November 2020].

Centers for Disease Control and Prevention. 2020. *Coronavirus Disease 2019 (COVID-19).* [online] Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/using-ppe.html> [Accessed 2 November 2020].

Centers for Disease Control and Prevention. 2020. *Coronavirus Disease 2019 (COVID-19)*. [online] Available at: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/about-face-coverings.html> [Accessed 2 November 2020].

Congress.gov. 2020. *Text - H.R.6074 - 116Th Congress (2019-2020): Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020*. [online] Available at:

<https://www.congress.gov/bill/116th-congress/house-bill/6074/text?q=%7B%22search%22%3A%5B%22Coronavirus+Preparedness+and+Response+Supplemental+Appropriations+Act%22%5D%7D&r=1&s=1> [Accessed 2 November 2020].

Globalepidemics.org. 2020. *The Path to Zero: Key Metrics For COVID Suppression – Pandemics Explained*. [online] Available at: <https://globalepidemics.org/key-metrics-for-covid-suppression/> [Accessed 2 November 2020].

Johns Hopkins Coronavirus Resource Center. 2020. *COVID-19 United States Cases by County - Johns Hopkins Coronavirus Resource Center*. [online] Available at: <https://coronavirus.jhu.edu/us-map> [Accessed 2 November 2020].

USAFacts.org. 2020. *US Coronavirus Cases and Deaths*. [online] Available at: <https://usafacts.org/visualizations/coronavirus-covid-19-spread-map/> [Accessed 2 November 2020].

US EPA. 2020. *List N: Disinfectants For Coronavirus (COVID-19) | US EPA*. [online] Available at: <https://www.epa.gov/pesticide-registration/list-n-disinfectants-coronavirus-covid-19> [Accessed 2 November 2020].

Web.csg.org. 2020. *State Executive Orders – COVID-19 Resources for State Leaders*. [online] Available at: <https://web.csg.org/covid19/executive-orders/> [Accessed 2 November 2020].

Who.int. 2020. *WHO Director-General's Opening Remarks at The Media Briefing On COVID-19 - 11 March 2020*. [online] Available at: <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020> [Accessed 2 November 2020].

YaleNews. 2020. *Sleep Apnea Devices Need Filter For Use In COVID-19, Yale Doctor Warns*. [online] Available at: <https://news.yale.edu/2020/04/20/sleep-apnea-devices-need-filter-use-covid-19-yale-doctor-warns> [Accessed 2 November 2020].