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Reopening of Sleep Centers and Clinics: What You Need to Know
By Kevin Asp, CRT, RPSGT

As public health professionals make the determination it’s safe to see patients and there are more relaxed stay-at-home restrictions, sleep centers and practices should strategically plan on how and when it’s best to reopen. They should take recommended guidance from relevant prominent authorities, such as the American Academy of Sleep Medicine (AASM) and the American Medical Association (AMA), on how to safely reopen their facilities.

Narcolepsy-Cataplexy and Precocious Puberty May Be Linked
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AAST THANKS ITS PRESTIGE PARTNERS
Throughout the COVID-19 epidemic, we’ve all been learning a lot about ourselves.

This "new normal" has opened our eyes to a lot of different realities, especially for those of us who stayed at home for weeks on end this spring. For many of us, it was a time to reflect on who we want to be in the future. I saw a lot of people posting on Facebook about taking their CCSH or RPSGT exams, using the downtime from work and social responsibilities to buckle down and study. To me, it was a light in the middle of an uncertain time.

Education helps us all to move forward—whether that entails pursuing a certification or a new credential, or brushing up on best practices to keep our patients and coworkers safe. And with AAST, there’s no lack of opportunities to learn.

Over the past several months, AAST has rolled out several exciting new educational programs we believe can assist you with your professional development. Our newest offering—AAST’s Advanced Sleep Titration e-Learning Course—focuses on state-of-the-art titration technology and techniques. Developed over five modules, each course progressively builds off of the previous one, to provide a comprehensive learning program. The best part? You can take this course at your own pace.

AAST is also offering an educational bundle that packages 11 of the most popular sessions from the AAST 2019 Annual Meeting. These topics range from how sleep impacts people based on gender and age, to comorbidities affecting those with sleep ailments.

While this unprecedented time has forced us to put a pause on many things, let’s not let education be one of them.

Until then, rest well.

Melinda Trimble, LRCP, RPSGT, RST, FAAST
As we moved further into 2020 the AAST, along with the rest of the world, changed focus rapidly toward the effects of the COVID-19 pandemic. Where were you when the world closed down? I was in Arkansas at the annual Arkansas Sleep meeting in Little Rock. During the first day of the meeting organizers heard the President’s shut-down announcement in the Rose Garden.

In light of that, organizers decided, with cooperation of attendees, to continue the meeting into the evening and present as many of the next day’s talks as possible on that day so everyone could return home. It was a marathon! But it was the right thing to do as everyone was concerned about the impact to their work and family. If this had occurred a few days earlier, the meeting would have been cancelled, so I am happy that I was able to be in Arkansas once again for an outstanding meeting with many wonderful friends and colleagues. Today, we still do not know when we will be able to attend another in-person sleep meeting. Sadly, the planned 2020 AAST meeting has been cancelled. Nearly all professional organizations have shut down all in person meetings. Many have gone virtual – and I expect many more will. We are hopeful that we will have our meeting in 2021 and be able to see many of you. If not, we will go virtual!

Many of our sleep centers shut down in early to mid-March – and are just beginning to reopen. Some of our colleagues were furloughed. The lucky ones, particularly those in hospital-based sleep centers, continued to work in other roles, ranging from taking temperatures for all arrivals, assisting in command center operations, running supplies (especially PPE), cleaning Tyvek suits, and many other new and different tasks. Some sleep centers remained open, but performed only diagnostic studies and HSAT, using PPE and stringent cleaning efforts. We did this for three months. Others closed completely. Since mid to late May sleep centers have begun to re-open, and some are now performing PAP titrations and mask fitting once again – but under very different circumstances.

AAST has worked hard to gather numerous resources for our members and the sleep technologist community. These resources provide much important infection prevention information to assist you to keep your patients and staff safe during this ongoing pandemic. We have also provided stress management resources, resources for working remotely, and free CEC offerings for all.

On May 26th, AAST hosted a one-hour Town Hall to discuss Providing Sleep Center Services Amid the COVID-19 Pandemic. This is still available on our website resource page for anyone who missed it. There were many questions raised and answered during the Town Hall, and many questions that followed. Those questions and answers from this session are also available on our website, and are a valuable resource for those in the process of re-opening. In early July a follow-up Town Hall meeting is planned, with invited experts who will attempt to elaborate on a few of the themes that were brought up during the first Town Hall. These included how to safely titrate PAP, how to clean PAP equipment and the environment and some of the new tools available for disinfection such as UV-C light. We hope you will join us for the upcoming Town Hall – keep an eye on the website and your email for further information.

As we reopen in a changed world, AAST is working hard to provide online learning resources for those who need continuing education credits (CECs). Along with the free CECs we have provided, we have many online courses in our Learning Center. Our latest offering is geared toward those who want to brush up on their titration skills and expand their knowledge of advanced titration therapies. Our Advanced Sleep Titration e-learning course is now available. The course is a series of five modules, each of which progressively builds on the previous module, providing a thorough understanding of cardiorespiratory anatomy and physiology and enhancement of your PAP titration skills. There are also three interactive titration scenarios that provide practice for these new titration skills, and the course provides 6 CECs.

One of the positive outcomes of the pandemic has been the rapid adoption of telemedicine. Patients and physicians alike have embraced telemedicine, and I expect it is here to stay. For us, this may mean new ways to provide education and support for our patients, particularly assisting with adherence to therapy. Our vendors are coming up with new ways to perform mask and interface fitting remotely, and of course we already the ability to remotely download therapy data and adjust equipment. As technologists, in particular those with the CCSH credential, we have an opportunity to rethink our roles and expand them. As you work on expanding your skills and education level, consider new possibilities and roles that might be right for you. AAST has a vast library of educational materials on sleep and sleep disorders that can assist you to increase your knowledge.

In this edition of A2Zzz our cover story focuses on re-opening your sleep centers and clinics – safely and effectively. Many things will be done differently, but we can provide good (and essential) sleep care for our patients in new and different ways. We just need to be open to new possibilities and willing to learn.

Wishing you all a safe summer and a successful re-opening! Sleep well!

Rita
Instructions for Earning Credit

AAST members who read A2Zzz and claim their credits online by the deadline can earn 2.00 AAST Continuing Education Credits (CECs) per issue, for up to 8.00 AAST CECs per year. AAST CECs are accepted by the Board of Registered Polysomnographic Technologists (BRPT) and the American Board of Sleep Medicine (ABSM).

To earn AAST CECs, carefully read the four designated CEC articles listed below and claim your credits online. You must go online to claim your credits by the deadline of August 28, 2020. After the successful completion of this educational activity, your certificates will be available in the My CEC Portal acknowledging the credits earned.

COST
The A2Zzz continuing education credit offering is an exclusive learning opportunity for AAST members only and is a free benefit of membership.

STATEMENT OF APPROVAL
This activity has been planned and implemented by the AAST Board of Directors to meet the educational needs of sleep technologists. AAST CECs are accepted by the Board of Registered Polysomnographic Technologists (BRPT) and the American Board of Sleep Medicine (ABSM). Individuals should only claim credit for the articles that they actually read and evaluate for this educational activity.

STATEMENT OF EDUCATIONAL PURPOSE & OVERALL EDUCATIONAL OBJECTIVES
A2Zzz provides current sleep-related information that is relevant to sleep technologists. The magazine also informs readers about recent and upcoming activities of the AAST. CEC articles should benefit readers in their practice of sleep technology or in their management and administration of a sleep disorders center.

READERS OF A2Zzz SHOULD BE ABLE TO DO THE FOLLOWING:
• Analyze articles for information that improves their understanding of sleep, sleep disorders, sleep studies and treatment options
• Interpret this information to determine how it relates to the practice of sleep technology
• Decide how this information can improve the techniques and procedures that are used to evaluate sleep disorders patients and treatments
• Apply this knowledge in the practice of sleep technology
You must go online to claim your CECs by the deadline of August 28, 2020.

READ AND EVALUATE THE FOLLOWING FOUR ARTICLES TO EARN 2.0 AAST CECs:

Reopening of Sleep Centers and Clinics: What You Need to Know
Objective: Readers will take away best practices for reopening their sleep centers and clinics amid the COVID-19 pandemic.

Narcolepsy-Cataplexy and Precocious Puberty May Be Linked
Objective: Understand how early detection of narcolepsy-cataplexy can possibly reverse precocious puberty.

Redeployment from the Frontlines: One Sleep Technologist’s Experience During COVID-19
Objective: Learn about one sleep technologist’s experience being redeployed in his Florida hospital amid COVID-19.

Peeking into the Mind’s Eye: Electrooculography in Text
Objective: Learn why researchers believe polysomnography is connected to text comprehension and cognitive processes.
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Reopening of Sleep Centers/Clinics:
Sleep Technologist Considerations

By Kevin Asp, CRT, RPSGT
You must clean high-touch surfaces at least twice a day, as well as the waiting room and workstations.

Consider drop-shipping CPAP equipment to further reduce the risk of virus transmission and infection.

It’s advisable, and many sleep clinics are doing this, to wait 72 hours after receiving Home Sleep Apnea Testing (HSAT) equipment from patients before opening the sealed bag.

2. PPE Equipment and the Sleep Technologist

Your sleep center staff must use personal protective equipment (PPE) properly. They must always wear a surgical mask, unless they’re alone in an expanded work area or their own room with nobody else within six feet. They can remove their surgical masks intermittently and store them in a paper bag labeled with their name when they are not within six feet of other people.

The masks must be thrown away if they:
• No longer fit
• Break
• Become soiled
• Are past their recommended usage time frame

Staff must wear face shields or goggles, N95 masks, gowns, and gloves during procedures such as:
• When occupying the same room as patients using Positive Airway Pressure (PAP) devices

Staff may reuse their N95 masks five times (five days) and sanitize them with steam three times (two minutes in a microwave at high power or steamer with two ounces of water). They can wash face shields and goggles with water and soap or sanitize them with a Super Sani-Cloth or alcohol wipes. They must discard their gloves after each use.

Command strips or hooks can be placed outside the patient door to hang PPE supplies per patient per night.

To limit COVID-19 exposure, as a sleep center, you should clean and disinfect your clinic thoroughly

Evaluate your PPE requirements, consider alternatives like cloth masks, review what your current stockpile contains and what you’ll require in the future, and then place your orders. Have supplies delivered to your sleep center in advance so you are prepared to reopen. Deliveries may be sporadic and sufficient supplies are essential to manage your day-to-day plan.

3. Covid-19 Screening of Patients and Staff

Regular and proper screening for COVID-19 is essential for both patients and staff.

Screening Sleep Center Staff
Sleep technologists and other staff must be screened for COVID-19 symptoms regularly. They should take their temperatures twice daily, at a minimum, and report any symptoms, such as a cough, fever, or shortness of breath, indicative of a potential COVID-19 infection.
If your staff is symptomatic, send them home. Adopt reduced and/or flexible scheduling to account for sleep staff needing to take time off due to quarantine or illness. Provide sufficient rest breaks if you’re working with a decreased level of staffing.

**Screening Patients**
You must screen all sleep center patients for potential COVID-19 symptoms before their in-person appointment, and once again when they arrive for their appointment, before they enter your clinic.

Pre-screen patients before appointments:
- Use patient portals, phone calls, or online self-assessment tools
- Review COVID-19 status
- Review COVID-19 symptoms like cough, fever, or shortness of breath
- Reschedule patients who are positive, showing symptoms, or pending COVID-19 testing.

Screen patients at the time of appointments:
- Check patients’ temperatures and screen them again for symptoms of COVID-19 and test status once they arrive at your sleep clinic.

- Reschedule patients who are positive, experiencing symptoms, or pending COVID-19 testing.
- Refer to clinical care or diagnostic testing as appropriate.

**4. Keep Staff Workstations Consistent to Minimize Cross-Contamination**
Reduce person-person contact as much as you can. This includes during the staff screening process as staff members conducting temperature checks have been possible sources of workplace spread.

Consider rearranging open workspaces to increase how much distance is between individuals working.

Also, consider having dedicated patient rooms and workstations to reduce the number of individuals touching the same equipment. Maintain social distancing among sleep technologists and staff of at least six feet apart.

**5. Consider Negative Pressure Units for Patient Rooms**
Negative pressure rooms, also called Airborne Infection Isolation Rooms (AIIR), are especially critical when something such as COVID-19 hits. In healthcare settings, these rooms prevent infectious contaminant spread and maintain restricted spaces or sterile spaces. These rooms isolate patients with AIIR and protect individuals outside the rooms from exposure.

Negative pressure rooms use lower air pressure, allowing outdoor air into the segregated atmosphere, trapping and keeping possible harmful particles within the room by keeping the indoor air from leaving the immediate area.

Negative and positive pressure rooms are used as part of a large range of research and healthcare environments as they help keep conditions clean and contained in the smallest clinics to even the largest.

**6. Consider UV Lighting for Cleaning Rooms**
Some sleep centers can incorporate UV-C light into the system for maintaining a sterile environment. UV-C light can sterilize surfaces and decrease viruses, like COVID-19, in patient areas. Cleaning rooms using standard disinfectants is required prior to using UV-C light. This helps to protect your staff and your patients, ensuring thorough cleaning that can be documented.

As an added measure for infection-control, consider using air purifiers with HEPA filters. A HEPA filter assists to purify the room’s air and capture and destroy viruses, like the COVID-19 virus. You should use these at night in patient bedrooms as well as for Multiple Sleep Latency Tests (MSLT) during the day or for PAP fittings.

As an alternative when UV-C light sterilization is not available, you can consider rearranging open workspaces to increase how much distance is between individuals working.
turn a HEPA filter on at high speed for two hours using a timer and keeping the door closed to the room.

7. Utilize Telemedicine When Practical and Possible

You should consider using Registered Polysomnographic Technologists (RPSGT’s) and telemedicine to provide patient education. This is an effective way to teach patients how to effectively use their devices (CPAP/BiPAP/APAP) while reducing staff exposure to droplet aerosolization. In addition, employ home sleep apnea tests (HSAT) when practical.

8. Limit Non-Patient Visitors

Post your visitor policy clearly for people who are not staff members or patients (including educators, vendors, service providers, etc.) on your website and outside your clinic’s door. Reroute all visitors to virtual communication, using videoconference or phone calls, when feasible.

If you have visitors, technicians, or others, who absolutely must enter your sleep clinic physically, to do repair work, for example, ensure you designate a time that’s outside of your sleep clinic’s regular office hours to reduce interactions with:

- Sleep technologists
- Patients
- Staff members

Your sleep center should also have proper social distancing signage and six feet markings to remind staff and visitors to practice COVID-19 spread mitigation protocols. Hand sanitizers should be placed throughout your center and regular use should be encouraged. Place signage in the bathrooms to remind everyone to wash hands for at least 20 seconds.

9. Policies for Sleep Center Employees Diagnosed with COVID-19

If a sleep center staff member has a confirmed COVID-19 case, certain parties need to be notified within 24 hours, including:

- Management
- Staff
- Suppliers
- Contractors
- The local public health department or hospital command center

Anyone who has come into contact with the infected individuals should be notified. You should keep a record of this notification.

Employees with symptoms of COVID-19 should be asked to go home until their symptoms resolve; preferably 14 days since their symptom onset, or until they test negative for the virus.

**Employees who leave work or stay at home because they're at particular risk of infecting other people with COVID-19 should not be disciplined, discharged, or otherwise retaliated against.**

Employees who leave work or stay at home because they’re at particular risk of infecting other people with COVID-19 should not be disciplined, discharged, or otherwise retaliated against.

If a sleep staff member does have a confirmed COVID-19 case, thoroughly clean and disinfect the sleep clinic before you allow any patients into your clinic. Clean and disinfect your clinic using low-level disinfection, like Opti-Cide Max spray or Super Sani-Cloth, which sufficiently destroys the COVID-19 virus. If available, treat the area with UV-C light.

**In Summary**

Sleep technologists should follow AASM guidelines to ensure the safety of their patients and themselves, and to help prevent the spread of COVID-19. Please note this guidance is not intended to be all-inclusive and will require modification to meet specific facility requirements, and/or as new developments or information regarding COVID-19 emerges.

**KEVIN ASP, CRT, RPSGT,** Because of the implementation of his best practices of Implementing Inbound Marketing in its Medical Practice, he turned the once stagnant online presence of Alaska Sleep Clinic to that of “The Most Trafficked Sleep Center Website in the World” in just 18 months time. He is the President and CEO of inboundMed and enjoys helping sleep centers across the globe grow their business through his unique vision and experience of over 27 years in sleep medicine.
The AAST Learning Center is accessible 24/7 and provides you with on-demand videos, advanced learning modules that you can start and stop on your schedule, conference recordings and more!

Discover relevant educational content by searching by content type or topic area and access the Case of the Month, Journal Club and A₂Zzz CECs all through the AAST Learning Center.

Get started at www.aastweb.org by checking out the latest offerings, including the AAST 2018 Annual Meeting Recordings.
Scientists have noted that children with narcolepsy-cataplexy have an increased prevalence of overweight/obesity. More recent studies have linked narcolepsy-cataplexy with precocious puberty, and have indicated that the earlier the onset of narcolepsy-cataplexy in a child, the greater the risk of precocious puberty. Weight loss can occur after treating narcolepsy-cataplexy in children, but the extent that treating narcolepsy-cataplexy can reverse precocious puberty has not been examined in depth. Exactly how narcolepsy and precocious puberty are related is unclear but research studies have produced some interesting findings.

Approximately 25% to 74% of individuals with narcolepsy-cataplexy are overweight or obese, and precocious puberty occurs in 17% of children with narcolepsy-cataplexy. Narcolepsy is a syndrome consisting of four symptoms: vivid realistic dream imagery on going to sleep (i.e., hypnagogic hallucination) or on awakening (i.e., hypnopompic hallucination); excessive daytime sleepiness; sleep paralysis (i.e., a temporary inability to move on awakening or going to sleep); and cataplexy (i.e., sudden skeletal muscle weakness that occurs with the expression of strong emotions such as mirth or anger). A person does not have to have all four symptoms to be diagnosed with narcolepsy. In recent years, a fifth symptom has been suggested: disrupted sleep

Exactly how narcolepsy develops is unknown. Some evidence indicates that narcolepsy has a genetic component. Some people with narcolepsy, especially people with narcolepsy-cataplexy, have the HLA-DQB1*06:02 gene, which is a variation (i.e., allele) of the HLA-DQB1 gene. The HLA-DQB1 gene is part of a family of genes called the human leukocyte antigen (HLA) complex. This complex is involved in immunity and allows the body to distinguish its own proteins from proteins produced by viruses and bacteria. The HLA genes encode for proteins that are on the surface of certain immune cells. These proteins then attach to protein fragments (i.e., peptides) outside of a cell. If the immune system recognizes the peptides as foreign (e.g., viral or bacterial peptides), the immune response is triggered to attack the invading viruses or bacteria.

Some research indicates that the loss of orexin-producing cells in the hypothalamus (a structure at the base of the brain) is a factor that is associated with narcolepsy. Orexin (also called hypocretin) is a hormone that, among other functions, has a role in wakefulness and increases appetite. Alterations in orexin genes or the loss of orexinergic neurons results in narcolepsy in rodents and dogs in animal models of narcolepsy. The loss of orexinergic cells may also contribute to increased weight in individuals with narcolepsy.

What causes the loss of orexin-producing cells in narcolepsy is unknown (i.e., idiopathic). However, some research indicates that this loss may be related to an improper immune response: in some instances, symptoms of narcolepsy start soon after a child has had a bacterial or viral infection. Supporting the possibility of an improper immune response in narcolepsy, immunotherapy such as intravenous immunoglobulin therapy has been shown to reverse or reduce symptoms of narcolepsy, especially cataplexy, in some children.

In addition to its role in sleep-wake, the hypothalamus is involved in growth. It releases growth hormone-releasing hormone, which stimulates the pituitary to release growth hormone. Growth hormone increases the movement of amino acids from blood into cells, which then use the amino acids to form tissue proteins, thereby enhancing growth. Growth hormone also enhances the breakdown of fat while decreasing the breakdown of glucose.
The hypothalamus also synthesizes somatostatin, which inhibits the release of growth hormone. The release of growth hormone-releasing hormone and somatostatin are regulated in a feedback manner by the blood levels of growth hormone and insulin-like growth factor 1 (a hormone that, along with growth hormone, promotes bone and tissue growth and development).

Certain neurons in the hypothalamus synthesize and release gonadotropin-releasing hormone (GnRH). The hormone travels through the bloodstream to the anterior pituitary gland where GnRH receptors stimulate the pituitary gland to synthesize and release the gonadal hormones luteinizing hormone and follicle-stimulating hormone. In males, luteinizing hormone binds to cells in the testes to stimulate the production of sperm cells. In females, follicle-stimulating hormone stimulates the growth of eggs in the ovaries.

The onset of puberty (i.e., sexual maturity) normally begins at 8–13 years old in girls and at 9–14 years old in boys. Signs of puberty in both sexes are the development of pubic and underarm hair, a rapid increase in height (i.e., "growth spurt"), acne, and underarm odor. In addition to these signs, girls will develop breasts and experience the onset of menstrual periods, and boys will have growth of the penis and testes, deepening voice, and facial hair. Precocious puberty occurs when the onset of puberty occurs before eight years old in girls and nine years old in boys. Children with precocious puberty initially grow taller than their peers because of the growth spurt; however, because the growth spurt occurs earlier, these children stop growing earlier than their peers. Therefore, individuals who experience precocious puberty in childhood will often be smaller than their peers in adulthood.

Precocious puberty is classified as central (i.e., caused by a problem in the brain) or peripheral (i.e., caused by a problem outside the brain). The cause of central precocious puberty is usually idiopathic, but it can occur as a result of a tumor, brain abnormalities, or brain injury.

Some research indicates that precocious puberty may have a genetic component. For example, a mutation in the MKRN3 gene has been associated with precocious puberty. The MKRN3 gene is involved in directing the onset of puberty.

Peripheral precocious puberty can result from exposure to certain chemicals in the environment or the consumption of foods that disrupt the activity of natural endocrine hormones. Endocrine-disrupting chemicals stimulate or inhibit the activity of natural hormones by binding to their receptors or by affecting their synthesis, transport, metabolism, and elimination. For example, bisphenol A (BPA), a chemical used in various plastic products, stimulates the actions of certain molecules (e.g., the protein kisspeptin 1) that have a role in the onset of puberty and inhibits the actions of certain molecules such as the yin yang 1 (YY1) protein and the enhanced at puberty 1 (EAP1) protein that inhibit the onset of puberty. Some pesticides used to kill unwanted organisms in agriculture and in other settings (garden, medicine) are endocrine disruptors. The pesticides dieldrin, endosulfan, methiocarb, and fenarimol have estrogen-agonist and androgen-antagonist activity. Humans can become exposed to these pesticides through dietary and environmental means (e.g., water and soil).

Potential risk factors for precocious puberty in children with narcolepsy-cataplexy was first examined by Poli et al. In their study, the children underwent pubertal endocrine assessments, which involved gonadotropin-releasing hormone (GnRH) stimulation tests in which the GnRH agonist gonadorelin was intravenously administered; x-ray imaging of the nondominant wrist to determine the bone/chronological age ratio and pelvic ultrasound imaging for girls, and brain magnetic resonance imaging of the hypothalamic-pituitary region. They diagnosed precocious puberty when a child had secondary sexual characteristics before the age of 8 years (girls) or 9 years (boys); markedly elevated levels of plasma luteinizing hormone (i.e., >5 minus/ ml after the GnRH stimulation tests); and no brain abnormalities on magnetic resonance images.

Poli compared the prevalence of precocious puberty among obese children with narcolepsy-cataplexy versus its prevalence among obese children without narcolepsy (i.e., the controls). The findings were that precocious puberty affected nearly 17% of children with narcolepsy-cataplexy, but it only affected 1.9% of the controls. In their study, most (74%) of the children with narcolepsy-cataplexy (i.e., with and without precocious puberty) had overweight/obesity. Poli suggests that precocious puberty and overweight/obesity among children with narcolepsy-cataplexy may indicate extended hypothalamic dysfunction.

The interplay between the orexinergic system and hypothalamic hormones involved in growth may be involved in the increased prevalence of precocious puberty in overweight/obese children with narcolepsy-cataplexy. Orexin is involved in feeding (i.e., increased hunger), promotes wakefulness, and is involved in the sleep-to-wake transition. It inhibits the secretion

Individuals who experience precocious puberty in childhood will often be smaller than their peers in adulthood.
of the growth hormone by modulating the activity of growth hormone-releasing hormone neurons and somatostatin neurons.

Fibers from orexin-producing neurons in the hypothalamus project to nuclei that control growth hormone secretion in the anterior pituitary. Therefore, orexin may be involved in growth hormone secretion resulting from growth hormone-releasing hormone stimulation. Some research suggests that the level of growth hormone is higher during sleep, and orexin may be involved in sleep-induced growth hormone secretion. In 1985, Chisholm and colleagues reported their experience with a nearly 6-year-old girl with narcolepsy-cataplexy, breast development, and advanced bone age. Based on their findings, they proposed that the very early onset of narcolepsy-cataplexy could have attributed to the girl's precocious puberty. Other reports noting an association between narcolepsy-cataplexy and precocious puberty soon followed. For now, the mechanisms that link narcolepsy and precocious puberty remain unclear. Future studies may clarify this link.

However, clinicians may need to consider having a child with narcolepsy-cataplexy undergo endocrine evaluations, especially if the child is overweight/obese and/or has signs of precocious puberty. This evaluation may allow a clinician to detect or confirm precocious puberty and treat it early to prevent complications such as growth problems and to reduce the risk of developing other problems such as breast cancer, teen pregnancy, heart disease, and diabetes.

References


REGINA
PATRICK,
RPSGT, RST, has been in the sleep field for more than 20 years and works as a sleep technologist at the Wolverine Sleep Disorders Center in Tecumseh, Michigan.
Redeployment from the Frontline: One Sleep Technologist’s Experience During COVID-19

By Kate Jacobson

Sleep technologists from across the world have been redeployed in the face of COVID-19. They’ve been called on to help COVID-19 patients, to test those coming in and out of the hospital and to help disperse personal protective equipment (PPE) to other departments. For Eduardo Hernandez, BSRC, RPSGT, CCSH who works at Nemours Children’s Hospital in Orlando, the experience really opened his eyes to how valuable sleep technologists are during a crisis such as this.

“We’re malleable,” he said. “There’s so many different hats a sleep technologist wears, and that’s why we’ve stepped up during this pandemic.”

Hernandez said his hospital started making changes in mid-March like many other health care institutions. His sleep lab started cancelling appointments two weeks out, and he and his coworkers were quickly put to use in other areas of the hospital. Those that were dual credentialed in respiratory therapy were all redeployed in the region to respond to COVID-19 patients, while others were given jobs around the hospital.

Hernandez said most of his coworkers were tasked with monitoring people for symptoms as they entered the hospital, while others were asked to help with PPE. Called the Mask Exchange Transfer and Training program, technologists and others from different hospital concentrations were asked to keep track of how many N-95 masks were available in the hospital and instruct on appropriate fitting.

Others started preparing the hospital for potential overflow of patients from other area hospitals.

“The first thing—it was shock, for better or for worse,” said Hernandez. “We were getting to meet everyone in the hospital and they were getting to meet us. We were screening employees at all entry and exit points of the hospital and we got to see people we would’ve never seen. It felt like a sense of identity, though—we’re all in this together.”

While COVID-19 numbers in Orlando didn’t reach critical levels—the Florida Department of Health reports a total of 1,831 cases in Orange County as of the end of May—Hernandez said everyone wanted to do their part to ensure the hospital was ready. It was that sense of camaraderie that made working through an unprecedented crisis a little bit easier.

“Taking a step back and looking through our response, I really appreciate we had this sense of community working through this,” he said. “No job is too small here. I’d like to think that since everyone is doing their part, everyone keeps in the back of their minds that even though some of the work isn’t in our scope of practice, we’re doing what we need to have done. We have all these things in place to isolate potentially infected patients. We’ve done a phenomenal job.”

He said moving forward, he thinks this will change the hospital in a larger way. Some processes introduced during the pandemic will probably stay—especially procedures looking at what PPE is in stock and how it’s being distributed. He said he also thinks it will be an important moment for reinforcing clean, sterilized work environments.

Mostly, though, it’s given Hernandez a greater appreciation for all his colleagues—in and out of the sleep lab. Once things return to the new normal, he said he hopes those connections continue.

“The silver lining of this is we get to leave our four walls of the sleep lab,” he said. “We can all lend a hand.”

KATE JACOBSON is the managing editor of A2Zzz.
The computerization of EOG in addition to other physiologic measures emerged in the 1960s from research in motion sickness related to air and space travel. Digitized systems helped relieve human scoring technicians from the time consuming chore of manually reducing big data sets with minimal scoring bias. Examples of vintage mechanical calculating aides used by EOG scorers appear elsewhere in the historical literature.

**Signal Source and Processing**

The cornea and retina of the eye resemble the oppositely charged terminals of a battery. Electrodes placed near the left and right temples monitor horizontal rotations of this electrical dipole as a subject performs left to right scans.
In addition to differential amplifiers, some equipment manufacturers introduced an analog signal processor known as a differentiating amplifier. Processor output was proportional to the rate of change in the signal associated with eye rotations. The differentiation of eye position provided velocity data.18 This quantity, defined as the distance covered by an eye rotation over time, approximates reading speed measured in either letters per second or words per minute. Differentiating amplifiers encouraged electrographic investigations of reading speed in text comprehension research. Velocity is a practical measurement for detecting fixations because the eyes remain relatively still between EMs. Signals exceeding an empirically determined minimal velocity are defined as EMs (see Fig 2). The term I-VT refers to the identification of EMs and fixations by velocity thresholds. A television monitor and an ink-writing unit convert the signals into visible patterns for either immediate viewing or post-acquisition analysis. One of the first reports of this instrument configuration surfaced in 1950.19 The basic configuration remained unchanged until the introduction of digital data acquisition (see Fig 3).

Meaningful data collection using antique polygraphs required recording technicians with a practical knowledge of medical instrumentation and biomedical electronics. A hands-on ability to troubleshoot faulty recording sessions "on-the-fly" with minimal downtime was essential. One technician described this technology as WYSIWYG or "what you see is what you get."10 Post-acquisition editing to remove ECG, muscle activity or intrusive artifacts from a broken lead serving as an antenna for radio frequency interference was not an option with analog technology. (When the author temped as an electro-diagnostic technician at an uptown New York City hospital, an improperly attached patient lead would pick up pirate radio broadcasts from an adjacent apartment complex and transmit the signals to a recording polygraph’s EMG channel!)

during reading behavior. A third electrode, placed on an electrically neutral site such as behind the subject’s ear, serves as a reference point. An electrically shielded cable routes infinitesimally small voltages to a polygraph for filtering, which sifts desired signals from competing signals.

The following differentiating stage increases the filtered voltage difference between the two electrode placements while rejecting electrical noise common to both placements relative to the neutral site. Without this essential feature, background noise would obscure the desired signal.
Understanding Comprehension

I do believe something very magical can happen when you read a good book.
– JK Rowling

According to Monika Pluzyczka from the University of Warsaw, the cognitive movement in psychology from the 1970s promoted the use of EM recordings in text processing research. In contrast to behavioral psychologists, who considered unobservable mental states as topics ill-suited for scientific inquiries, cognitive psychologists advocated hypothesized relationships between perception and mental events. Thought provoking articles such as: The Theory of Reading from Eye Fixations to Comprehension, and What Your Eyes Do While Your Mind is Reading published in 1980 and 1983 respectively, intrigued researchers. Some individuals even suggested fixation signatures could reveal hidden processes involved with rendering images in the mind’s eye. However, a more cautious position warned against “fanciful flights” and supported “the solid ground of sound experimentation and rigorous inference.”

Jin Ong was a professor at the Southern College of Optometry in Tennessee. Previously, he was a graduate assistant to the experimentalist and EOG historian, Elwin Marg. Although a strip chart recording from nearly 70 years ago displays velocity signals from a case study involving a brief reading task (see Fig 4), Ong described the first known use of I-VT in a controlled, study of reading behavior. His subsequent work with a Beckman polygraph (see Fig 1) analyzed reading efficiency under different experimental conditions as well as the precision and reliability of EM measures.

The expanding presence of mini-computers in EM laboratories required software applications to expedite data analysis. An avalanche of studies documenting digital methods for quantifying basic EOG parameters (namely: eye position, saccadic velocity and fixation time) included some notable duplication of efforts. Applications typically used I-VT algorithms because of the marginal computational demands placed on the hardware available at that time.

Eye tracking refers to mapping individual fixation times onto specific words through computer-assisted biocalibrations. This capability provides moment-to-moment insights regarding mental processing that accompanies reading behavior. For example, the data set in Table 1 indicates the term weightarm requires more fixation time to process, which suggests the term’s meaning as a mechanical device was not available for immediate access from the reader’s vocabulary or lexicon. Furthermore, longer fixation times recorded at the end of the sentence suggest the reader needed additional time to integrate words viewed between EMs into a meaningful sentence. The findings are consistent with the Eye-Mind Connection that hypothesizes a minimal time lag between text perception and cognitive processing.

Mapping fixation times (in msec) onto words gives information about lexical access times. Values indicate total time subject spent fixating on each word or phrase.

Table 1. Fixation Durations Measured During Reading. Mapping fixation times (in msec) onto words gives information about lexical access times. Values indicate total time subject spent fixating on each word or phrase.

<table>
<thead>
<tr>
<th>Word</th>
<th>Fixation Duration (msec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>weightarm</td>
<td>748</td>
</tr>
<tr>
<td>pyramid</td>
<td>627</td>
</tr>
<tr>
<td>blocks</td>
<td>568</td>
</tr>
<tr>
<td>pyramid</td>
<td>558</td>
</tr>
<tr>
<td>blocks</td>
<td>530</td>
</tr>
<tr>
<td>weightarm</td>
<td>467</td>
</tr>
<tr>
<td>pyramid</td>
<td>283</td>
</tr>
<tr>
<td>blocks</td>
<td>200</td>
</tr>
<tr>
<td>weightarm</td>
<td>283</td>
</tr>
<tr>
<td>pyramid</td>
<td>350</td>
</tr>
<tr>
<td>blocks</td>
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<td>pyramid</td>
<td>283</td>
</tr>
<tr>
<td>blocks</td>
<td>283</td>
</tr>
</tbody>
</table>

Eye-Mind Connection

The Egyptian engineer of 5,000 years ago may have used a simple wooden device called a weightarm for handling the 2.5 to 7 ton pyramid blocks.

Fig 5. A sub-notebook PC from Acer (left); Dataq’s dual-channel, data-logger (center); Heathkit’s dual-channel, EOG unit (right) with electrode patches and cables (foreground) comprise a compact, student-friendly, system for empirical studies of reading behavior.
Wi-Fi data streaming to an Android or iPad tablet along with suggested teaching points including EMs, measuring fixation intervals and speed reading techniques.

When Comprehension Fails

...with weightless hands night is lulling the furious tide, and one by one images recede, one by one words cover their faces.
– Octavio Paz

Pluzyczka has documented the explosive growth in eye recording and tracking articles submitted to academic journals during the years leading up to 2014. In her Review of Electroocculography, principle author Uzma Singh writes

Eye movements also reveal information on cognitive processes of visual perception, such as visual memory, learning, or attention. If it is possible to infer these processes from eye movements, this may lead to...aware systems that are able to sense and adapt to a person's cognitive state. The identification of an EM signature associated with the brain in autopilot mode while reading would benefit both students and teachers. An intelligent device interacting with the user could infer whether an EM pattern indicates waning attentional involvement with the reading material.

Metacognition is a state of mindful or attentive focus during mental or physical activities. This learned skill encourages individuals to reflect on whether they are actively processing information acquired through reading behavior. However, during episodes of mindless text inspection, the "eyes might arrive at the bottom of the first page successfully enough... but there will be no understanding of the sentences..." Mindless text inspection, where visually fixated words are unattended is not consistent with the definition of reading as a behavior that advances students to higher states of knowledge. "Don't teach til you see the direction of their eye movements" was one special educator's pointed response to managing the vacant stares of students.

A lack of interest in the subject matter, distracting background noises or a sleep deficit can precipitate comprehension failure. For example, the Epworth Scale – a standard diagnostic inventory for evaluating excessive daytime somnolence (EDS) – includes the likelihood of falling asleep while reading as a presentation of EDS. Despite the prevalence of mindless reading, investigators rarely expressed much interest in this phenomenon. However, pioneering efforts by Francoise Vitu are a noteworthy exception. Her post-doctoral research, which relied on corneal reflection method for eye tracking rather than EOG tracking, was published in 1995. Vitu compared EM signatures of readers who received meaningful text samples to samples devoid of linguistic content. Although more recent studies delved into the mindless reading experience, Reading Hall of Fame inductee, Karen Wixson voiced concerns that EM research in this area is still experimental.

Technical Training

"An understanding of the inner mechanism of any tool used by the researcher should be part of their intellectual repertoire.”
– Nathaniel Kleitman

The technical skills necessary to use EOG and ETRA in text comprehension research (and in the wider field of human cognition) are multi-disciplinary. A survey course on the physical and natural world can provide a context for subsequent courses in medical instrumentation theory, medical terminology and physiologic event scoring. An introduction to electricity is a good foundation course. Appropriate courses in the life sciences include: anatomy, physiology, as well as an elective in physiological or cognitive psychology. Quantitative literacy, in addition to written and oral communication courses, are essential practical skills. Many junior colleges offer these courses through their accredited PSG and biomedical electronics degree programs.

Summary and Conclusions

Although more accurate methods for recording EMs are available, EOG technology is still one of the most cost-cutting ways to collect data about cognitive processes underlying reading and learning from textual materials. Empirical findings can assist in the design of effective instructional aides that contribute to expert performance. EOG technology coupled with artificial intelligence has the potential to improve human-computer interfaces by inferring the cognitive states of users with an acceptable level of accuracy. These developments highlight directions in the field through the combined efforts of electro-diagnostic techs and engineers as well as neuro and cognitive psychologists.
Registered sleep technologists with structured training combined with clinical experience in physiologic recordings and signal recognition (selecting appropriate filter settings to discern the slow EMs of drowsiness from the rapid EMs of dream sleep, for instance); possess a marketable skill set. This skill set can transfer to employment positions using EOG and ETRA. In addition, a practical understanding of such concepts as sampling theory, signal analysis, networking and data file management gained from conducting PSGs on digital acquisition systems are assets to include in a job-seeker’s professional portfolio.

References

Additional References (vacant stares)

REG HACKSHAW, EdD, has over 20 years experience delivering diagnostic and therapeutic services to the sleep-deprived community. Currently, he works as a mentor for students enrolled in the PSG certificate and associate programs at Thomas Edison State University in Trenton, New Jersey.
With David Wolfe, MSEd, RRT-SDS, RPSGT, RST

DAVID WOLFE, MSEd, RRT-SDS, RPSGT, RST, has been a respiratory therapist since 1994. His research focuses on sleep-related treatments and side effects, as well as infection control processes in a sleep facility. He has served as the chair of the AAST Educational Products Committee, on the CEC Accreditation Committee and as an elected AAST Director-at-Large where he served as liaison to the Educational Products Committee and the Program Committee. Besides his passion for sleep medicine and sleep disorders, Wolfe has two kids who he jokes “have bad sleep habits.”

What did you want to be when you grew up?
For some reason, I remember first wanting to be a civil engineer, then an astronomer, optometrist, and finally decided on a respiratory therapist.

Why did you decide to become a sleep technologist?
I was teaching at a respiratory therapy school and they wanted one of the instructors to train in sleep, so it could be taught in the program. It sounded like a cool field to learn more about, so I jumped at the chance. About 20 years ago, I was asked if I wanted to work in a sleep lab. It was the best thing I could have done. I immediately loved the field of sleep medicine and became more involved by speaking on various “sleep” topics at local community events, for the newspaper and television, and eventually local, state, and national/international conferences.

Why did you become an AAST Member?
The AAST has so much to offer for the sleep technologist, or any health professional, involved in sleep technology. You get a lot for the cost of membership. In addition, I truly believe in supporting your profession, so, even if I didn’t use the AAST resources, I would still join every year.

Who has had the greatest influence on your career?
My family has had the biggest influence, always being supportive in everything I do. Also, I have asthma and grew up spending some time in the hospital for treatment. My grandfather had emphysema and my mom has asthma. Being around people who has trouble breathing led me to the respiratory therapy profession, which eventually led me to sleep technology.

What is the most challenging part of your profession?
With the constant changes and advancing technology, I think sleep technologists are worried about the future of the field. My experience has shown me that sleep technologists are resilient and are excellent at adapting to change.

What do you like most about your profession?
What I love about both respiratory therapy and sleep technology is that everyone breathes and everyone sleeps, so people always have questions when they find out what I do. Try to find someone that doesn’t either have a respiratory or sleep problem or, at least, know someone who does!

What do you do for fun on days off from work?
Mountain bike, as much as possible ... by myself, with other people, any weather, any time I can spare! I also enjoy going to the gym (in non-pandemic times), rock climbing, hiking, golf, and spending time with my family. If I’m outside, I’m happy!

What is the biggest change you’ve seen in the profession since you started?
There are so many, but I would have to say home sleep testing - that has changed the field substantially. When I first started in sleep, there was the turf war between respiratory therapists and sleep technologists. At least, back then, our job responsibilities stayed relatively constant. Now, that is evolving so quickly. I’m hoping to see the required sleep technology education change even more, in the future.

What are your professional goals in the next five years?
I’m hoping to remain on the AAST Board and help drive the future of sleep technology.
The COVID-19 pandemic has brought unwelcome challenges overnight, leaving the healthcare industry floundering in a sea of change; it seems that every service line now must assess, pivot and adopt safety procedures aimed at reducing the risk of care. My goal for this compliance corner is to highlight the resources and standards required to develop an enhanced and ongoing safety plan for your sleep center.

The CDC and OSHA have published guidelines in an effort to reduce facility, patient and employee risk of community transmission of the virus. The AASM has reviewed federal and state policies and has provided updated mitigation strategies for sleep center clinical operations. The AAST has created a resource page to assist sleep technology professionals to better navigate the standards. I encourage you to visit these sites frequently for updates. The purpose of this article is to address employee safety plans.

As we operate our sleep labs during this pandemic state governors have mandated that we adopt a revised safety plan; whether your center continued to operate during the stay at home orders or is just now reopening. The plan must be written, provided to all employees and posted publicly. It is an expectation that all employees, including management, play their part in helping minimize the spread of COVID-19.

The safety plan requirements are found in state level executive orders and usually include these four basic elements:

1. Institute a health screening process;
2. Employ enhanced cleaning and disinfecting protocols for the workplace, including regularly cleaning high-touch surfaces;
3. Enhance the ability of employees, customers, and clients to wash hands or take other personal hygiene measures such as use of hand sanitizer; and
4. Comply with social distancing requirements established by the CDC, including maintaining six-foot social distancing for employees and members of the general public when possible.

The foundation of the safety plan is preventative measures and guidance that includes:

- Stay home when sick,
- Perform frequent handwashing,
- Avoid touching eyes, nose or mouth,
- Follow appropriate respiratory etiquette (covering the mouth and nose when you cough or sneeze),
- Avoid crowding or close physical contact (stagger break room use, reduce size of groups to (10) while accommodating 6ft distancing, configure workspaces appropriately),
- Avoid using other workers’ phone, desk, or office whenever possible,
- In lieu of a water cooler, use individual water bottles,
- Define whether employees and visitors are to use face coverings while at work,
- Limit access of family members and other non-patient visitors to those required for providing health care services,
- Consider having patients and visitors wait in their vehicles instead of in waiting areas, post phone numbers to call to inform you of their arrival,
- Monitor and secure PPE supplies.

Protective measures are critical for a successful safety plan. Education is an important part of that plan. All employees must familiarize themselves with the symptoms of COVID-19. All employees entering any workplace will be subject to a health screening process. If an employee answers yes to any item on a symptom health screening questionnaire and/or has a fever of 100.4 F or higher the employee will be asked to return home and not report to work until at least 72 hours after recovery. Screening should be done at the point of access to the workplace. This may mean that employees who do not have a manager on site must self-report any symptoms and perform a temperature check prior to clocking in to work. Reporting logs should be maintained and kept private. State and County Public Health Orders outline when employees can come back to work. Typically, the employee with symptoms of COVID-19 may not return to the workplace until:

- At least 3 days (72 hours) have passed since symptoms have resolved (without the use of fever-reducing medications) AND
- At least 10 days have passed since symptoms first appeared.

- Note: The above criteria do not apply to anyone who, after showing symptoms, receives a negative COVID-19 test.

Employees are also screened to determine if they have been in close contact with a positive person or traveled via airplane, have been advised to self-quarantine or have tested positive for COVID-19. These employees will need to comply with required quarantine guidelines and to the same return to work guidance. There is also an emphasis in finding alternatives to in person meetings; telephone or virtual meetings are preferred. Consider other ways to minimize person-to-person contact. Alternative HSAT service models may be used, such as mail delivery or curbside distribution and drop off of units.

The safety plan must include COVID-19 related cleaning measures and should reference the OSHA Guidance on Preparing Workplaces and the CDC Cleaning and Disinfecting Guidance. Based on what is currently known about the virus, and similar coronaviruses, this is spread from person to person most frequently with close contact. Transmission occurs via respiratory droplets, but the virus has been found to remain viable for hours to days on surfaces.
With Laura Linley CRT, RPSGT, FAAST

made from a variety of materials. Cleaning of visibly dirty surfaces, followed by disinfection, is a best practice measure for prevention of transmission of COVID-19 and other viral respiratory illnesses in community settings. Employees must be aware of the necessary precautions and the supplies needed and available to properly clean and disinfect surfaces and equipment. Provide personal protective equipment for staff, disinfectant wipes throughout the facility, hand sanitizer in offices, and appropriate cleaning supplies.

Ensure that a designated staff member is regularly monitoring for facility, state and local health department updates on COVID-19.

Make all staff aware of the need for:

• Frequent cleaning and disinfecting of shared work areas and common tools and equipment with appropriate disinfecting products.
• Frequent cleaning and disinfecting of high touch services, including doorknobs, handles, keyboards, telephones, tables, etc.
• Frequent cleaning of shared break/lunchroom/bathroom areas with appropriate disinfecting products.
• Enhanced personal hygiene measures.

All employees must wash their hands with soap and water regularly and thoroughly, including at the beginning of each shift, before and after patient care, and upon returning from any break. In addition, frequent use of hand sanitizer and no touch disposal receptacles is recommended.

In the event of identification of a confirmed or suspected COVID-19 diagnosis the CDC recommends:

• Closing off areas visited by the ill person.
• Opening outside doors and windows and the use of ventilating fans to increase air circulation in the area.
• Waiting 24 hours, or as long as practical, before beginning cleaning and disinfection of the area(s).

It is unknown how long the air inside a room occupied by someone with confirmed COVID-19 remains potentially infectious. Facilities will need to consider factors such as size of the room, the ventilation system design, and location of supply and exhaust vents when deciding how long to close off rooms or areas used by ill persons before beginning disinfection. Cleaning staff must clean and disinfect all areas such as offices, bathrooms, common areas, shared electronic equipment such as tablets, touchscreens, keyboards, remote controls, and equipment used by the ill person, focusing expressly on frequently touched surfaces.

Note that the items outlined are only suggestions. Be specific in your safety plan to outline what needs to be addressed at your center. Consider adding machine inlet and exhalation filters to PAP circuits and use of disposable patient sensors. Assure all staff have an appropriate understanding and competence with manufacturer cleaning recommendations.

This a good opportunity to perform a facility risk assessment and take a comprehensive look at all employee and patient care areas. All managers are responsible for ensuring that appropriate disinfecting and housekeeping practices occur on a regularly scheduled basis. The use of logs and assigned duties will be critical to manage this.

The safety plan should outline your social distancing requirements. All employees, customers and any visitors must follow the social distancing requirements established by the CDC including maintaining 6-foot social distancing when possible. In addition, include the expectation that employees and visitors wear a mask or face covering.

The safety plan encourages workplace flexibility. This may be a good time to consider shared or split workloads, especially when childcare may be of concern for employees. Assess the feasibility of work at home, which can help to eliminate overcrowded offices. This is also a good time to review sick leave policies and make adjustments to incorporate alternative documentation protocols for return to work, minimizing requirements for employees to visit healthcare providers prior to returning to work.

Re-train all employees on the proper use of any required PPE, the proper use of cleaning chemicals and disinfectants, and handwashing and infection control expectations. This should be done at the time the facility is re-opened to assure staff education is current, and documentation of training should be kept in employee file along with the employee's acknowledgment of understanding of the revised safety plan.

There is a specific concern in the sleep center related to PAP titration studies, as this procedure does present a high risk of aerosol transmission. Staff must utilize appropriate PPE, such as N95 respirators, face shields, gowns and gloves. Employees will need an N95 FIT test to assure proper use and protection. The FIT test documentation should be kept in the employee chart.

OSHA Issues Training Resources for Respirators

On May 5, 2020, the U.S. Occupational Safety and Health Administration (OSHA) announced that it is releasing a new video and poster (available in English and Spanish) for employers and
employees regarding how to properly wear and remove a respirator. Both resources offer seven steps, which, according to OSHA, “every worker should follow when putting on and taking off a respirator”. These seven steps include:

1. Wash hands with soap and water or alcohol-based hand rubs containing at least 60 percent alcohol before putting on and after removing the respirator;
2. Inspect the respirator for damage;
3. Cover mouth and nose with the respirator and pull strap over the head so that it rests at the back of the head. A second strap should rest at the back of the neck. Use the metal nose clips to mold the respirator to the shape of the nose;
4. Adjust the respirator by placing both hands over it and inhaling and exhaling. Readjust the straps if air leaks from the respirator’s edges;
5. Avoid touching the respirator while wearing it;
6. Remove the respirator by grabbing the strap(s) from behind. Do not touch the front; and
7. If the respirator does not need to be reused because of supply shortages, discard it in a closed-bin waste receptacle.”

Employers that have determined respirators are necessary or appropriate for use in their workplaces may wish to incorporate these new OSHA materials into their training programs. In areas where N95 masks are in short supply, surgical masks placed over the N95 mask while in contact with a patient and discarded between patients may be useful to prolong the useful life of the N95 mask.

I am sending my gratitude and appreciation for all of the strength and unity our sleep community has shown during this international emergency. While the coronavirus pandemic has upended life for nearly everyone, healthcare workers, first responders and other essential workers have had to face more risks than most. I would like to join the AAST community in thanking all of those who are providing essential services during this difficult time. Be Safe and Sleep Well.