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QUARTER FOUR 2021 / VOLUME 30 / NUMBER 04

Wearable Sleep **Technology**

WHAT'S INSIDE

Artificial Intelligence and Sleep Careers

Chronic Insomnia and Digital/
Telehealth Treatment

The Importance of Certification in
Clinical Sleep Health

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CONTRIBUTORS

EDITOR

Rita Brooks, MEd, RPSGT, REEG/EPT, FAAST

MANAGING EDITOR

Monica Roselli

SENIOR WRITER

Regina Patrick, RPSGT, RST

CONTRIBUTING WRITERS

Andrea Ramberg, BA, RPSGT, CCSH
Kevin M. Adley, RPSGT, CCSH

ART DIRECTOR

Bill Wargo

GRAPHIC DESIGNER

Alaina Kornfeld

330 N Wabash Suite 2000 Chicago, IL 60611
A2Zzz@aastweb.org | www.aastweb.org
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From the Editor

As We End the Year...

By Rita Brooks, MEd, RPSGT, REEG/EPT, FAAST

As we approach the winter holidays, the Centers for Disease Control and Prevention (CDC) has approved boosters for all and posted cautions once again related to travel and indoor gatherings. Vaccination mandates for both COVID-19 and influenza are being put in place in most health care facilities. As health care providers, I encourage you to protect yourselves, your families, friends and patients, and get your vaccinations!

In this issue of *A₂Zzz*, we look forward in this new paradigm with several articles that focus on the use of technology in sleep medicine and new roles for sleep technologists. The use of artificial intelligence (AI) in sleep health care is highlighted in Andrea Ramberg's piece on what AI can do to enhance your career in sleep technology, with a focus on expanding roles in sleep education, sleep coaching and sleep navigation that those with the certification in clinical sleep health (CCSH) credential might be interested in pursuing. The CCSH Q&A

provides insight from those who have earned their credential and have found the knowledge attained benefits their patients, improves their positive airway pressure (PAP) titration skills and opens new pathways in their careers. Kevin Adley provides insight on the use of telehealth for the management of chronic insomnia and the role sleep technologists can play in educating patients on these options, which have been found to be equivalent to face-to-face cognitive behavioral therapy for insomnia (CBT-I).

Laura Linley's Compliance Corner focuses on communication skills for sleep educators and their role in positive patient outcomes. This is a skill that is essential for sleep technologists and educators in every aspect of their work, and this article provides a wealth of useful information on the topic. Additionally, Regina Patrick reviews consumer sleep technologies and their role in patient care now and in the future, with insightful reviews of several research studies on the topic. These

technologies are growing and as sleep technologists, we need to be familiar with them.

AAST continues to develop new educational programs for sleep technologists. Most recently we have released a "Fundamentals of EKG" module series that is developed specifically for sleep technology. This has long been an educational need for the sleep community, and we thank Jon Atkinson and Lisa Endee for their substantial contributions to this set of AAST learning modules.

Cozy up to the fire and spend some time this winter looking over the educational offerings at AAST! Renew your membership and take advantage of the free continuing education credits that accompany it and let us know if there are topics you would like addressed in future educational offerings!

Sleep well!

Rita





President's Message

Looking Ahead

By Laree J. Fordyce, CCRP, RPSGT, RST, CCSH, FAAST

As I step into the role of AAST President and begin my term, I am excited to have this opportunity to connect, work and advance the sleep field with you all. AAST is an organization that is dedicated to providing its members with top-notch continuing education, networking opportunities, access to world-class education and industry updates, and as your president, I am committed to ensuring these member benefits are upheld.

Joining me on the AAST Board of Directors' Executive Committee are three other wonderful individuals who are equally as excited and dedicated to serving you all. Emerson Kerr, RRT, RPSGT, FAAST, will be serving as treasurer, David Wolfe, MEd, RRT-SDS, RPSGT, RST, FAAST, will be serving as secretary and Melinda Trimble, LRCP, RPSGT, RST, FAAST, has assumed the role of immediate past president, offering guidance and insight to me and the rest of the board. Rounding out the board are five individuals serving as directors. These individuals include T. "Massey" Arrington, RPSGT, RST, CCSH, Julie DeWitte, RCP, RPSGT, RST, FAAST, Byron Jamerson, RPSGT, RST, CCSH, FAAST, Amy Korn-Reavis, RRT,

RPSGT, CCSH, and Daniel D. Lane, MAPsy, BS, RPSGT, CCSH.

Continuing to bring our members and the sleep community relevant and timely education, we are pleased to announce the release of our latest set of online education modules: "Fundamentals of EKG." This course includes three online modules, each focused on the essentials of EKG in polysomnography, and has been approved for three AAST continuing education credits (CECs). To learn more about this new educational opportunity, visit the [Fundamentals of EKG](#) page on the AAST website.

Additionally, we will continue to offer all of the online educational modules and courses from 2021 in 2022. These include the [AAST Advanced Pediatrics Module Series](#), the [AAST Enhanced CCSH Designated Education Program Modules](#) and the [AAST Advanced Sleep Titration e-Learning Course](#). If you have not already taken these intuitive modules and courses,

I highly encourage you to do so in the new year as the information presented is timely and reflects current industry practices. You can also top up your CECs.

Lastly, as we look ahead to 2022, I'd like to take this time to encourage everyone to either renew their AAST membership or join AAST for 2022. We are an organization that is dedicated to its members. The board, AAST staff and I are committed to assisting members in all aspects of the sleep profession, whether that is through educational opportunities, industry involvement or meeting certification renewal requirements. Information on how to renew [can be found here](#) and information on how to join AAST can be viewed on the [Join page](#) of the website. If you have any questions regarding AAST membership in 2022, please don't hesitate to reach out to AAST headquarters staff via email at info@aaastweb.org or by phone at (312) 321-5191.

The AAST Board of Directors and I are looking forward to working with and serving you all in the new year. If any of us can be of assistance to you or your sleep center, please don't hesitate to reach out to us at info@aaastweb.org.



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 **March 31, 2022**. 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 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 **March 31, 2022**.

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

Wearable Sleep Technology

Objective: Readers will review current consumer sleep technology/wearables and develop a working knowledge of how these devices can be useful in gathering information about a patient's sleep that is not possible with polysomnography (PSG).

What Can AI Do for Your Career in Sleep?

Objective: Readers will review multiple career paths available to them and identify ways in which artificial intelligence (AI) technology can help advance their careers in sleep.

Chronic Insomnia: The New Role for Digital/ Telehealth Treatment

Objective: Readers will develop a working knowledge of cognitive behavioral therapy for insomnia and current telehealth and digital treatment options for patients in and out of the sleep lab.

The Importance of Certification in Clinical Sleep Health: A Q&A With CCSH Credential Holders

Objective: Readers will review peer insights into the Certification in Clinical Sleep Health (CCSH) credential and identify ways in which the credential can benefit both themselves and the sleep industry.

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Wearable Sleep Technology



The use of wearable sleep technology (i.e., devices worn on the body to measure aspects of sleep such as sleep/wake cycles) is increasing among consumers. Benefits of wearable sleep technology are that it collects information about a person's sleep in their natural environment and can record information over an extended period of time, compared to having a polysomnographic study in which the "first night effect" and having incomplete data in a sleep diary can negatively impact results. However, little guidance exists regarding how to use these devices effectively in clinical and nonclinical settings (e.g., sleep research, consumer market). In addition, scientists have concerns regarding the devices' validity, accuracy and reliability in measuring various sleep parameters (e.g., sleep stages, sleep/wake cycles).

In 1978, Kripke and colleagues¹ described an accelerometer-based wrist actigraph that measured sleep/wake cycles based on changes in a person's general activity level between sleep (i.e., less active) and wake (i.e., more active). In their study, wrist actigraphy, electroencephalography (EEG), electrooculography (EOG) and electromyography (EMG) data were obtained simultaneously. They compared the total sleep time as measured with wrist actigraphy and manual scoring (based on EEG-EOG-EMG recordings). The correlation between wrist actigraphy and EEG-EOG-

EMG with regard to minutes of sleep, total sleep period and minutes of wake during a sleep period was high at 98%, 95% and 85%, respectively. Based on these findings, Kripke suggested that continuous wrist activity recordings could provide very accurate estimates of sleep time.

Since then, wearable sleep-trackers have been developed in many forms: wristband, armband, smartwatch, headband, finger ring and sensor clip. Some popular manufacturers of consumer sleep technology (CST) devices and their products are as follows:

- Fitbit, Inc. (San Francisco, CA): Charge 3-5, Charge HR, Versa and Versa 2-3
- ActiGraph Corporation (Pensacola, FL): GT9X Link and wGT3X
- Ōura Health Ltd. (Oulu, Finland): Smart Ring
- Apple, Inc. (Cupertino, CA): Apple Watch

Many CST devices purport to track a consumer's sleep, provide sleep-related metrics (e.g., sleep architecture, sleep stages), improve sleep quality or screen for sleep disorders (e.g., obstructive sleep apnea [OSA], periodic leg movements). However, the extent that these claims are true when compared to objective data obtained with polysomnography (PSG) has shown conflicting results with regard to accuracy and reliability.

For example, de Zambotti and colleagues^{2,3} evaluated the accuracy of a wearable sleep device, the Fitbit Charge HR wristband tracker, in measuring heart rate variability during sleep when compared to electrocardiography (ECG) data. In this device, heart rate is determined by an optical sensor (i.e., a photoplethysmograph [PPG]), which flashes a strobing green light onto the skin at hundreds of times per second. Capillaries in the skin reflect some of the light back to light-sensitive photodiodes. The amount of reflected light varies with blood volume changes in capillaries with each heartbeat. This variation is used to determine the heart rate.

de Zambotti found an average discrepancy of <1 beat per minute in the heart rate between the ECG and PPG data. Thus, the device showed good agreement with ECG in measuring HR during sleep. However, their comparison was based on minute-by-minute averages of the heart rate throughout the night rather than beat-to-beat data because beat-to-beat monitoring is unavailable in consumer wearables. Thus, the beat-to-beat accuracy level could not be determined.

Some CST devices use heart rate variability to determine sleep stages — more accurately, to determine whether someone is in "light sleep" (i.e., stages 1 and 2), "deep sleep" (i.e., slow wave sleep [SWS]) or rapid eye movement (REM) sleep.^{4,5} Changes in EEG activity (i.e., central nervous system activity) are strongly coupled to changes in the autonomic nervous system, which is involved in regulating myocardial function.^{6,8} For example, non-REM sleep stages are associated with a stable heart rate, whereas REM sleep is associated with an increased and more variable heart rate. Heart rate variability (i.e., beat-to-beat variations in the heart rate) is less pronounced between SWS and the lighter stages of sleep (i.e., stages 1 and 2) than it is between REM and non-REM sleep.

PPG technology has shown moderate to excellent results in research regarding sleep stages. For example, Finnish researchers Kuula and Pesonen⁵ examined the validity of the Firstbeat sleep analysis method versus PSG assessment of sleep stages. The Firstbeat sleep analysis method uses an algorithm (i.e., a specialized mathematical formula) to evaluate the physiological state of the person as "wake" or "sleep," based on heart rate variability and accelerometry data. It then rates sleep as "light sleep," "deep sleep" or REM sleep. The algorithm incorporates heart rate variability, respiration rate (based on heart rate variability), movement and time of day data to determine sleep, wake and sleep stages. In their study, healthy volunteers wore a heart rate monitor (Bodyguard 2 [Firstbeat; Jyväskylä, Finland]) and an actigraph device (Geneactiv; Activinsights, Ltd., Cambridgeshire, UK).

They found that for wake, the Firstbeat method had an accuracy of 93% with PSG data and accurately detected when a person was not awake 77% of the time and when a person was awake 95% of the time. For light sleep, Firstbeat had an accuracy of 69% and accurately detected when a person was not in light sleep 69% of the time and when a person was in light sleep 67% of the time. For SWS, Firstbeat had an accuracy of 87% and accurately

Scientists have concerns regarding the devices' validity, accuracy and reliability in measuring various sleep parameters.

detected when a person was not in SWS 91% of the time and when a person was in SWS 72% of the time. For REM sleep, Firstbeat had an accuracy of 84% and accurately detected when a person was not in REM sleep 92% of the time and when a person was in REM sleep 60% of the time. However, Firstbeat underestimated REM sleep (by a mean of 18 minutes) and overestimated wake (by a mean of 14 minutes). Despite this discovery, they believe their findings sufficiently validated that heart rate variability monitoring combined with accelerometry could be used to distinguish sleep from wake and determine sleep stages.

Most CSTs are sold as lifestyle or entertainment devices rather than as medical devices or medical applications (apps). Therefore, they do not have United States Food and Drug Administration (FDA) oversight. With this in mind, the American Academy of Sleep Medicine (AASM) in 2018 stated:

"It is the position of the AASM that CST must be FDA cleared and rigorously tested against current gold standards if it is intended to render a diagnosis and/or treatment. Given the unknown potential of CST to measure sleep or assess for sleep disorders, these tools are not substitutes for medical evaluation. However, CSTs may be utilized to enhance the patient-clinician interaction when presented in the context of an appropriate clinical evaluation."⁹

Some research regarding how to appropriately use CST data in sleep settings has been reported. de Weerd and colleagues¹⁰ described their experience in combining CST data with PSG data to successfully treat three patients. Patient 1 was a three-year-old boy who had difficulty going to sleep at night. Actigraphy data collected over a period of eight days revealed he had somewhat regular bedtimes and active periods. He was diagnosed with insomnia and limit-setting disorder and was successfully treated with cognitive and behavioral therapy (in particular limit setting by the parents). Patient 2 was a 12-year-girl who had insomnia and daytime tiredness. Actigraphy data (eight days) revealed a prolonged sleep time (approximately 12 hours) and regular naps after lunch time. PSG revealed frequent spontaneous arousals and short

awakenings. She was diagnosed with poor sleep hygiene. Cognitive and behavioral therapy reduced her sleep time to 10 hours. Patient 3 was a 14-year-old boy who was unable to go to sleep before 2 a.m. and had difficulty in getting out of bed (at 11 a.m.). Actigraphy data (eight days) revealed delayed sleep phase syndrome. He was successfully treated with cognitive, behavioral and bright light therapy to advance his sleep/wake cycles.

Patients who come to a sleep center may present sleep professionals with data from their CST device. To give appropriate feedback, sleep professionals need to be aware of the pros and cons of these devices. Some benefits of using these devices are that they improve patients' awareness of sleep and can enhance patients' willingness to take an active role in their sleep health. They can improve patient-physician interactions and are relatively inexpensive, easy to use and comfortable to wear. Additionally, they can alert a patient to sleep problems and can collect data over a long period. Some drawbacks of these devices are raw data collection (e.g., epoch length) and a lack of standardization of the algorithms used, which can make comparing information derived from the devices difficult. The devices can give inaccurate data and they are not truly a medical device (i.e., their use is considered "entertainment") as they do not have FDA approval. Lastly, they can have unintended clinical consequences (e.g., a patient may worry if the device indicates a sleep problem or a person may not seek help if the device indicates no sleep problem).

Although CST devices have not been validated in clinical studies, they can be useful in gathering information about a patient's sleep that is not possible with PSG. And they can be useful in gathering sleep/wake information of patients (e.g., autistic patients, patients with dementia) who would have difficulty in undergoing a PSG study. For now, researchers continue to evaluate CST devices with regard to their accuracy and reliability. With greater information, guidelines could potentially be determined for how to use these devices clinically and in sleep research. Wearable sleep technology could contribute greatly to advancing the understanding of sleep. 🌙



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.

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A Technologist's Guide to Performing Sleep Studies

Designed as an introductory resource, the *Technologist's Guide to Performing Sleep Studies* provides step-by-step instructions for collecting sleep study data from patients. It includes sections that cover suggestions for putting the patient at ease, reviewing the patient's symptoms and medications, attaching the sensors, preparing to record, biological calibrations, artifact detection and correction, and documentation.



Purchase *A Technologist's Guide to Performing Sleep Studies* eBook in the AAST Learning Center

What Can AI Do for Your Career in Sleep?

By Andrea Ramberg, BA, RPSGT, CCSH

Finding enough time in your day to accomplish everything both personally and professionally is a struggle that many people can relate to. Most of us wish that we could find time to do more, yet many of us finish our days with items still left on our to-do list. If technology could free up half the time your team currently spends scoring studies, what items could you start crossing off your list each day? Could you use that time to take your career in sleep to the next level?

One of the things I'm passionate about is finding ways for technologists to excel in the midst of the ever-growing demands placed on sleep care professionals. Implementing artificial intelligence (AI) technology can lead to scoring more studies in less time and reduce your sleep lab backlog. This, in turn, frees up time in your workday to pursue a new part- or full-time role at your sleep lab. There are many opportunities in sleep for technologists to expand patient care and compliance, including attaining an additional certification, pursuing continuing education by taking a course at a local college or implementing a new program for your sleep lab. All of these initiatives have the potential to both positively impact your sleep center and elevate your career.

Career Doors That Open With a CCSH

Your career can rapidly evolve when you earn an additional degree, credential or certification. In sleep medicine, the Certification in Clinical Sleep Health (CCSH) credential might be the one that opens the most doors for sleep technologists. That was certainly the case for me. I started out in sleep medicine performing in sleep lab studies and transitioned to a scoring technologist.

While building up my skills, I recognized opportunities to make a difference in the lives of my patients beyond scoring studies.

I obtained my CCSH certification, and using my expertise and knowledge, worked to improve the care pathway for patients in the community that I served by starting a sleep navigation program. My CCSH credential helped me grow my career, and it started with me seeing an opportunity to make a difference and finding a way to make it happen.

My CCSH credential helped me grow my career, and it started with me seeing an opportunity to make a difference.

If you're interested in earning your CCSH the following are career paths a sleep technologist might consider pursuing. The first three start with the CCSH credential and the fourth is a direct result of implementing an AI-assisted sleep scoring solution.

Sleep Coach

With your CCSH, you will have the skills and qualifications to help patients with specific disorders that require unique therapy plans, including insomnia. Generally, sleep coaches work closely with physicians and other behavioral medical specialists to facilitate improved outcomes for the patient. For many patients, talking with a sleep coach might be the very first step in analyzing sleep patterns. Patients may not be ready to accept their current reality; a sleep coach is someone who can guide a patient toward healthy (or healthier) sleep patterns. Sleep coaches will also work with parents to assist them in getting their kids on a healthier sleep schedule, providing benefits to the entire family.

Sleep Navigator

Often found in health systems, the sleep navigator brings together the sleep lab and other areas of the health system. Sleep navigators help facilitate the care plan from inpatient to outpatient, ensuring patients do not fall through the cracks and get the right treatment. Navigators educate physicians and nurses on what to look for in patients as well as put systems in place to remove the challenges often faced with pre-op screening, subsequent testing, and follow-up treatment and education.

Sleep Educator

A sleep educator typically serves in a durable medical equipment (DME) role. Educators work directly with patients, for example, after a home sleep apnea test (HSAT) is taken, but before the patient begins their auto-titrating continuous positive airway pressure (Auto-PAP) setup. The sleep educator will educate the patient on the potential disease state,

how to use and clean the positive airway pressure (PAP) device and what to expect with mask and therapy options. Educators can also provide remote monitoring. Because remote monitoring is a newly reimbursable activity, sleep educators are able to support patients and the bottom line at the same time. As such, educators are remotely downloading patient PAP data and interpreting and commenting on it with patients proactively to improve adherence.

Love Scoring Studies? Be a Super Scorer

For the sleep technologists that love scoring sleep test studies, implementing AI technology can help them either increase the volume of tests they get through on a given day or allow them to really dissect and interpret the more complex or difficult sleep tests. AI-assisted sleep test scoring software can take the first pass at scoring the polysomnography (PSG) or HSAT study and then the super scorer can go back into the test and focus their time on the parts that are most complex and really need the

expertise of a sleep technologist. Sleep technologists can be the eyes and the ears of the physician and catch little details such as arrhythmias or abnormal electroencephalography (EEG) results, as well as catch patterns that ultimately result in the patient getting a better diagnosis and care plan.

Closing Career Advice

As you head into 2022, consider what your career goals are for the new year. Will you earn your Registered Polysomnographic Technologist (RPSGT) or CCSH credential? Will you take a couple of classes at your local college in a specific area of interest or to make a positive contribution to your sleep team or organization? This past year has seen a lot of changes and challenges in sleep medicine and health care in general. The evolution of sleep medicine means we all need to take our careers to the next level. Don't be afraid to set professional goals and create opportunities and a plan that will positively impact your career in 2022 and beyond. 🌙



ANDREA RAMBERG, BA, RPSGT, CCSH, has spent over a decade in sleep medicine learning every component of polysomnography, from clinical to administrative. She is double credentialed with her RPSGT and CCSH, and holds a bachelor's in psychology while currently pursuing a master's in industrial and organizational psychology. Ramberg is the president-elect of the BRPT and will begin her term as president on Jan. 1, 2022. She is the customer success manager with EnsoData and is passionate about bringing sleep into the future.

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Chronic Insomnia: The New Role for Digital/ Telehealth Treatment

By Kevin M. Adley, RPSGT, CCSH

Insomnia is the most common sleep disorder in the general population. It is defined as a persistent difficulty with sleep initiation, duration, consolidation or quality that occurs despite adequate opportunity for sleep, and leads to impairment in health and functioning.¹ It may also be a symptom of another medical condition such as obstructive sleep apnea (OSA). Recent findings show that insomnia is on the rise. Factors such as stress and anxiety have contributed to an increase in its prevalence in the United States with diagnosis rising from 33% (pre-pandemic) to 56% (post-pandemic).^{2,3} Cognitive behavioral therapy for insomnia (CBT-I) is the first-line recommendation for managing chronic insomnia. The American College of Physicians released recommendations for chronic insomnia in 2016 stating that only after patients fail CBT-I should medication options be considered. Seventy-five percent respond to CBT-I,⁴ therefore, why are so many people that are suffering from insomnia still taking sleep medications?

First, let's define terms. According to the "International Classification of Sleep Disorders" (ICSD-3), insomnia is classified in three diagnostic categories:⁵

- **Chronic:** Frequent and persistent difficulty initiating or maintaining sleep that results in sleep dissatisfaction and daytime impairment.
- **Short-term:** Occasional difficulty initiating and maintaining sleep, often associated with some sort of stressor, e.g., jetlag, grief, illness.
- **Other:** Rare cases that do not meet criteria for chronic or short-term insomnia but have symptoms indicating clinical suspicion of insomnia. This diagnostic category is used sparingly because of its nonspecific classification.

In this article, I'll be focusing on chronic insomnia and the historical challenges providers have faced with the treatment recommendation of CBT-I. Although CBT-I is the first-line recommended intervention for insomnia,⁶ its utilization is limited by the lack of clinicians who are trained in this treatment. Currently there are less than 200 board-certified behavioral sleep medicine (DBSM) specialists, with less than 60 specializing in pediatrics. Many of these specialists are practicing in larger cities or are affiliated with universities leaving people outside these areas with few treatment options.

Understanding CBT-I

What is CBT-I? Sleep hygiene is not CBT-I, nor is CBT-I talk therapy. CBT-I consists of both psychological and behavioral interventions where a patient learns how to recognize and change beliefs and behaviors that reduce the anxiety associated with their sleep. This systemized approach for treating insomnia has been widely studied and determined effective in treating insomnia. The "Clinical Guideline for the Evaluation and Management of Chronic Insomnia in Adults" published in the Journal of Clinical Sleep Medicine¹ states

a consensus that CBT-I treatment should be utilized as an initial intervention when appropriate and when conditions permit. A typical program consists of six to eight weekly face-to-face sessions.

CBT-I Session-by-Session Example:

1. Initial evaluation, sleep hygiene, complete baseline log
2. Sleep restriction and stimulus control treatment
3. Relaxation training
4. Worry time
5. Cognitive restructuring (one to two visits)
- 6.-8. Gradual increase in total sleep time (TST), maintenance, relapse prevention

Introducing CBT-I to Patients

According to insomnia specialist Dr. Lisa Medalie, "It can help to 'watch your words' when first introducing CBT-I to a new patient. I typically have my colleagues describe 'me' as an insomnia specialist, as opposed to a psychologist. While stigma for seeking therapy is improving, it still exists, and CBT-I truly is a sleep-focused program. To give a high-level of what the program feels like, it can be helpful to explain that CBT-I 'is like physical therapy, but for your sleep.'" Patients should also understand that it is data-driven and data-backed; they will fill out sleep logs

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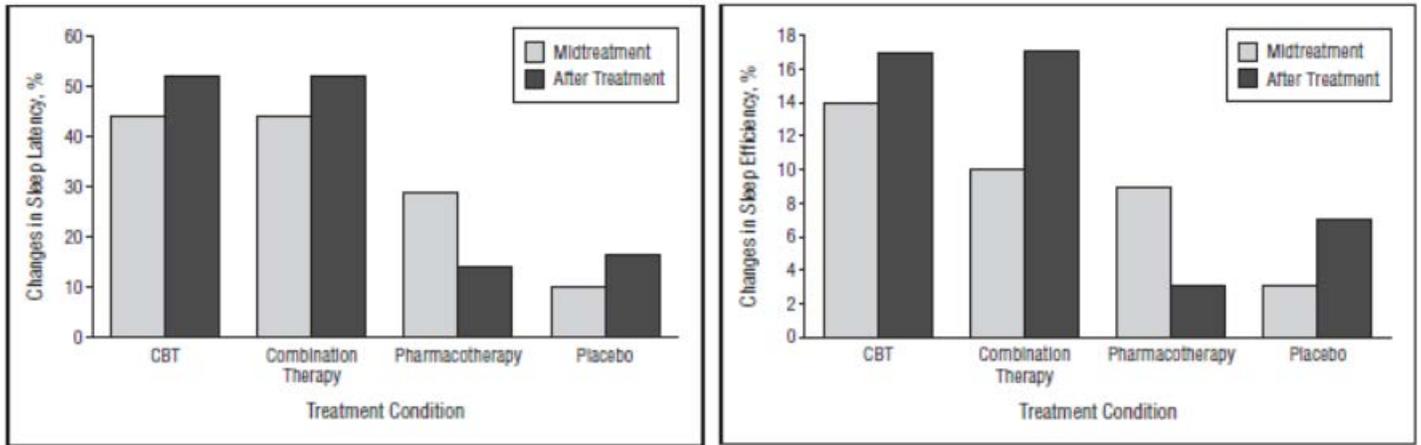


Figure 1. Source: Jacobs GD, Pace-Schott EF, Stickgold R, Otto MW. Cognitive behavior therapy and pharmacotherapy for insomnia: a randomized controlled trial and direct comparison. *Arch Intern Med.* 2004 Sep 27;164(17):1888-96. doi: 10.1001/archinte.164.17.1888. PMID: 15451764.

throughout treatment to track progress (data-driven), and the program is backed by repeated randomized control trials.

CBT-I has been shown to surpass pharmacological treatments in long-term efficacy and does not carry the same risks of side effects, issues with drug tolerance and/or drug dependence. At Beth Israel, Robert Stickgold and his team studied 63 adults with chronic insomnia treated with CBT-I, pharmacotherapy and a combination of the two.⁷ There were no significant differences at mid-treatment and after-treatment points, however, there were significantly more patients who met the criteria for normal sleep onset (less than 30 minutes) in both CBT-I groups compared to both the pharmacological and control groups (Figure 1).

CBT-I and Digital Telehealth and Technology

Insomnia is a serious sleep disorder that requires treatment. CBT-I is a safe and effective treatment but access to therapy is limited, and thus, a solution is required. That is where digital and telehealth technology come into play. Prior to the COVID-19 pandemic, digital apps such as Headspace, Calm and Breethe were available to assist the public with sleep and insomnia. However, even with a variety of approaches, most of which lack serious evidence-based protocols, the chronic insomnia patients were still left underserved.

The Shift to Digital Telehealth

The paradigm shift happened as a result of telemedicine flipping on in 2020 at the beginning of the pandemic, and it appears the proverbial genie has been released from the bottle; enough time has now passed comparing the effectiveness of telemedicine versus in-person visits. This shift was examined in a recent study, led by Dr. J. Todd Arnedt

at the University of Michigan.⁸ Dr. Arnedt and his team randomized 65 adults with chronic insomnia to six individual sessions of CBT-I, delivered either in person or by telemedicine. They wanted to know if CBT-I via telemedicine performed similar to (that is, not worse than) in-person CBT-I in reducing the severity of insomnia symptoms. They also compared other outcomes such as daytime functioning and patient satisfaction with the treatments.

The Results

At two different time points, the completion of CBT-I and at three months post completion, CBT-I delivered by telemedicine was not inferior to, or no worse than, CBT-I delivered in person, meaning the telemedicine group did as well as the in-person group. Telemedicine was also not inferior for other outcomes, including response rates, daytime functioning and patient satisfaction.⁸

So what does this all mean for sleep technologists? First, as technologists, we often serve as that ambassador between patients and their initial journey to treating a sleep disorder. Education and awareness are vital to patient outcomes; there is a duty for us to be informed of the latest therapies, standards of practices and technology so that we can best assist our patients. Our colleagues also rely on us to bring the “latest and greatest” in technology to their attention.

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Digital Options for Treating Chronic Insomnia

There are a few new and exciting digital options for treating chronic insomnia. Given that most insomnia patients end up in sleep clinics, we want to bring these resources to the labs. The nice thing about these resources is that you can easily “bring them to the lab” by adding a link to your lab website or via a QR code link in your lab materials.

Sleepio

- Patient age: adults
- Resource type: digital health
- Availability: offered through employers’ benefits packages
- Source: www.sleepio.com

Somryst

- Patient age: adults
- Resource type: FDA-approved digital health
- Availability: prescribed by physicians; covered by insurance
- Source: www.somryst.com

DrLullaby

- Patient age: all ages
- Resource type: digital health and telehealth
- Availability: Discounts offered to sleep labs; telehealth covered by insurance in some states
- Source: www.drlullaby.com

The Future Is Bright

The full impact of these new insomnia solutions has yet to be realized, and more time is needed to study the utility of this approach for underserved communities. However, as they become adopted into clinical practice, a paradigm shift should be anticipated with how insomnia patients navigate through the health care system. Not only can this shift be utilized by sleep providers, but the patient’s primary care team will have an option outside of medication and a referral to a sleep clinic. They too can be empowered with minimal effort in providing evidence-based solutions that are convenient to their patients without sacrificing clinical outcomes. Indeed, bright days are ahead for those who are suffering from restless nights. 🌙



KEVIN M. ADLEY, RPSGT, CCSH, is the clinical director at Midwest Dental Sleep Center, one of the nation’s largest providers in dental sleep medicine. Prior to starting this position in the spring of 2018, he spent 15 years with the University of Chicago Sleep Disorders Center. There he ran more than 3,000 sleep studies, participated in groundbreaking research and finished the last six years working as the program’s chief technologist. He is passionate about sharing his knowledge and expertise with others, and has developed educational programs in the fields of polysomnographic technology, dental sleep medicine and alternative therapy strategies for treating OSA. He is currently serving on the AAST Education Committee and is on the board of directors for the Illinois Sleep Society.

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The nice thing about these resources is that you can easily “bring them to the lab” by adding a link to your lab website.

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The Importance of Certification in Clinical Sleep Health: A Q&A With CCSH Credential Holders

By *Monica Roselli*

The Certification in Clinical Sleep Health (CCSH), offered through the Board of Registered Polysomnographic Technologists (BRPT), showcases the knowledge of those who manage patient care as health care providers and educators. In addition to meeting specific educational/clinical requirements of the CCSH, individuals must hold a Basic Life Support (BLS) certification or its equivalent, adhere to the BRPT Standards of Conduct and pass the CCSH examination.

AAST Managing Editor Monica Roselli recently spoke with four sleep professionals who have earned their CCSH credential, Betsy Dauphin, RRT, CCSH, Andrea Early, RPSGT, CCSH, Cheryl Memmini, RRT, RPSGT, CCSH, and Salvatore "Sam" Sarullo, RPSGT, CCSH, on what having the credential means to them, the impact it will have on the sleep industry and advice for those looking to sit for the CCSH exam.

What does a typical day look like for you and how do you utilize your CCSH credential in your day-to-day work?

Betsy Dauphin (BD): I work with BetterNight, a national durable medical equipment (DME) provider, so my focus is mainly on compliance with positive airway pressure (PAP) devices, rescuing PAP failures to alternative therapies and acting as a research coordinator on clinical studies. My CCSH credential and education have prepared me to better understand sleep-related breathing disorders and other issues surrounding sleep and whole-body health. It's through this coaching that patients achieve sustainable compliance. In addition, I keep my respiratory therapist license in 40 states, which allows my CCSH credential to extend into those areas as well.

Andrea Early (AE): My day consists of educating obstructive sleep apnea (OSA) patients on use, purpose and function of all PAP devices. I troubleshoot machine pressure intolerance and effectiveness, machine malfunction, mask fit issues, compliance adherence, insurance problems with reimbursement and review sleep study results and how poor sleep impacts overall health. I also collaborate on patient treatment needs and modifications to current treatment with physicians.

Cheryl Memmini (CM): I am a clinical sleep educator for a health system's own DME. I do patient education for patients diagnosed with OSA and central sleep apnea (CSA) as well as PAP setups, follow-ups and troubleshooting.

Salvatore "Sam" Sarullo (SS): My typical day involves working with patients, and family members, regarding diagnostic testing and education. The education piece not only encompasses procedural testing but almost always leads into general sleep hygiene. The CCSH education has helped me identify what patients are experiencing and how I can intervene and play a supporting role with direct or indirect influence.

What benefits do you see in obtaining the CCSH credential? How has having the credential benefited you and the work that you do?

BD: Learning about different sleep disorders and treating them is very beneficial when working in the sleep industry. Having the CCSH credential has benefited me by helping me educate patients about the disease, why treatment is needed, adverse outcomes if untreated and explaining treatment in ways they can understand. The CCSH credential also helps me educate and inform coworkers and staff on how other issues outside of sleep-disordered breathing may affect patients and their compliance with PAP therapy.

AE: The CCSH is helpful in becoming well rounded in all aspects of sleep from medications and behavior modification to PAP treatment and alternatives. This credential reminds me to stay up to date on all new trends in sleep, too.

CM: The CCSH credential is beneficial because it shows that the practitioner has studied a specific area (education of sleep disorders) and is qualified to provide this important information to patients and the general public. It has benefitted me specifically with getting the patient education process implemented as well as helping me to learn to focus on each patient as an individual with their own life circumstances, learning style and adaptability to new ideas/change. It has also increased my confidence in my ability to help people understand sleep disorders.

SS: The benefits are tremendous. It shows you have a growth mindset and are passionate regarding patient outcomes. It prepares you for expanding into additional sleep medicine roles (i.e., inpatient OSA screening, DME, and clinic) which I've had the pleasure of supporting with seamless transition and confidence.

How do you see the CCSH credential impacting the future of the sleep industry?

BD: The CCSH credential will allow Registered Polysomnographic Technologist (RPSGT), Registered Respiratory Therapist (RRT) and nursing staff to implement sleep programs across the country, increasing diagnostic and screening potential. It will carve out a whole new space for us to practice in, and it will assist in bringing sleep education out of the dark and into the light.

Pursuing the CCSH credential provides clinical education for professionals wishing to make a more significant difference in the lives of their patients.

AE: When/if services are reimbursable, I see it taking the weight off providers to help the sleep patient in all modes of treatment. Hopefully, it will lead to more hospital consults or physician office visit consults for CCSH staff to talk to patients about healthy sleep and how it affects the body.

CM: The CCSH credential is very versatile. You can work for a health system, DME, physician's office or even go to work for yourself and start your own sleep coaching business.

The CCSH role is a very good link between sleep diagnosis and treatment and the sleep physician and ongoing therapy success. I believe this credential can decrease the amount of time from diagnosis to successful therapy. Patients often find it easier and less intimidating to relate to us and often ask us questions they don't ask their physicians. When patients have a home sleep apnea test (HSAT), get a diagnosis of OSA and go directly onto auto-titrating positive airway pressure (Auto-PAP) therapy, they need good patient education on OSA, its cause and comorbidities, a review of their sleep study results, what PAP therapy is, how it works and why PAP therapy is a good treatment for them. It can take months to get in to see a sleep physician after diagnosis and patients often spend that waiting period untreated. If they can see a CCSH professional soon after diagnosis, they can go through all of the above, and their therapy can get started right away. They can then follow up with the sleep physician post-setup from the CCSH. Another benefit to this is if there is a problem with therapy, it is identified quickly and can be addressed sooner by the physician. The CCSH can also educate patients on comorbid sleep disorders, i.e., restless legs syndrome (RLS), periodic limb movement disorder (PLMD) and insomnia as well. The patient that has a good understanding of their sleep disorder and

why treatment is necessary is generally more likely to be compliant with and do well with PAP therapy.

SS: I see more technologists and health care professionals pursuing and obtaining the CCSH, which will drive healthier patients and communities.

What is something about the CCSH credential that you wish more people knew about?

BD: The CCSH can help professionals recognize symptoms of underlying health issues, help their patients learn how to improve their day-to-day habits and help them to ask the right questions for better care and management of their sleep disorders.

AE: Using another resource like a CCSH can add value in the sleep community.

CM: There is more than one way to use the credential, and the knowledge gained while studying the necessary information to obtain the credential is invaluable. Other than the ways already stated to use the credential, an in-hospital sleep educator can help educate inpatients on sleep disorders, link them to their comorbidities and current condition, and guide them through the diagnostic process. Also, public education about sleep is extremely important and necessary.

SS: It will help with your PAP titration studies, especially re-titration studies where downloads are available for review. The CCSH covers therapies with PAP download scenarios.

What advice do you have for someone contemplating obtaining the CCSH credential?

BD: I want to encourage people to expand their knowledge and understanding of different sleep disorders and patient education. Pursuing the CCSH credential provides clinical education for professionals wishing to make a more significant difference in the lives of their patients and those who struggle with sleep disorders.

AE: The CCSH credential adds another dimension to gaining more sleep knowledge.

CM: My advice would be that you should really like helping people understand their sleep disorders and helping them with their therapy, as well as seeing them through the whole process. Many people are resistant at first and these people tend to need your help most of all.

SS: You will notice your core knowledge has improved, and you will have more confidence in your career. The CCSH credential will prepare you for transitioning into other sleep medicine areas when the call presents.

Anything else you'd like to share?

BD: I see the CCSH credential as a promise. The more we do with this credential in our hands, the higher we elevate it and its possibilities.

CM: Sleep medicine is always changing and evolving. Attaining a higher level of knowledge, staying current and adapting to new ideas and information are vital to any sleep professional.

SS: Have a growth mindset and embrace knowledge and change. It will help you and those around you. Sleep well, everyone. 🌙



BETSY DAUPHIN, RRT, CCSH, joined BetterNight in 2015 as a sleep care specialist. Over the last six years, she has grown in the

field of sleep medicine as a registered respiratory therapist that is licensed in 40 states. She obtained the CCSH credential in 2020. Dauphin has been a research coordinator on multiple Institutional Review Boards-approved research studies and enjoys participating in any research that adds value to the field of sleep medicine.



CHERYL MEMMINI, RRT, RPSGT, CCSH, has been in health care for 35 years as a respiratory therapist, a sleep technologist and a clinical sleep educator. She is married and has four adult children and a menagerie of dogs and cats.



SALVATORE "SAM" SARULLO, RPSGT, CCSH, began his sleep industry journey in 2003 with on-the-job training at a private sleep lab and eventually advanced into a reputable health system in Illinois. With dedication and support, he has been able to grow and participate in multiple programs and implementations, and also work alongside exceptional technologists, medical directors and administrators. He has a passion for technology and became an EPIC analyst for a short period before transitioning back to sleep medicine.

ANDREA EARLY, RPSGT, CCSH, has been a respiratory care practitioner since 1998, a clinical sleep educator since 2013 and has held her CCSH credential since 2016. She has worked in multiple care settings including a hospital intensive care unit, a pulmonary rehab facility, home care and a pulmonary and sleep clinic.



MONICA ROSELLI is the managing editor of A₂Zzz.

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Compliance Corner

By Laura A. Linley, CRT, RPSGT, FAAST

The Power of Positive Communication in Successful Therapy Outcomes

As we continue to expand the role of the sleep technologist, it has become apparent that an enhanced communication skill set is needed to motivate our patients. I am reminded that the basics of communication and positive communication are fundamental in health care delivery and positive patient outcomes. This was something I personally experienced with a family member recently starting positive airway pressure (PAP) therapy. I offered education and face-to-face support, yet I could sense that there was still hesitation and distrust that PAP therapy was going to work; so I called in backup. It took follow-up and reinforced education from an experienced sleep educator to really get my family member to buy in and to start the therapy.

Now I basically said the same thing in my education session, though most likely I had a different tone. (In hindsight the “you are going to wear this therapy and like it because I love you and you are already experiencing negative comorbid complications with your untreated sleep apnea” approach did not work ... oops.) In this situation, I witnessed firsthand the power of repetitive teaching, respectful listening and recognition of barriers to care – and how

that combination of skills set the stage to motivate and support the start of a home therapy program.

There are four main communication styles: passive, aggressive, assertive and direct. Each one of them has their own characteristics, and you can have a predominant style or use different styles in different situations. There has been research that shows that clinical outcomes such as patient recall, understanding treatment recommendations and adherence to those recommendations is associated with the clinician's communication skills. The most consistent findings suggest that communication needs to be consistent and basic principles of information are used. Successful communication should:

- Be uncomplicated
- Be specific
- Use some repetition
- Minimize jargon
- Verify the patient's understanding

In addition, communication should simultaneously employ a patient-centered approach and an interpersonal interaction to



Compliance Corner *continued*

By Laura A. Linley, CRT, RPSGT, FAAST

promote patient satisfaction. Overly directive communication and teaching appears to have a negative consequence (as in the case of my family member).

To foster a good relationship with a patient, it's important to start off on the right foot. Greet the patient appropriately, maintain eye contact if you're in a face-to-face interview and listen actively. By encouraging patient participation, you are showing interest in the patient as a person. One easy technique is to simply thank the patient for sharing their perspective or experience.

Gather information by attempting to understand the patient's need for the encounter. Ask open-ended questions and allow for the patient to respond completely. Elicit your patient's full set of concerns and perspective on the problem or illness, and make sure to clarify and summarize the information given.

When providing information to the patient, explain the nature of the problem. In approach to diagnosis and treatment, give uncomplicated explanations and instructions, encourage questions and check patient understanding. It is important to provide information resources; remember to evaluate that the patient knows how to access and use informational tools such as therapy compliance apps or electronic medical charts.

When providing information to the patient, explain the nature of the problem. In approach to diagnosis and treatment, give uncomplicated explanations and instructions, encourage questions and check patient understanding.

To get the patient involved in decision-making, encourage the patient to participate by outlining their choices, and work together to reach agreement in a therapy plan. This is a good time to discuss follow-up and plan for unexpected outcomes. It is important to assess patient interest or ability for self-management. You can do this by agreeing on next steps. It is important to assess patient readiness to change health behaviors. One tool is to elicit the patient's goals, ideas and decisions.

Overall, by providing respectful care you are acknowledging and exploring patient emotions and expressing empathy, sympathy and reassurance. This approach will help your patients deal with emotions and identify psychological distress that may prevent success in therapy goals. Respectful care also incorporates cultural competence. Understand that the patient's view of you may be defined by ethnic or cultural stereotypes. Know your limitations in addressing medical issues across cultures, understand your personal style and recognize when it may not be working with a patient.

In a field where more and more patient interaction is being done outside of face-to-face communication, the challenges of assessing communication skills should not be underestimated. Developing effective remote patient-clinician communication requires a substantial commitment in an increasingly challenging environment with declining clinical reimbursements and increasing expenses. It may well be that, in the long term, effective communication skills save time by increasing patient adherence to treatment, thereby reducing the need for follow-up calls and visits. It may be beneficial to look to industry services such as programs with wellness coaches to support best outcomes.

Our industry demands positive patient outcomes. Advocate for sustainable practice models that increase the number and duration of patient visits that include education sessions to address multiple patient concerns. Increased time for these visits and positive approaches to communication are crucial to improve patient-centered interviewing, shared decision-making and improved patient communication. Non-physician health care providers, such as certified clinical sleep health (CCSH) educators, have an important role in supporting best practices and best sleep health outcomes.

If you are looking to expand your skill set and learn the skills of a CCSH, check out the recently released [AAST enhanced CCSH Designated Focused Education Program](#). These enhanced modules provide a comprehensive education series and real-life examples of how to apply the CCSH credential in your sleep center or practice. 🌙

2021 AAST Fellows

The AAST Fellow Program is a means of recognizing those who have made significant and sustained contributions to the field of sleep technology. Fellowship recipients must be credentialed in sleep technology by a nationally recognized organization for at least 15 years and have been a regular AAST member, in good standing, for the last 10 consecutive years.

AAST Fellows have also attained distinction through significant professional service to AAST and to the field of sleep technology; significant professional contributions to the field; or prominent leadership, influence and achievement in clinical practice, education or science.

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Winner: Andrea Ramberg, BA, RPSGT, CCSH



AAST Professional Development Service Award

This award honors and recognizes an AAST member who demonstrates exceptional commitment to advancing education in sleep technology.

Winner: Lisa Endee, MPH, RRT-SDS, RPSGT, RST



AAST Literary Award

This award honors an AAST member who has written an original article, paper or textbook chapter in the past year that has been accepted for publication.

Winner: Laura Linley, CRT, RPSGT, FAAST

