A CALL FOR HIGHER EDUCATION IN SLEEP MEDICINE

FACING THE FUTURE:
A CALL FOR HIGHER EDUCATION IN SLEEP MEDICINE

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The role of sleep technologist has come a long way from its days of sporting the look of ink-stained lab coats, paper cut fingers with the accessories of rubber belts and peep valves in our pockets. But, for as far as we have come, there is no denying the fact that we are still on that journey forward as a profession. A convergence of factors is placing new demands on sleep technologists today. Regulatory and economic pressures are changing the way sleep disorder patients are diagnosed and treated. New models of integrated care are emerging with an increased focus on patient education, monitoring, and follow-up. And a workforce analysis shows that the number of trained physician specialists will be inadequate to provide this new level of care.

As an association, the AAST is highly focused on the needs of our members, and on the legacy we are creating for the next generation of sleep professionals. We are highly cognizant of the trends, as well as the reality that in order to maintain viability as an allied health profession sleep technologists entering the profession will need to meet consistent education requirements and demonstrate competency in a broader set of roles than they currently are today.

While several models that address this growing need already exist, the true challenge will come with how to define the new roles for sleep technologists, and the ways in which education is provided. Quite simply, these factors will allow professionals to flourish in the future of sleep medicine.

On that notion, AAST leadership realized that advancing the profession meant maintaining the status quo would simply not suffice. Instead, a new direction was necessary in order to stay viable in the face of great changes coming from all different directions and to keep pace with other disciplines where higher-level degrees are becoming the norm.

Recently, the two primary Boards that manage credentialing for sleep technologists, the American Board of Sleep Medicine (ABSM) and the Board of Registered Polysomnographic Technologists (BRPT), have discussed making changes to the educational requirements for certification. Specifically, the Boards discussed the AAST position that it is imperative to establish a requirement for individuals to have an associate’s degree to become credentialed, as opposed to the current system of establishing pathways that allow individuals with a high school diploma an opportunity to be certified.

These discussions began back in 2013 with our AAST Summit. Which eventually led to AAST-hosted Education Taskforce Meetings with invited members of AAST, BRPT, ABSM, the Committee on Accreditation for Polysomnographic Education (CoA PSG), and instructors of both accredited certificate and associate polysomnographic education programs. All of these conversations focused on answering the following question: ‘Would raising the educational requirement for sleep technologists improve or worsen job prospects?’

To evaluate this, AAST engaged McKinley Advisors, an independent consulting firm, to conduct research with stakeholders in order to assess how this proposed educational requirement would affect the field. It all started with an online survey, sent to key stakeholders in sleep technology facilities and institutions of higher education. The response rate we received was very encouraging, and the insights provided by these respondents, along with information gathered during additional contacts with sleep educators and professionals, were highly illuminating to the ways in which we must shape the future direction of this profession.

In this issue, our cover story dives into the findings of this research—a focus on the future of sleep medicine and the evolving role of the sleep technologist. I believe the results are highly indicative of the challenges, opportunities and outcomes that will enable us to face the future of sleep technology with confidence.

These results also reinforce the efforts that the AAST is making to promote and advance the profession, working with key stakeholders to provide the right level of education and training.

It’s a bright future, and we are taking that next step forward.
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Mission: The American Association of Sleep Technologists (AAST) promotes sleep wellness and leads the sleep technology profession through education, resources and advocacy.

Vision: The American Association of Sleep Technologists (AAST) will play a key role in setting the standard for professional excellence in the evolving practice of sleep healthcare.

Purpose: To provide a voice for the professionals who ensure the safe and accurate assessment and treatment of sleep disorders.

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THE NEXT STEP FORWARD

It’s been roughly two months since we officially announced ‘doors open’ with our new association management company, SmithBucklin. Thus far, I am happy to report that this next step forward for AAST is going smoothly.

As you are aware, the move to transition from the American Association of Sleep Medicine (AASM) and engage with SmithBucklin came in direct response to a growing need for the AAST to become more responsive to the rapidly changing and increasingly complex needs of our membership. Given the 65 years of experience in serving independent non-profit associations, including approximately 30 other healthcare-related societies and associations, SmithBucklin was the right fit for assisting the AAST to move rapidly and smoothly into the technology arena and become a more process-driven, volunteer-supported organization.

I want to take a moment to recognize how this transition is aligning with the strategic goals of AAST. In particular, the goal of evolving the AAST from a people-driven organization to one that is more process-driven.

We believe strongly in giving members the ability to develop into future leaders in the industry. We recognize that our members continue to face many time pressures, which can make it difficult to meet the duties that come with being a volunteer. Therefore, it was important that with this transition we invested in the right project management resources and technology tools that would create an effortless experience for members across the board.

One such aspect is managing Continuing Education Credits (CECs). The AAST remains firmly committed to education, and thus we continue to work together with stakeholders in the field of sleep technology to develop curricula, identify knowledge and skill gaps, and provide training and instruction to meet the needs of our members.

With our commitment to technology improvements, you now have easier access to our online education programs and CEC opportunities using an updated educational platform. The new platform allows learners to personalize their learning process, track progress and engage in more interactive education, including clinical simulations.

We now have a brand new CEC Portal where you are able to review your transcript, print certificates, view program details, and track certification start and renewal dates. From your Learning Center, you can view currently active modules and search the catalog for new eLearning. Completion certificates are available in your CEC Portal. And we are making it easy to navigate through these resources by providing videos and additional directions for each, to help you familiarize yourself with these tools.

This is all part of an enhanced Member Portal, where you can access membership information and update your profile. We will continue to improve our website and expand our capabilities for interactive communication with our members, keeping you up to date with news in the field of sleep technology and providing opportunities for feedback to the leadership.

Speaking of keeping up to date with the news, you have probably noticed a slight change to the format of A2Zzz. Beginning with this issue, we are delivering the publication straight to your inbox. You may have received a notice via email that this issue was available, with a link that directed you to download the current issue of the magazine. This move was made out of convenience for readers, assuring that you know the moment our issues of A2Zzz become available. This change in format is designed to make for a more efficient and engaging reader experience. And don’t worry; as a member with continued access to up to two free CECs per issue, you will still follow a similar format for recording your CEC credits, as previously done.

While we have just begun our journey into the next phase of AAST, we believe that the best is still yet to come. Look for more exciting announcements in the following months as we continue to explore new ways to serve our members at the highest level possible. Join us as we explore the changing needs of our members and other stakeholders and our expanding roles, and work on redefining the organizational identity of the AAST. Walk with us into the future.
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 from the list below and claim your credits online. You must go online to claim your credits by the deadline of Nov. 30, 2017. After the successful completion of this educational activity, a confirmation letter acknowledging that you have earned 2.00 AAST CECs will be sent to the email address that you have on file with the AAST.

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.

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 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 Nov. 30, 2017.

Read and evaluate the four following articles to earn 2.0 AAST CECs:

Obtaining Insurance Authorization and Minimizing Denials: What You Can Do to Assure Your Patients
Receive Appropriate Care................................................................. 16
Objective: Defining KEY phases of the authorization process; preparing to contact the insurance provider; defining the optimal approach for direct contact with the insurance representative; Utilizing “key words” to provide appropriate information and a successful outcome.

Trauma Associated Sleep Disorder: A New Nightmare or a Wrinkle on an Old Favorite? ......................................................... 19
Objective: Identify co-morbid disorders associated with TSD; describe defining characteristics of TSD; recognize differential diagnoses that have similar symptoms to TSD; and proposed treatment

The Prevalence of Sleep Disorders in Patients Diagnosed with Traumatic Brain Injury ............................................................ 24
Objective: Define traumatic brain injury, and the prevalence of sleep disorders diagnosed with this condition in a sample of 21 patients.

Measuring Quality of Life in Children with Narcolepsy ................................................................. 28
Objective: Understand the psychosocial factors affecting quality of life of children with narcolepsy and the difficulties in measuring quality of life in these children.
FACING THE FUTURE:
A CALL FOR HIGHER EDUCATION IN SLEEP MEDICINE

By Laura A. Linley, RPSGT, CRTT, Immediate Past President, American Association of Sleep Technologists
Many professions are facing dramatic changes in workforce. To some extent, sleep medicine is a poster child for these changes. In many markets, home sleep testing has replaced a portion of laboratory sleep studies for the diagnosis of obstructive sleep apnea in patients assessed to be at high risk, resulting in decreased overnight sleep study positions for sleep technologists. For some, this led to dire predictions about the future of the field of sleep technology. For others, including members of the Board of Directors of the American Association of Sleep Technologists (AAST), a new direction was necessary to stay viable in the face of changing technology. The mission of the AAST is to promote sleep wellness and lead the sleep technology profession through education, resources and advocacy.

This process began with the AAST’s Summit on Sept. 21, 2013. The discussion can be summarized by the statement that “there was a broad consensus that the technologist of the future will need a higher level of education and skills to provide value to potential employers and be competitive in the job market.”1(p. 592-3) The AAST subsequently hosted Education Taskforce Meetings with invited members of AAST, the Board of Registered Polysomnographic Technologists (BRPT), American Board of Sleep Medicine (ABSM), the Committee on Accreditation for Polysomnographic Education (CoA PSG) and instructors of both accredited certificate and associate polysomnographic education programs. At around the same time, Wells and Vaughn2 published the results of a survey of sleep, EEG and respiratory therapy program directors. The survey indicated a need for higher-level training for sleep technologists – at the bachelor’s degree level – although at the time training programs were limited to associate degrees and certificates. (There are currently two accredited baccalaureate programs). In an accompanying editorial, Kirsch wrote, “Current sleep technologists should focus on learning new sleep-specific skills to keep pace with the evolving climate in sleep medicine, buffering them against the potential loss of overnight sleep technologist jobs.”3

A positive view of increased educational requirements is unsurprising for a survey that focused on a sample of educators. But the majority of sleep technologists, and the majority of AAST members, learned sleep technology through on-the-job training. The AAST sought the input of its membership and other stakeholders, such as those who employ sleep technologists. Did this more diverse group feel that technologists should seek a higher level of education? Is it worth the time and effort for technologists to go back to school? Would raising the educational requirement for sleep technologists improve or worsen job prospects?

To evaluate this, the AAST engaged McKinley Advisors, an independent consulting firm, to conduct research with stakeholders...
to assess how this proposed educational requirement would affect the field. The research began with in-depth telephone interviews of a stratified sample of 24 respondents. Their responses informed the development of an online survey that could be widely distributed. Surveys were sent to a convenience sample of AAST members, former AAST members, members of state sleep societies, sleep center directors, CAAHEP program directors and A-STEP sleep technology educators. McKinley used an online survey over a period of 16 days between Feb. 15 and March 2, 2017. As is typical with this type of survey, the response rate was low. The 41-question survey was sent to 10,369 contacts and 776 respondents completed or partially completed the survey for a response rate of 7.5 percent. The completion rate was 75.1 percent. This report was completed in April 2017.4

IN-DEPTH TELEPHONE INTERVIEWS

As part of this research, McKinley conducted 24 in-depth telephone interviews between October 2016 to February 2017, including a diverse representation of both active and inactive members of the Association, who were further segmented into sleep technologists and center owners and directors, as distributed below.

- Active Sleep Center Owners and Directors (3 participants)
- Active Sleep Technologists (15 participants)
- Inactive Sleep Center Owners and Directors (2 participants)
- Inactive Sleep Technologists (3 participants)
- BRPT Board member (1 participant)

Overall, respondents agreed across the board on the importance of education in the sleep technologist field and are appreciative of AAST’s efforts in proactively considering education improvements and providing accessible educational resources to its members. Several participants highlighted, in particular, AAST’s free continuing education credits as a valuable resource they rely on. However, opinions were split when it came to whether the benefits of implementing an associate’s degree requirement would outweigh the potential downsides and place certain populations of sleep technologists at risk. Some respondents pointed out that such a requirement may ultimately alienate sleep technologists who lack the resources or time to pursue a level of education beyond what is currently required. Others wondered whether requiring an associate’s degree would be enough to help bridge the knowledge and skill gaps that exist in the field today, or if a focus on specialties and/or clinical experience would better equip sleep technologists to provide quality patient care, as well as address the challenges sleep technologists face each day.

Sleep center owners and directors noted three key areas that are critical to the success of a sleep technologist. These are as follows:

- Technological skills: Although technology has become more user-friendly, owners and directors noted the importance of being able to use and even fix technological equipment. One director noted that he has seen a decline in technologists’ technical and troubleshooting skills in the past 10 years.
- Clinical skills: Sleep technologists must be able to assess
patients and participate in “active monitoring”. It was also noted that sleep technologists benefit from having clinical knowledge in related fields to provide additional job security.

- Communication/interpersonal skills: Patient interaction and education is a critical piece to the success of a sleep technologist. It requires the ability to understand and translate clinical knowledge and make a patient feel comfortable.

The majority of sleep center owners and directors agreed that education plays a vital role in the success of sleep technologists. Two respondents mentioned that they have noticed that technologists with a background in healthcare education are more successful, especially when treating patients with more severe conditions or complicated comorbidities. However, practical clinical experience and compassion for patients were noted as equally important in providing quality patient care. Conversely, one sleep center manager noted that she prefers to train inexperienced sleep technologists stating, “I prefer when a sleep tech comes in and we do their training so we train them our way. A lot of techs have a lot of experience and they’re set in their ways. Protocols vary at different labs.”

Each sleep technologist interviewed has a unique education background, which includes some combination of high school education, community college, associate’s degree, bachelor’s degree and/or certification. The majority had, or were in the process of obtaining, some form of higher education and certification. Only one of the respondents with an associate’s degree received a degree specifically in polysomnography while most of the remaining interviewees received their advanced degrees in other related health fields. AAST, BRPT, AASM and state conferences were the most common venues for obtaining continuing education in the sleep technologist arena. A handful of interviewees noted that they had completed the A-STEP program through AASM. Many technologists preferred to obtain their continuing education credits at conferences and meetings as they provide opportunities to both learn from peers and have “hands-on learning.” Over half of the respondents across all segments reported that they complete their continuing education credits (CECs) online, with the majority specifically turning to AAST.

For most, education was noted as having a significant impact on their professional success, helping respondents acquire clinical knowledge and develop critical thinking skills. Unsurprisingly, respondents with bachelor’s degrees seemed to find more value in their education than those with an associate’s degree. One respondent with an associate degree went on to share that they have reached the limit of what they can achieve with their current education. On-the-job training was also indicated as providing valuable experiences in terms of practical applications in patient care, as one sleep technologist stated, “What has helped me more is direct patient care, shadowing physicians, things I’ve done on my own.”

CHARACTERISTICS OF SURVEY RESPONDERS

Most respondents were AAST members (63 percent) and, on average, reported being a member for six to 10 years. The modal age was in the 46- to 55-year-old range and 32 percent of respondents reported being in sleep technology for more than 20 years. Thirty percent held a bachelor’s degree and 26 percent an associate’s degree. These demographics indicate an experienced, senior level sleep technologist was most likely to respond to the survey.

Most survey respondents (70 percent) reported that their facility is accredited by the American Academy of Sleep Medicine (AASM); 16 percent noted that their facility is accredited by another body; 12 percent reported that their facility is not accredited and 2 percent were unsure of their facility’s accreditation status. Respondents noted a median of six beds per facility with 39 percent of respondents reported that their facility has six to 10 beds while 32 percent reported three to five beds in their facility. Most respondents indicated that their facility employs at least one staff member with the RPSGT credential (70 percent). Respondents also noted employing staff members with the RRT credential (41 percent), RPSGT/RRT credentials (41 percent), and the RST credential (31 percent). When asked to indicate the educational level of employees at their facility, 60 percent of respondents noted that their facility employs at least one staff member with a bachelor’s degree and 54 percent offered that their
facility employs at least one staff member with an associate’s degree. When asked to indicate their supervisory responsibilities, just under half of respondents (48 percent) reported that they currently directly or indirectly supervise sleep technology practitioners.

NEEDS ASSESSMENT
Respondents were asked a series of questions to assess their views on hiring and retaining sleep technologists. Figure 1 shows data from some of these questions.

Most respondents said that their sleep center is selective when hiring and 63 percent reported difficulty recruiting qualified applicants. Most said their centers provided financial support for additional education and did not have trouble training or retaining employees.

Respondents were asked to identify the most critical skills, knowledge and credentials as important for a sleep technologist to be hired over the next five years. These are shown in Figure 2.

Professional ethics and values were more important, and were rated extremely important by 93 percent of respondents. Most technologists work without direct supervision, and trust is a key issue for many employers. Communication and interpersonal skills were listed as the second most important, reflecting the importance of technologists establishing a rapport with patients. Technical skills and knowledge were listed as a high priority by 89 percent of the respondents. This suggests that those entering sleep technology from other health care professions will need training in the knowledge and skills of sleep technology. Eighty percent of respondents listed credentials and certification as a critical factor. This also suggests that technologists’ skills and knowledge will form a basis for the future, but will not be sufficient. Although education was endorsed as important by 61 percent of respondents, the skills and knowledge ranked as having higher importance would be expected to be learned as an integral part of a formal educational program.

The survey also asked respondents to evaluate sources for the skills identified in Figure 2. Most respondents indicated that advanced modular training courses would be helpful (82 percent); that there is a need for specialty training for night technologists (81 percent); that there is a need for specialty training for patient educators (78 percent); that the concept of stackable credentials should be evaluated (63 percent); and there is a need for more accredited schools (61 percent). Only 40 percent indicated that students are well-prepared for today’s professional environment.

Respondents were asked whether raising the educational requirement for sleep technologists to an associate’s degree would have a beneficial effect on sleep technology. A majority thought it would benefit sleep technology professionals in general (63 percent) with fewer saying it would benefit themselves (48 percent). Respondents thought the change would be beneficial to patients (63 percent) and to schools (74 percent). Most thought an associate’s degree would allow candidates to distinguish themselves when competing for jobs (76 percent) but would have negative consequences such as decreasing the number of qualified practitioners (64 percent) and increasing costs associated with sleep technology services (62 percent).

RECOMMENDATIONS
Sleep technology is not the only allied health profession undergoing transformation. One of the reasons that the AAST engaged McKinley
was to draw on their experience with other similar professions and to have them recommend solutions that have proven beneficial for others. The AAST survey results showed that sleep technologists vary significantly in their level of skills and competency, with less than half of the respondents believing that students today are well-prepared to work in today's professional environment. New entrants to the field of sleep technology should be advised to obtain a higher level of formal education that will provide long-term advantages in a competitive job market. There are currently several different career pathways that lead to positions in the sleep technologist field along with varying levels of education among its practitioners.

Sleep centers expressed a need for more well-rounded technologists that can use both their soft and hard skills that allow them to not only perform diagnostic tests but also be involved in the provision of care, patient education, and long-term follow-up. By analyzing survey data such as that presented here and by working with other stakeholders in technologist education through the Education Task Force, the AAST can enhance and standardize competencies. As a first step, McKinley developed a preliminary enhanced competency model highlighting potential "core tenets" of becoming a successful sleep technologist (Figure 3). The AAST has worked to update job descriptions and educational curricula for students entering the field of sleep technology. An enhanced competency model provides dual benefits for the association and user, acting as a framework for content development and packaging of educational offerings, as well as a guide for members to assess skills and identify gaps. This, in turn, supports the advancement of the entire field.

But what can the AAST do to support experienced technologists currently working in the field? Many of the survey respondents are well established and are struggling to keep up with industry trends. These technologists indicated a need for specialty-focused training. Today, sleep technologists and sleep centers rely on a variety of sources to meet their educational needs with little standardization across or within sleep centers. This has resulted in inconsistencies across the profession. McKinley Advisors recommended the development of "stackable" or "sequential" credentials. For example, credentials in coding, regulatory compliance, reimbursement issues and insurance practices could be "stacked" to indicate competence in business practices. Experienced technologists who are already competent in clinical practices or other elements of the core competencies would not need to repeat those elements of training.

As an example of a communications skills set, the AAST has recently developed a Patient Education Curriculum for the Sleep Health Educator. This document provides learning goals for the patient educator including an introduction and background; general patient education requirements; discussion points for the first visit after diagnosis; key elements of follow-up visits; documentation using a standardized care plan; and a list of references for additional information. An example case study is provided. The curriculum is intended to provide a standard for educational programs to use. The AAST intends to develop a variety of educational resources to support the curriculum. These materials will include reference texts, case studies, clinical simulations and self-assessment tools.

Given the variability in training and competence among practicing sleep technologists, the AAST will work to offer self-assessments and brief aptitude tests that will identify educational gaps. Experienced technologists will have areas of expertise that do not require updating or remediation. Gaps that are identified will be used to direct learners to training modules that fill those gaps and provide "micro-credentials" or "digital badging" in highly specific areas such as advanced PAP platform use or sleep disorders in cardiovascular disease. Successful completion of a learning module and post-test will provide the technologist with a credential or badge that serves as evidence of advanced education. This will be helpful for employers as they seek to cross-train technologists for new roles in patient care.
The AAST will seek to diversify its educational catalog. Textbooks, study guides and flash cards have been a staple of the offerings thus far. Online learning modules have been developed including a Case of the Month and a Journal Club series. In the future, clinical simulations and self-assessment tools will be a focus for the AAST. Educational products will be developed to support the CoA PSG programs and higher degree programs. Plans are underway to provide materials to support the BRPT Certification in Clinical Sleep Health (CCSSH) credential as well.

CONCLUSIONS

The AAST will seek to diversify its educational catalog. Textbooks, study guides and flash cards have been a staple of the offerings thus far. Online learning modules have been developed including a Case of the Month and a Journal Club series. In the future, clinical simulations and self-assessment tools will be a focus for the AAST. Educational products will be developed to support the CoA PSG programs and higher degree programs. Plans are underway to provide materials to support the BRPT Certification in Clinical Sleep Health (CCSSH) credential as well.

The sleep technologist of the future will be better educated, more familiar with new technologies and ready to take on new roles. The AAST will continue working with stakeholders to provide education and training that meets the needs of members, technologists, trainees, employers and patients.

REFERENCES

4. American Association of Sleep Technologists Market Needs Assessment: Key Findings and Recommendations, Prepared by Alanna Tievsky McKee, MSW, Senior Consultant, Alison Bramer, MSW, Associate Director of Research and Cynthia Lu, Project Associate, McKinley Advisors, Washington, DC.

ACKNOWLEDGEMENTS

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There once was a time a sleep study could be scheduled without consideration of the insurance carrier. Patients could be scheduled that night or the next day. Times have really changed as we have moved into an age of pre-authorizations and longer wait times for patients to have an overnight sleep study. Have we lost quality of care for the patient as insurance takes over and the request for a sleep study is denied? This article is meant to share information and tips to assist sleep centers with the authorization process, in hopes of minimizing denials, obtaining reimbursement for the study and improving quality care for our patients.

The first thing to do is gather your paperwork. An order is received, which is typically sent with a demographics page or face sheet. Next, print or request the history and physical (H & P) along with any previous tests that have been done and can be helpful, such as pulmonary function tests (PFTs), echocardiograms, cardiac stress tests and a sleep questionnaire completed by the patient. Be sure that your sleep history includes the patient’s BMI, and height and weight, and obtain either an Epworth, Stop Bang or the Berlin questionnaire. I have noticed neck circumference is becoming the newest metric requested, so if it can be obtained, include this information.

Now that all of this paperwork has been gathered, what do you do with it? As you begin looking through the information gathered, review the order and note which testing/billing codes you will need to request. Note the insurance carrier and whether you will need prior authorization for the sleep study. If yes, be cognizant of how many days prior to the study date you have to get the authorization completed for that particular insurance company. There is nothing worse than having to reschedule a patient because the authorization is “still in review.” So, for instance, Blue Cross and Blue Shield (BCBS) of Texas PPO plans typically do not require an authorization, so a study for a patient with this insurance can be scheduled the same day. United Health Care (UHC) requires 7-10 business days for the review process considering start time begins at the time all documents are submitted. Care Centrix powered by Cigna typically requires 15 business days in review. Note that Cigna was previously the only plan that required an authorization for an adult HSAT but now BCBS-TX-HMO has recently begun to require an authorization for a home sleep apnea test (HSAT). It is important to know which insurers require authorization and for which tests. These requirements change frequently! Both the requirements and the days in review can vary from state to state, so be sure to ask the intake coordinator during the authorization process. Ask frequently if any new guidelines or changes have been implemented to the authorization process.

Review the patient demographics; be sure you have the patient’s full name and personal information listed, you will need it during the authorization process. Check for the ordering physician’s full name, address, phone and fax numbers, and have the NPI number for the ordering physician handy. (If you don’t have it, go online to NPI lookup or request it from the physician’s office). When looking up an NPI number, compare details to be sure you have the correct physician. Always have your own facility’s NPI number, Tax ID number, and address available as well.

It’s time now to review the clinical information gathered, such as results of previous testing, H & P and sleep questionnaire. Get your pen out and get ready to mark up your paperwork. The chances for approval increase considerably when you provide the insurer with supporting documents and good notes, so don’t be afraid to mark up the information sheets. When reviewing the sleep questionnaire, the H & P and any previous testing, keep in mind the plethora of cases the intake coordinators and nurses at the insurance company must review per day. It is possible for important information to be missed while they are reviewing a case. Make your documents stand out and underline important things like co-morbidities, patient complaints and pertinent previous testing results. If you don’t have enough supporting documentation, call the ordering physician to ask for an addendum. Circle, underline, or box things you really want to stand out so that it draws the immediate attention of the nurse or the medical director reading the documents you submitted. The person reviewing the case will see what you see and get a better picture of the request; this makes it more obvious why your patient requires an overnight study monitored by a sleep technologist versus a HSAT.

What exactly are they looking for? Clearly documented co-morbidities; things like: impaired cognition, moderate to severe congestive heart failure (CHF), cardiac arrhythmias not
controlled by medication, pulmonary, neurological or cardiac disease, parasomnias and unexplained pulmonary hypertension. Patients or physicians should document symptoms and complaints in the sleep questionnaire or H & P, such as: snoring, choking and gasping, witnessed apnea, morning headaches, mood swings, irritability, decrease in sexual drive and/or erectile dysfunction, excessive daytime sleepiness, periodic limb movement disorder (PLMD), falling asleep at work or while driving, weight gain, and not wanting to get out for social activities. I have found many of these symptoms can be found in the insurer’s “criteria” section, which lists indications for sleep studies. These are all important things to underline, or mark so that the nurse can see what the patient is enduring.

You should be familiar with and use ICD-10 codes for the symptoms that have been listed by the patient or physician. A good approach to learning and using ICD-10 codes is to make a table grouped by category, such as cardiac, sleep, pulmonary, and list the appropriate ICD-10 codes that fall under each category. That is my quick “go-to” template for using these codes. For some insurers, like UHC, the code you choose is the only opportunity you have to tell the story and plead your case. In my experience, when calling UHC, I am only able to provide specific information such as patient demographics, ordering physician and place of service information, testing code and ICD-10 code. That’s it. Time to fax it all in. I have asked insurers if it helps if I list more than the obvious code of OSA, and I have been told more than once, YES! List what is documented using the appropriate codes so that the need for testing is obvious from the beginning.

Some insurers ask certain questions as part of their authorization process, based on their specific guidelines. Be ready to answer any questions the insurer might ask. You will generally find all your answers on the H & P and sleep questionnaire. It is always acceptable to say “I don't know” (if you don't see an answer for that question). Once all the questions have been answered, you may be given a reference number and be told someone will call when they are ready for the necessary clinical information. I ALWAYS ask for the fax number prior to ending the call, so that all documents can be faxed post call. I find this helps to expedite the process versus waiting for someone to call. It is still possible that someone will call to have the documents re-faxed, or faxed to another fax number, but at least the ball is rolling.

Let’s talk denial. If the nurse calls and says there is intent to deny, that can be your final opportunity to submit any new documents to be considered. You have a choice here to agree with the denial and move to HSAT, or you can request elevation to the medical director for review. Denial after review by the medical director can be escalated as well; request a peer to peer review if you think an in-lab test does not meet criteria for the in-laboratory study. If asked, and the answer is yes, you can expect a yes answer is given, that the insurer's medical director to consider. There are times the insurer's medical director will indicate the in-lab test does not meet their medical necessity criteria, so it will remain denied and an HSAT will be scheduled. If the HSAT is non-diagnostic or positive for OSA, then a new request can be initiated for a PAP titration (95811) based on the results of the HSAT. Then the process repeats.

Helpful hints: for many insurers, a request can be submitted for a diagnostic study (95810) and if the patient meets criteria to split during the testing night they can be split. The patient advocate or authorization specialist must then call the insurer the next day to revise the code. This also works if a split code is approved but the patient does not meet criteria to be split. If you begin with a split code (95811) but perform a diagnostic study (95810), you will need to call the next day to have the code changed to a (95810) then you will be prompted to speak to the nurse to request a full night titration study (95811) in follow-up. CareCentrix powered by Cigna has recently changed their criteria on this method. According to CareCentrix new guidelines for initial requests, they no longer allow for a split night study (95811) on initial request. They will allow for a diagnostic study (95810) on initial request and if the patient meets criteria to split during the night, the technologist can split the patient. The next morning, the authorization specialist must call to up-code to the (95811) split study that was completed. I have found that one particular insurance will ask if an HSAT can be substituted for the in-lab study, and when a yes answer is given, that the insurer seems to default to HSAT and immediately send a denial for the in-laboratory study. If asked, and the answer is yes, you can expect most insurers to default to HSAT. It is important to indicate that the patient can have an HSAT ONLY in the event the patient doesn't meet criteria for the in-laboratory study. Those words are very important to say. You are saying they could have an HSAT but not until the insurance carrier has proven that they don't meet criteria. This process allows opportunity for review of the in-lab study request and a discussion with the nurse.

In summary, a few final thoughts to share. Keep in mind that many of these details can vary state to state, these are my
experiences. Always have your paperwork ready before you call the insurance company for authorization. Review it, and have your ICD-10 code table handy or open a tab on your computer that lists ICD-10 codes for the current year. Have the appropriate NPI numbers, an NPI look up list ready, or a tab opened on your computer in case you need the ordering physicians’ NPI number. Open a BMI calculator or pre-calculate the patient’s BMI; they will ask for it! Underline, box or arrow important details so the nurse reviewing the case sees what you really need them to see. Look for cardiac, neurologic, pulmonary, mental, and sleep issues, and the patient’s complaints, and highlight those things. Keep up with insurance requirements for testing and changes; make sure you know the latest criteria for approval of sleep studies for each insurer.

Most important: be kind and courteous while speaking to the intake coordinator. Kindness will get you many places that rudeness will not. Have you heard the phrase, “you can catch more bees with honey?” Remember, as the patient advocate or authorization specialist, you are the voice for the patient and the physician. The patient goes to the physician for help. The physician documents medical necessity for a sleep study. Next it is up to you to help paint the exact picture necessary to help the patient receive quality care. If you do it correctly, the patient will be able to come to an accredited sleep facility and be monitored by a credentialed sleep professional. It is acceptable to say the patient really needs to come to be monitored in the sleep center, let’s schedule a peer-to-peer review or request to submit more documentation. We must be the voice for the patient. Let’s be proactive in assisting our patients to receive high quality care for their sleep disorder. After all, what happens during sleep directly affects activities of daily living. It’s a great feeling to receive an approval after all the information gathering and preparation, or to have a denial overturned as a result of our efforts. We can make a difference in our patients’ care!
The emergence of a brand-new sleep disorder is a rare and beautiful thing. In many ways, it is like watching the birth of a baby... it is inspiring, labor intensive, full of future possibilities and usually messy as heck. It begins as a germ of an idea in the mind of one or a handful of people, growing slowly, being fed by an increasing number of observers and subsequent observations. Until one day, it is ready to hatch, set forth upon the world, only to then have some detractors argue that it is nothing new, but rather just a twist on an old disorder. Sometimes these exchanges can get quite messy and sometimes it is something so clear and obvious that the idea moves quickly and uncontested through its infancy, until it matures onto the pages of Principles and Practice of Sleep Medicine.

A few days ago, a paper came across my desk (ok, so do we really have papers and desks?... it was actually a link to a website,¹ and it came across my Facebook feed) about some interesting research coming out of Madigan Army Medical Center at Joint Base Lewis, McChord, Washington. Col. Vincent Mysliwiec, MD, a sleep researcher, had noticed some peculiar sleep behaviors from some military veterans of the Iraq and Afghanistan wars. These veterans usually (but not necessarily) suffered from Post-Traumatic Stress Disorder (PTSD) and had the typical nightmares that are associated with it. What made it unusual was the emergence of dream enactment behaviors in some of these patients. “These behaviors were troubling”, Col. Mysliwiec reported. “They’d strike out, scream, yell at their spouse and even run around their bed and at times hurt themselves or others.” Then in 2013, Col. Mysliwiec came across one episode in his sleep laboratory. After establishing that this is something new, Col. Mysliwiec and colleagues labeled what they saw as “trauma associated sleep disorder,” or TSD. They define TSD as “dream-enactment behaviors relating to trauma-related nightmares.” Post-Traumatic Stress Disorder may or may not be present, but a precipitating stressful trauma and nightmares are cardinal features of TSD.²

So, let’s first discuss what this is NOT. It is not somnambulism or sleep walking. Sleep walking occurs during the deeper stages of sleep, not during rapid eye movement (REM) sleep, which is often associated with dreaming. The sleep walker does not recall dreaming and when studied in a sleep laboratory, these episodes arise out of N3 “slow wave” or “deep sleep.” In essence, the sleep walker has trouble waking up from deep sleep, and is stuck in a limbo state between sleep and wakefulness.³,⁴ On the other hand, the symptomology of TSD not only requires the presence of dreams, but also those that are highly emotionally charged and associated with the precipitating trauma.

Trauma Associated Sleep Disorder is also not REM Sleep Behavior Disorder (RBD). The proposed etiology is vastly different from that of RBD. Most cases of RBD are proposed to arise from neuro-degenerative causes. Damage to portions of the brainstem can cause abnormalities in certain aspects of REM sleep. Of particular interest are manipulations that affect the regulation of muscle tone in REM sleep. Lesions of several regions in the pons and medulla can cause REM sleep to occur without the normal loss of muscle tone⁵. Simply put, that means it is damage to the brain itself that causes the movements in REM sleep. We know that there are brain mechanisms that “paralyze” the body during REM sleep that prevent us from acting out our dreams. In classic RBD, neuro-degeneration causes these mechanisms to break down, the protective paralysis then fails, and we enact our dreams. The presence of neuro-degenerative disorders has been shown to increase the risk of RBD by as much as 50 percent, including Parkinson’s Disease and Multiple System Atrophy.⁶ RBD in people without these disorders could predict an increased risk of developing them in the future, predicting up to 80 percent of as-of-yet undiagnosed Parkinson’s and Lewy Body Dementia.⁷

To be sure, not all RBD is due to underlying neurological disorders. Other factors that influence the intensity of REM sleep may also play a role in the genesis of RBD, including alcohol consumption or its withdrawal, strokes, brain tumors, sleep deprivation and medication use. In the case of alcohol or medication use, RBD may only be acute, rather than chronic as it is in most other cases.⁶ Certain medications, particularly some of the selective serotonin reuptake inhibitors (SSRIs) and selective noradrenergic reuptake inhibitors (SNRIs) appear to increase EMG tone during REM sleep, and may or may not precipitate or aggravate RBD.⁸

Trauma Associated Sleep Disorder is similar to RBD in its physical expression only, but the etiology may be completely

different. The theorized mechanism of action is psychogenic, rather than somatic; it is not necessarily related to the typical neurodegeneration seen in RBD, rather it may be due to the adrenaline dump from the very intense nightmares these TSD sufferers endure. It is proposed that trauma-related nightmares result in an intense “dump” of adrenaline, which in turn, may overwhelm the body’s natural “paralyzing” mechanisms during REM sleep, resulting in behaviors emerging from the dream state. It isn’t so much an organic break-down in the paralysis mechanisms themselves, as it is just an overwhelming tsunami of chemicals (likely the hormone adrenaline, but perhaps some involvement of the neurotransmitter noradrenaline as well), causing movement in REM sleep. So, whereas TSD may mimic RBD in outward appearance, the underlying causes make it something new and exciting.

In a previous paper, first published in 2014, Col. Vincent Mysliwiec et al. reported on four case studies of young male military personnel suffering from this syndrome. The researchers noted their relevant medical history and ran sleep studies on them. Researchers found that these behaviors ranged from vocalizations and somnambulism to combative behaviors that even injured bed partners. Nightmares were replays of the patient’s traumatic experiences. All patients had REM without atonia during polysomnography; one of the four patients had an episode of these behaviors and a nightmare, captured during a REM period on the PSG. Subsequent treatment included the use of the antiadrenergic medication Prazosin. Although Prazosin is typically used to treat high blood pressure or benign prostatic hyperplasia it was chosen as therapy because it also blocks some of the effects of adrenaline. RBD has been previously associated with organic loss of noradrenergic neurons of the locus ceruleus and/or perilocus ceruleus, whereas PTSD appears to be characterized by hyper-adrenergic function of these areas; the overproduction of adrenaline or the “adrenaline dump” discussed earlier. Blockade of the hyper-adrenergic function is thought to be the primary mechanism of action of Prazosin. The researchers predicted that if the proposed “adrenaline dump” model is correct, then this class of medication would reduce the amount of adrenaline released, immediately improving the REM associated movements in TSD. Indeed, researchers showed improved REM related behaviors and nightmares in all patients. Furthermore, patients 1 and 4 reported a return of REM behaviors and nightmares upon discontinuation of Prazosin use.

As we have already seen, RBD is a disorder that is usually associated with organic, neurodegenerative causes, mostly affecting certain areas of the brain that regulate muscle tone (or lack thereof) in REM sleep. But there are other, less common causes, not related to neurological disorders. Most people readily agree that causes of RBD are already multifactorial in nature, there is no homogeneous etiology. Geneses range from neurodegenerative processes to alcoholism, drug effects, brain trauma or even simple sleep deprivation. Could a sudden and overwhelming release of adrenaline during REM sleep just be another factor to be added to this list? Do we really need to add a whole new sleep disorder, or will tweaking the existing list of known RBD causes suffice? Sometimes the KISS policy (Keep It Short and Simple) makes for the best policy.

This theory is ripe for new and fresh research. Questions going forward that must be answered include whether TSD predicts neuro-degenerative disorders, as RBD does? Does long-term unresolved TSD result in permanent damage to the affected brain areas? Do REM behaviors resolve after long-term remission of PTSD / nightmares? Is psychological counseling and treatment as effective as Prazosin in decreasing or eliminating REM enactment behaviors and associated nightmares? Is TSD present in other traumatic but non-combat related life experiences? Is TSD a seizure in sleep or a short-lived fugue state? Although seizures are known to mimic RBD-like activity, the medical history of TSD patients suggest they are not involved. However, a simple EEG test should suffice to eliminate this possibility.

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13. 31st Annual Meeting of the Associated Professional Sleep Societies in Boston. 2017; p. 11
Dance marathons emerged as popular entertainment in cities across the United States around 1923 and lasted until the middle of the twentieth century. During the bleak economic years following the Depression of 1929, hopeful couples competed for up to thousands of hours in exchange for small tips from sympathetic spectators, and shelter, as well as sponsor-supplied food – a necessity that many families were forced to ration. Winning contestants earned short-lived celebrity status in the form of newspaper interviews and photo opportunities, as well as cash prizes. One marathon in Baltimore offered a grand prize equivalent to almost $150,000 today. The grueling pressure on dancers who experienced irresistible fatigue and mental exhaustion in pursuit of prize money was depicted in Horace McCoy’s 1935 novel and subsequent film adaptation, *They Shoot Horses Don’t They?*

**SWINGING AT THE SAVOY**

Dance marathons were conceived as performance spectacles. Experienced marathoners entertained audiences with precision footwork and innovative arm choreography to music from swing jazz bands. The “Lindy Hop,” named to honor the transatlantic aviator Charles Lindberg, was developed by a marathoner at the famed Savoy Ballroom in New York City.

In contrast, first-time contestants endeavored to lead (or follow) with the correct foot, taking one step after another while maintaining a dance hold position in accordance with competition rules. Ultimately, one couple remained standing as competitors dropped out because they were too fatigued to foxtrot or too tired to two-step. Contestants who succumbed to an episode of microsleep and stopped moving were disqualified by floor judges and given the “bum’s rush” from the dance floor by event bouncers. Typically, marathoners received a single 15-minute break every 45 minutes.

Toward the end of the event, some sponsors limited rest breaks to five minutes per hour. Undoubtedly, the contestants’ sleep architecture suffered serious distortions when no time was permitted for uninterrupted, nocturnal rest.

**RESTLESS LEGS ON THE DANCE FLOOR**

The World’s Championship Dance Marathon staged at Chicago club was the longest on record, lasting an incredible 2,831 continuous hours. The marathon began on April 11, 1930. By Aug. 6, two contestants were left standing after one competitor injured his ankle; another was disqualified when she fainted on the dance floor. The Windy City again made newspaper headlines in 1931 when a promoter proudly staged “the only absolutely restless marathon.” Contestants initially received a three-minute rest every hour. In keeping with the event’s theme, rest time was eliminated entirely after one week except for a 20-minute lunch break and time out for a daily shower.

**DANCE-INDUCED INSUFFICIENT SLEEP SYNDROME**

Sponsors staged dance marathons as extreme endurance contests. The focus on resolute endurance rather than the performers’ expressive artistry prompted social dance historian, Frank Calabria, to describe the staging venue for marathons as a “Palace of Wasted Footsteps.” Behaviorally induced insufficient sleep syndrome (ISS) among contestants was the inevitable consequence of the unforgiving, continuous movement rule that characterized marathons. According to the American
Association of Sleep Medicine, ISS is a voluntary reduction or restriction in the amount of nocturnal sleep required to maintain a functional level of daytime wakefulness and alertness. Clinical features of extreme sleep deprivation include inattention, a loss of coordination and anergia or an abnormal lack of energy.

As a promotion for an upstate New York marathon unequivocally asserts, “No human being can possibly stand this severe test of endurance indefinitely” (see Fig 1). The consequences of competitive sleep deprivation were not confined to performance deficits. Psychiatric symptoms, such as mania were common. Episodic mania was known as “going squirrelly” in the vernacular of the dance-era decades. An onset of the squirrellies could lead contestants to rip their clothes and rush through the dance hall while attacking fellow contestants or spectators before crashing to the floor in an exhausted heap. One contestant reportedly refused to return to the dance floor after napping, preferring to hug his rest cot while pleading with an attendant for additional sleep time. Non-stop dancing allegedly contributed to an extreme example of the squirrellies according to an article in the Chicago Daily Tribune:

…nerves shattered by the ordeal of days and nights without sleep, three youths stood in the County Criminal court here today and pleaded guilty to holding up two banks... They were charged with robbing the Cumberland bank of $1,000 four days after they had quit the marathon dance... For nearly a month after the contest, they said they were unaccountable for their actions.

LEGISLATING DANCE FEVER

The dance marathon sensation was met by opposition from some authorities who viewed the contests as a public nuisance and a clear violation of a basic, common-sense understanding of proper sleep hygiene. In 1929, two members of the New York State legislature co-sponsored a bill to limit competitive dancing to 12 hours followed by equal time for rest. Several years later, the State Commissioner of Labor in Detroit sought a warrant to arrest promoters of a marathon entering its 106th, uninterrupted day. When asked about the unchallenged endurance record set by World’s Championship Dance Marathon in 1930, Chicago’s Health Commissioner maintained that his department had no jurisdiction over the event, although such contests were “absolutely disgraceful and harmful to health.”

The extreme consequences of ISS observed among dance marathon contestants contributed to public awareness of sleep hygiene and the gradual decline of competitive sleep deprivation as a form of popular entertainment.

SOURCES


Traumatic Brain Injury (TBI) is clinically defined as an alteration in brain function, or other evidence of brain pathology caused by an external force. TBI may result from motor vehicle accidents, falling objects, assault, bomb blasts, etc. TBI is a leading cause of death and can cause lifelong disabilities in survivors. According to the Centers for Disease Control, 1.6 to 3.2 million TBI's are reported in the United States (Singh, 2016). Following the initial injury, patients may complain of headaches, nausea or vomiting, memory loss, mood changes, and difficulty with attention or concentration.

Sleep disorders are commonly associated with TBI and can cause additional difficulty in recovery and rehabilitation. Such sleep disorders include insomnia, excessive daytime sleepiness, fatigue, parasomnias and apneas. Some studies suggest that up to 70% of patients with TBI experience some type of sleep disturbance (Grima, 2016). Compared to the general population, there is a higher prevalence of sleep disorders in patients who have suffered from a TBI.

In addition to sleep disorders, TBI patients may also suffer from mood disorders, anxiety and depression. Cognitive function is almost always impaired in patients with TBI, which may cause difficulty concentrating, paying attention, memory loss, or decreased alertness (Lucke-Wold, 2015).

According to Baumann (2012), TBI's are mostly caused by falls (28 percent), motor vehicle accidents (20 percent), impact from an object (19 percent) and assaults (11 percent). TBI can be classed as primary or secondary. Primary damage includes contusions and hematomas. Baumann states that Primary damage relates to external forces, as consequences of rapid acceleration or deceleration, direct impact, penetrating objects, or blast waves. Primary damages include shearing injuries of white-matter tracts leading to diffuse axonal injury, focal contusions, hematomas, and edema. (Baumann, 2012) Secondary damage occurs on a cellular level and effects gene activation and inflammatory response.

TBI is often classified as mild, moderate or severe. According to Wickwire, in patients with mild TBI, standard acute structural imaging studies such as head computed tomography scans do not show hemorrhage or other overt structural abnormalities (Wickwire, 2016). Collision forces that cause TBI can result in focal injury or diffuse injury. “Focal injuries may include contact contusions, subdural, epidurals, and/or intraparenchymal hemorrhages…Diffuse injuries are often caused by acceleration-deceleration forces that can cause shearing forces or wide-spread axonal injury in the brain.” (Saltzman, 2016). It is suggested that the location of the traumatic injury may lead to certain sleep symptoms. For example, “Hypersomnia can result when areas involving the maintenance of wakefulness are injured. These regions include the rostral pons, caudal midbrain and thalamus” (Saltzman, 2016). Sleepiness and sleep attacks have also been linked to upper cervical cord lesions, which may possibly cause a disruption of breathing when asleep.

Saltzman (2016) found that head trauma patients with hypersomnia, and sleep-disordered breathing was found in all whiplash patients and thought to have occurred post injury. Unfortunately, TBI can cause vasospasm, which limits the blood supply going to the brain and can eventually lead to neural cell death. According to Baumann, etiology and pathophysiology of disrupted sleep and wakefulness following TBI are mostly unknown, but likely multifactorial. Baumann also mentions that it is unknown whether injury to specific brain regions might be responsible for the evolution of posttraumatic sleepiness. (Baumann, 2012).

**DISRUPTIONS ASSOCIATED WITH TBI:**

Disorders such as sleep apnea, hypersomnia, narcolepsy, and periodic limb movements of sleep have been associated with trauma.
TBI. The most common sleep disruption following a TBI is insomnia (Lucke-Wold, 2015). Disrupted sleep is often associated with other symptoms, such as depression and anxiety. Mood and behaviors may include irritability, anxiety and even psychosis. Cognitive impairment is associated in almost all TBI patients, including decreased attention, concentration, and memory loss. “Evidence indicates that cognitive deficits following TBI may be influenced by the severity of TBI, as they related to the degree of axonal injury, the presence and duration of loss of consciousness, post traumatic amnesia and the degree of brain stem injury” (Lucke-Wold, 2015). Sleep disturbances following TBI include frequent night time awakenings, higher percentage of stage N1 and stage N2 sleep, decreased percentage of rapid eye movement (REM) sleep, and an overall lower sleep efficiency when compared to matched controls. (Lucke-Wold, 2015).

TBI has also been associated with parasomnias such as sleepwalking, sleep terrors, and REM behavior sleep disorder. Patients may develop mood disorders and post-traumatic stress disorder. One study showed that depression post-injury is especially prominent in female patients, and in those who are younger and who have a history of prior mental health treatment, substance abuse or self-inflicted injury. (Lucke-Wold, 2015). According to Saltzman, new onset anxiety after TBI is a significant predictor of sleep disturbance (Saltzman, 2016).

A meta-analysis was conducted to determine how sleep disorders affected patients with TBI (N=637) compared with a healthy control population (N=567). Polysomnography results showed TBI patients had a decreased sleep efficiency, shorter total sleep time, and increased wake after sleep onset time. The study also showed that TBI patients spend less time in REM sleep and reported increased sleepiness and poorer perceived sleep quality. Mild to moderate/severe TBI patients both displayed reductions in total sleep time, sleep efficiency and increases in wake after sleep onset (Grima, 2016).

Excessive sleepiness or hypersomnolence in adults has also been investigated. It is suggested that hypersomnolence in patients with post traumatic hypsomnolence appears to be related to the severity of the brain trauma and the length of time since it had occurred. (Masel, 2001).

Another study was conducted to determine the prevalence and consequences of sleep disorders in patients with a TBI. The study was designed using 87 adult TBI patients three months’ post injury. The researchers use various tests such as nocturnal polysomnography, multiple sleep latency testing (MSLT), psychomotor vigilance, profile of mood states, and functional outcome of sleep questionnaire (FSCQ), non-psychological evaluation and self-report measures. The study found that 47 percent of the participants had a sleep disorder, 23 percent had obstructive sleep apnea, 11 percent PTH, 6 percent narcolepsy, and 7 percent periodic limb movements. Twenty-six percent were found to have excessive sleepiness. The authors concluded that there is a high prevalence of sleep disorders in patients with TBI and these patients should undergo complete and thorough sleep evaluations (Castriotta R. A., 2009). According to Lucke-Wold, in the long term, sleep disruption and fragmentation can have negative consequences on recovery and can increase the progression of brain trauma from the injury (Lucke-Wold, 2015).

TREATMENT:
Treatment for sleep disorders associated with TBI includes medications such as Zolpidem and Provigil. Behavioral therapies such as cognitive behavioral therapy (CBT) and meditation are also recommended. Continuous positive airway pressure (CPAP), may benefit patients with obstructive sleep apnea. Some patients may require counseling to cope with depression. Other treatments such as SSRI, pain management, stimulant medications, Melatonin, bright light therapy, and sleep hygiene

Figure 1. When the TBI Occurred
education may also be considered. According to one study, some sleep difficulties may resolve spontaneously over time, but this study highlights that for over half of their sample, their sleep quality remained the same or deteriorated when assessed at 6 and 12 months (Theadom, 2015). These findings suggested that there is a need for treatments that can prevent sleep disturbances from becoming chronic if possible. TBI patients could also be assessed by using sleep diaries, self-report questionnaires, actigraphy and polysomnography.

**DESCRIPTION OF THIS STUDY**

**METHODS:**

A survey was designed to determine what percentage of a sample of patients had been evaluated for sleep disorders and if so, what type of disorders were diagnosed. Participants who had not been evaluated for sleep disorders after TBI were asked a series of questions to measure sleep quality and to determine the prevalence of patients in this population who are underdiagnosed for sleep disorders.

**RESULTS:**

Of the 21 participants 46.67 percent were diagnosed with TBI. 53.85 percent of these participants suffered the TBI within 1-5 years (Figure 1).

Of these patients 33.33 percent had been evaluated for a sleep disorder. 64.29 percent of those evaluated were diagnosed with Obstructive Sleep Apnea, 64.29 percent with Insomnia, and 57.14 percent with Nightmares, Restless Legs Syndrome, Narcolepsy and Excessive Daytime Sleepiness respectively (Figure 2).

These participants were asked a series of follow up questions to assess their sleep quality. They essentially were given the Pittsburg Sleep Quality Index (PSQI) sleep quality assessment. Only one of the 14 participants in this group had a final score of less than 5 (Figure 3).

**PSQI RESULTS:**

Of these participants, 50 percent took 16-30 minutes to fall asleep, 28.57 percent had trouble sleeping because they could not get to sleep within 30 minutes, 28.57 percent complained of waking up in the middle of the night or early morning, 42.86 percent had trouble breathing at least once a week, 42.86 percent had trouble sleeping because of snoring loudly once or twice a
week, 42.86 percent had difficulty sleeping because of nightmares at least once or twice a week, and 38.46 percent had difficulty sleeping once or twice a week because of pain. In addition, 35.71 percent took sleep medications at least once or twice a week because of difficulty sleeping, 21.43 percent had trouble staying awake while driving, eating meals, or engaging in social activity. 21.43 percent documented having problems having enthusiasm to get things done and 21.43 percent rated their overall sleep quality as very bad.

DISCUSSION:
Although the sample size was small, 66.67 percent of the participants who had TBI had not been evaluated for sleep disorders, and of these participants with TBI, all but one had a PSQI score greater than 5; indicating poor sleep quality. This raises the question of under diagnosis in this population.

The relationship between sleep and TBI is still poorly understood and requires further investigation and research. This research should include determining pathophysiology, disorder management, appropriate patient assessments and treatment. The study conducted in this research paper, used a very small sampling size. Despite this, there was an indication that patients who have suffered a TBI are not thoroughly evaluated for sleep disorders and are underdiagnosed for sleep disturbances.

CONCLUSION:
TBI is a leading cause of death and can cause lifelong disabilities in survivors. Sleep disorders are commonly associated with TBI. These sleep disorders may include insomnia, excessive daytime sleepiness, fatigue, parasomnias and sleep apnea. In addition to sleep disorders, TBI patients may also suffer from mood disorders, anxiety and depression. Compared to the general population there is a higher prevalence of sleep disorders in patients who have suffered from a TBI. Treatment for sleep disorders associated with TBI include medications such as Zolpidem and Provigil. Behavioral therapies include cognitive behavioral therapy and meditation. Extensive sleep evaluations after TBI may help with underdiagnosed for sleep disorders, behavioral disorders, and cognitive decline.

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The sleep disorder narcolepsy is characterized by excessive sleepiness, sleep paralysis, cataplexy (i.e., the temporary partial or total loss of skeletal muscle control, which is typically triggered by a strong emotion), vivid realistic hallucinations that occur with sleep onset (i.e., hypnagogic hallucination) or on awakening (i.e., hypnopompic hallucination), and disturbed nocturnal sleep (e.g., difficulty staying asleep). All symptoms of narcolepsy do not have to be present for a person to be diagnosed with the disorder. The impact of these symptoms on the quality of life (QOL) varies as a person with narcolepsy ages. Because of the rarity of narcolepsy (its prevalence is 0.03%–0.06%), no questionnaire has been developed that specifically measures QOL in children or adolescents with narcolepsy. Several questionnaires exist that measure the QOL in healthy children or children with other illnesses such as cancer or depression. Administering these questionnaires to children with narcolepsy reveal that these children have a lower QOL compared to healthy controls. However, the unique psychosocial issues faced by children with narcolepsy at different ages may affect how a child perceives his or her QOL. A recently developed a questionnaire, called the NarcQoL-21, shows promise in more accurately assessing QOL in children with narcolepsy.

The onset of narcolepsy symptoms usually begins at 15–25 years old. Approximately 30 percent of people with narcolepsy experience symptoms before 15 years old; 16 percent of people, before 10 years old; and 4 percent of people, before 5 years old. However, because symptoms of narcolepsy are often mistaken for other disorders, only 4 percent of children with narcolepsy are accurately diagnosed before the age of 15 years. In children, symptoms of narcolepsy are often mistaken for a neurological disorder (e.g., epilepsy) or a psychological/psychiatric disorder (e.g., depression, attention deficit-hyperactivity disorder [ADHD]). Some ways that symptoms of narcolepsy may affect a child’s QOL are described below.

### EXCESSIVE SLEEPINESS

Excessive sleepiness affects a child’s ability to retrieve previously learned information, to pay attention, and to concentrate when learning new information. Teachers and parents may consequently view the child as “lazy.” If a child is frequently caught napping, adults may perceive the napping as a psychological coping skill—for example, as a way of avoiding school work. A child may consequently be punished.

However, excessive sleepiness in children can also manifest as excessive activity for which child may receive a diagnosis of ADHD. Teachers and parents frustrated by the hyperactive behavior may punish the child.

### SLEEP PARALYSIS, CATAPLEXY, AND HYPNAGOGIC/HYPNOPOMPIC HALLUCINATIONS

The symptoms sleep paralysis, cataplexy, and hypnagogic/hypnopompic hallucinations last from a few seconds to several minutes and end spontaneously. Of these three symptoms, cataplexy has the greatest impact on QOL.

### SLEEP PARALYSIS

During a sleep paralysis episode, muscle atonia of rapid eye movement (REM) sleep continues to manifest just as a child is awakening or going to sleep. Other sensations that may also be experienced during an episode are numbness, tingling of the limbs, sweating, a sensation of pressure on the chest, and hallucinations. Based on a child’s or parent’s description of sleep paralysis symptoms, a physician may treat the child for a psychological or neurological problem.

### CATAPLEXY

An episode of cataplexy occurs when the muscle atonia of REM sleep suddenly intrudes into wake when a person experiences a strong emotion. In a mild episode of cataplexy, only a few muscles such as the jaw, arm, or leg muscles suddenly weaken, which may cause the child to have a slack jaw, drop objects, or have difficulty in walking. In a severe case of cataplexy, all skeletal muscles suddenly weaken and the child may fall to the ground as if in a faint. Adults may think a child is “play-acting” on seeing a child stumbling or falling down in an apparent faint and may accordingly scold or punish the child.

Episodes of cataplexy may expose a child to ridicule by classmates or to bullying (e.g., children may intentionally induce episodes by causing the child to laugh or by frightening the child). As a result, a child may try various means to avoid going to school or being around peers. Such withdrawal can cause a child to feel isolated.
Depending on the severity of cataplexy, a child may not be able to participate in sports, allowed to drive, or participate in school activities that may trigger episodes of cataplexy and expose a child or others to danger. Being unable to participate in activities with classmates or friends may cause the child to feel isolated.

To prevent episodes of cataplexy, a child may try to control emotions and consequently develop a flat affect. Adults may mistake the flat affect for “sullenness.”

Based on descriptions of cataplexy symptoms by a child or the child’s parents, a physician may diagnose and treat the child for a neurological problem (e.g., seizures) or a psychological problem.

**HYPNAGOGIC/HYPNOPOMPIC HALLUCINATIONS**

Hypnagogic/hypnopompic hallucinations result from REM sleep dream imagery occurring during wake. On describing the imagery, parents or a physician may believe the child is having delusions or some other psychological problem. If a child is frightened by the hallucinations, a parent or physician may believe that a child is simply having night terrors, nightmares, or panic attacks and not take the child seriously.

**DISTURBED NOCTURNAL SLEEP**

Disrupted nocturnal sleep affects memory consolidation (i.e., incorporating information into long-term memory after learning). A child with narcolepsy may consequently have trouble with schoolwork, and teachers and classmates may label the child as “not smart.”

Struggles with sleepiness remain throughout life in people with narcolepsy. However, episodes of cataplexy, hallucinations, and sleep paralysis can decrease with aging. This reduction may be related to the decrease in the amount of REM sleep or changes in other mechanisms of REM sleep that occur with aging.

Changes in the severity of these symptoms as a child ages may affect the child’s assessment of QOL. However, assessing self-reported QOL in children with narcolepsy is difficult because of factors such as language (e.g., young children may be unable to answer or understand questions) and age.

In research studies of QOL in children with narcolepsy, investigators typically administer several types of questionnaires to the children and/or their parents to measure different features associated with narcolepsy such as depression, insomnia, narcolepsy symptoms, sleepiness, and ADHD. The premise of using several questionnaires is that the information collectively derived from the questionnaires would approximate a child’s QOL more accurately than either questionnaire alone. However, the collective information provides incomplete information on a narcoleptic child’s QOL.

For example, Gregory Stores and colleagues administered several questionnaires to narcoleptic children (4–18 years old) and their healthy counterparts such as the Ullanlinna Narcolepsy Scale, the Strengths and Difficulties Questionnaire, the Child Depression Inventory, and the Child Health Questionnaire. The Child Health Questionnaire, which was used to measure QOL, revealed that narcoleptic children had poorer QOL than healthy children. However, the QOL was assessed by parents and not reported by the children. Hence, some issues important to children with regard to their QOL may have been missed.

Clara Inocente and colleagues similarly administered several questionnaires to children and adolescents with narcolepsy and normal controls to assess sleepiness (Adapted Epworth Sleepiness Scale and Pediatric Daytime Sleepiness Scale), depression (Children’s Depression Inventory), insomnia (Insomnia Severity Index), ADHD symptoms (Conners Parents Rating Scale-revised), narcolepsy symptoms (Cataplexy Severity Rating Score), and health (VSP-A [Vécu et Sante Percue de l’Adolescent], a French self-report health-related QOL questionnaire for teens). Inocente found that depression had a major negative impact on QOL in children with narcolepsy, and that delay in diagnosis, the presence of cataplexy, or treatment had no effect on QOL in children. However, Inocente cautions that their findings may have some bias: their study did not distinguish between the impact of different levels of severity of the disease on QOL. Thus, the narcoleptic patients may have had more severe symptoms and may not fully reflect what occurs among narcoleptic children.

A questionnaire that is commonly used to assess general health in children is the KIDSCREEN questionnaire. The KIDSCREEN questionnaire contains questions concerning a child’s health and exercise level (e.g., “How would you describe your health in general?”); feelings (e.g., “Do you enjoy your life?”); mood (e.g., “Do you feel you do everything wrong?”); leisure time (e.g., “Have you had enough time for yourself?”); family and home (e.g., “Do your mother/father understand you?”); money (e.g., “Have you had enough money to do the same as your friends?”); friends (e.g., “Do you do things with other children or young people?”); and other relationships (e.g., “Do other children or teenagers make fun of you?”); However, no question on the KIDSCREEN is specific for children with narcolepsy.
For this reason, a Swedish research team, headed by John Chaplin, developed a questionnaire, the NarQoL-21, that is sensitive and specific in measuring the QOL of children with narcolepsy. Similar to the KIDSCREEN questionnaire, the NarQoL-21 asks a broad set of questions about a child’s emotions and social interactions. It also asks questions about school and concentration. A unique feature of this questionnaire is that it asks children about their expectations for their future (e.g., “There will be good opportunities for me”, “Everything will be fine for me in the future”, “I think I will get a driving license”, “I see obstacles for me in the future”).

To develop a questionnaire with a focus on health-related QOL issues that are of most importance to children with narcolepsy, the researchers conducted semi-structured interviews with a focus group of children and adolescents (ages, 8-18 years). Their responses initially revealed seven themes—emotional support, school performance, social image, concern about the future, being limited by the condition, personal energy, and disturbed sleep—with 135 questions related to the concept of their health-related QOL. The researchers dropped questions having to do with sleep and physical problems since these issues are already covered by existing validated questionnaires or dropped questions for other reasons. After this reduction, a pilot questionnaire containing 40 questions was developed and administered to the children. Their responses on this questionnaire was subjected to further statistical analyses, after which the researchers rejected more questions. This elimination resulted in the final 21 questions (hence, “NarQoL-21”).

In another aspect of their study, Chaplin and colleagues compared the KIDSCREEN-10 Mental Health Index (KIDSCREEN-10) and NarQoL-21 with regard to distinguishing between healthy individuals and patients. After subjecting the questionnaires to several statistical analyses, they found that both questionnaires had good to excellent specificity (i.e., high true-negative rate) and sensitivity (i.e., high true-positive rate). However, the NarQoL-21 was more sensitive than the KIDSCREEN-10 index in detecting children with narcolepsy.

Symptoms of childhood narcolepsy and the impact of the disease on a child’s QOL are often not recognized by healthcare professionals. As a result, many children will not be diagnosed correctly until adulthood. A tool such as the NarQoL-21 could potentially provide more accurate information on the impact of the disease on a child and provide better discrimination between children with and without narcolepsy. However, the NarQoL-21 questionnaire was developed in the Swedish language and for Swedish children. Before it can be used on a widespread level, it will need to be translated into other languages and validated in other countries. If future studies corroborate its validity, the NarQoL-21 could have a role in reducing the negative psychosocial impacts of the disease and shortening years of misdiagnosis often experienced by children with narcolepsy.

REFERENCES

Joseph Anderson, Supervisor, RPSGT, RST, RPFT, CRT-NPS, RCP, is the Certified Sleep Educator and Tele-Sleep Coordinator for Integrated Sleep Disorders Center at McGuire VA Medical Center (RICVAMC).

In 2003, Joseph designed and fabricated a time capsule for the 25th Anniversary of the APT/AAST in Chicago. Included in this capsule were pictures, letters and other memorabilia from the first 25 of years of the APT/AAST, including original A 2 Zzz publications, as well as the first “color” edition of the magazine. This time capsule continues to be displayed at various AAST meetings. He will be speaking at AAST/KSS meeting in October on the topic, “Using Digital Technology to Monitor Adherence.”

When I was young I wanted to grow up to be: The first thing that I remember wanting to be was a garbage man. Back then, they came around to back/side doors of the house to get the cans. My dad traveled a lot in the Marine Corp., so the garbage man was a male figure in my life. The second was a preacher. I wanted to open a church in my back yard.

I decided to become a sleep technologist because: I was going to MIT in Boston to be an ocean engineer when I had a motorcycle accident that put me in rehab for several years. So my plans had to change. After some exploration I decided that respiratory therapy was my career path. That led me to becoming a neonatal RT, and then later migrate into home sleep studies with the VP of Marriott as my business partner using the Healthdyne Night Watch system.

I got my first job in sleep technology at: I was self-employed before selling my business and going to work for North Broward Neurological Institute’s sleep disorders center in South Florida as a day tech in the 1990s.

I became an AAST member because: I believe in the work that we do as techs, as well as the fact that the AAST is a strong representative of our industry.

The person who has had the greatest influence on my career is: John Burkholder, RPSGT and Lisa Makepeace, RPSGT, were my early mentors. Unfortunately, John recently passed away.

The most challenging part of my profession is: Staying aware of the technological improvements that we are fortunate to see in our industry. The tools available to us have increased exponentially over the last few decades.

The thing I like the most about my profession is: Making a difference. One of the things that respiratory care and sleep have in common is that we often see very quick results from the care that we give. Life changing improvements in many cases.

The food I’m most likely to snack on while working is: Trail mix. I love a good trail mix with nuts and dried fruit. I also like a good hot dog, and the best I have ever had was in Iceland.

For fun on days off from work I like to: Remodel my house or work on my property in Central Virginia. If I am not doing those activities, I am most likely traveling somewhere to teach or speak about sleep.

My favorite TV show is: Right now it is “Colony”. Others include “The 100,” “Suits,” and various shows on HGTB.

My favorite singer or musical group is: Jimmy Buffett. I have been a fan since first seeing him in Miami during the days of “Miami Vice.” I have been able to meet him many times over the years, and have a huge collection of memorabilia.

The website I visit most often is: My own first, priorityhealtheducation.com, and then YouTube to view education info on sleep or home renovations or farming.

The person I would like to meet is: I have been fortunate to have already met Dr. Dement, Dr. Sullivan and Dr. Lee-Chiong. I always enjoy meeting the people that continue to move our profession forward.

The biggest change I have seen in the profession since I started is: Store-it-forward, including the expanded and accepted use of modem technology for PAP therapy and compliance.

Words of advice I have for people who are new to the profession are: Learn as much as you can and look for opportunities to improve the health of your patients. Also, I recommend expanding your personal footprint in the industry. I have traveled all over the world in this field.

My professional goals for the next five years are: Continue to expand the rural initiative of the Integrated Veterans Sleep Disorders Center in Central Virginia. This effort includes our store-it-forward and tele-sleep initiatives.

Sleep is: Always changing, always challenging and always rewarding.
CERTIFICATION UPDATE: FROM THE BOARD OF REGISTERED POLYSOMNOGRAPHIC TECHNOLOGISTS

**RPSGTS RECERTIFYING IN 2017 – DON’T WAIT UNTIL THE LAST MINUTE TO RECERTIFY**

Don’t miss out on important email reminders, deadlines and tips to facilitate the recertification process. Make sure your contact information is up to date in the BRPT database and you’re on track with continuing education credits. RPSGTs are responsible for knowing their certification expiration dates and recertification deadlines. Expiration dates can be verified by searching the BRPT Primary Source Verification Directory.

**THE IMPORTANCE OF RECERTIFICATION**

Recertification is a cornerstone of best practices in a certification program and the BRPT has a responsibility to the profession – and the public – to assure all RPSGTs continue their education. The BRPT adheres to best practices for credentialing programs and works to ensure that the RPSGT certification continues to be recognized as the leading certification for polysomnographic technologists by the medical community, allied health professions, legislative bodies and other regulatory decision makers, and the public. The continuing education requirement ensures that all RPSGTs remain up to date in the dynamic and rapidly changing field of sleep medicine. In addition, the recertification process is an opportunity to reinforce the value of the RPSGT certification and a chance for RPSGTs to recommit to the delivery of excellent patient care.

**RECERTIFICATION REQUIREMENTS**

All RPSGT certification holders must recertify every five years in order to retain the use of the RPSGT credential. To recertify, RPSGTs must either earn 50 continuing education credits during their five year credential window or retake and pass the RPSGT exam.

**RECERTIFICATION PROCESS**

The RPSGT certification holder must apply for recertification on or before the certification expiration date. Their application must include a CPR/BLS certification that was earned in a live/skills setting. The BRPT does not accept online CPR/BLS certifications. The certification holder can apply for recertification anytime within six months prior to the certification expiration date. All recertification requirements must be fulfilled before the application will be considered for approval. Once the recertification process is completed and the application is approved, BRPT will issue a new RPSGT certificate with a certification expiration date five years from the previous certification expiration date.

For more information, go to: http://www.brpt.org/default.asp?contentID=304