ARTP
Association for Respiratory Technology & Physiology

# SNEWS

May 2023
Volume 13
Issue 1

*Dreaming of a better night's sleep*

www.artp.org.uk

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# Editor's welcome

Welcome to your new edition of SNEWS!

We have revamped your latest edition of SNEWS, bringing you the same level of current information and latest developments in the world of Sleep Medicine and Physiology.

We have been missing for most of 2022 but we hope 2023 is the beginning of a new SNEWS for you to all enjoy!

As we see COVID-19 restrictions being lifted, what does this mean for the world of Sleep Medicine and Physiology? We will explore the challenges we have faced with manufacturer stock supplies in this issue of SNEWS and how this will pave the way for us over the next few months.

You will notice the layout of SNEWS has changed. We hope you like it! As always, we hope to make SNEWS interactive. There may be areas of Sleep Medicine and Physiology you would like to read articles on or have articles you would like to share. If this is the case, please contact the SNEWS team on S-NEWS@artp.org.uk.

Take care & best wishes,

**Trish Matharu**
**S-NEWS@artp.org.uk**

**DATES FOR THE DIARY**

**Basic Sleep Course: 24th April 2023**

**Advanced Sleep Course 25/26th September 2023**

**Conference: 25-26th April 2024**

**NIV course - TBC**

*All dates are subject to change.*

SCIENTIFIC

# CPAP therapy

CPAP therapy is well known to be the most effective method of treatment for Obstructive Sleep Apnoea (OSA). Along with its benefits CPAP has been known to cause some side effects. Perhaps one of the most surprising side effects of CPAP is weight gain. Often thought to cause the opposite the AASM have looked in weight gain as a possible side effect of CPAP therapy used to treat OSA.

## Up, down, or no change: weight gain as an unwanted side effect of CPAP for obstructive sleep apnea (aasm.org)

This commentary by Brown (2020), highlights the need for us healthcare professionals to be aware that CPAP therapy can cause the opposite effect to what we have always thought.

This link provided will allow you to review the evidence available for weight loss and weight gain that has been researched. Will the research presented here change your advice you give to your patients?

PROFESSIONAL

# Obstructive Sleep Apnoea (OSA) and DVLA guidelines

**Dr Sophie West** Consultant, **Mr James Oliver** Highly Specialist Clinical Physiologist
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**This is perceived as a difficult area, and it can feel stressful to give driving advice. Health care professionals are concerned about saying the "wrong thing". This article seeks to give clarity on what we should be saying to people with OSA or suspected OSA about their driving and ways to make a consistent message easier. It is up to the DVLA to decide whether someone can hold a licence or not and they will make medical enquiries to help make this decision. It is for individuals to assure themselves that they are fit to drive. It is our job to give driving advice to help the patient assess their fitness to drive.**

## Who should give driving advice?

The DVLA considers medical professionals to be "doctors and other healthcare professionals". This flags that it is all our responsibility to advise the individual of their fitness to drive; we cannot leave this task to someone else. Locally, a physiologist advised a sleepy patient collecting diagnostic equipment not to drive and provided the *Tiredness can kill* leaflet (INF 159). **https://www.gov.uk/government/publications/tiredness-can-kill-advice-for-drivers** The patient drove against medical advice with tragic consequences, killing a cyclist. The physiologist appeared in court to give evidence about the advice they provided.

## What is the DVLA guidance we need to know?

The DVLA has published *Assessing fitness to drive: a guide for medical professionals* on assessing and advising people regarding their fitness to drive. **https://www.gov.uk/guidance/assessing-fitness-to-drive-a-guide-for-medical-professionals.** Information on OSA is in a section in Miscellaneous conditions titled: *Excessive sleepiness – including obstructive sleep apnoea syndrome*. The guidance defines 'Excessive sleepiness' as having, or likely to have, an adverse effect on driving and it includes 'obstructive sleep apnoea syndrome of any severity'.

It is clear the DVLA are focussing on individuals with excessive sleepiness, not everyone with OSA. Please avoid saying "*You must stop driving*" in all people who snore or who have possible OSA when there is not a history of excessive sleepiness when driving. This is not appropriate, not what the DVLA guidance suggests and can lead to people being reluctant to come to the clinic if they perceive they will have their driving licence taken away.

In its simplest form therefore, the standard driving advice that we should all be giving to all patients with OSA or suspected OSA is that the DVLA guidelines say "*Anyone with excessive sleepiness having, or likely to have, an adverse impact on driving should not be driving, whatever the cause*". We can also flag that it is the patient's responsibility to ensure they are fit to drive.

One way to ensure a consistent message across your sleep service is to ensure this paragraph is present in all written and electronic correspondence and information that OSA patients receive, such as clinic outcome letters, information sheets about sleep studies, CPAP, on automatic email reply for CPAP helpline etc. This raises awareness of driving, sleepiness and OSA for patients and fitness to drive.

> *For example, we use the following in all correspondence with patients:*
>
> **Driving**: You should be aware of the DVLA guidance regarding driving: "*Anyone with excessive sleepiness having, or likely to have, an adverse impact on driving should not drive*". You need to ensure you are fit to drive and not too sleepy for every journey.

The DVLA say we should advise the individual on the impact of their medical condition on safe driving ability, and advise the individual on the legal requirement to notify the DVLA of any relevant condition. Considering this individual advice, it is fairly straightforward at either end of the sleepiness spectrum:

- If someone does not have excessive sleepiness having or likely to have an adverse impact on driving, and describes no sleepiness at the wheel, or no sleepiness at all, they should be made aware of the DVLA guidance, but advised that their medical condition does not seem to be impacting on safe driving ability and they do not need to restrict driving, nor notify the DVLA.
- If someone is extremely sleepy with excessive sleepiness having or likely to have an adverse impact on driving, they should be advised not to drive as per the DVLA guidance until their symptoms have resolved (in this case with CPAP treatment). They will need to notify the DVLA – see notes below.
- People who are in the middle are harder– with sleepiness which is causing significant problems, but who say they have no issues with excessive sleepiness having, or likely to have, an adverse effect on their driving. Research studies have tried to define how to identify which patients with OSA are most likely to crash. This is difficult, but it is established that Epworth Sleepiness Score (ESS) and the OSA severity measure (AHI or ODI) do not have clear correlations. Neither ESS nor AHI/ODI should be used as a can drive/can't drive binary tool but are helpful in the overall assessment of sleepiness. A driving history can be helpful: distances driven, crashes and near misses in the last three years, sleepiness or nodding off at the wheel, sleepiness in general, needing a break less than 1 hour into the journey. Partner history is also helpful. The more aspects that concern you regarding a history of sleepiness, long distance driving, nodding off, near misses, the more information you have to give accurate driving advice about suspending driving until symptoms are controlled.

Document any driving advice you give, which can include standard driving statements in letters. Document specific driving advice if you are particularly concerned about someone.

### Who needs to NOTIFY the DVLA?

- All people with excessive sleepiness due to moderate or severe OSA confirmed on sleep study
- All people with excessive sleepiness including due to suspected OSA and due to mild OSA confirmed on sleep study, where the symptom control has not resolved within three months.

Successful treatment with CPAP which improves excessive sleepiness will improve driving safety and means patients can drive as normal. We need to therefore encourage patients with suspected or confirmed OSA to engage with our diagnostic and treatment process so that in due course they can drive as normal. Suggest that people notify the DVLA in writing (not telephone) after diagnosis and CPAP – though must be only driving if they do not have excessive sleepiness having or likely to have an adverse impact on driving in the meantime.

### In summary

It is important for us all to advise on driving in patients with suspected or confirmed OSA. Discuss this with your team to ensure you are using all the opportunities to give standard DVLA advice. Any complex patients with concerns around driving where you are not confident on what advice to give – please discuss this with senior team members.

### FURTHER INFORMATION

The Sleep Apnoea Trust website is a valuable resource on driving to direct patients to for more information, including contacting the DVLA. **Driving and Sleep Apnoea - The rules with driving with Sleep Apnoea (sleep-apnoea-trust.org)**

The British Thoracic Society position statement on driving also goes into driving issues in more detail for health care professionals **Sleep | British Thoracic Society | Better lung health for all (brit-thoracic.org.uk)**

PROFESSIONAL

# An STP Experience

**The scientific training program (STP) as most of us know it, is an approved route to becoming a clinical scientist with Health and Care Professions Council (HCPC) statutory registration. It is a 3 year fully funded MSc along with being employed, usually at a B6 whilst undertaking clinical training. To be accepted onto the program you will usually require a BSc in a specific science subject.**

We spoke to **Marina Themis-Tiwari** B8a Healthcare Scientist professional manager (Adults) at St Georges Hospital, London, who shared her STP experience with us.

**What were you doing before you enrolled on the STP Programme?**

Before joining the programme, I was working as a clinical research assistant in the Clinical Research facility in the Northwest Lung Centre in Manchester. The research I was co-ordinating involved recruiting severely allergic patients to undergo a food challenge to peanuts. As you can imagine this research had a significant respiratory element to it; most of the research was understanding the patients' respiratory deterioration (If they received the control cookies instead of the placebo ones). Part of the work-up for the food challenge was to assess their lung function, which is where I first learned to perform spirometry testing.

**What made you apply for the STP? Why did you choose respiratory and sleep science?**

One of the main reasons I chose to do the STP (If I am being honest) is because I overheard a colleague at my previous workplace talking about applying for it. I discretely listened to all the stages of the application, her description of the programme and how she really wanted to be a cardiac physiologist. The programme sounded extremely daunting and challenging, so in the early days I never really considered it as an option.

As my position was fixed-term, I had to start thinking about the next steps in my career. I went away and researched the STP out of sheer curiosity from the previous conversations I over-heard, only to find out that it actually comprised of all the elements of healthcare that I was inter-ested in; patient facing, full time employment whilst studying for a Master's degree, with different placements around the country.

From my previous job, it only seemed like a natural progression to apply for respiratory and sleep science as I had transferable skills but also wanted to experience the field in much more depth. I found it extremely fascinating how someone's airway could be completely comprised just in response to eating a nut! I therefore applied for the programme and enrolled in 2016, which is when I moved to London.

**What were some of the difficulties you experience whilst doing the STP?**

I would have to say the challenging part of the STP was trying to balance my workload whilst continuing to work in a full-time position. This included Master assessments, competencies, and

exams. The good news is whilst on the STP you are entitled to one study day a week time away for university placements which was weeks at a time, a bursary for educational/travel expenses and usually very supportive training officers.

**What would you recommend for future STP students /those thinking about applying?**

My main piece of advice to future scientists/physiologist is to try and attend as many courses, conferences, and hands-on placements as possible. Speak to your employer/tutors as they are always willing to support professional development in many ways that trainees may not be aware.

To those considering doing the STP, don't forget to use your bursary to your advantage! Buy books you need, book as many courses as you can and partake in educational events which will give you practical experience.

Above all, the STP is a fun 3 years of socialising, learning and travelling, with the bonus of a Masters, which is highly sought-after once you are finished.

**How do you think the STP has prepared you for your current role?**

The STP was an enormous steeping stone into a vocational clinical role, and I can honestly say that it has prepared me considerably for my current position. Following my three years as a trainee I accepted a job as a Clinical Scientist in another London hospital after which I progressed internally to a senior Clinical Scientist. I was able to implement almost 100% of my knowledge and skills acquired during the 3-year programme into my job role.

One of the main aspects of the STP that I am grateful for is that it prepares you for a variety of scenarios in your future workplace. From infection control policies to data protection, to complex sleep studies, it covers all bases (whether your department provides the tests or not).

The rotation placement element of the STP (4-8 weeks spent in different departments) was so valuable in terms of learning the scientific basis behind systems closely linked to lung disease and sleep studies such as cardiology and vascular science.

The professionalism module of my masters has probably shaped many of my leadership qualities. The elective (my favourite placement) even allowed me to learn animal physiology whilst partaking in research at Europe's largest aquarium in Valencia.

## FURTHER INFORMATION

For more information about the STP and how to apply visit the academy for healthcare science **www.ahcs.ac.uk** and the national school of healthcare science **www.nshcs.hee.nhs.uk**

You may also be eligible to apply for the STP equivalency if you have enough years' experience as a physiologist. **www.ahcs.ac.uk**

PROFESSIONAL

# So Clean

In clinical practice you may have been asked about So Clean and its benefits in cleaning a patient's CPAP machine. In Oct 2021, So Clean filled a lawsuit against Philips for their accusations and released the following statement.

> *"The lawsuit, filed in the United States District Court for Massachusetts, alleges Philips has misled the public and engaged in acts of deliberate misdirection, placing blame on SoClean to divert attention away from obvious design flaws, including a poor choice of sound abatement foam, which led to its recent voluntary product recall of Philips' CPAP machines, BiPAP machines, and ventilators."*
>
> *SoClean also alleges that Philips and its CEO and Chairman of the Board, Frans van Houten, made false and misleading statements regarding ozone cleaners that have had a negative impact on SoClean's business. Among other things, the complaint states that Philips and its CEO wrongfully suggested to consumers, distributors, health care professionals, and the general public that SoClean and its ozone cleaners were somehow responsible for the product recall.*
>
> *"We are disappointed that Philips has decided to point the finger at SoClean for its product recall and has chosen to make false and misleading statements about our products," said Robert Wilkins, CEO of SoClean. "By this lawsuit, SoClean intends to defend itself against Philips' dishonest attacks, restore its hard-earned reputation, and correct the record for a consuming public that has been intentionally misled by Philips."*

The controversy around the accusation by Philips may sway your opinion about whether So Clean is a worthy purchase. The information above may help determine your opinion on So Clean's benefit for a patient.

PROFESSIONAL

# Other NEWS

## WatchPAT

In other news around Sleep Medicine, WatchPat has become an increasingly used diagnostic tool. This diagnostic device was purchased by Zoll Medical in September 2021 for a whopping $538 million. WatchPAT was originally manufactured by Itamar Medical. This diagnostic device has been accepted by AASM and was subsequently included in the 2017 AASM HSAT Clinical Guidelines Practice for Adults with OSA. With an 89% accuracy correlation to PSG, could WatchPAT be your new diagnostic tool?

## NightOwl

The use of Peripheral Arterial Tonometry has been further utilised by a company called Ectosense, to develop another HSAT device, known as NightOwl. This device was purchased by ResMed in October 2020 has been used in Australia, America and India, under the brand name 'ResMed onesleeptest™'. ResMed has been a minority investor in Ectosense since July 2020 with an undisclosed purchase price.

## Philips Recall

For many Respiratory Physiology and Sleep Departments, the Philips recall has really taken its toll, whether departments were directly or indirectly affected by the recall. For many, it was deemed communication from Philips itself around the recall was poor. The FDA released an article around this and SNEWs have included the link here for you to read. **https://www.hmenews.com/article/fda-to-philips-improve-communication-on-recall**

The CPAP recall by Philips continues to have effects on Sleep departments throughout the country.

## Devilbiss sale

Drive DevilBiss has sold its sleep product business to 3B Medical, a Florida based company. Drive DevilBiss advised ARTP SAC late last year that production of these devices would cease at the end of 2021.

3B Medical are in the process of setting up a manufacturing facility in the USA for CPAP/NIV devices as well as continuing to sell their current range of devices and accessories which are produced by BMC Medical in China. I understand that 3B Medical will be picking up warranties on current Drive DevilBiss products. How that will work in practice is not clear at present and SNEWs will advise more on this as information becomes available. Who will distribute 3B Medical products in the UK is also, as yet, not clear.

**https://www.3bproducts.com/clinicians-portal/**

## Change in law: Completion of DVLA forms

As of 20th July 2022 , the law was changed so that healthcare professionals other than doctors are now able to complete the DVLA medical questionnaire following notification of a condition, such as OSA, that may affect an individual's driving.

Link to the Government website: **DVLA announces change in the law to enable more healthcare professionals to complete medical questionnaires - GOV.UK (www.gov.uk)**

RESEARCH

# Paediatric Home Sleep Apnoea Testing: Service Audit

**M Davies, A Laverty, M Samuels**
*Great Ormond Street Hospital for Children NHS Foundation Trust, London UK*

## Introduction

The use of Home Sleep Apnoea Testing (HSAT) in paediatrics for the diagnosis of Obstructive Sleep Apnoea (OSA) has been adopted at our Trust since late 2020, and was given increased impetus by the COVID pandemic. A high technical quality of the recorded HSAT study is paramount to interpretability, with published data indicating wide variation in the quality achieved (46-87% technically acceptable[1,2]). This audit aimed to assess the technical quality of the HSATs performed by our service.

## Methods

The Embletta-MPR device (Stowood Scientific Instruments, UK, Figure 1), was provided to the patient and carer, usually by visit/collection and training was provided at this time. Printed instructions, a link to a video tutorial and contact details of the overnight physiology team were also supplied. The HSAT was performed in line with adapted American Academy of Sleep Medicine (AASM) standards[3].


Figure 1. The Embletta MPR device

Our in-house referral criteria for HSAT specified test provision for non-syndromic children aged 2-17 years with clinical suspicion of OSA. As the Embletta MPR uses the same sensors as the main sleep laboratory (Embla), the current in-laboratory minimum requirements for quality standards were implemented to assess the interpretability of each study (Table 1). A total sleep time (TST) ≥ 4hrs comprised of artefact-free $SpO_2$ recording for ≥ 4hrs, and signals required to score respiratory events (nasal flow and/or respiratory effort bands) for ≥ 4hrs were required for a study to be deemed technically successful.

Table 1. Minimum HSAT study requirements

| Parameter | |
|---|---|
| Total Sleep Time (TST) | ≥ 4hrs |
| SpO2 recording, artefact-free | ≥ 4hrs TST |
| Respiratory event recording (nasal flow ± respiratory effort bands) | ≥ 4hrs TST |

All consecutively recorded HSATs between 03/12/2020 and 01/03/2022 were retrospectively evaluated for (a) meeting referral criteria and (b) their technical quality.

## Results

97 HSATs were performed over a 15-month period. Five different Embletta MPR devices were used. Mean patient age was 7.7 years (± 4.3), (58% male).

Compliance with referral criteria was 80%. All 19 non-compliant referrals were syndromic

patients (6 were patients with Trisomy 21).

Overall study success rate (determined by criteria described in Table 1) was 76.0% with a small difference identified between those performed on patients who met referral criteria and those who did not (76.9% vs 73.7% respectively). The trend by month of failed referral criteria and failed study is shown in Figure 2.

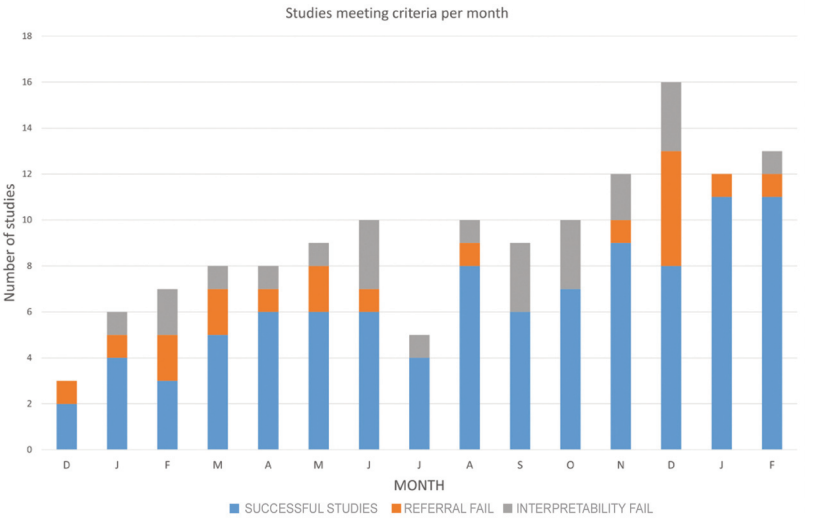



Figure 2. Studies and criteria matching by month

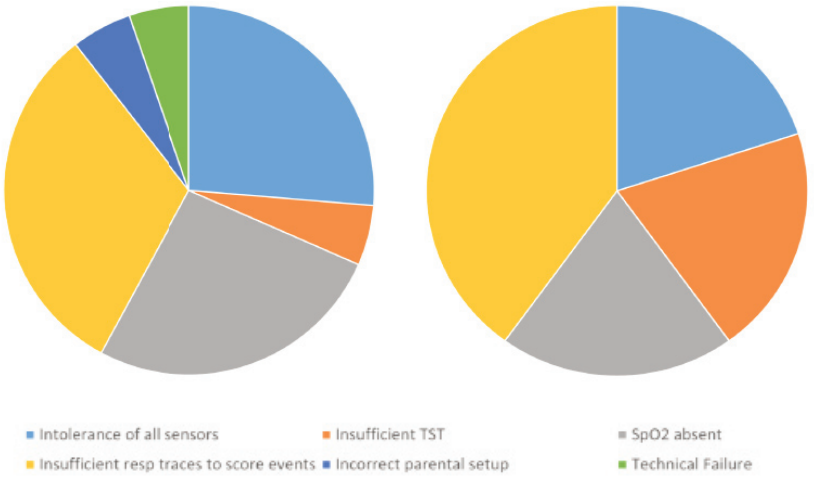



Figure 3. Reasons for failure. Patients meeting referral criteria (left), those not meeting referral criteria (right)

| Study outcome % | | | | | | |
|---|---|---|---|---|---|---|
| Referral criteria met? | Normal | Mild OSA | Moderate OSA | Severe OSA | Central | Fail |
| Yes | 54 | 18 | 1 | 4 | 0 | 23 |
| No | 32 | 11 | 5 | 11 | 15 | 26 |

Figure 4. Study outcome

Figure 3 displays reasons for study failure.

Study outcome is shown in Figure 4.

## Conclusion

The majority of HSATs met referral criteria and were technically successful. Improvements to address uninterpretable HSATs include: improved parental teaching, modification of the $SpO_2$ sensor attachment policy, and consideration of improved psychosocial support techniques.

References
1. Gudnadottir, G. et al. Respiratory polygraphy in children with sleep-disordered breathing. Journal of sleep research 2019; 28(6), p.e12856
2. Michelet, M. et al. Successful home respiratory polygraphy to investigate sleep-disordered breathing in children. Sleep Medicine 2020; 68, pp.146-152
3. Berry, R.B. et al. The AASM manual for the scoring of sleep and associated events: rules, terminology and technical specifications, version 2.6.0. American Academy of Sleep Medicine, Darien, Illinois; 2020.

PAEDIATRICS

# Ventilate and breathe, let's get you 'better at home'

## A paediatric better at home suite

Long term paediatric ventilation is an ever-growing service. Long term ventilation includes those patients who are ventilated either via a mask or a tracheostomy 24/7 or part of (Wallis *et al* 2011). Paediatric respiratory conditions which may require ventilation include chronic lung, spinal injury, upper airway abnormalities, congenital disorders such as T21, neuromuscular disorders and sleep disordered breathing. Choice of ventilation mode, such as BI-LEVEL ventilation or continuous positive pressure ventilation (CPAP) is usually based on the clinical presentation, assessment including blood gases and sleep study results.

As medical advancements are made, patients are presenting with multiple complex health conditions, some of which are life limiting. As ventilator machines are becoming more paediatric specific, smaller patients are being considered for initiation of respiratory support, providing its own challenges. Many of these ventilated patients who would have previously been cared for in hospitals until weaned off support are now being cared for in the community by their families and/or carer. Training sessions to ensure safety of the patients, are often performed at the patient's bedside which are likely to have a whole host of distractions, alarms, minimal privacy often within an enclosed space. When already having to come to terms with your child having a chronic respiratory condition and then being faced with having to learn new skills and adapting to a new way of life, can often feel very overwhelming for these families.

In August this year, St George's Hospital, London opened the first 'Better at Home training suite' in London, which was funded by the children's charity WellChild, who specialises in caring for children with complex healthcare needs at home. The suite is supported by two better at home/long-term ventilation nurse specialists; Alex McClements and Charlie Perth.

The initiative behind the 'Better at Home training suite' at St George's is to facilitate better training and a safe space for parents whose children require long term ventilation in a room that looks just like a children's bedroom. Charlie discusses how 'the training provided is both practical and theoretical using real life scenarios which will ensure parents and careers gain the confidence and advanced skills needed to safely manage the care of their children in the community'.

When training caregivers, certain competencies need to be fulfilled prior to a patient's discharge. This ensures safety. A paper from Nawaz et al 2019, performed an analysis of paediatric long term ventilation incidents in the community and found that common problems were linked to staff competency issues. In a survey conducted with parents and nurses, 63% did not know about alarms linked to accidental dislodging and 52% failed to understand high pressure alarms.

These competencies can be patient specific and may include patient's own equipment (such as prams) to carry out specific scenarios using simulation dolls to mimic those scenarios.

Competencies include;

- Understanding the child's respiratory condition and why they require ventilation
- how to use the ventilator and care for it
- how to attach and fit the mask
- troubleshooting alarms and what they mean clinically
- Age-appropriate troubleshooting scenarios i.e in a push chair, cot or pram
- How to identify when the patient deteriorating and how to respond in an emergency
- Basic life support is also covered

Since opening in August, the training suite has already provided this much needed support to many families. Here are just some of their glowing comments;

> ***'The whole training was amazing and having the room made everything clearer and practicing made me feel as confident as I can be to take care of my daughter on my own when she will be home'***
>
> ***'The training covered all the scenarios and the situations that can happen to my child's condition. It helped to boost my confidence to act upon these situations'***
>
> ***'The practical sessions opened my eyes more and made me more ready for the future'***

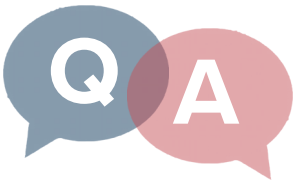
There are a few centres around the country that provide these better at home suites for a variety of medical simulation training. WellChild says;

*'WellChild Better at Home training suites provide home-from-home spaces where parents and carers can learn the often life-saving interventions needed by their child in a safe environment with state-of the art simulation equipment. The also provide the opportunity to train extended family members to widen the support network for families. Set-up like a child bedroom, they provide a safe space to prepare for providing care in the home' .*

Thank you to WellChild, Charlie and Alex for the amazing work they do along with the supporting network of the wider paediatric respiratory team at St Georges.

WellChild
the national charity for sick children

QUESTIONS & ANSWERS




# Ask the experts

**How well do sleep experts rate the sensitivity of WatchPAT analysis for CSR/CSA?**

There have been very few studies reviewing the sensitivity of PAT detecting CSR. A validation study performed by Pillar et al (2020) compared PAT with polysomnography across 11 sleep clinics (majority USA and Israel). The results showed that with an AHI of >15/hr the sensitivity and specificity was 67% and 100%, respectively. However, this reduced when reviewing those with an AHI < 15/hr. However, it must be noted that the sample used heart failure patients and hence more likely to experience CSA, suggesting an unrepresentative sample. Overall, identifying CSA on a PAT signal may be of significance and help to direct the clinician for further investigation based on the clinical circumstances of the patient.

**What are some of the clinical symptom's children display with OSA?**

There are several symptoms associated with obstructive sleep apnoea. Some of the commonly observed nocturnal symptoms are snoring, witnessed apnoeic events, sweating, noisy breathing, rest. This can lead to daytime tired, increased daytime naps and loss of concentration at school and in some children challenging behaviours.

**Are there any sleep courses and/or qualifications available?**

Yes, there are a few courses and qualifications depending on the level you are at. Take a look at the links below.

**SLEEP Certificates (artp.org.uk)**

**ARTP Courses**

**Sleep Medicine Examination | ESRS**

**Respiratory sleep certified training programme - ERS - European Respiratory Society (ersnet.org)**

**RPSGT – Board of Registered Polysomnographic Technologists (brpt.org)**