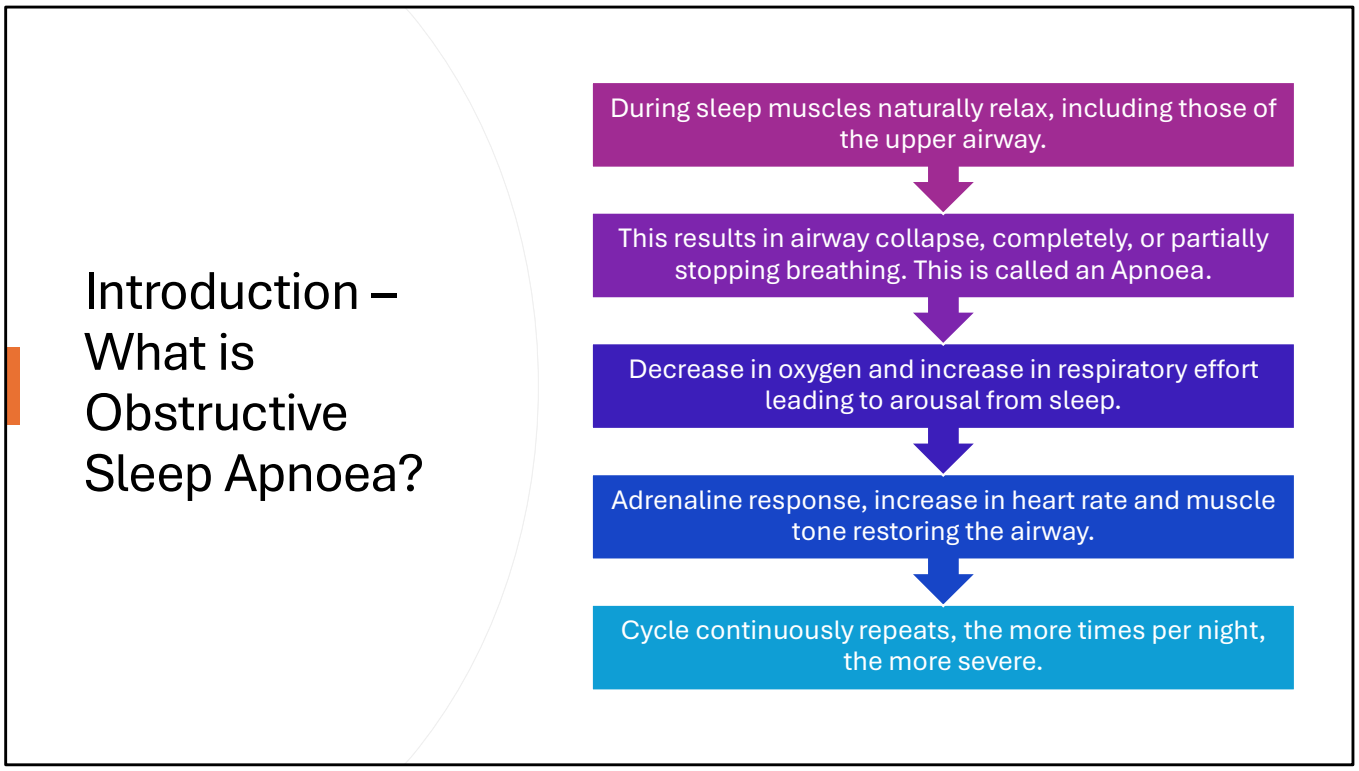
Oxford Sleep and Ventilation S11 CPAP Setup

General welcome.
Encourage asking questions and that if uncomfortable questions can be asked 1:1 at the end of the session.
This slideshow is available on our website and at request it can be emailed across or printed if no access to the internet. Just ask at the end of session.



Introduction – OSA diagnosis, basic physiology, and symptoms

- During sleep the body relaxes – reduced muscle tone = muscle relaxation.
- Muscles that constitute the upper airway also relax (reduced muscle tone in pharyngeal dilators – these muscles act to maintain upper airway patency).
- This can result in upper airway collapse as the collapsing forces overwhelm the dilating forces.
- Partial blockage of air = hypopnoea; Complete blockage of air = apnoea.
- Lack of oxygen and build-up of carbon dioxide in the blood, stretch receptors in the chest muscle aren't stimulated properly, this leads to an increased respiratory effort.
- It is this increased respiratory effort that causes arousal from sleep.
- Increase in heart rate, adrenaline and muscle activity which will resume breathing.
- Upper airway patency is restored so breathing resumes, preventing/resolving hypoxia and hypercapnia.
- This apnoea cycle happens many times an hour (mild OSA = between 5-15 events per hour, moderate OSA = between 15-30 events per hour, severe OSA = over 30 events per hour.)
- Explain that severity is doesn't matter as treatment is always the same and just as effective and it is more important about symptoms.

Signs and Symptoms

- Increased daytime sleepiness
- Unrefreshed and difficulty getting going upon waking
- Very loud obtrusive snoring
- Frequent need to use the toilet at night
- Frontal headaches upon waking
- Low mood and lack of motivation
- Difficulty losing weight
- Gastric reflux/heart burn
- Short-term memory and concentration issues
- Restless legs
- Increased risk of cardiovascular disease

Explain why it causes each of these symptoms in turn.
Sleepiness and difficulty getting up and going due to Sleep Fragmentation caused by arousals from sleep due to the obstructed airway and low oxygen.
Snoring due to vibration of the airway as it narrow.
Nocturia due to increased urine production.
Sometimes frontal headaches due to waste gases building up.
Low mood due to poor sleep.
Difficulty losing weight as you start to crave quick energy food and lack the motivation to make positive changes.
Reflux due changes in abdominal pressures during apnoeas.
Short-term memory and concentration due to poor sleep.
Restless legs due to the low oxygen – this should have been discussed when you spoke to the doctor.
Cardiovascular disease – high blood pressure, heart attack, and stroke being most common, due to constant stimulation from adrenaline.

Treatment options

- Weight loss – increases space in the mouth and airway, reducing risk of collapse. Can often cure OSA, but not always.
- Surgery – only used in patients with very large obstructive tonsils.
- Mandibular/Jaw Advancement Device

Surgery – UPPP (UvuloPalatoPhyringoPlasty) Used to be common, cuts away the Uvula and soft palate. No longer performed as it was found to be ineffective, only effective for a weeks/months. Could lead to quite unpleasant side effects – permanent sore throat, difficulty swallowing, VERY painful recovery.

MAD -A gum shield that brings the bottom jaw forward to give the upper airway more room.
Evidence suggests this is usually only effective against mild/low moderate OSA.
Not currently offered by every NHS organisation – including OUH, so must be paid for privately.
Requires 6-10 strong healthy teeth and can cause issues with the temporomandibular joint and teeth alignment.

Continuous Positive Airway Pressure (CPAP) - how does it work?

- Gold standard of care – guaranteed to treat OSA when used.
- It takes in filtered room air, no oxygen or other gases are added. This air is then pressurised through a tube that connects to a mask worn on the face.
- This increased pressure of air completely resolves physical obstruction.
- We use automatic pressure devices that change the pressure throughout the night to suit what each patient needs.
- Our devices are remotely monitored using the mobile phone network, no Wi-Fi is required.
- This is a treatment and not a cure, if CPAP is not used then apnoeas will resume.

Setting up the S11

The first time you turn on the device it will give you a choice of Clinician or User.

Select “User”, “Next”, then “New to PAP” even if you are familiar with it.

Rate your normal level of daytime sleepiness.

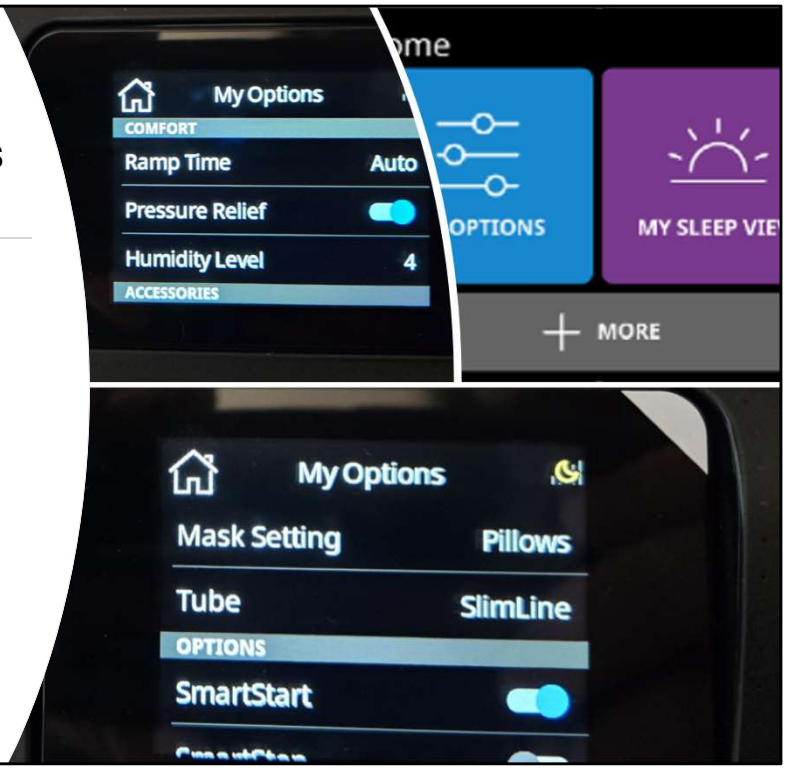
If you have a Smartphone we highly encourage you to use the app.

You can link the app directly to your machine in the menus later, for now select “No Thanks”.

Your machine will now be ready to use.

CPAP settings: My Options

- My Options:
  - Ramp time
  - Pressure Relief
  - Smartstart and Smartstop
  - Humidifier
  - Climate control



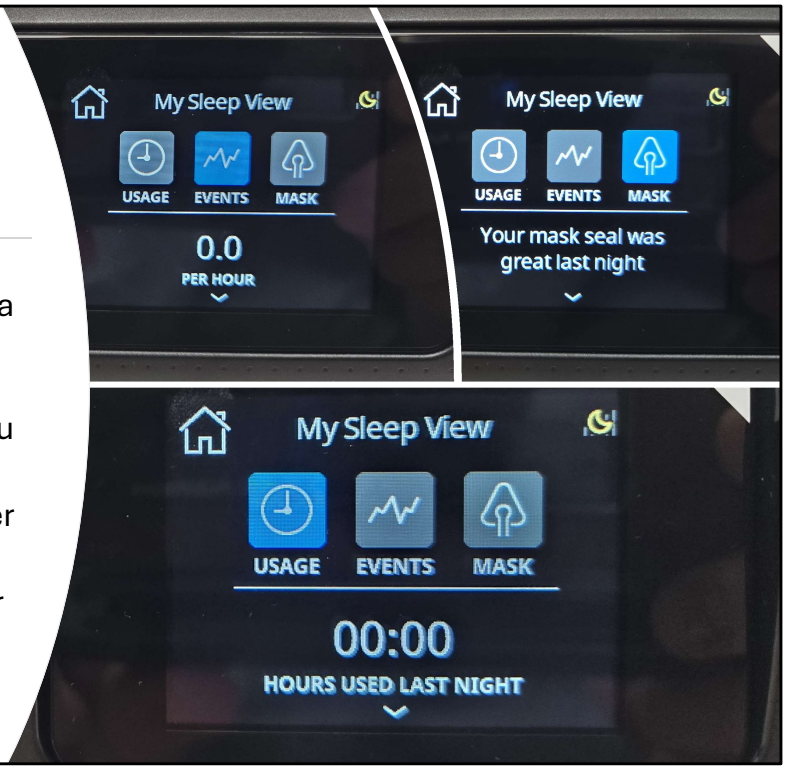
- Clarify that a blue line with the circle to the right is on, a gray line with the circle to the left is off.
- Ramp time - Starts off at a low pressure to make it easier when falling asleep. Machine automatically detects sleep onset as breathing pattern changes; it then ramps up to treatment pressure based off of ResMeds Autoset function.
- EPR (Expiratory pressure relief) – This lowers the positive pressure being applied by the device during expiration which can make breathing out feel easier. This is because most events occur during inspiration so a lower pressure during expiration should not impact on treatment as much.
- Smartstart – This automatically starts the treatment pressure when the mask is fitted and the patient breathes in a few times, without having to press the power button (can be useful for patients with hand disabilities/ arthritis). This is on as standard.
- Smartstop – This automatically turns off the pressure when the machine detects the mask has been taken off. However, it is quite sensitive to leak and can turn itself off even whilst still being work. This is off as standard.
- Humidifier – this is a solution to dry mouth which many CPAP patients experience (humidifier adds moisture to the air). Try without humidifier first for a week then, if experiencing a dry mouth, trial CPAP with the humidifier. Show how to remove machine

side piece (and explain not to throw this away as it needs to be fitted to the machine if it is being transported). Use either filtered water, cheap bottled water, or boiled tap water that has cooled down (avoid water straight from the tap). Change water daily and fill to the max line (show how to open humidifier). This needs hand washing weekly with warm soapy water, it is dishwasher safe on the top rack (use plain washing-up liquid; no soaps/ baby wipes/other chemicals) and leave to air-dry. Every month at least (or if you see lime scale/sediment build up) wash with a weak acid (lemon juice or white vinegar) and half water and use a soft bristled brush to scrub; again, leaving to air dry. Show how to insert humidifier and change humidity settings on my options. Explain a high humidifier level means more moisture and therefore less dryness. If the patient experiences rainout then they will need to request a heated tube.

- Climate control – this appears when using the humidifier and heated tube. The machine will automatically change the temperatures. It can be changed to manual where you have full control over the humidifier and heated tube temperature. If this is required then we will explain this separately rather than at the session today.

CPAP Settings: My Sleep View

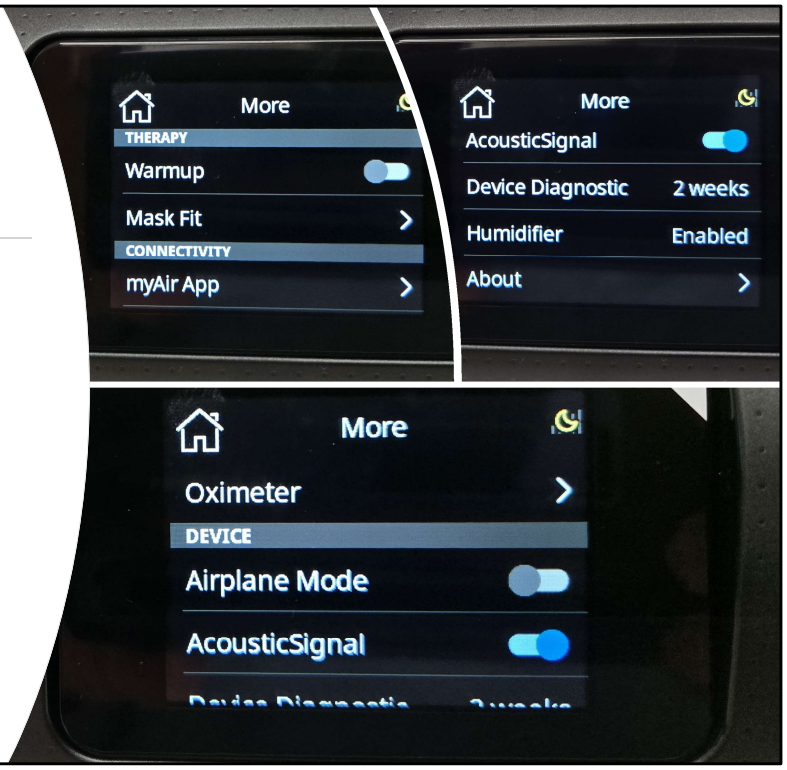
- Here you can check your own data to see how effective your treatment is.
- Usage shows how many hours you used the device last night.
- Events shows how many times per hour you had apnoeas.
- Mask lets you know how well your mask sealed.



Usage – explain that more usage will always give more benefit. There is no maximum usage and avoid mentioning any specific amount of minimum time to reach as sometimes patients take that number away as a maximum and do not try to go above this.
Events – aiming for <5 per hour but in the beginning, it is perfectly normal for this number to be raised. Once well established on treatment this number should be down. If mildly raised but all symptoms resolved we likely will not change anything.
Mask – If a bad seal but the patient is happy, no problems and a good benefit, no action needed. If a good seal but the patient is being disturbed by leak, still raise to sleep service to discuss mask seal.

CPAP Settings: + More

- Warmup
- Mask Fit
- MyAir App
- Oximeter
- Airplane Mode
- Acoustic Signal
- Device Diagnostic
- Humidifier
- About



Warmup – pre-heats the humidifier so the air is slightly warmer, there will be a slight flow of air whilst this is on to avoid condensation building up inside the device and tubing.

Mask Fit – This turns up the pressure to a high level to check for mask leak at higher levels of pressure.

MyAir App – We will talk about this in the next slide.

Oximeter – We do not use this feature. It allows you to connect compatible BlueTooth oximeters to your CPAP so that data is all collected into one report.

Airplane Mode – Turns off the modem and Bluetooth inside the device, to be used when using the device on aeroplanes.

Acoustic Signal – There is a very small microphone inside the motor that listens once every 2 weeks for 30 seconds in the middle of the night. This is purely checking for any change in the volume of the motor to see if there are any potential faults. If any changes are detected, then this is raised to the ResMed Technical team who will let the appropriate hospital know which device serial number is potentially faulty so we can raise it to the patients. The audio files are automatically deleted and are not able to listen to noises outside of the device. If this still bothers patients then it can be turned off here. However, if your device develops a loud noise before you're due a replacement we will require you to turn the Acoustic Signal back on or provide audio/visual evidence themselves before we will exchange the device.

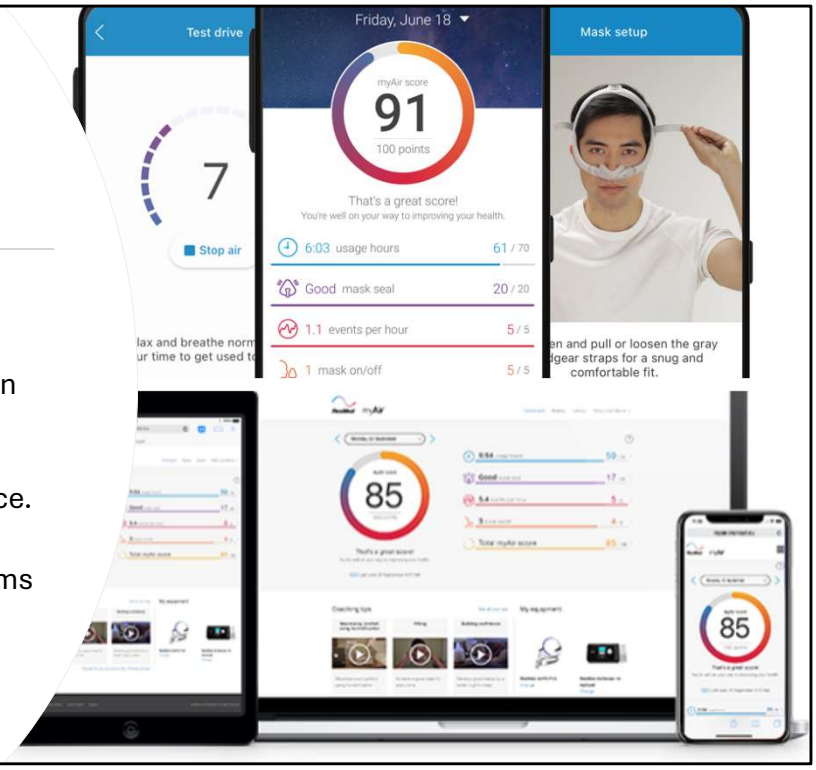
Device diagnostic – This is how frequently the acoustic signal checks the motor, as default we have it on once every 2 weeks.

Humidifier – This will say enabled whilst your humidifier is plugged in, even if you have the humidifier turned off it will still say enabled if humidifier is plugged into the side.

About – Serial numbers, total run hours etc...

MyAir App and Website

- Easy to use online support programme and app.
- Access to a more in-depth guide on your CPAP data.
- Multiple tutorial videos on mask fitting and taking care of your device.
- Care check-ins to see how you're getting on that will flag any problems to our specialist team.
- Proven to improve patient compliance.



Mask Fitting

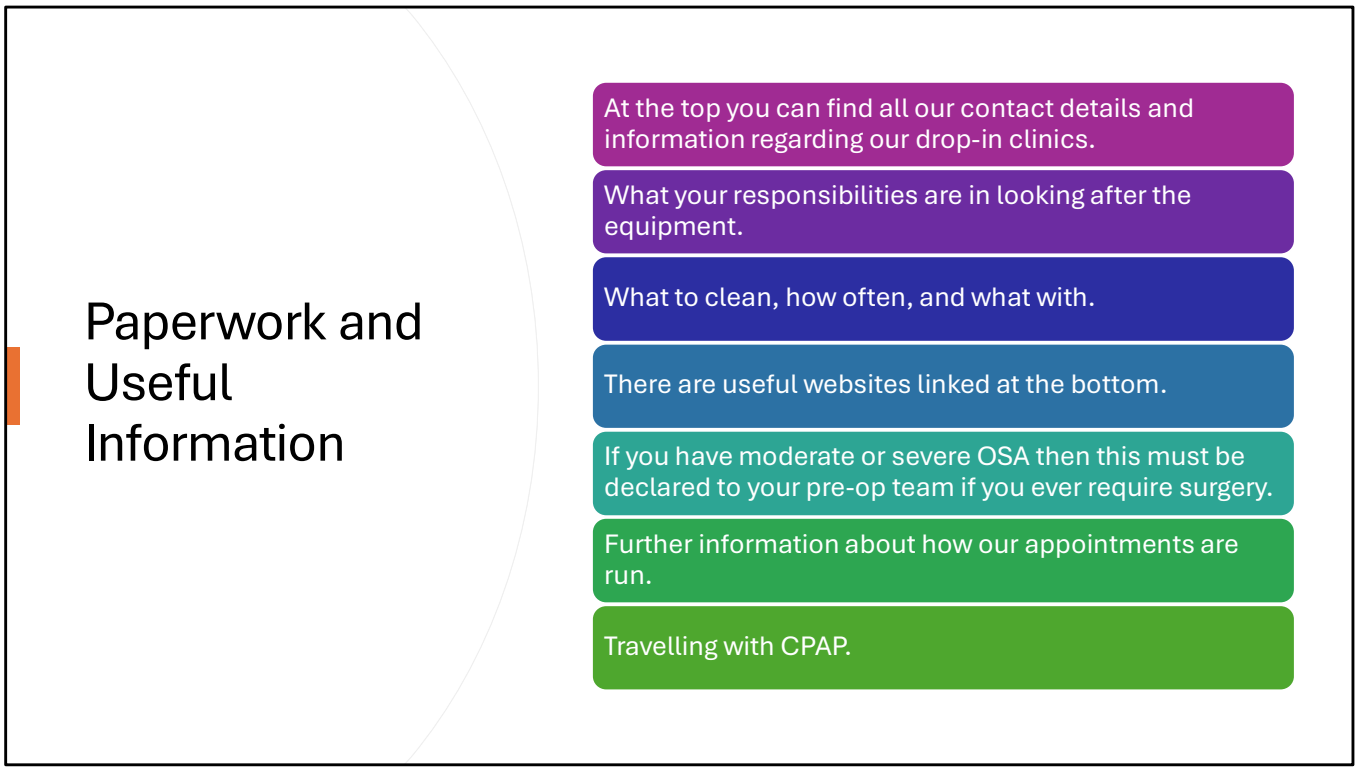
- There are several different styles of mask: full face, hybrid, nasal, pillows. We tend to start with either full face or hybrid.
- Making sure you have the right size is important.
- Take off the magnets, pull the straps over your head, attached the magnets, tighten the top and bottom Velcro.
- It is important to keep the Velcro as loose as possible whilst still maintaining an adequate seal.
- There are lots of places where you can find videos on mask fitting and care - MyAir app, OXPAP, YouTube.

Mask style – speak about requiring mouth to be closed when using a nasal mask which can be more claustrophobic than just using a full-face mask to begin with. We only use nasal masks if full face or hybrid cannot be tolerated.
Highlight where to find all the videos to do with mask fitting – MyAir app, OXPAP.com, youtube by searching for your mask and brand.

Cleaning your Equipment

- This is one of the single most important parts of CPAP therapy.
- Keeping your mask clean will ensure a better seal, and less irritation to your skin.
- The cushion of the mask is cleaned daily with warm soapy water. Unscented washing-up liquid, not hand soap, or shampoo, or baby wipes.
- The frame and straps of the mask should be cleaned weekly in the same manner.
- The tubing and humidifier should also be cleaned with warm soapy water once a week.
- The humidifier should also be descaled once a month as a minimum.

Humidifier descaling - Use a mild acid and water, such as lemon juice or white vinegar. Use a roughly 1:1 ratio (this doesn't really matter, just use more acid and soak for longer if the scale isn't cleaning off), then leave to soak for 10 minutes before rinsing and scrubbing with a soft bristled brush or sponge.



OXPAP.com – links to useful videos, mask fitting, SATA, Hope2Sleep, the one of our staff member is for an old device and so should not be used for people using the S11.

Sleep Apnoea Trust – Charitable organisation containing the single best accumulation of information about Sleep Apnoea and CPAP aimed at patients. This includes many useful leaflets, 2 of which we provide you with today. As well as an Airline guide for when you travel with your machine.

Hope2Sleep – Another charity but this is a shop that sells accessories to CPAP that aren't available on the NHS, such as tube liners, battery hire, and many other items.

Travelling with CPAP – When it comes to travelling use the Sleep Apnoea Trust guide when selecting who you fly with. The CPAP goes on the Aeroplane as extra free hand luggage. You still take your normal hand luggage as well. We can provide an airline letter to you on request. This letter should be issued within 3 months of your flight date as this is a requirement for some airlines. Batteries can be hired or purchased from Hope2Sleep if required, we do not provide these. We can loan a car converter cable if needed. If you live on a boat/off-grid one can be provided permanently.

What Comes Next?

- Take your time getting used to CPAP.
- Using CPAP is a marathon not a sprint. Most people take 4-12 weeks to get used to using CPAP.
- It can be worn during the day when watching TV, reading a book, or playing a game.
- Avoid long breaks off the machine as this can set you back to the beginning.
- Speak to us or come to drop-in if you're really struggling to tolerate the mask. We're here to support you!
- We will book you in for a 4-week telephone review. Should you have any problems before this then get in touch, either via email, telephone, or drop-in.

Using CPAP during the day - This won't provide any symptomatic benefit, but it will help you get used to the mask.