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**How to choose...**

## **Positive Airway Pressure (PAP) therapy**

Authors & reviewers:

Adrian Zacher MBA

Dr Lizzie Hill PhD RSPGT EST



How to choose...

Positive Airway Pressure (PAP) therapy

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How to choose...

Positive Airway Pressure (PAP) therapy

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### Part One

#### Introduction

Bizarrely, there is a similarity between dating and learning how to choose a Positive Airway Pressure (PAP) therapy. Seriously, there is!

Think of it like this: first you have to know yourself, then you gather knowledge about the other person, or in this case **PAP**, and then you apply that knowledge to find out if you might be compatible. Finally you are in a position to make your choice.

This Guide assumes you have been **diagnosed** with obstructive sleep apnea/apnoea (OSA), and might now be facing the possibility of using a PAP machine each night.

So, coming back to the dating analogy, **Snorer.com** is here to help you make the connection between your needs and the preferences of the other party (i.e. PAP). OK, this Guide won't get you a super 'hot' date, but it may help you make more informed choices about PAP.

Of course, *it does not replace medical advice from your Doctor*, who you should consult if you are in any doubt.

Working through this **Snorer.com** Guide is not a passive process – you will need to print page 7 and write down your answers.



#### ACRONYM ALERT!

PAP = Positive Airway Pressure



A diagnosis can only come from a medical professional and doesn't mean a 'self-diagnosis.'



#### ACRONYM ALERT!

OSA = Obstructive Sleep Apnoea

The US spelling is 'apnea' whereas the UK spells it 'apnoea.'



## How to choose...

### Positive Airway Pressure (PAP) therapy

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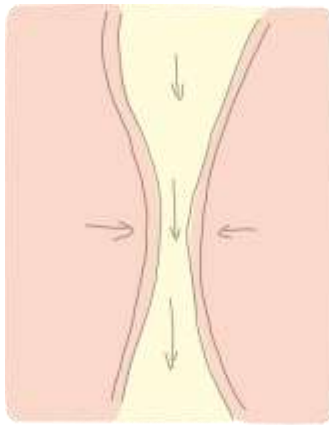
#### How it works

In the diagram below, on the left your airway is narrowing as you breathe in, creating the snoring noise and possibly about to collapse – this is known as an obstructive apnoea.

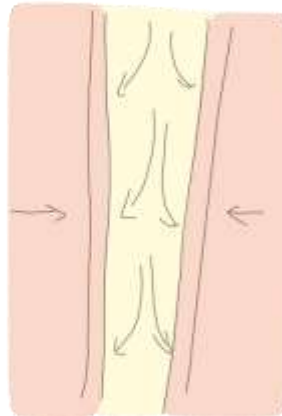
The diagram below on the right, illustrates how PAP therapy 'splints' open your airway, preventing the narrowing and the obstructive apnoea.

We mean OBSTRUCTIVE sleep apnoea when we say 'sleep apnoea'. Explained: Obstructive = an obstruction (used to differentiate the problem from Central sleep apnoea). Sleep = you are not awake when this happens. Apnoea = Medical word for a collapse or closure. Put it all together and you have, in effect, self-suffocation when asleep!

**Figure 1: How air pressure 'splints' open a narrowing airway**



**LEFT:** The impact of a narrowing airway on the air you breathe. The air has to travel faster as the airway narrows. If the airway narrows sufficiently to reduce airflow, it is a hypopnoea. If it collapses on itself, it is an apnoea.



**RIGHT:** How increased air pressure holds (or splints) open the airway.



### Knowing yourself

Please print this page then write your answer below each question:

1. Can you easily breathe through your nose – do you suffer from nasal congestion/colds?
2. Have you had palatal surgery for snoring?
3. Do you have facial eczema/acne/rashes?
4. Do you breathe through your mouth or does your mouth fall open when you sleep?
5. Do you go camping or do you travel frequently?
6. Do you have facial hair?
7. Do you like to read in bed before going to sleep and wear reading glasses?
8. Are you a restless sleeper?



How to choose...

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## How to choose...

# Positive Airway Pressure (PAP) therapy

### Some info on...

### Positive Airway Pressure (PAP) therapy

PAP therapy involves wearing a mask over your face while you sleep, to force air through your nose (and sometimes your mouth as well). This 'pressurised' air prevents your airway from closing when you breathe in. There are several PAP machine manufacturers and it is considered the best solution for moderate to severe sleep apnoea. For one reason or another, it doesn't work for everyone, and some people find wearing a mask in bed every night difficult to get along with.

PAP was first invented in the 1980s, and the technology has developed since then. However, overcoming the difficulties that PAP users experience remains a development focus for manufacturers and new features such as:

- improved mask design,
- warming and humidifying the air,
- raising the air pressure from a low level as you fall asleep and
- varying the air pressure as you breathe in and out,

are all fairly recent advances.

Some of the sections below may not immediately apply to you, particularly if your healthcare system makes choices for you, but knowing what is possible, how best to use it, what the jargon means and ultimately how to choose, is what this document is about.

Remember the answers you wrote on the page you printed? Now is the time to refer to them while reading why each one is important.



#### ACRONYM ALERT!

PAP = Positive Airway Pressure – used to keep the airway open



#### JARGON ALERT!

Snorer.com tries to avoid jargon, but others still use it, so we'll try to let you know what the jargon means. You can also use the Snorer.com Jargon Buster at: <https://snorer.com/jargon-buster/>

## How to choose...

# Positive Airway Pressure (PAP) therapy

The significance of the questions you answered explained:

### 1. Can you easily breathe through your nose – do you suffer from nasal congestion/colds?

If you have difficulty breathing through your nose you need to tell your medical practitioner. In the immediate short term, a mask that covers BOTH your nose and mouth can help.

However, mouth breathing can also be a symptom of untreated OSA, as the body's way of trying to get air in through an obstructed airway during the night. You may find that once you start using a nasal mask, your mouth automatically closes.

If you have real problems keeping your mouth closed, a chinstrap can help or there are oral masks which fit into the mouth and bypass the nose altogether. Resolving the problem with your nose, perhaps with medication or surgery, may help you breathe and sleep better.



#### ACRONYM ALERT!

OSA = Obstructive Sleep Apnoea

### 2. Have you had palatal surgery for snoring?

Ear, Nose and Throat (ENT) surgeons can undertake operations to reduce the amount of soft tissue at the back of your mouth. For some people this helps reduce snoring; however for others it only provides short-term relief, with snoring returning as the scar tissue heals.

Unfortunately, this type of operation can subsequently make it more difficult to use PAP if symptoms return – in certain instances the pressurised air may go up your nose and out of your mouth, rather than holding open the airway and helping you breathe

## How to choose...

### Positive Airway Pressure (PAP) therapy

(because you don't have a soft palate anymore). This is known as 'mouth leak'. ENT operations today are very carefully performed to NOT have this impact. If you have a problem with 'mouth leak' then a full face mask can help.



**ACRONYM ALERT!**

ENT = Ear Nose & Throat

#### 3. Do you have facial eczema/acne/rashes?

This can be a challenge. For PAP to work you need to wear a mask on your face – and the mask itself and the air flowing from it may aggravate your skin condition. Conversely, some creams and medications can damage the mask, in particular, moisturisers with petroleum-based ingredients might degrade silicone masks faster than others and you must NOT use petroleum-based products if the vapours or product might enter the airways. Comfort accessories such as a fabric CPAP liner or silicone-filled cushions may help. Speak with your medical practitioner about this, as PAP may make it harder to clear up.



**ACRONYM ALERT!**

PAP = Positive Airway Pressure

#### 4. Do you breathe through your mouth or does your mouth fall open when you sleep?

This is not a major problem in itself, but something that you and your medical practitioner, need to know about. It means that a solely 'nasal' mask will not help you – and nasal pillows are out. You need a 'full face' or oro-nasal mask – one that covers both your nose and your mouth at the same time. Alternatively, try a chin strap or oral mask.



### 5. Do you go camping or do you travel frequently?

If yes, then it would make sense to get a PAP machine that is easy, light and compact to carry and can run from battery power. There are even machines available which are solar powered!

### 6. Do you have facial hair?

If you have hair where the mask will attempt to seal to your face, it can cause air to leak out from your mask... just like it would with sub-aqua. This creates noise due to air leakage and as the machine works harder. It may also impact how effectively you are treated (for example if the machine does not adequately compensate for the pressure drop). Think carefully about which mask will fit best or, if all else fails. shave off the hair!



### 7. Do you like to read in bed before going to sleep and wear reading glasses to do this?

You can still do this with particular PAP masks – discuss this with your medical practitioner.

Some 'full face' masks that have a forehead support won't suit you because you won't be able to wear your glasses.

You can get full face masks without forehead support - ask to see if they suit you. Ideally, however, PAP should be the very last thing you do before you go to sleep – put away your book, pop on your mask, turn the light off and try to sleep – and using the machine and mask whilst awake can be uncomfortable.

### 8. Are you a restless sleeper?



The route the air tubing takes from the machine to the mask may, in some circumstances, cause problems if you are a restless sleeper.

Factors such as how the tubing connects to the mask, i.e. can it swivel, how long, lightweight, and flexible it is; all affect how well the PAP machine will provide therapy. You can purchase a “hose lift” if this is a real problem, which effectively takes the weight of the hose.



#### ACRONYM ALERT!

PAP = Positive Airway Pressure

Having answered the questions you printed out, and reading the ‘answers’ above, you should now know a little more about yourself in relation to PAP. Keep your completed answer sheet to hand and continue reading, to build a little knowledge about PAP treatment... (we’re setting the scene for your ‘date’ here!)

**It is important that regardless of your answers to the questions above, that you should NOT use petroleum-based products on your skin if there is a chance that the vapours from the product, or the product itself could get into your airway.**



### Part Two

#### First try out – the ‘First Intention’ concept

Have you ever had the experience where you go shopping and spend all day trying out lots of the different things you’re looking for, only to go back to the first one you tried? That is known as ‘first intention.’

In the context of OSA therapy, the ‘first intention’ concept is most often applied to the mask. The first mask you try becomes your reference point so you compare everything else to it, which is only logical as you have nothing else to go on. Difficulty arises however, when what you first experienced wasn’t actually the most appropriate, becomes obsolete or your condition changes. Change is never easy, especially when you believe something is working for you; it doesn’t matter what the new product promises!



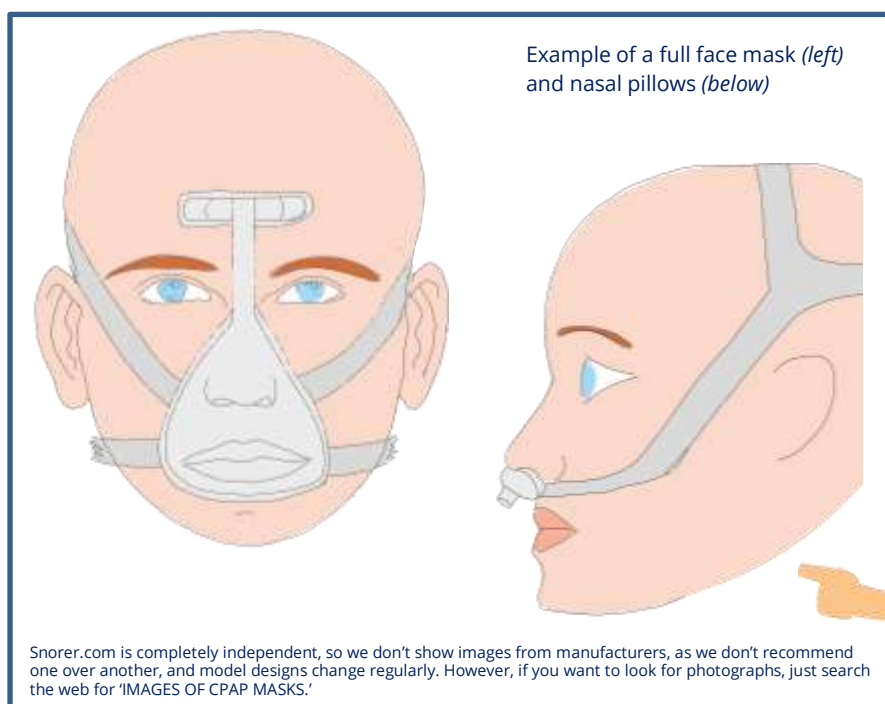
#### ACRONYM ALERT!

OSA = Obstructive Sleep Apnoea



#### JARGON ALERT!

You may find that the face mask is sometimes referred to as the ‘patient interface.’



## How to choose...

### Positive Airway Pressure (PAP) therapy

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So, when you are 'new' to PAP therapy (the medical profession will 'charmingly' refer to you as a 'naïve' patient) the solution would seem simple: get it right first time around. In other words, find the most appropriate mask at the beginning! Sadly, this is not as easy as it would seem, as some issues may only arise when you start therapy.



#### ACRONYM ALERT!

PAP = Positive Airway Pressure

Before we go much further, a note of about acronyms and jargon, you will be amazed how many there are! A Jargon Buster which also contains acronyms is available on the **Snorer.com** site at: <https://snorer.com/jargon-buster/>. We'll explain any acronyms and jargon used in this document, and we do our best to avoid using jargon... as it's not our style! (It's quite difficult sometimes though!)



#### JARGON ALERT!

If we use some jargon, we'll explain it and add a link to the Jargon Buster!  
<https://snorer.com/jargon-buster/>

## How to choose...

## Positive Airway Pressure (PAP) therapy

### You've got the machine home but...

### "I am never going to get used to this..."

As with anything new, you need to have plenty of patience and give yourself time. You wouldn't learn to swim by diving in the deep end of the swimming pool, but if you've been diagnosed with sleep apnoea, you might be so tired, that everything seems a hassle. Now's the time to ask for support from a partner if you have one... so let them know.



A diagnosis can only come from a medical professional and doesn't mean a 'self-diagnosis'

The below is a suggested step-by-step process to carry out DURING THE DAY.

- Give yourself a break and keep things simple. Start slowly and build up gradually.
- Separate the component parts. Just try wearing the mask at this point... no hose or machine.
- Try wearing just the mask on its own and practice doing this in the evening while relaxing – maybe in front of the TV, long before you attempt to wear it to sleep.
- Try not to fiddle with it – set up the straps once so it is comfortable and don't over tighten. The mask should sit comfortably on the face.
- After a time (which may be several days), when you can wear the mask without a problem, attach just the hose – do not connect up to the machine yet.
- Repeat this over a few evenings if necessary.
- When you are completely comfortable with the above, connect the hose to the machine and turn it on - see how the air pressure feels. Keep it short, just 2- 5 minutes.
- Repeat this if you need to until you are ready. When you do take the plunge to use the machine at night, the important thing is to stick with it every night. It is going to be strange and it will feel odd.



## How to choose...

### Positive Airway Pressure (PAP) therapy

Persevere with PAP for at least a couple of week's consistent use, every night, before querying anything. If things are set up correctly - you should be fine – if not then, well that might be one of the reasons for reading this. Once again, consult your Medical Practitioner and keep up the dialogue. **Evidence has shown that support during the first few weeks can increase your success with PAP in the longer term<sup>1</sup>**, so if you're struggling, don't just give up – contact your Medical Practitioner or PAP provider!

<sup>1</sup> SMITH, I. et al "Educational, supportive and behavioural interventions to improve usage of CPAP machines for adults with OSA", Cochrane Database of Systematic Reviews, 2009



#### ACRONYM ALERT!

PAP = Positive Airway Pressure

### The wrong mask for me

Manufacturers are acutely aware that PAP masks are not sexy, can be cumbersome and may be uncomfortable. They spend quite literally millions creating different features, such as a quieter air 'exhaust' – the air that you breathe out. There are now many mask styles, in different sizes with various straps to hold them on to your face (known as 'headgear') – there are even leopard print ones! Some manufacturers now produce masks specifically designed for women – for example, with straps that go behind the ear that don't affect the hair style. The basic variations are discussed here - try them out and be patient. Patience and persistence are important as you need to be comfortable with your PAP to be able to wear the mask all night. Your Sleep Centre should take time to try out a few different masks and find the right size and style for you when you have your education session. If they don't offer – **ask!**



If you are struggling, don't suffer in silence. With the right help, you can find a mask that works for you.

Everyone has different needs and face shapes, so it is really important to take your time and make sure you have a mask that suits you and fits you properly. Be really careful NOT to over-tighten the mask straps. It should sit comfortably on your face. Not only will it make it more uncomfortable but the mask will be 'crushed' onto your face, creating (not solving) air leaks, and then it will be unable to adapt to your features. Other masks have a double wall or 'cushion' seal that is soft

An education session will be provided by your Sleep Centre to help you find the right machine, mask and any accessories to ensure you are successfully and effectively treated.

## How to choose...

### Positive Airway Pressure (PAP) therapy

and flexible to adapt to your nose in particular – be careful as the seal is easily squashed. Try fitting the mask with the machine running, tightening it slowly until the leak stops. You want to have the mask as loose as possible but with no air leak.

Modern PAP machines are in themselves almost silent. However, the noise of the air escaping from your mask can perhaps be considered 'white noise'. Ear plugs or an 'anti-noise' machine can sometimes help, and masks are available that minimise the 'exhaust' noise. Using an auto-titrating PAP machine can minimise noise, especially if you require higher pressures. It can do this because it varies the pressure in response to changes in your breathing, meaning it always runs at the lowest pressure required at any given time – see below.

More advanced PAP machines can detect air leakage through airflow feedback, if it has been programmed with your chosen mask. The machine uses this information to automatically adjust the air pressure if your mask leaks. Without this technology, a leaky mask means you are not getting the air pressure that you need to hold your airway open, so you can breathe! Some people notice the noise of the air escaping, or their skin or eyes become sore, dry or teary. Depending on what type of mask seal you have, if you experience these problems, you should adjust the straps and try to get a better fit. If you still have problems, contact the Sleep Centre where you were originally fitted.



#### ACRONYM ALERT!

PAP = Positive Airway Pressure



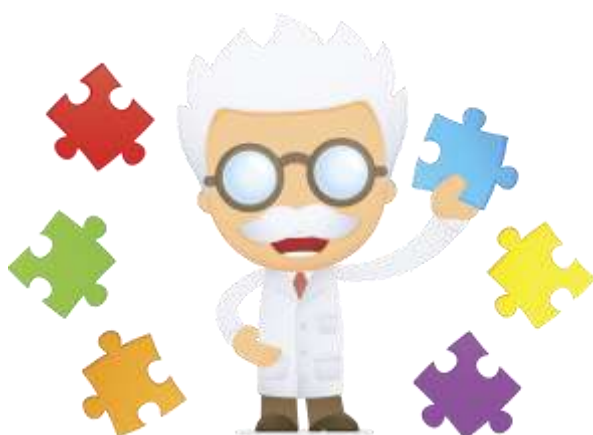
#### JARGON ALERT!

An auto-titrating PAP machine in very simple terms means it automatically adjusts the air pressure according to your need.

Check out the Jargon Buster at:  
<https://snorer.com/jargon-buster/>



If you are struggling, don't suffer in silence. With the right help, you can find a mask that works for you.



## How to choose...

## Positive Airway Pressure (PAP) therapy

Questions (and suggestions for getting a better fit):

- **Have you got the correct size mask?** Some of the more sophisticated masks have a sizing guide to make this easier to determine.
- **If you have a double wall seal** (sometimes known as a cushion) then SLACKEN the straps, then gently lift the mask away from the face and place it back on. This allows the double wall to inflate (a bit like a hover craft) and seal better to the curve of your facial features.
- **If you have a gel cushion**, TIGHTEN the straps.
- **If your mask has an adjustable forehead assembly**, use it – if air is leaking into your eyes, angle the mask towards the face. If air leaks at the chin/lip, tilt the forehead assembly away from the face.

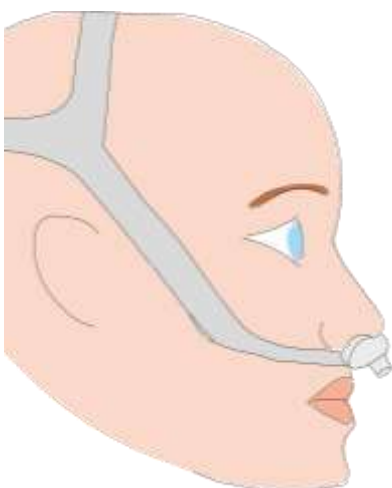


Masks known as **nasal pillows** are quite minimal in bulk and only plug up each nostril. Some people find nasal pillows a bit tickly and they do have a lower maximum air pressure than other masks, so will not be suitable for everyone. They have slim straps that are designed to be out of your line-of-sight.



### JARGON ALERT!

There are masks called nasal pillows as they only plug up each nostril, and run at a lower maximum air pressure. Check out the Jargon Buster at: <https://snorer.com/jargon-buster/>



Example of nasal pillows (*left*), showing how they can be held in place, and what the 'pillows' look like when not up the nose! (*below*)



Snorer.com is completely independent, so we don't show images from manufacturers, as we don't recommend one over another, and model designs change regularly. However, if you want to look for photographs, just search the web for 'IMAGES OF NASAL PILLOWS'.



## How to choose...

# Positive Airway Pressure (PAP) therapy

Nasal pillows are good if you feel claustrophobic with a conventional mask or if you have sensitive skin, due to their minimal contact with your face. They are great for reading in bed, if you wish to do so (but we have already advised against that). Masks are also available which combine nasal pillows with an oral mask (see below for more on what an oral mask is).

**Nasal masks** that only cover your nose are available and they leave your mouth accessible to speak or take a sip of water, although air will escape when you open your mouth, which can feel and sound a bit strange! These are OK if you normally sleep with your mouth closed. However, if you open your mouth at night (known as 'mouth leak'), the pressurised air simply goes up your nose and out your mouth, instead of down your throat to your lungs. This means your **OSA** will not be adequately treated. If you use an **auto-titrating** PAP machine, mouth leak can 'confuse' the machine, causing the pressure to ramp up unnecessarily. You therefore might need to try a chinstrap. (That's why we asked you about whether you open your mouth at night!)

There are masks that only cover the nose, allowing speech, but the escaping air can sound and feel strange.



### ACRONYM ALERT!

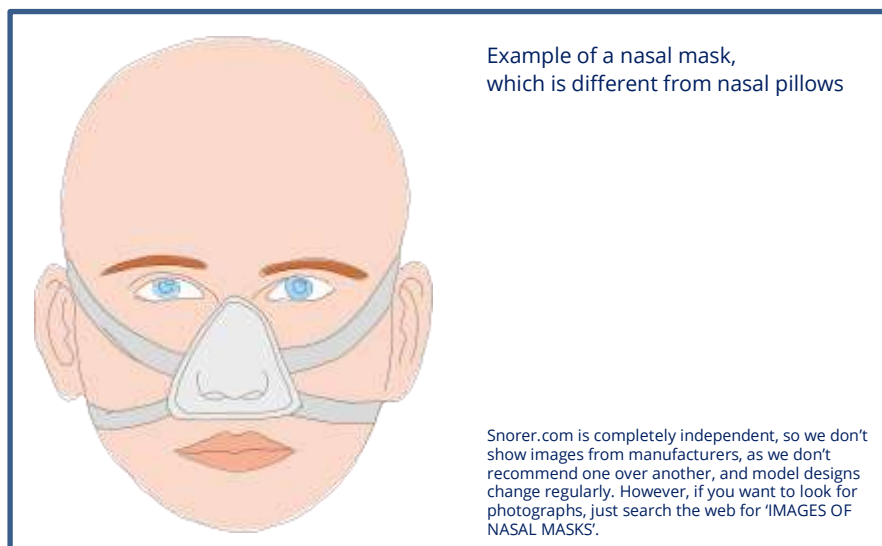
OSA = Obstructive Sleep Apnoea



### JARGON ALERT!

An auto-titrating PAP machine in very simple terms means it automatically adjusts the air pressure according to need.

Check out the Jargon Buster at:  
<https://snorer.com/jargon-buster/>



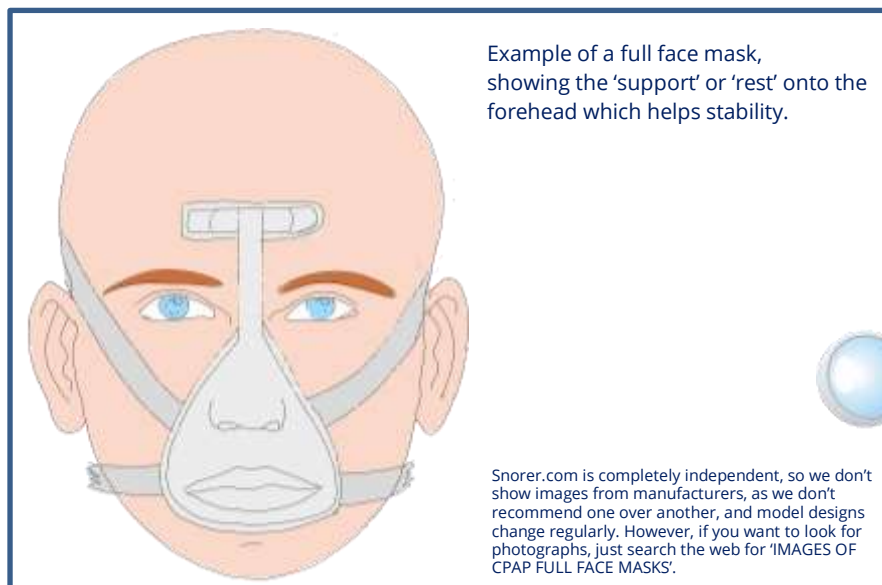
## How to choose...

### Positive Airway Pressure (PAP) therapy

**'Full face' masks** cover both your mouth and nose and are ideal for patients that open their mouth. Despite the name, the majority don't actually cover your whole face! Certain models have a support that rests in the middle of your forehead, which some people find unsettling as it comes up above the eyes. However, this does keep the mask stable, in position and helps prevent leak. 'Full face' masks are far from discreet, but are not easily displaced so they work well if you are **restless sleeper**, require **higher air pressures** or **sleep on your side**.

As mentioned before, some people may find a mask over the nose and mouth claustrophobic.

'Full face' masks cover the mouth and nose and are ideal for those who open their mouth whilst sleeping.



Certain PAP masks accommodate **reading glasses** (for example nasal pillows, as mentioned earlier) which may suit you if you like to read in bed before going to sleep. Other masks are affected if you have **facial hair** where the mask seals onto your face, causing air leakage (noise and loss of effect). Consider nasal pillows, or an oral mask, which we'll look at now.



## How to choose...

### Positive Airway Pressure (PAP) therapy

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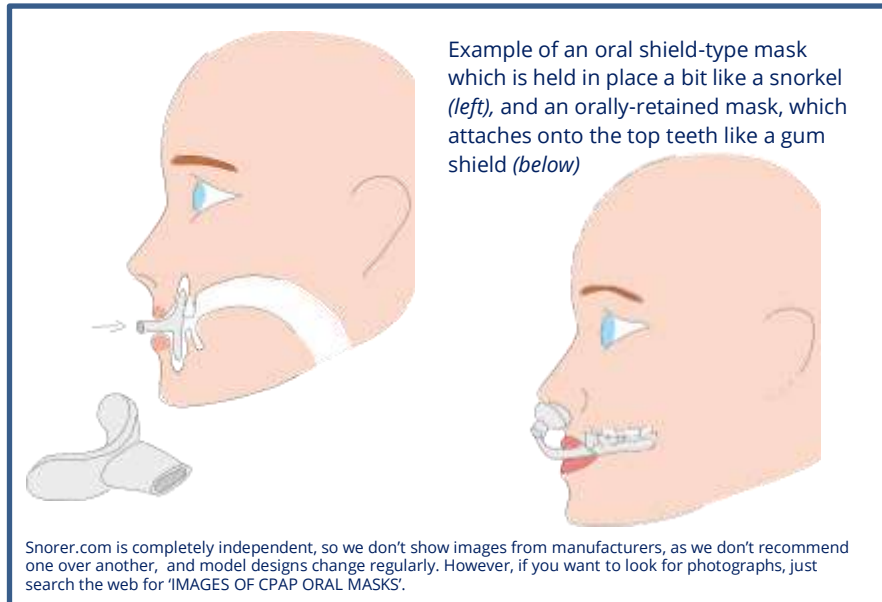
**Oral masks**, as the name suggests, fit in the mouth only. The mask fits into the mouth and seals around the lips, similar to a snorkel.

These have the benefit of minimal contact with the face, which is great for people with **skin problems** or prone to breakout due to mask sensitivity. However, they can cause excess salivation and some people find it difficult to tolerate having the mask in the mouth.

An oral mask fits at the front of the mouth, a bit like a snorkel.

**Orally retained masks** are mounted on a 'gumshield' like device held onto the upper jaw. These have a 'tongue' that sticks out through the lips to hold a nasal pillow type mask in place. This eliminates 'head gear' straps and may prove more comfortable. Further research is required before these can be independently recommended.

An orally retained mask eliminates the need for straps as it is mounted on a 'gumshield' like device held onto the upper jaw.



## How to choose...

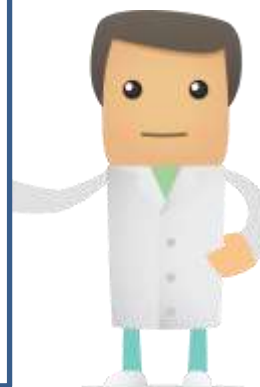
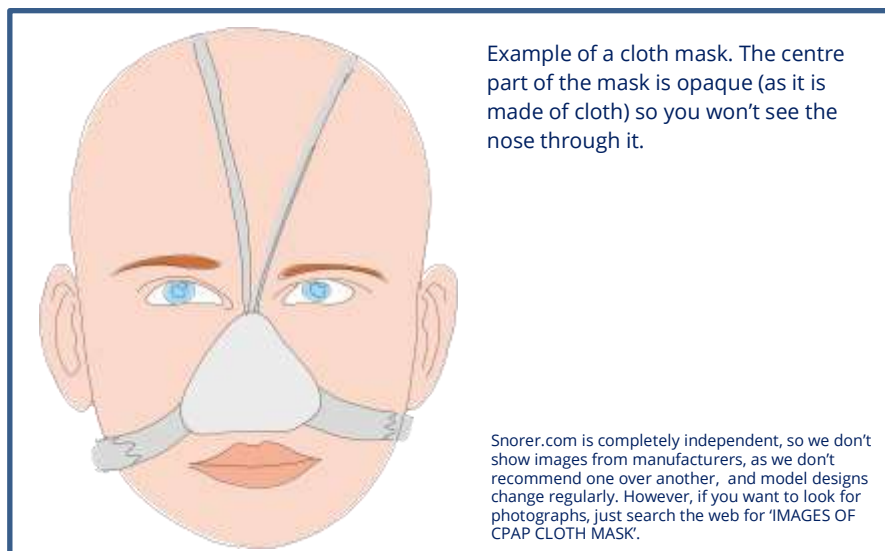
### Positive Airway Pressure (PAP) therapy

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While PAP masks are usually adjustable and come in various sizes, it is important to realise that there are no standard sizes between the manufacturers. So if you are a 'medium' in one manufacturer's mask you may be something else entirely in another's. Be patient, ask for (and accept) help ensuring your mask fits properly and comfortably. Finally, remember the shape of your face changes when you lie down, so try it laid flat, and also lying on both sides. If you are using an auto-titrating device, ask your provider to ramp up the pressure during your education session to see if the mask maintains its seal at higher pressures.



**Cloth masks** may suit some people, although questions remain over how much of the air escapes through the cloth. Further research is required before these can be independently recommended, but some users find them comfortable due to the soft material and their reduced weight.



## How to choose...

# Positive Airway Pressure (PAP) therapy

## PAP machines

It can take time for some users to become accustomed to PAP therapy, so manufacturers have developed a few ways to make it easier and/or more tolerable. That *'box of tricks with a hose sticking out of it'* (that's the PAP machine), contains some clever electronics which can help. Bear in mind that additional features may be charged for over and above the basic continuous / fixed pressure PAP.



### Simple operation and aesthetically pleasing design

Manufacturers are striving to make PAP machines more intuitive to setup and adjust – even automatically adjust. Features such as colour displays and easily navigated menus are increasingly available and packaged in a way that doesn't scream 'medical product for an ill person'. There are machines that incorporate a radio alarm clock or that can play MP3s from a USB stick, and you can have your own photos printed onto a "skin" to customise your machine to match your pyjamas, décor or personality!



#### ACRONYM ALERT!

MP3 = audio file format  
USB stick = small sized portable computer memory device

On a more serious note, medical product convergence may mean that, in time, PAP becomes combined with perhaps blood sugar monitors for diabetics or contact free heart monitoring.

### 'Titration'

In some countries, where fixed PAP is routinely used, it is common practice to 'titrate' or adjust your pressure, according to your needs – which means changing it up and down to work out what is best for you.



#### JARGON ALERT!

Titration means the adjustments made to air pressure in order to meet patient needs.  
Check out the Jargon Buster at:  
<https://snorer.com/jargon-buster/>

## How to choose...

## Positive Airway Pressure (PAP) therapy

It works like this:

- You are loaned an automatically titrating (and expensive) machine for a short period (perhaps a week or two).
- Then your own 'fixed' PAP machine is setup using the data recorded by the automatic one.

This process aims to determine the lowest and therefore most tolerable pressure adequate to overcome your sleep apnoea. Alternatively, you may be titrated during an inpatient stay in a Sleep Centre.

It is important that treatment is **tolerable**, so that it is continued with! This is also known as therapy compliance.

When the optimum air pressure to treat you (both effectively and tolerably) has been determined, it may mean you have to change to another mask design, as different masks have pressure parameters.

If you don't like a newly suggested mask, try to remember that '*first intention*' concept and keep an open mind to change.

The first intention concept is where you are inclined to prefer the first 'thing' you tried.

Research has shown that, although there is no significant difference in treatment outcomes between fixed pressure and auto-titrating machines, most people prefer whichever type they use first... as we said before.

### 'Ramping'

Some PAP machines (typically as an extra cost option) include a comfort feature that gradually raises the pressure of the air. The idea is you wear the PAP as you fall asleep, with the pressure set quite low, which is probably at an insufficient level to treat your sleep apnoea. Then after a variable delay (hopefully after you have fallen asleep) the pressure is gradually increased to what you need to help you breathe, and 'optimally' treat your sleep apnoea. In industry jargon this is known as 'ramping'. Speak with your Medical Practitioner if you think this might be helpful for you.



#### JARGON ALERT!

Ramping is a gradual increase in air pressure to reach a treatment level. Check out the Jargon Buster at: <https://snorer.com/jargon-buster/>



A 'non-treating' low level pressure is technically known as being at a 'sub-optimal' level, where 'optimal' is when the pressure is sufficient to treat the sleep apnoea.

## How to choose...

# Positive Airway Pressure (PAP) therapy

### Machine sophistication - detecting obstructive events and distinguishing them from central ones

PAP machines employ ever-more sophisticated technology. Some machines can monitor air flow and air resistance, and in time it is envisaged they will be able to monitor respiration rate and heartbeat without any patient contact.

This means that some PAP machines can now analyse every breath and determine if it is appropriate to 'respond' to any particular sleep apnoea event. This is important, because if a PAP machine were to incorrectly increase the air pressure for a detected apnoea (detecting a lack of air flow and an increased air resistance) and it was a central event, the machine would *over* inflate your lungs and cause a decrease in respiration - making things even worse!



#### JARGON ALERT!

Central apnoea (in very simplistic terms) is when the body has no trigger to breathe. Obstructive is when there is a 'blockage.'



#### ACRONYM ALERT!

PAP = Positive Airway Pressure

### Reducing the effort to breathe out

Advanced machines that sense your effort to breathe out (expiration) can decrease the air pressure slightly each time you breathe out. This can make it easier to tolerate the air pressure, especially at higher pressures. It is normally adjustable – speak to your Medical Practitioner for help with this.



### Different pressures for breathing in and out

Machines exist that use two different air pressure settings, one for breathing-in and another for breathing-out, usually with a 'default' breath rate for central apnoeas (when the body doesn't try to take a breath). This is a much higher level of support, and is not normally used as an initial treatment for OSA, so we're not going to go into detail in this **Snorer.com** Guide.



Whilst a higher level of support is not normally used as an initial treatment of OSA, we have included it here in case it is mentioned to you.

## How to choose...

### Positive Airway Pressure (PAP) therapy

#### Humidification of the air you breathe

Some PAP users find that the pressurised air dries out the inside of their nose or makes them congested. If this happens, discuss your situation with your Medical Practitioner and keep up the dialogue if their first suggestion doesn't resolve the issue. If this happens and you have an auto-titrating PAP machine, check that your mask fits correctly, as a leaky mask may cause your machine to over compensate by increasing the air flow. This could also be an issue if your weight changes significantly, as your face will change shape. Certain masks may be more capable of tolerating weight changes e.g. nasal pillows (if your treatment pressure is low enough) and those with an inflatable cushion. If that doesn't help then your Medical Practitioner may consider prescribing a nasal saline spray.



If you breathe through your mouth at night or sleep with your mouth open, some PAP devices may worsen dry mouth or cause the air to escape from your mouth. A full-face-mask (one that covers both your mouth and nose) may improve things.

Another option to consider is an adjustable heated humidifier, which may be attachable to some machines. It delivers warmed and humidified air and should use distilled water to avoid mineral deposit build up. However, depending on the ambient temperature of your bedroom it may create a problem known as 'rain out'. This is where the moisture in the air condenses on the inside of the air tube and eventually delivers you a face full of water! To overcome this, hose covers and heated tubing is available. Alternatively, vary the temperature in the room, or pop your hose under the bed covers!

If you are still struggling, speak with your Medical Practitioner who may prescribe a nasal steroid spray.

## How to choose...

### Positive Airway Pressure (PAP) therapy

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Humidification *may* help if you struggle with the previously described nasal symptoms, however there is conflicting data over the real value of humidification and it has not yet been shown to improve the duration of use each night.<sup>2, 3</sup>

<sup>2</sup> Smith I, Lasserson TJ. "Pressure modification for improving usage of continuous positive airway pressure machines in adults with obstructive sleep apnoea." Cochrane Database of Systematic Reviews, 2009.

<sup>3</sup> A good review of evidence - Weaver T, Grunstein RR. "Adherence to Continuous Positive Airway Pressure Therapy." Proceedings of the American Thoracic Society, Vol. 5, No. 2 (2008), pp. 173-178. <http://www.atsjournals.org/doi/full/10.1513/pats.200708-119MG>

### Part Three - User feedback

#### New users...

New users may be worried about using PAP for the first time. The sensation of having air blown at you can be strange to get used to. One user likened it to sticking your head out of the window of a moving car and some people have found that they initially gasped to catch their breath.

It's worth persevering, the benefits are substantial! Here are some quotes from anonymised users:

*"My local sleep clinic is excellent. I was given a CPAP machine and tried several masks, including nasal pillows which I hated and now have a [named brand] (about 5 years now) and I use it every night and for naps. I have no problems with it. My clinic are very helpful and supportive and I've gone from 60 apnoeas an hour lasting up to 59 secs to NONE so it does help me."*

*"Since I was diagnosed with the condition, having a 'pump' has been a real God-Send, as I now not only get a deep sleep (beyond REM), I do not snore at all. Also my wife gets a good night sleep, and the pump is quiet enough so as not to disturb her. Even the cat doesn't mind! It also of course means I am no longer tired during the day at work, where previously I had been through a spell of nodding off."*



## How to choose...

## Positive Airway Pressure (PAP) therapy

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### Unintentionally removing the CPAP mask during the night

In the early days of becoming accustomed to PAP, you may find you wake up having pulled off the mask while asleep. This is perfectly normal. Try to get into the habit of replacing it whenever you wake to find it off. Do you have nasal congestion? A humidifier may help in these circumstances.



#### ACRONYM ALERT!

CPAP = Continuous Positive  
Airway Pressure

### Newly occurring vivid dreams

Dreams are thought to occur primarily in REM sleep. When you get effective treatment for sleep apnoea, you may suddenly recall having vivid dreams and this may be what is known as 'REM sleep rebound' a part of a scientific concept known as 'sleep debt'. The 'sleep debt' theory is that over the day your drive to sleep increases and you 'repay' at night. If however you do not sleep sufficiently (or you do so inadequately because you have sleep apnoea) you are 'borrowing'. REM sleep is believed to be the first part of sleep that your body 'repays' so consequently, you may have lots of dreams. This should resolve once you are established on PAP treatment and your OSA is effectively treated.



#### ACRONYM ALERT!

REM = Rapid Eye Movement  
(The criteria for REM sleep includes rapid eye movement, low muscle tone and rapid, low voltage brain activity, easily discernible in a polysomnogram, the sleep study typically undertaken for patients with suspected sleep disorders)  
[http://en.wikipedia.org/wiki/Rapid\\_eye\\_movement\\_sleep](http://en.wikipedia.org/wiki/Rapid_eye_movement_sleep)

## How to choose...

# Positive Airway Pressure (PAP) therapy

### Difficulty falling asleep

Some people experience difficulty using PAP after initial success. This can be due to a specific problem or a combination of issues. Practicing good sleep habits such as relaxing by perhaps taking a warm (not hot) bath before bed, exercising regularly (but not before bed), minimising or avoiding caffeine, avoiding alcohol and heavy meals before bedtime, will all help you get off to sleep and stay asleep.

Some typical challenges and suggestions on how to adapt are shown below:

- Claustrophobia. Some PAP masks are designed not to be in your 'line of sight' i.e. nasal pillows and other masks without a forehead support.
- As you begin to restore normal sleep your daytime alertness should return. Consequently, you will need to reduce the amount of caffeine you used to 'prop yourself up' - switch to decaf!
- Difficulty getting used to the air pressure. If you find putting the machine on feels like you have a hurricane blowing up your nose – then look into 'ramping' the air pressure. This is a way that the PAP machine starts at a low pressure and over the course of perhaps 15 minutes (as you go to sleep) it gradually increases or 'ramps' up.
- Has treating the OSA uncovered another sleep problem? Disorders such as periodic limb movement disorder, which is when the individual moves their limbs involuntarily during sleep and experiences symptoms or problems related to this movement, may be "masked" by OSA. If you think you may have another sleep related issue, discuss it with your Medical Practitioner.



#### ACRONYM ALERT!

PAP = Positive Airway Pressure



#### ACRONYM ALERT!

OSA = Obstructive Sleep Apnoea



#### JARGON ALERT!

Periodic limb disorder is when the individual involuntarily moves their limbs during sleep and experiences symptoms or problems related to this movement.

## How to choose...

### Positive Airway Pressure (PAP) therapy

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Another theory is that you may have become accustomed to 'carrying' a significant sleep debt (see *Newly occurring vivid dreams* on page 27) and now that you are recovering your sleep debt, the 'load' has diminished and you find this strange. This is normally a temporary issue and as you adapt it should resolve itself – practicing good sleep habits may help.

### What next?

You might like to read the other **Snorer.com** Guides:

- Overview Guide
- Partner's Guide
- How to choose... a mouthpiece to stop snoring
- Things to consider... when considering surgery for snoring & sleep apnoea

Find out more about other **Snorer.com** Guides at:  
<https://snorer.com/information-guides/>

Want to find out if you have sleep apnoea, but worried about the impact on your medical records? We suggest you consider the **Snorer.com**

[ASAP Anonymous Sleep Apnoea Process™](https://snorer.com/asap/)

Find out more about the **Snorer.com** Anonymous Sleep Apnoea Process at:  
<https://snorer.com/asap/>



### Appendix

#### Acronym glossary

- AASM = American Academy of Sleep Medicine
- BSDSM = British Society of Dental Sleep Medicine
- BSS = British Sleep Society
- CPAP = Continuous Positive Airway Pressure
- CPD = Continuing Professional Development
- ENT = Ear, Nose & Throat
- EST = European Somnologist-Technologist
- MBA = Master of Business Administration
- MP3 = MPEG-1 or MPEG-2 Audio Layer III
- OSA = Obstructive Sleep Apnoea
- PAP = Positive Airway Pressure
- REM = Rapid Eye Movement
- RPSGT = Registered Polysomnographic Technologist
- USB = Universal Serial Bus



#### JARGON ALERT!

These acronyms, and others that you may come across are explained in the **Snorer.com** Jargon Buster!  
<https://snorer.com/jargon-buster/>

### References

- <sup>1</sup> Smith, I. et al "Educational, supportive and behavioural interventions to improve usage of CPAP machines for adults with OSA", Cochrane Database of Systematic Reviews, 2009.
- <sup>2</sup> Smith I, Lasserson TJ. "Pressure modification for improving usage of continuous positive airway pressure machines in adults with obstructive sleep apnoea." Cochrane Database of Systematic Reviews, 2009.
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<http://www.atsjournals.org/doi/full/10.1513/pats.200708-119MG>



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Kuchida, C.A et al "Practice Parameters for the Use of Continuous and Bilevel Positive Airway Pressure Devices to Treat Adult Patients With Sleep-Related Breathing Disorders" SLEEP, Vol. 29, No. 3, 2006

### Support groups

#### United Kingdom

- Sleep Apnoea Trust Association: <http://www.sleep-matters.org>
- Scottish Association for Sleep Apnoea (SASA): <http://www.scottishsleepapnoea.co.uk>
- Irish Sleep Apnoea Trust: <http://www.isat.ie/>
- Hope2Sleep: [www.hope2sleep.co.uk](http://www.hope2sleep.co.uk)

#### United States

- American Sleep Apnea Association: <http://www.sleep-apnea.org>

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# How to choose...

## Positive Airway Pressure (PAP) therapy

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- You control if/when/what to communicate about your results.

### Authors & reviewers

#### Adrian Zacher MBA

Adrian Zacher has a wide ranging experience in medical devices for both conscious and unconscious respiratory medicine. He is a recognised pioneer, inventor, author, expert and serial entrepreneur.



Adrian pioneered the first commercial dental sleep medicine laboratory in Europe; ZSA Ltd. During the 11 years of successfully running ZSA, he invented a sleep device that could be adjusted to suit the individual needs of the wearer, winning an award for the device. He went on to co-found the [British Society of Dental Sleep Medicine](http://bsdsm.org.uk/) (BSDSM) and instigated and assembled the sleep medicine team which ultimately developed the [Pre-Treatment Screening Protocol](http://www.nature.com/bdj/journal/v206/n6/full/sj.bdj.2009.214.html), which forms the benchmark for obstructive sleep apnoea screening in the UK. He continues to provide specialist dental sleep medicine knowledge to interested parties.

<http://bsdsm.org.uk/>

<http://www.nature.com/bdj/journal/v206/n6/full/sj.bdj.2009.214.html>

## How to choose...

### Positive Airway Pressure (PAP) therapy

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Adrian successfully completed his MBA in Oxford. After which, he was headhunted to lead international business development for a leading sleep business, working as subject matter expert on oral appliances and dental sleep medicine. He left in February 2012.

Adrian is often asked for advice and insight in the field of sleep medicine, recently co-authoring a chapter in Carranza's Clinical Periodontology Expert Consult, and has completed the 2013 update.

Whilst taking time off as a new parent (truly appreciating the need for good quality sleep!) he started work on **Snorer.com** Ltd.

When not running **Snorer.com**, including [Snorer.me](https://snorer.me) (for patients), [Snorer.business](https://snorer.business) (for employers) and [Snorer.training](https://snorer.training) (for dentists), Adrian runs a LinkedIn group "[The impact of sleep disorders on business](https://www.linkedin.com/groups/4925339)" is a member of the [British Sleep Society](http://www.sleepsociety.org.uk/) and a recent past Trustee of the charity [Hope2Sleep](http://www.hope2sleep.co.uk) that supports patients with sleep disordered breathing.

<https://snorer.me>  
<https://snorer.business>  
<https://snorer.training>  
<https://www.linkedin.com/groups/4925339>  
[www.sleepsociety.org.uk/](http://www.sleepsociety.org.uk/)  
[www.hope2sleep.co.uk](http://www.hope2sleep.co.uk)

#### Dr Lizzie Hill PhD RPSGT EST

Dr Lizzie Hill has worked in the field of sleep medicine since 2000. She is a Registered Polysomnographic Technologist, trained in the Department of Sleep Medicine at the Royal Infirmary of Edinburgh.



In 2005, she was appointed Sleep Services Manager of The Edinburgh Sleep Centre, Scotland's only private sleep disorders centre. She is a trained sleep counsellor, working with teenagers with sleep problems and additional support needs for the charity, Sleep Scotland.

Lizzie is currently a Research Fellow in the Department of Sleep Medicine at the Royal Infirmary of Edinburgh, and has completed her PhD investigating prevalence and treatment of sleep apnoea in adults with Down's Syndrome. She is the UK national delegate for the European Society of Sleep Technologists and a member of the Executive Committee of the British Sleep Society (BSS), with editorial responsibility for the BSS newsletter. As well as sleep, she enjoys yoga, skiing, campervanning and real ale.



# How to choose...

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