

## Department of Respiratory Physiology and Sleep

# The use of Non-Invasive Ventilation at Home (Resmed Stellar 150)

### Patient information leaflet for home NIV



### What is Non-Invasive Ventilation (NIV)?

NIV is a commonly used treatment for people who have breathing problems and require help with ventilation. Chronic lung diseases (such as COPD/emphysema), neuromuscular conditions, chest wall deformities or problems related to being overweight, may cause problems in breathing resulting in low oxygen and high carbon dioxide levels in the blood.

### Why do I need Non-Invasive Ventilation (NIV)?

Normally your lungs have two purposes:

- To draw air/oxygen into your lungs. Oxygen is needed to help provide energy for your body to work properly.
- To blow out carbon dioxide. Carbon dioxide is a waste gas produced by your body from chemical reactions and processes.

If you have a condition listed above your breathing may be affected. This can mean that you:

- Struggle to supply your body with oxygen. If oxygen levels drop too low this is dangerous.
- Struggle to get rid of carbon dioxide. Having too much of this in your body is very dangerous.



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The problem is usually worst at night, because when we are asleep we breathe more slowly and less deeply. This results in some of the symptoms you may be experiencing at the moment; headaches in the morning, tiredness; as if you haven't had a refreshing sleep. Other people may not feel like anything is wrong.

### **What does NIV do?**

NIV blows air into your lungs as you breathe in which will help you take bigger breaths than normal and it will support your muscles making your breathing easier. The NIV helps you to breathe more effectively and so your body will be able to get oxygen in and carbon dioxide out of your lungs more easily. This should help to relieve the symptoms you may be having, reduce admissions to hospital and improve quality of life and survival.

As well as blowing in air as you breathe in, the NIV will also blow in air at a lower pressure as you breathe out. This pressure helps to hold open your airways and is particularly important for people who have conditions such as obstructive sleep apnoea.

### **Using the machine**

NIV needs to be used regularly every night and for a good amount of time (4 hours or more) for it to be effective, the most appropriate amount for you will have been discussed and recorded at the end of this booklet. It is very important to keep as close to the recommended plan as possible. If the NIV is constantly on and off it will not work effectively enough.

It should not cause you a problem if for some unavoidable reason you are unable to wear the machine for one night but over time if you don't wear the NIV machine enough it will not be able to work sufficiently well.

### **The following equipment will be supplied to you:**

1. The NIV machine which generates the prescribed pressures to aid your breathing.
2. Circuit tubing to deliver air from the ventilator to the mask.
3. A full face/nasal mask or nasal pillows (these vary in size and shape).

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You may also have:

- Green oxygen tubing
- A humidifier to make the air from the machine less dry

### How do I set up the machine?

The settings on the machine will already have been programmed by the NIV team. These settings should not be altered in any way whilst you are at home. To avoid this try to prevent children from playing with the machine. The NIV machine should be placed on a flat surface near the head of your bed i.e. on a bedside cabinet.

1. Make sure that the air inlet at the back of the machine is free from dust, bedding etc.
2. Carefully connect the tubing to the front of the machine.
3. Carefully connect your mask to the other end of the tubing.
4. If you have oxygen then the green oxygen tubing connects to the front of the mask.



### How do I turn the machine on/off?

1. By pressing down on the black button on the front of the machine will stop/start the machine but not turn it off.
2. The on/off switch at the side of the power lead at the back of the machine will turn the machine on/off as just switching it off at the plug socket will just mean the machine uses the internal battery.

### How do I put the mask on?

If you use oxygen with your NIV machine you should ensure this is attached and switched on before applying the mask. It is recommended that you put the mask on first and then immediately start the machine.

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### **Full face mask:**

Hold the mask to your face, the bottom of the mask should sit just below your bottom lip and the top should sit on the bridge of your nose.

### **Nasal mask:**

Hold the mask over your nose and then pull the strap over the back of your head, making sure the clear plastic adjustment strap is over the top of your head.

Make sure you can open and close your eyes and the mask is not squashing them. Fasten the headgear by inserting the clips into the side of the mask; you may need some help doing this at first. If the mask feels too loose use the individual straps at the front of the mask to adjust the fitting. This can be done more effectively with the machine turned on.

### **How do I check that the mask is fitted properly?**

The mask needs to fit comfortably on your face. There should be a small amount of give in the straps so that you are able to pull the mask away from your face slightly. You should have the mask as loose as possible without allowing air to leak from around the edge of your mask, especially into your eyes, or causing the machine to alarm.

If you wear dentures ensure they are securely fitted and try to wear them when the mask is on as this will give a better fit.

### **How do I check for a leak?**

The full face mask has a vent over the bridge of the nose where the carbon dioxide escapes. You should feel a leak of air from this port when the machine is turned on. It is important **not to cover this port** in anyway as this can prevent the carbon dioxide from escaping.

Although a leak is allowed from this port it is important to try and reduce any leak from elsewhere around the mask as this may cause irritation to the face and may cause the machine to be less effective.

To check for a leak feel around the mask whilst you are wearing it and with the NIV machine turned on. If you can feel air escaping from anywhere other than the carbon dioxide vent then try adjusting the individual straps at the front of the mask. Any adjustments here should be made using the pairs of straps to ensure the mask is kept central on your face. However, if you cannot reduce a leak entirely do not make your face sore by over tightening the mask.

### How do I look after my equipment?

#### Daily tasks:

- Wipe around the mask with soapy water and damp cloth to remove oils produced by your skin overnight.
- If you have a humidifier then carefully disconnect the tubing and empty out any excess water that may have collected. The tubing may be hung up over a door or shower rail to dry. Also replace the water in the humidifier up to the fill line.
- **Do not tilt the machine whilst there is water in the humidifier as this may cause water to get into the machine and stop it from working.**

#### Weekly tasks:

- Carefully disconnect the tubing from the mask and the machine.
- Wash the mask, headgear and tubing in warm soapy water, rinse in clean water and then allow to dry. **Do not machine wash or tumble dry. Avoid placing in sunlight or directly on a radiator.**
- To reattach the headgear to the mask place the straps on a flat surface with the fleece side down. Lay the mask on top of the headgear and then feed the straps through the gaps on the mask.
- Ensure that the carbon dioxide vent is firmly in place

#### Yearly tasks:

Your NIV machine should be serviced as the engineer state is necessary. There will be a sticker on your machine that has a date for the next service. Your machine will also be checked by a member of the NIV team when you attend for your clinic appointments in the ventilation clinic.

## Common Problems / Frequently Asked Questions

### How long will it take to get used to my NIV machine?

This can vary from person to person; most people will have been used to their NIV having had it during a hospital stay. However, going home with the machine can feel worrying and unsettling. Most patients will have some anxieties on leaving the hospital, but the majority of patients find that they get used to using it quickly once they settle into a routine, and most feel

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quite happy with the machine when they return for a clinic appointment about six weeks later.

### **How soon after starting NIV should I notice an improvement?**

This will depend a little on the symptoms you experience. Most patients will notice an improvement in their general wellbeing whilst they are in the hospital, and this may continue for the first few weeks after discharge.

### **Will I have to wear the NIV for the rest of my life?**

It is likely you will. The majority of people needing NIV have a lung condition which will not improve, and will need to continue to use the NIV.

### **Will the settings on the NIV need adjusting?**

Sometimes this may be necessary, after a period of time and as you become used to using the machine we may need to alter the settings to fit your need. This will be done at the hospital during a clinic visit, or if you need to come into hospital. **You should not try to adjust the settings yourself.**

### **Areas of my face have become red and feel sore**

Unfortunately it is not uncommon for people wearing the NIV to feel some soreness around their face, particularly over the bridge of the nose. Most often this can be corrected by correctly adjusting the mask and making sure not to over tighten it. Sometimes you may need to wear padding on your face or on the mask itself.

### **It feels like air is leaking around my facemask when I am using the machine**

When the mask is properly fitted this should not happen, on most machines the amount of leak can be seen on the display. All machines are different but a leak of up to around 20l/min will not cause any problems to the way most NIV machines work, although if you find the air leak uncomfortable you should adjust the mask to reduce the leak.

### **I can't turn on the machine:**

- Check that the power lead is firmly attached.
- Ensure the machine is turned on at the wall and at the back of the machine.
- Press down on the black button on the front of the machine once and you should see a green bar appear on the left hand side of the display screen.
- If you are still having problems contact the **Respiratory Physiology Department NIV Machine Helpline** on **02476 966 734**. This service is available **8am - 8pm Mon – Fri**. **Out of these hours please contact the NIV nurses on ward 30 at UHCW on 02476 966678.**

### **How do I know if my machine is working?**

The screen on the front should light up and you should feel air being blown through the mask.

### **The mask is broken or difficult to reassemble:**

Contact the **Respiratory Physiology Department NIV team** on **02476 966734**.

### **I can feel a leak from around the mask:**

- Remove the mask and reposition on your face, ensuring the mask is central and properly aligned
- Check that the carbon dioxide vent is securely fitted
- If you use oxygen check that the tubing is correctly fitted
- If you don't use oxygen check that the oxygen ports are in place and tightly closed
- If you are still having problems contact the **Respiratory Physiology Department NIV Mask Helpline** on **02476 966734**. This service is available **8am – 8pm Mon-Fri**. In the meantime use the machine as tolerated.

### **What happens if my machine breaks at the weekend or if there is a power cut?**

If you are unable to use the machine overnight on the odd occasion, simply wait until Monday when you can contact the helpline. However, if you start to feel unwell then you should contact your GP, out of hours GP/walk in centre or come into A+E.

### **How long do I use my NIV machine for?**

The NIV team will advise you on the length of time you need to spend on your machine.

If you are feeling unwell/have a temperature /secretions changed colour, you may use your machine for longer to support your breathing and relieve breathlessness. You should also contact your Doctor or Outreach Team to inform them that you are unwell. Although using the NIV machine at home may help your symptoms you may still need to come into hospital at times.

### **What if I press some of the other buttons on the machine by mistake?**

This should not alter your settings. However, if you are concerned that your NIV machine is not working properly contact the helpline during the advised times.

### **How long will it take to get used to the NIV machine?**

Usually people get used to their machine within a few weeks. If you do continue to struggle with the machine please contact the NIV team at UHCW. You should have a follow up appointment within a few weeks of starting NIV and during this appointment you will be assessed and your NIV settings optimised.

### **How soon after starting to use my NIV will it be before I start to notice an improvement?**

Most people notice an improvement within a few days or weeks of starting NIV at home.



### **Will the current settings need to be changed?**

Sometimes the settings need to be altered in order to continue to keep you as well as possible. The machine and the settings will be reviewed in your follow up outpatient clinic appointments.

### **I have developed an area of redness on the top of my nose and I think it is related to the mask. What should I do?**

This may be due to the headgear being too tight. Try to wear it a little looser. If you continue to have problems contact the **Respiratory Physiology Department NIV Team** on **02476 966734**. This service is available **8am-8pm Mon – Fri**. **Otherwise contact your GP practice nurse for advice.**

### **It is outside of Respiratory Physiology Department hours and I have a problem with my NIV system.**

Firstly, don't panic! It should not cause any problems to your health if you cannot use the NIV for a night or two for some unavoidable reason.

- If you feel the problem is minor and not affecting the operation of your NIV you should carry on using it and contact Respiratory Physiology when next available.
- If you feel the NIV is not working properly you should continue without it until Respiratory Physiology are available to assist you. You should not experience any problems being unable to use your NIV for a short time.
- If you do feel unwell and cannot use your NIV machine you should seek medical assistance. This should be **your GP first** and if you still feel unwell or you feel seriously unwell **you should come to the A&E department.**

### **What do I do if I need to go into hospital?**

It is advised that you take your machine and this booklet into hospital with you for all admissions as this will help your Doctors and the rest of the team know what treatment you are receiving.

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### For hospital information:

I use a \_\_\_\_\_ machine with a  
\_\_\_\_\_ size mask/nasal mask (model \_\_\_\_\_) for  
\_\_\_\_\_ hours/night and \_\_\_\_\_ hours/day.

### My settings are:

EPAP \_\_\_\_\_ cmH<sub>2</sub>O IPAP \_\_\_\_\_ cmH<sub>2</sub>O

RR back up \_\_\_\_\_

IPAP max \_\_\_\_\_ cmH<sub>2</sub>O IPAPmin \_\_\_\_\_ cmH<sub>2</sub>O

Mode \_\_\_\_\_

Supplemental O<sub>2</sub> on NIV \_\_\_\_\_ L/min

Supplemental O<sub>2</sub> off NIV \_\_\_\_\_ L/min

The Trust has access to interpreting and translation services. If you need this Information in another language or formats please contact 02476 966734 and we will do our best to meet your needs.

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#### Document History

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