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Your child's Nippy 4 for bi-level ventilation

Children's Respiratory Physiology

Information for Patients

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What is bi-level ventilation?

We use Bi-Level ventilation to treat many conditions. It supports breathing and removes excess carbon dioxide (CO2) from the lungs. We can sometimes use it to keep your airways open. These machines deliver air through tubing and into a mask or tracheostomy.

Bi-Level helps you breathe while you sleep by gently pushing air through a mask over your nose and/ or mouth, or a small opening in your neck tracheostomy. It can also be used when you are awake to help your breathing.

It has 2 different pressures:

- **IPAP** is a higher pressure. It helps your child breathe in.
- **EPAP** is a lower pressure. Keeps the airway open to help your child breathe out.

What will it feel like?

The ventilator works with your child's breathing. It matches their breathing and gives air when needed. It gives extra breaths if your child's breathing slows down. It can feel strange at first. This is normal.

If your child feels uncomfortable at night:

- Turn the machine off.
- Remove the mask.
- Wait until your child feels calm.
- Turn the machine back on again.

How do I use the ventilator?

- Keep the ventilator plugged into the mains when being used.
- The ventilator has a small internal battery for emergency use.

The main buttons are:

On the top of the machine:

1. The power button to tune the machine off and on.

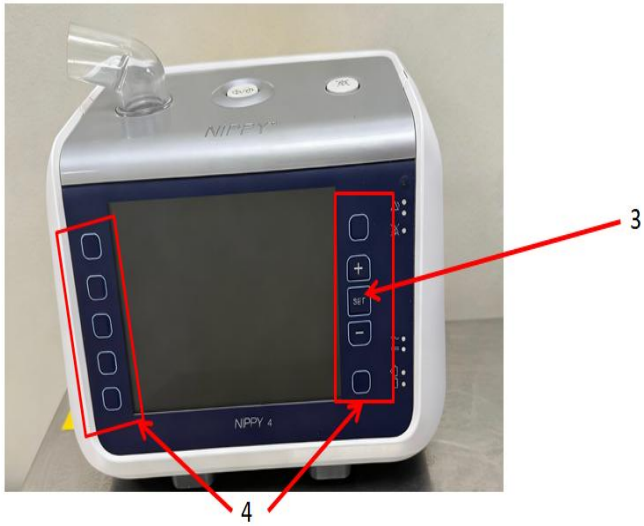
2. The alarm button. Pressing this will mute an alarm for 1 minute.

On the front of the machine:

3. The set button. May be used for a range of things. It confirms options on the screen.

4. Other buttons: May be used for a range of things. The screen will show what they can be used for if you need to use them.





To turn the Nippy 4 on:

- Press and hold the power button for 15 seconds to turn the ventilator on.

To turn the Nippy 4 off:

- Press the power button once and use the ‘set’ (3) button to confirm.
- The ventilator must be unplugged to do this.

To use bi-level:

- To start bi-level, press and hold the power button for 5 seconds when in standby mode.
- To stop bi-level, press and hold the power button for 5 seconds. Then confirm using the set button (3).

Equipment you will need



- The Nippy 4 machine and power cable.
- Tubing (circuit).
- A close-fitting mask worn over the mouth and/or nose. This needs to have ports that lets the exhaled air to escape. If you have a tracheostomy, the air will escape through the leak valve.
- Humidifier (optional).

How do I set up the Nippy 4?

Dry Circuit

1. Plug the Nippy 4 into the power supply at the back of the machine.
2. Connect the tubing to the top of the ventilator.
3. Connect the mask to the opposite end of the tubing.
4. Do a pre-use test (only when needed, see page 4).

External humidified circuit



1. Plug the Nippy 4 and humidifier into the power supply.
2. Place the chamber into the humidifier.
3. Connect the filter to the front of the ventilator. Then place the short tubing onto the filter. Attach the other end of the tubing to the chamber.
4. Attach the long tubing to the humidifier chamber and the mask.
5. Connect humidifier temperature probes and water supply as shown during training.
6. Do a pre-use test (only when needed, see page 4).

Internal humidifier (as pictured)

1. Plug the Nippy 4 into the power supply.
2. Lift the handle. Press the small button on the right to remove the blue panel.
3. Press the small button on the left to remove the white block (if you have one).
4. Insert the filled humidifier chamber until you hear a click.
5. Attach the tube to the top of the ventilator and the mask.
6. Do a pre-use test (only when needed, see page 4).

How do I do the pre-use test?

The pre-use test helps to prevent alarm issues.

Do a pre-use test:

- every 6 months.
- when you change the tubing.

How to do it

- Make sure the machine is powered on but not running ventilation (standby mode).
- Choose menu using the bottom button on the right. Use the +/- buttons to highlight ‘pre use test
- Follow the on-screen instructions.
- If you have an internal humidifier, this should be in the ventilator and filled with water.
- **Do not** connect the mask during the test.

How do I clean the Nippy 4?

Keeping the equipment clean helps to prevent infection and damage to the equipment.

Every morning:

- Remove the mask from the tubing.
- Wipe inside with a wet wipe/baby wipe.
- Leave it to dry off before using again.

Do not use bleach or alcohol-based products, these can damage the masks.

Every week:

- Some circuits may need changing. The community team will tell you if you need to do this. They will also give you the supplies you need.
- Wipe the Nippy 4 down with a damp cloth/baby wipe to keep it dust/dirt free.

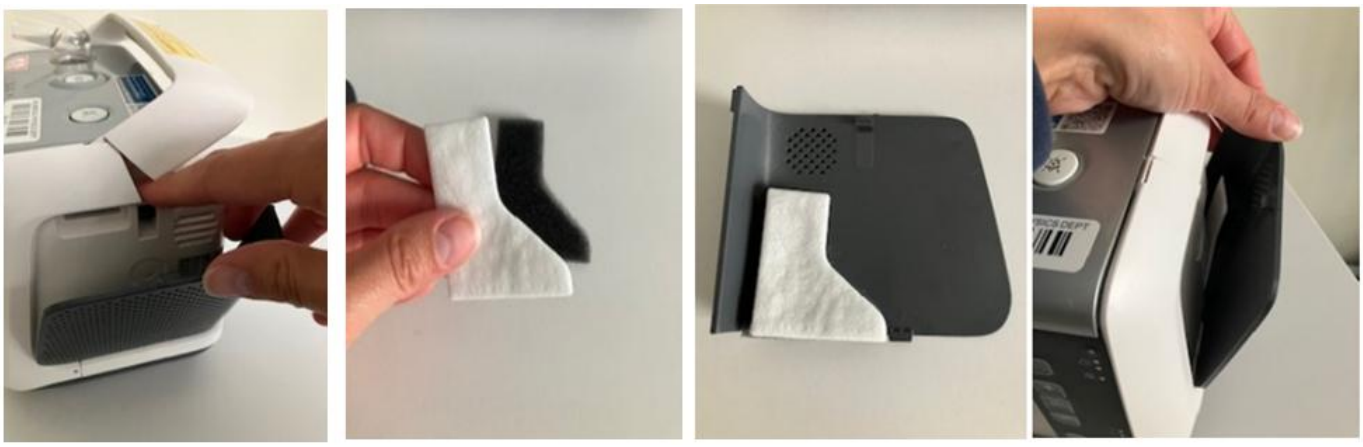
Every month:

There are 2 filters in the left side of the Nippy 4. Check them every month.

- The white filter must be changed every month or when dirty.
- The black filter must be changed after 6 months or when dirty. This is if you have not changed it already.

To change the filter:

1. Lift the handle, press the button on the right side to release the cover.
2. Remove the black and/ or white filters, replace with new.
3. Make sure the blue cover is firmly replaced until you hear a click.



How do I check the fit of my child's mask?

Your child's mask must be fitted well to make sure they get the pressure they need.

It should be tight enough to be secure and have little leakage. Be careful not to over tighten and cause discomfort and soreness.

To check if the mask fits:

- Move your hands around the mask. You should not feel lots of air leaking from where the mask touches your child's face.
- Each mask has a little leak to let CO2 escape. This is different on every mask. You should have been shown where it is.
- Check the leak level on the main screen. If this number is above 50, then try adjusting the mask to reduce leak.
- If you notice a high leak, try moving the mask on the child's face or adjust the straps.
- If you are struggling often with mask fit or leak, please contact children's respiratory physiology.

Alarms

Alarms are set on the Nippy 4 device for safety. We tailor the alarms to every patients needs so some of these alarms may be turned off. You can see active alarm on the top of the screen.

- **Red** alarms are **high** priority alarms.
- **Yellow** alarms are **low** priority.

You can mute the alarm for 1 minute using the alarm mute button. It will carry on sounding every minute until the problem is fixed. Please contact the physiology team if you are having problems with alarms.

Common alarms

- **High leak**: The mask is not correctly fitted. This happens when the mask has been removed or if the circuit is not correctly assembled.
- **Apnoea alarm**: This may appear if your child holds their breath. This should self-clear once they have stopped holding their breath. If this sounds a lot please check the mask fit or contact physiology.
- **Disconnection alarm:** This will sound if your child has removed their mask.
- **Internal battery**: This will sound if the internal battery is being used. Check that the mains cable is correctly inserted and it is turned on at the plug.

Common problems

Runny nose, dry nose, mouth or throat: All these issues are quite common. These symptoms do settle in a few days. If the symptoms continue, please contact the Respiratory Physiology Team. See the number at end of the leaflet.

Blocked nose: If your child is using a nasal mask, they may not feel the benefit of using bi-level. They may need to breathe through their mouth until their nose has cleared. This is why we often try to offer masks covering nose and mouth.

Broken mask: If your child's mask has broken, please contact the community team for a replacement.

Machine does not seem to be working correctly: If you think your equipment is not working, please contact the respiratory team.

Mask rubbing on skin: Sometimes the mask can rub on your child's skin making it sore. To help this you can try some moisturiser on your child's skin to see if this helps.

Oxygen use

You can connect oxygen to the machine if your child needs oxygen as part of their therapy or in an emergency. This will give both oxygen and bi-level to be given at the same time.

You will have been given an oxygen connector that goes into the back of the Nippy 4. You then attach your oxygen tubing to this.



Ventilator use

To help prevent equipment damage and ensure your ventilator works correctly, please follow these instructions:

- Do not soak the ventilator in water or spray it with water.
- Do not use strong chemicals or rough cleaning product, or detergents to clean the ventilator.
- Do not use the ventilator if it, the power lead, or the power socket is damaged.
- When possible, it is recommended the ventilator is not used in temperatures above 40°C.
- Do not leave the ventilator in direct sunlight.
- Do not store the ventilator in places that are very dusty or damp.
- Keep the ventilator away from direct sources of heat, such as fires, radiators, or heaters.
- Check that the filter is in place before use. Replace the filter as advised during your training.
- Do not use the ventilator if the air intake filter is pressed against a wall, curtain, bedding, or any other surface. Leave at least 10 cm of space between the filter and any surface to allow air to flow freely.
- If carrying the ventilator on a wheelchair or pushchair, always use the appropriate ventilator bag or carry case.
- Do not move the ventilator with any humidifier attached.
- Wash the mask after each use in warm, soapy water and allow it to air dry.

Saturations monitoring

We may have asked the community team to give you a saturations monitor. This will depend on your child's age and needs.

You should use the saturations monitor at all times whilst your child is using the ventilator. It is for safety and to alert you if there is something wrong. If your child is moving or the probe is not attached correctly it may not be accurate.

The nursing team will let you know how to use the saturations monitor. They will help you know when there is something to be concerned about.

The community team is responsible for this monitor and any probes needed.

Do I need to bring the ventilator with me to hospital appointments?

Bring your child's Nippy 4 with you to any appointments about their ventilation. For example, if your child has a follow up appointment in the respiratory or sleep clinic to see the doctors, nurse or physiologists.

You should bring the Nippy 4 machine, mains power cable and mask unless asked otherwise.

If your child has to visit hospital for an overnight stay for any reason, you will need to bring their ventilator, mask, circuit and humidifier with you. **This is very important as we do not have spare machines to loan to the wards.**

You must let the doctors and anaesthetists know that your child is on ventilation. This is very important if your child is going to have a general anaesthetic as they may need ventilation after their procedure.

What if I am going on holiday?

Your child can take their ventilator on holiday with them.

If they are flying, the ventilator needs to be carried as hand luggage. This stops it from getting lost or damaged. It must not be transported in the hold. Please contact the respiratory nursing team and they will give you with a flight letter to let you do this.

If you are flying overnight, it is likely that your child will need to use the ventilator whilst flying. Please contact us to arrange this.

Some children will need a flight assessment before flying. If your child needs oxygen or you have been told that your child needs a flight assessment, please speak to the respiratory nursing team before booking your flight.

Contact details

Children's Respiratory Physiology, Children's Development Centre, Ground Floor, Windsor Building, Leicester Royal Infirmary, Monday to Friday, 8:30am to 4:30pm on **0116 258 5691.**

Please make an appointment before attending.

Health information and support is available at www.nhs.uk or call 111 for non-emergency medical advice
Visit www.uhleicester.nhs.uk for maps and information about visiting Leicester's Hospitals.
To give feedback about this information sheet, contact uhl-tr.informationforpatientsmailbox@nhs.net

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If you would like this information in another language or format such as EasyRead
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