



Government of **Western Australia**
Child and Adolescent Health Service



Tracheostomy home care

A guide for parents and carers



| Contents | Page |
|--|-------------|
| Introduction | 2 |
| What is a Tracheostomy? | 2 |
| Reasons for a Tracheostomy | 2 |
| Care in Hospital | 2 |
| Humidification | 3 |
| Stoma Care | 3 |
| Suctioning | 4 |
| Tracheostomy Ties/Tapes | 5 |
| Tracheostomy Tubes | 6 |
| Changing a Tracheostomy Tube | 6 |
| Health and Safety | 7 |
| Communication | 8 |
| Going Out with Your Child | 8 |
| Compulsory Equipment | 8 |
| Managing Emergencies | 8 |
| Basic Life Support | 9 - 14 |
| Choking | 11 - 12 |
| Basic Life Support Flow Chart | 13 |
| Suction Unit, Cleaning of Other Equipment, Community Support | 15 |
| Re-admission, Consumables | 15 |
| Equipment Breakdown & Servicing | 16 |
| Glossary | 16 |
| Contact Numbers | 16 |
| Appendices | |
| 1. SUCTION: GUIDE TO USING DEVILBISS PORTABLE UNIT | 17 - 19 |
| 2. SUCTION: GUIDE TO USING LAERDAL COMPACT SUCTION UNIT | 20 |
| 3. HOME LOAN OXIMETER GUIDE FOR NELLCOR N560 | 21 |
| 4. HOME LOAN OXIMETER GUIDE FOR NELLCOR PM100N | 22 - 25 |
| 5. PARENT'S TRACHEOSTOMY COMPETENCY CHECKLIST | 26 - 27 |
| 6. TRACHEOSTOMY DISCHARGE SUPPLIES | 28 |
| References | 29 |

Introduction

This package is designed to help you learn about tracheostomy (trachy) care. While you are in hospital, nurses will teach you the skills you require to safely care for your child's trachy at home. Some of this information may not apply to your child.

Appendix 4 is the list of what you need to learn. Ensure you ask the nurse to sign this after teaching. **Appendix 5** is a list of some of the equipment you will receive prior to discharge. Ideally, 3 people are trained for each child with a trachy.

Goals

Before your child goes home, you should:

- know the reason for your child's trachy
- be able to care for your child's stoma
- know when and how to suction
- know about humidification
- be able to change trachy tapes/ties
- be able to change a trachy tube
- know what to do in an emergency
- know how to obtain and care for supplies and equipment^{2, 3}

What is a tracheostomy?

A trachy tube is placed through an hole in the neck into the windpipe (trachea) below the voice box or vocal cords (larynx)^{2, 4}. The hole is called a stoma. The stoma is kept open by the trachy tube which is secured around the neck with tapes, bead chains or ties².

Having a trachy changes the way a person breathes⁴. Usually air is breathed in through the mouth and nose where it is warmed, moistened and filtered⁴. Air then goes through the trachea and into the lungs^{2, 4}. With a trachy, air bypasses the nose and mouth and passes directly in and out of the trachy tube and lower trachea². Therefore, a child with a trachy will need help to warm, moisten and filter air^{2, 4}.

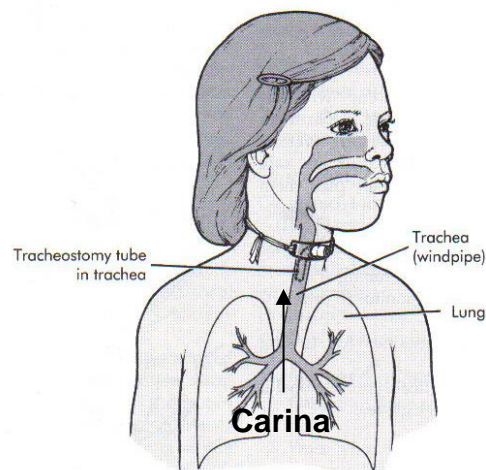


Figure 1: A child with a trachy.¹

Reasons for a tracheostomy

A child might need a trachy because they:

- were born with or developed a narrow airway
- need help to remove excess airway secretions
- need a ventilator to help them breathe⁵

Your doctor will explain why your child needs a trachy and how long they may need it for.

Care in hospital

Tracheostomies are first inserted in the operating theatre. After the operation, your child will go to the Intensive Care Unit.

At first, your child may need oxygen or ventilation via their trachy tube. New tracheostomies may need to be suctioned frequently and sometimes the secretions contain blood².

When a tracheostomy is first inserted, stitches are placed into the trachea (stay sutures) to assist if the tube comes out. These stitches are removed with the first tube change at five to seven days. Your child may need to stay in the Intensive Care Unit until their first tube change².



“A well-informed family will usually experience less anxiety”
(Aaron's Tracheostomy Page)



Humidification

Children with a trachy need to breathe air that is warmed, moistened and filtered. This is called humidification. Humidification stops the lungs and airways becoming dry and keeps secretions thin for suctioning^{2, 3}.

Humidification filters are worn by children with a trachy. These filters capture moisture and help to stop dust and small items from going into the lungs. These filters are called 'heat and moisture exchangers' (HME's) or Swedish Noses^{2, 3}. HME's are essential to prevent serious airway damage from the drying of airways^{18, 19}.

The filters simply fit onto the end of the trachy tube. Sometimes children pull their filter off. Just put the filter back on if it did not fall on the ground; otherwise replace it with a new HME. Suction or tap the filter to clear secretions that can be easily removed. Filters should be thrown away once they are full of secretions².

Stoma care

It is important to keep the skin around the stoma clean and dry. This is the most effective way to prevent infection and skin problems and most importantly stoma granulation⁶. Granulation is an overgrowth of tissue around the stoma. Contact the team if this occurs.

Stoma care should be done at least daily^{2, 6}. If your child has lots of secretions you will need to clean and dry the area more often⁷.

How to care for your child's stoma

Wash and dry your hands².

Have your child lie down. Place a rolled towel under the child's shoulders to extend their neck². Older children may wish to sit.

Look for any red areas, broken skin or secretions around the stoma. If these are getting worse, tell your nurse or doctor².

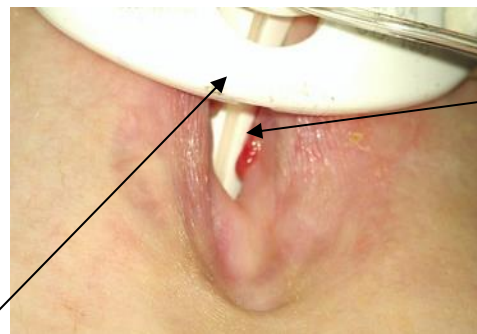
Gently clean around the tube with a cloth or cotton buds using tap water. Wipe secretions away from the stoma. Dry the skin thoroughly after cleaning^{2, 6}.

Dressings around the tube are not necessary unless the skin is sore, red, smelly or broken down^{2, 4, 6}

Kenacomb ointment prescribed by a Doctor is used if any of these occur. If a dressing is required, we recommend Excilon A.M.D.[®] or Mepilex Lite[®] which do not have loose fibres. Some children require thicker, foam dressings if they have a lot of secretions from their stoma. The nursing staff will advise on the best dressing to use. Thick dressings should be avoided in neonatal and small paediatric size tubes. You will need to change this dressing at least once a day to prevent further skin breakdown^{2, 3}

Stoma granulation

Some granulation tissue around the stoma can occur. Granulation tissue looks like red or pink fleshy tissue around the stoma. Sometimes the area is very small and sometimes the granulation is large.



**Small
Granulation:
red tissue**

It can be reduced or avoided by keeping the stoma clean and dry and reducing infection at the stoma.

If your child develops granulation tissue around their stoma, please discuss with nursing or medical staff. It should be treated, can bleed and if large may affect the ease of inserting the trachy tube.

Treatment of granulation may be as simple as extra cleaning and drying, using stoma dressings or it may require Kenacomb ointment or antibiotics. Granulation may require treatment by the CNC TDC or ENT Doctor.

Suctioning

Suctioning a trachy tube keeps the tube and airway clear of secretions⁴. Suction only when necessary as suctioning too frequently can increase secretions and cause unnecessary trauma to the airway^{2, 4}. We recommend suctioning at least twice a day to assess that the trachy tube is not becoming blocked. Infants generally require more frequent suctioning than older children.

When to suction your child's tracheostomy

Indications your child has secretions which requires suction:

- you hear rattling or bubbling of secretions from the trachy tube
- you can feel secretions when you place your hands on their chest
- your child is breathing faster or harder
- your child becomes anxious, sweaty, or pale, grey or blue around their lips^{2, 4, 7}
- when requested by the child
- suspicion of blocked or partially blocked trachy tube
- prior to trachy tube change, tape change, feeding, speaking valve use or after vomiting.

If your child is able to cough up their own secretions this should be encouraged. These can be wiped or caught in a tissue.

A drop in oxygen level is a late sign of a child requiring suction.

Suction equipment

- Suction unit
- Suction catheters
- Knowledge of suction depth
- Water to flush suction tubing

How to suction

- Wash and dry your hands²
- Have the equipment ready
- Position your child so it is easy to access their tube
- Remove your child's HME²

Turn the suction unit on and connect the suction catheter². The end of the catheter should not touch anything other than the trachy⁸.

Pressure Check – Nursing staff will show you how to set the suction unit pressure at **80-120mmHg**. Check this by occluding the thumb port and kinking the tubing just below the thumb port. The gauge should show 80-120mmHg.

Where possible, graduated suction catheters should be used. If not available, measure the end of the catheter on a tape measure to ensure the trachy is suctioned to an appropriate depth.

The correct suction depth will be on your child's airway profile. It is generally 0.5cm below the end of the trachy tube^{3, 6}. Insert the catheter to the measured length. This may make your child cough².

Apply suction by putting your finger over the thumb port. Roll the catheter between your thumb and index finger as you steadily remove the catheter. This should take five seconds^{3, 6}.

Let your child recover by allowing them to take a few breaths before inserting the catheter again (if required)².

If your child is unwell it may be necessary to use or increase oxygen before and after suctioning.

If the tube is not cleared, repeat the procedure. You may use the same catheter until the tube is clear as long as you keep it clean⁶.

If the secretions are hard to remove or thicker/stickier than usual, the occasional use of normal saline may help to remove these.

Infant: 0.2 – 0.5 ml

Child: 0.5 – 1.0ml

Adult: 1.0 – 1.5ml

Place the normal saline into the trachy, wait for a few breaths and then suction as normal. The saline may cause your child to cough which will help to remove secretions also. Use these amounts as a guide only. Use the smallest amount you feel helps you to remove your child's thick secretions. If

saline instillation is required frequently, please discuss further with nursing staff as your child may benefit from regular saline nebulisers.

Occasionally, it may be necessary to provide deep suction if the above methods have not improved your child's condition. Some children should not have deep suctioning, so please discuss with nursing or medical staff whether this is appropriate or necessary for your child.

Deep suction involves going an extra 0.5cm to 1.5cm deeper. This method is used if secretions are thick and normal saline is not helping.

If you are still having problems removing your child's secretions suction to the carina. Touching the carina usually causes a cough which will help push secretions up toward the tube. Once you think you have touched the carina, pull back 0.5cm before applying suction.

When suction is done, replace your child's HME. Use a tissue to wipe secretions from around the tube².

Throw away suction catheters after each event of suction. Suction water through the suction unit's tubing to clear it of secretions^{2,4,6}.

If the secretions are thick, encourage your child to drink more fluids and ensure they use the HME at all times⁹.

If you notice a change in the colour or smell of your child's secretions, please let your doctor or nurse know. This may mean your child has an infection².

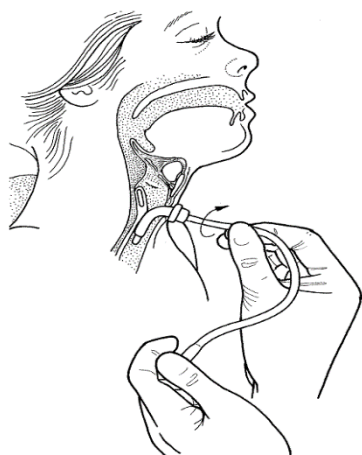
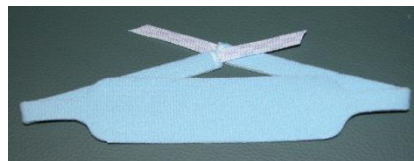


Figure 2: Shallow suction of a child's tracheostomy tube¹.

Tracheostomy Ties/Tapes

It is very important that your child's tube is kept secure with cotton ties, foam tapes or bead chains^{3, 6}.

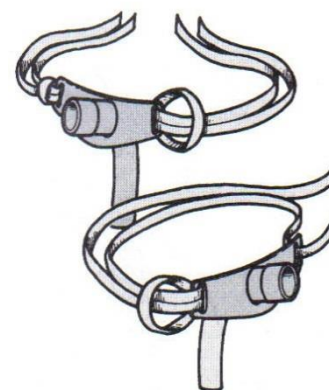
Tapes need to be changed when they are dirty or wet, and when the tube is changed³. Left in place, wet/dirty tapes may cause problems with the skin. Preferably you will need a second person to hold your child's tube while you change the tapes^{2, 6}. This could be neighbour, friend, partner etc.



Velcro foam tapes



Bead Chains



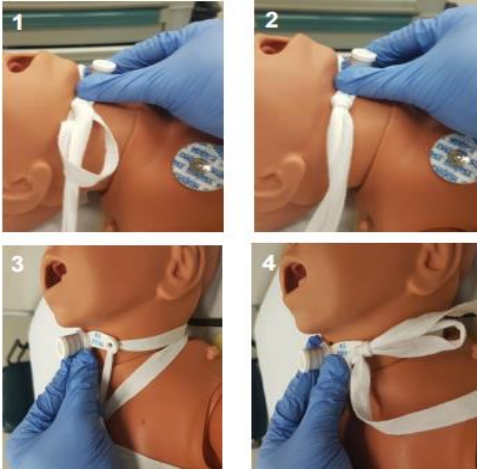
White Cotton Ties

Equipment

Securing device (cotton ties, velcro tapes or bead chains), wash cloth, cotton tips, saline or water, scissors or chain cutters.

How to change cotton tracheostomy ties:

1. Wash and dry your hands².
2. Cut the ends on an angle to make them easier to thread through the holes of the neck plate².
3. Place your child in your/their preferred position.
4. Clean and dry around the stoma².
5. Ask your helper to hold the tube until you have finished changing the tapes^{2, 6}
6. Remove one side of the tie. Clean and dry the neck. Thread the loop end of the clean tape through the neck plate hole on the side furthest away and pull tight
7. Pass ties under the neck towards yourself.



8. Thread one arm of the tape through the neck plate hole and make one knot and a bow (bows are easier to readjust if they are too tight or too loose).

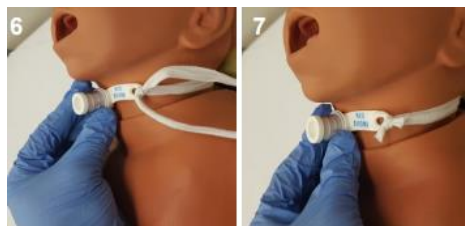
9. Sit your child up with their head slightly forward. Secure the tapes with enough room to place only your little finger underneath.

10. If the ties are too tight or loose lay your child back down, undo the bow and readjust, then sit up and check tension again, do this again until the tension is correct.



11. If the tension is correct, lie child down and change the bow into a knot by pulling the loops of the bow through to create a second knot.

12. Tie one further knot to secure the ties.



13. Cut off excess tape to leave ½ inch remaining.

- Check your child's tapes 15 minutes after changing them. If the tapes are too loose, the tube could fall out. If tapes are too tight, they may damage their skin. Adjust the tapes as necessary².

- Velcro tapes or bead chains are used by some children. Nursing staff will discuss these further.

Tracheostomy Tubes

There are different types and sizes of trachy tubes. Your team will choose the best tube for your child. The size of your child's tube will need to change as they grow.³ Your doctor may let you know when this should happen. Trachy tubes are often changed weekly to monthly. Small tubes (2.5 to 3.5mm) are often changed more frequently. It is best to change your child's tube either before a feed or at least one hour after a feed. This reduces the risk of your child vomiting.² You will need a second person to help when you change the tube.^{2, 6}

Washing a Trachy Tube

Bivona brand trachys are made to be washed and reused. **Bivona tubes should only be cleaned and reused 5 times each.** Shiley trachy tubes are made to be used and then discarded. If you don't have another tube wash your trachy until you have one.

1. Soak in cool tap water until you can wash the trachy. Do not use hot water². Do not soak the tube or introducer in chemicals or detergent as these may be absorbed into the plastic¹⁴
2. Clean with tap water and a small amount of mild detergent. Push the introducer in and out to clean inside the tube. Handle the tube gently so it will keep its shape²
3. Rinse the trachy and introducer with tap water. Discard if any damage, wear, peeling, smell or an oily feeling².
4. Shake off water, dry with a clean cloth, store in a rigid container once completely dry. Do not use any heat to dry the tube as it may change its shape and damage the plastic^{2, 14}

Changing a Tracheostomy Tube

Equipment

- Trachy tube introducer
- Clean tapes, ties or bead chains
- Suction equipment
- Water based lubricant – if previous difficulties inserting the tube

Procedure

1. Wash and dry your hands²
2. Inspect the tube for damage, wear, peeling, smell or an oily feeling²
3. Check that the introducer is easy to move in and out of the tube^{2, 6}
4. Attach clean tapes to one side of the clean tube. Place the introducer in the tube.
5. Lubricate the tip of the tube if needed.²
6. Position your child so you have good access to their tube^{2, 6}
7. Suction your child's trachy before you change it²
8. Your helper should hold the current tube in place while you remove the old tapes. When you are ready, you or your helper should remove the tube^{2, 6}
9. Place the clean tube into your child's stoma. Use a steady, curved motion to insert the tube. Your child may cough as the tube is removed and inserted^{2,6}
10. Hold the tube gently in place and remove the introducer immediately^{2, 6}
Ask your helper to secure the tapes while you hold the tube in place ^{2, 6}

Difficulty changing tube:

If you have any problems changing your child's tube try the following;

- Ensure your child's head is not turned to the side, position looking straight ahead.
- Use the tip of the tube to sweep stomal granulation to the side (if covering stoma).
- Make sure your child's neck is well extended (head right back).
- With your fingers either side of the stoma widen the opening and try to replace the tube. Do not apply force down onto the trachea.
- If you are still unable to place your child's usual size tube, try to insert the size smaller. If the smaller size tube is used please contact your **ENT doctor within 24 hours.**

Some children can breathe through their stoma without the tube in place. You will have been informed if this is likely. Comfort and position your child to help them to breathe through their stoma and call an ambulance^{2, 6}



Figure 5: Changing a tracheostomy tube seated and lying

Health and Safety

Having a tracheostomy will not stop your child doing most things.² However there are some things you should be careful with:

Water - Your child may have a bath in a shallow bath of water, with a trained caregiver present.⁴ Wearing a HME may help stop water splashing into the tube.² If water does enter the tracheostomy, suction the tube straight away.² Showers may be permissible in older children. Swimming is not possible due to the risk of water flowing into the trachy tube or stoma and then into the lungs^{2, 4}

Fumes – Avoid to smoke, powder, sprays perfumes, etc. Also avoid exposure to chemicals such as chlorine, bleach and ammonia.^{2, 4}

Small objects - Sand, dust, grass cuttings, leaves, food and parts of toys should not enter your child's trachy.^{2, 4} HME's will help to prevent this from happening. Always make sure your child's toys have no loose parts or stuffing that could cause problems.^{2, 4} Watch your child as they play with other children and take care if your child is around animals that lose hair.^{2, 4}

Clothing – Clothes that open at the front are best for children with tracheostomies.²

Clothes with high necks or collars may block your child's tube.^{2,3} Be careful using bibs with ties that could be mistaken for your child's trachy tapes.²

Illnesses – To keep your child healthy, avoid close contact to people with coughs, colds and illnesses.² Keep your child's immunisations up to date.² Always wash your hands or use an alcohol based hand gel before caring for your child's trachy.²

Food – Having a trachy does not stop children eating and drinking. However if your child has problems with swallowing, a speech therapist may be able to help.^{2,3}

Sports – Contact and water sports are not recommended.

Communication

Air that is breathed out usually passes through the voice box so we can speak.²

A child with a trachy does not usually breathe air past the voice box.² Some children have space around their trachy for air to pass up out of their mouth and nose, so they may be able to make some sounds or speak.³ Other children are able to use a speaking valve to help them talk.³ Your doctor and speech therapist will let you know if this is appropriate for your child. The speech therapist can also help your child to communicate in other ways.³

Going out with your child

When taking your child out you need to take the compulsory equipment.² It is best to have a bag packed so you don't forget anything.² Always replace what you have used when you get home so the bag is ready for next time.²

Driving with your child needs planning. Some children require suctioning at very short notice, so a trained person may need to sit in the back with the child. If safe to travel alone with your child, ideally place your child in the middle seat so you can view them in the rear view mirror if forward facing. A mirror can be used for rear facing. Be aware of your area in case you need to stop. Use the oximeter if this helps.²⁰

Compulsory Equipment

| |
|--|
| Trachy tube same size & one size smaller ^{1, 2} |
| Self-inflating bag and face mask |
| Suction unit/suction catheters/ Water for suction |
| Saturation monitor |
| Humidification HME |
| Introducer for the tube in situ |
| Spare trachy tapes or bead chains |
| Normal saline ampoules and 2mL syringes |
| Scissors or wire cutters |
| Lubricant |
| Roll for under the shoulders |
| Tegaderm (if your child has a patent upper airway) |
| Airway Profile |

Going away

If you are planning a trip away from home, let your doctor or nurse know.² Your Doctor might write a letter in case your child needs health care while you are away.² You may also need extra supplies to take with you.²

Flying requires more planning so be sure to discuss this with your Doctor or Nurse.

School

Children with trachys can go to school. Trachy training can be delivered to school staff. Contact your nurse and teachers to help arrange this.

Managing emergencies

It is important that you know how to respond to problems that your child may have.² You will be shown skills to deal with these.² Try to remain calm and do as you have been shown.²

If you need emergency assistance dial 000.

Below are guidelines for problems that could occur:

Blocked Tube

The trachy tube can block usually due to secretions that dry in the tube². If this happens, you might notice your child breathing harder and faster.² You may notice sounds such as a change in voice, whistling, noisy breaths or the stoma sucking in when breathing in. Your child may also become anxious, sweaty, or pale, grey or blue around their lips.²

If this occurs, suction the tube. Insert normal saline to help clear the secretions. If suctioning does not clear the tube or you are not able to insert the suction catheter to the usual depth, you will need to change the tube straight away².

Accidental Decannulation (tube falls out)

Sometimes trachy tubes fall out or are pulled out by children². This is a known risk and once your child is able to locate their tube at about age 9 months to 2.5 years, the chance of this is higher.

Try not to panic. Replace the tube as you have been shown.² If the tube does not go back in, try to insert the smaller size tube². Be sure to notify your ENT Doctor within 24 hours if you have used the smaller tube.

The tube coming out may have caused some trauma to the stoma. Using a water based lubricant at the tip of the trachy may make inserting the tube easier. If a tube ever seems tight when inserting, consider using lubricant regularly. Be sure to notify your doctor or nurse if tightness occurs.

Assess your child's ability to breathe and their colour. If your child is having difficulty breathing, follow the DRSABC training you received.²

It may not be possible to have two people in an emergency so think about your best option if this occurs. You may need to place one arm under their shoulders to help expose the stoma. The tube will be easier to insert if they are facing straight ahead. If you need help devising a plan, contact your Nurse.

Basic life support

You will need to know how to help your child if they ever stop breathing.² A nurse will show you how to do this before you take your child home.⁶ You will be given a Tracheostomy CPR pamphlet, store this in an easily accessible place. The pictures below may help you remember the process.

The DRSABC steps:

1. DANGER

Check for danger

2. RESPONSE

Call your child's name and squeeze their hand to see if they respond¹¹

3. SEND for help¹²

4. AIRWAY

If your child is not responding, lay them down on a firm surface¹²

Clear the airway - suction the tube to clear the airway¹²

If the tube is blocked, replace the tube with a new one¹²

Open the airway - your child needs to be positioned with their head facing forward to open their airway:

- A baby less than a year old should have their head and neck in a neutral or straight position¹¹
- A child one to eight years of age should have their head tilted back as though they were sniffing¹¹
- A child over eight years of age should have their head tilted back to extend their neck¹¹

5. BREATHING

Look, listen and feel if your child is breathing through their tube¹⁰

If they are breathing, let them recover on their left side or sitting upright.¹² A child will often place themselves in the best position.

Not breathing - Tube in place

If they are not breathing, give them two rescue breaths through their trachy either by your mouth or by self-inflating bag to their

tube^{11,12}. These breaths only need to be enough to make your child's chest rise and fall^{11, 12}

If the chest does not rise with your breath, ensure the tube is in place correctly and is not blocked (feel for air coming out of connector).

It may be necessary to change the trachy tube. If this is difficult, refer to the tips highlighted in the section 'changing a trachy tube'.

Not Breathing - Tube not in place and patent upper airway

- Dry the stoma area
- Cover the stoma with an air tight dressing ie Tegaderm®
- Use the self-inflating bag and appropriate size face mask which covers the mouth and nose and give 2 breaths
- Apply gentle pressure over stoma, if required

Child not breathing - Tube not in place and non-patent upper airway

- Place mask evenly over stoma
- Using 2 fingers place one on each side of the mask
- Use light pressure, don't press down and give 2 breaths
- Bag and mask via nose/mouth or stoma is likely to be ineffective



6. CIRCULATION

Check if your child has signs of life - whether they are conscious, responsive, breathing normally or moving. If these signs are present allow your child to recover.

If your child has no signs of life, meaning they are unconscious, unresponsive, not breathing normally and not moving, you will need to do chest compressions as well as rescue breaths ^{11, 12}

For chest compressions:

- On a baby less than a year old, place two fingers on the lower half of the breast bone¹²
- On a child aged one to eight years of age, place the heel of one hand on the lower half of the breast bone¹²
- For a child over eight years of age, place two hands on the lower half of the breast bone.¹²

Push down to $\frac{1}{3}$ the depth of your child's chest^{11,13}

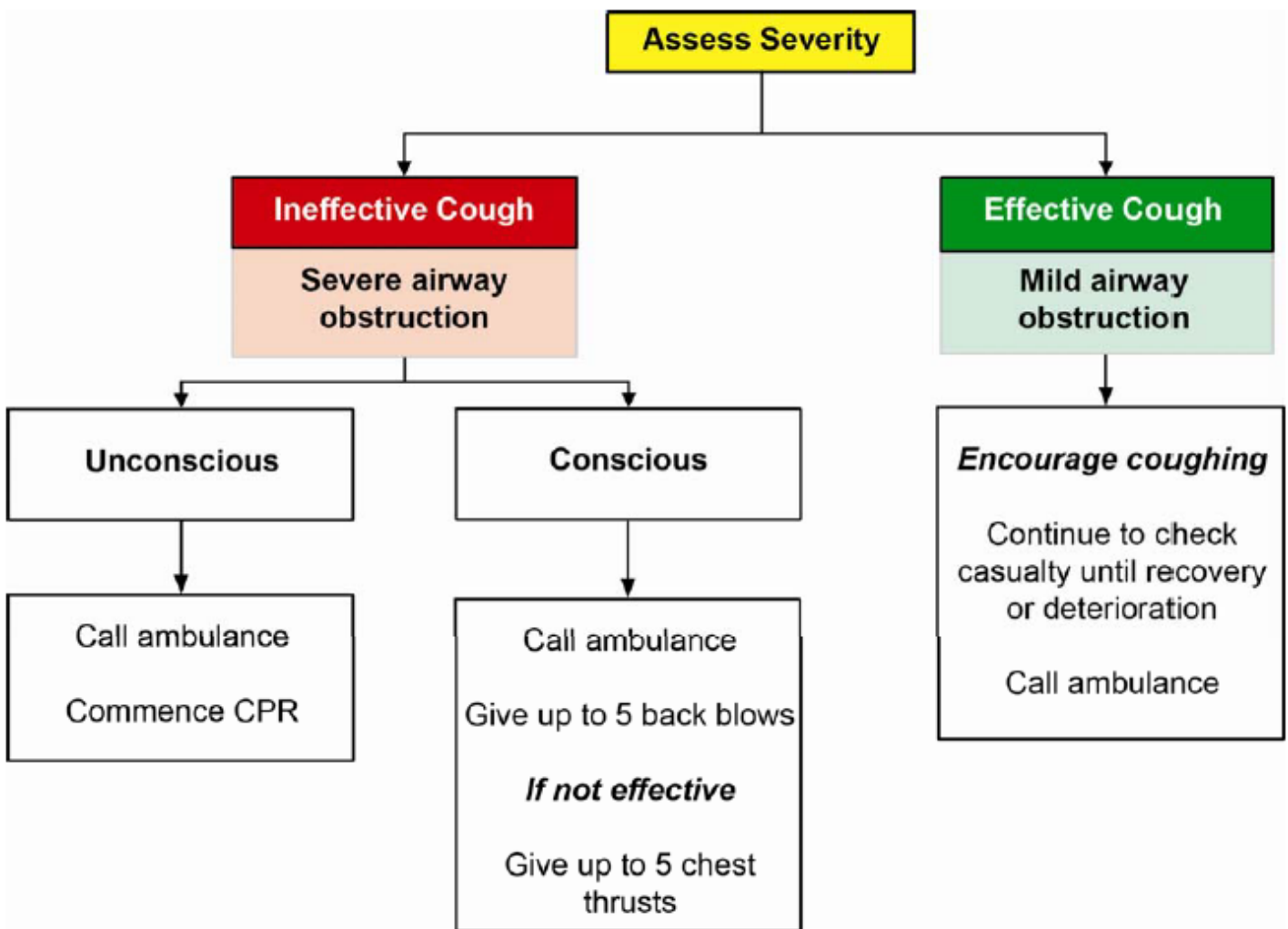
Push down 30 times and then give two breaths^{11,12}

Continue to give 30 chest compressions then two breaths for one minute

After one minute (if you have not already) call an ambulance

Continue with 30 chest compressions and two breaths until help arrives^{11,12}

Choking and a Child with a Tracheostomy



Choking

Follow these steps if you think your child is choking.

- Encourage your child to cough.



- Shout or send for help / call an ambulance.

- **Back blows**

If coughing does not remove the blockage then give up to 5 back blows (check if obstruction has been relieved after each back blow).



- **Chest thrusts**

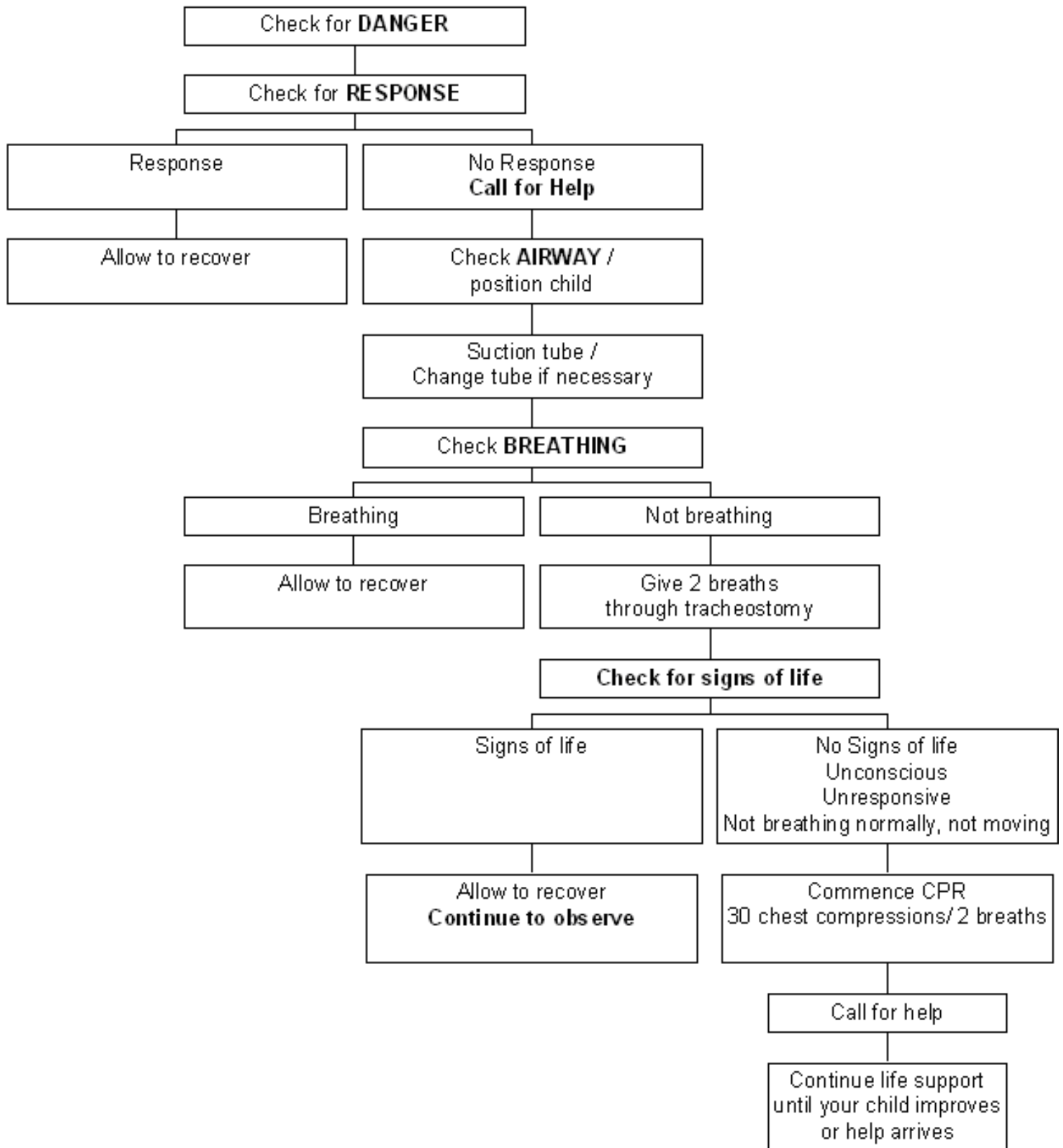
If blockage has not cleared after 5 back blows give up to 5 chest thrusts (check if obstruction has been relieved after each chest thrust).




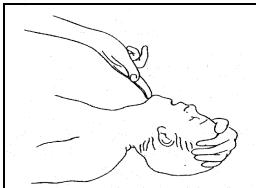

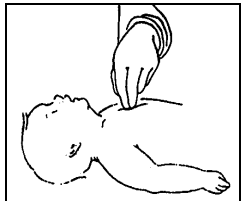
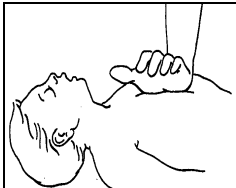
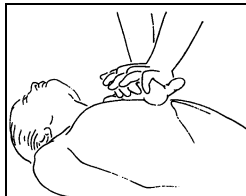
- **Ensure an ambulance has been called**

If the child loses consciousness at any time follow basic life support sequence over leaf.

Basic life support flow chart for children with tracheostomies



Basic Life Support Continued

| Child's age | 0 – 1 years | 1 - 8 years | Over 8 years |
|--|--|--|--|
| Position of head and neck | Straight or neutral position  | Head tilted back as if sniffing  | Head tilted back to extend their neck  |
| Location for chest compressions | Lower half of the sternum | | |
| Depth of compressions | Use two fingers to compress to $\frac{1}{3}$ of the depth of your child's chest  | Use the heel of one hand to compress to $\frac{1}{3}$ of the depth of your child's chest  | Use both hands on top of each other to compress to $\frac{1}{3}$ of the depth of your child's chest  |
| Rates of breaths and compressions | 30 chest compressions and two breaths | | |

Suction unit

We suggest that you practice using this machine before you take your child home.² Keep this unit plugged in to power to keep the battery charged. For safety and hygiene reasons keep the unit clean and dry. Avoid using the unit in moist areas such as the bathroom or laundry.²

Please refer to **Appendix 1** for Using the Devilbiss Portable Suction Unit.

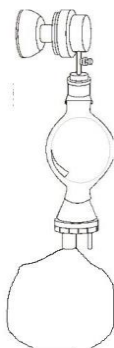
Oximeter

All children with a trachy can have an bedside oximeter at home. An oximeter measures the amount of oxygen in the blood. It is advised whenever your child is sleeping or unattended, the oximeter machine is attached which will alarm if there is a drop in oxygen saturations.

Please refer to **Appendix 2 or Appendix 3** for Home Loan Oximeter Guide for Nellcor N560 or PM100N monitors.

Cleaning of other equipment

You will be given a self-inflating bag. Mostly these are disposable and should be replaced 1 month after use (if used). Some bags are non-disposable and should be cleaned monthly.



Community support

Hospital in the Home/Post-Acute Care can see children with trachys and their families at home within the metropolitan area. These nurses will support you in caring for your child. You might want their help to change your child's trachy tube initially after discharge.²

Caring for a child with a trachy is tiring and demanding. There are some community agencies that may be able to provide support and respite. Sometimes funding is available to assist with this. Please speak with nursing staff to discuss further.

You will need to contact your power company to let them know that your home is a priority for power and repairs if services are interrupted.^{2, 3}

You may be eligible for the Essential Medical Equipment List Payment <https://www.humanservices.gov.au/customer/services/centrelink/essential-medical-equipment-payment> via Centrelink for a contribution to the use of power for your suction unit, pulse oximeter and other equipment your child may use.

Another subsidy is the Life Support Equipment Energy Subsidy Scheme http://www.finance.wa.gov.au/cms/uploadedFiles/_State_Revenue/Other_Schemes/Life_Support_Equipment_Information_Sheet.pdf?n=8629

The CNC for Technology Dependent Children may be able to put you in contact with other parents of a child with a trachy. Please ask if you would like to arrange this.

Additional resources

Kalparrin Centre For Families of Children with Special Needs at PCH 08 6456 0035 or 08 6456 5379 www.kalparrin.org.au

Aaron's Tracheostomy Page: www.tracheostomy.com

Readmission

It is likely that your child will need to come back to hospital intermittently. In time you will become an expert in your child's care. Please share your knowledge with staff so we can provide continuity in your child's care. If possible, take the opportunity to have a break while your child is in hospital.²

Consumables

Prior to going home, you will be given a letter about how to get your consumables (items that are used and discarded). You will be discharged

with about 2 weeks of consumables. A template of items for your child is provided for you to order from. Allow 2 weeks for orders to be ready and you will receive an SMS when the order is ready.

If you run short of consumables ring ECS ASAP to give them time to find stock to give to you. Out of ECS hours present to the PCH Emergency Department.

Equipment breakdown and servicing

If your equipment is damaged or broken contact the Equipment & Consumables Service. Call first to ensure a replacement unit is available. Ensure your equipment is **clean** and the suction canister **is empty**. You will receive a letter in the mail for the yearly service required on most electric equipment.

After hours equipment breakdown

If your equipment e.g. oximeter/suction breaks out of ECS hours contact Complex Care Coordination (if enrolled) or present to the PCH Emergency Department.

Glossary

HME (Heat and Moisture Exchanger) a filter that fits onto the end of the trachy tube. This warms and moistens air that is breathed through a trachy²

Humidification – to warm, filter and moisten air¹⁷

Introducer – is provided with the trachy tube. When inserting the tube, this helps to stiffen, protect the airway and guide the tube into the stoma²

Larynx – the organ that produces the sounds of voice and speech. Also known as the voice box or vocal cords¹⁷

Secretions – fluid released from cells which need to be removed from the trachy tube to prevent blockages. The presence of the tube results in an increase in these respiratory secretions

Stoma – an opening where the trachy tube is inserted²

Suctioning – removing secretions from the trachy tube with a catheter

Tracheostomy – an opening made through the front of the neck into the trachea. This allows air to pass directly into the lower airways and into the lungs¹⁷

Trachea – the passage for air between the voice box and the lungs. Also known as the windpipe¹⁷

Contact Numbers

**Perth Children's Hospital
Switchboard** 6456 2222

**Clinical Nurse Consultant
Technology Dependent Children**
6456 2019 / 0436 595 522

Consumables 0416 240 662
PCH.ECS@health.wa.gov.au

Dietician 6456 0408

Equipment & Consumables Service (ECS) 6456 0905

**Monday – Friday 8am - 6pm
Saturday - Sunday 8am - 4pm**

HITH/Post-Acute Care 6456 3773

Occupational Therapy 6456 0409

Physiotherapy 6456 0412

Social Work 6456 0413

Speech Pathology 6456 0414

Appendix 1. USING THE DEVILBISS PORTABLE SUCTION UNIT

To set up suction unit – see leaflet provided with containers

- Fit lid onto suction container making sure it is firmly sealed (if lid is loose device won't suction), place into holder
- Connect one end of short silicone tubing to the unit (push firmly) (see diagram below)
- Attach the other end of silicone tubing to filter on the suction container lid
- Attach long suction tubing to the connector on the lid marked "To Patient"
- Check that all connections are firm

DeVilbiss Suction Unit New Container Set Up



Charging the Unit

- Battery takes **10-17 hours** to charge fully (depending how flat it is)
- Fully charged battery will provide approximately 1 hour of continuous use
- Leave the unit connected to power **whenever possible**
- A power cord is provided for use in a wall socket and an adapter for a car's cigarette lighter

Led Display

- **L1 Green:** On when external power connected to unit (from mains or car battery)
- **L2 Yellow:** Constantly on when battery is being charged, will go out when battery is fully charged
- **L3 Red:** Constantly on when battery Low - Attach power cord to charge battery as soon as possible when light remains on

Setting the Suction Pressure

Before carrying out suction, **check** the **pressure level** to prevent injury to your child due to high pressure:

- Turn unit on
- Put your finger over the end of the long suction tubing and check the level on the gauge after 5-10 seconds. Adjust knob and repeat process
- The level (in the black outside number) should **80-120mmHg**. Use the knob beside the gauge to adjust the level to 80-1200mmHg



To Perform Tracheostomy Suction

See Suctioning Page 4 of this document

Oral/Nasal Suction:

1. Attach plastic sucker or disposable suction catheter to long suction tubing
2. Gently insert sucker into the side of your child's mouth or nose and apply suction by placing a finger over the hole in the sucker. Continue until secretions are cleared, gently rotate the sucker as you remove it
3. Repeat Step 2 if necessary
4. At the end of suctioning, clear the tubing by suctioning tap water through the tubing and sucker. Turn unit off

Changing the Filter

- **Change the filter every 2 months**
- Ensure canister does not tip or become overfull, as this will result in the filter becoming wet and the unit not working appropriately. If this occurs change the filter



Cleaning Instructions

It is important that regular cleaning and maintenance is done.

Suction Unit

- Switch power off, disconnect from power source
- Wipe unit with a cloth and disinfectant

Caution: Do not place suction unit in water as this will damage it



Container & Lid

- Container should be emptied and cleaned as needed
- Wash container & lid in hot soapy water, rinse and dry well (or dishwasher)
- **Remove filter** before washing suction container and lid. Change filter if it becomes wet

Tubing

- Suck through tap water after each suction
- Each week, suck through hot soapy water then tap water and leave to air dry
- Each week suck through 1 part white vinegar in 3 parts hot water
- Replace for new tubing monthly, if used regularly

Maintenance

- Check tubing and suction container for leaks and cracks
- The suction unit must be returned for service once a year to PAC or if not working properly
- Service due date is on the green label on the unit

| Problem | Action |
|----------------------------------|---|
| Unit does not turn on, but green | <ol style="list-style-type: none">1. Check power sources and connections.2. Ensure wall outlet is live by plugging in a lamp.3. If running from an internal battery, ensure that your unit has a battery installed. |

| | |
|---|---|
| external power light is illuminated | 4. If battery is installed, check that it is fully charged. |
| Pump runs, but there is no suction | <ol style="list-style-type: none"> 1. Check that all tubing is connected properly. 2. Check tubing connections for breaks or leaks. 3. Ensure that float shut-off is not activated. 4. Check for leaks or cracks in container assembly. 5. Replace suction container and lid with new assembly |
| Low suction | <ol style="list-style-type: none"> 1. Use suction adjustment knob to increase suction level. 2. Check system for leaks. 3. Push suction adjustment knob in toward unit and then release. |
| Battery will not charge but charge light is illuminated | <ol style="list-style-type: none"> 1. Ensure that unit is equipped with an internal battery by contacting your Devilbiss equipment provider. 2. Verify that charge light turns on. 3. Check electrical connections during charging. 4. Ensure wall outlet is live by plugging in a lamp. |



Devilbiss suction (older model)

Appendix 2. USING THE LAERDAL COMPACT SUCTION UNIT

The Laerdal Compact Suction Unit (LCSU) is a portable, electrically powered, medical suction unit.

Warnings:

- Suctioning material into the pump can damage and/or disable the device.
- Always have a spare canister or alternative device available in case the first canister is full or the device becomes tipped onto its side and the filter become wet.



Assembly of the 300ml canister Version:

1. Push the upper port connection into the Vacuum inlet and check that the lower part of the canister clicks into place. Canister CANNOT be emptied. They are disposable when full.
2. Connect the suction tubing to the Patient Port. Ensure all connections are secure to prevent leakage.

Check Before Each Use

1. The Unit should not be damaged.
2. The Unit should be clean.
3. All parts should be properly assembled (canister, tubes etc.).
4. Perform Device test after each assembly.
5. Check Battery level.

Power source options

- The LCSU can be powered with either the internal battery, external 12VDC power (using the vehicle charger) or external AC power (using the AC charger).

| LED Indicator | Status |
|---------------|--|
| Green | External Power is connected |
| Yellow | Battery is charging (Will go off when Battery is fully charged) |
| Red | Battery level is low |

- An empty battery must charge for up to 5 hours to reach full capacity.
- Battery run time of approximately 45 minutes of continuous operation.
- Always fully charge the battery.
- To prolong the battery lifetime, it is recommended to place the battery on continuous charge.

How to adjust the suction level:

1. Turn the unit on.
2. Block the patient suction tubing.
3. Set the desired suction vacuum level by turning the vacuum regulator.
4. The vacuum level will display on the 50-550mmHg scale (use 80-120mmHg for children)

Appendix 3. HOME LOAN OXIMETER GUIDE FOR NELLCOR N560

- Please ensure the oximeter is on a firm stable surface or secured (if using on a pram/wheelchair) when in use to prevent accidental dropping or damage to the machine. Weight: 1.7kg
- **ALARM LIMITS-** Appropriate alarm levels for low heart rate and oxygen saturations will be pre-set on the machine. A doctor will determine these limits according to your child's age and medical condition. **Please do not change these alarm limits.**

AC POWER OR BATTERY OPERATION

- Leave your machine plugged in to a power outlet which is turned on at all times (except if using on battery power) to ensure the battery is always fully charged
- A new fully charged battery will provide **up to 8 hours** of monitoring time
- To fully charge a dead battery takes **6 hours**
- **Low Battery** indicator will light and a low priority alarm will sound when **15 minutes** of monitoring time remains on the existing battery charge

FRONT PANEL BUTTONS and SYMBOLS

Please Note- A Quick Guide for using the Nellcor Oximeter is located on the top of the machine

FRONT PANEL BUTTONS and SYMBOLS

Please Note- A Quick Guide for using the Nellcor Oximeter is located on the top of the machine

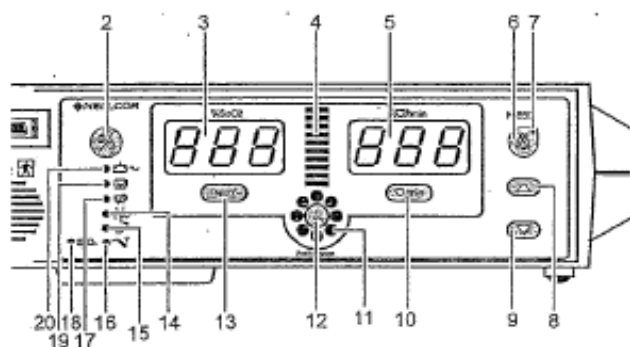


Figure 1: Front Panel Buttons and Symbols

| | |
|------------------------------------|--|
| 1 — SpO ₂ Sensor Port | 12 — SatSeconds Alarm Limit Button |
| 2 — Power On/Off Button | 13 — SpO ₂ Alarm Limit Button |
| 3 — %SpO ₂ Display | 14 — Interference Indicator |
| 4 — Pulse Amplitude Indicator | 15 — Sensor Off Indicator |
| 5 — Pulse Rate Display | 16 — Sensor Message Indicator |
| 6 — Alarm Silence Button | 17 — Pulse Search Indicator |
| 7 — Alarm Silence Indicator | 18 — Data In Sensor Indicator |
| 8 — Adjust Up Button | 19 — Low Battery Indicator |
| 9 — Adjust Down Button | 20 — AC Power Indicator |
| 10 — Pulse Rate Alarm Limit Button | 21 — Speaker |

ERROR CODES

- If an error code is displayed on the screen **EEE** (on the left hand screen) and a number e.g. **513** (on the right hand screen) turn the Oximeter off and wait 10 seconds before turning it on again
- If the Oximeter is still showing an Error code after turning off and on **Please write down the error code number to assist us in fixing the problem**

OXIMETER PROBES Please reuse your Oximeter probes for as long as possible and only replace if **broken or not working**

Appendix 4. HOME LOAN OXIMETER GUIDE FOR NELLCOR PM100N

- Place monitor on a firm stable surface (or secured if in a pram/wheelchair) to prevent damage to the machine. Weight: 1.6kg
- **Alarm limits are preset for heart rate and oxygen saturations** - A doctor will determine these limits by your child's age and medical condition. **Please do not change these alarm limits.**

Power or Battery Operation

- Plug into power at all times to ensure the battery is fully charged
- A fully charged battery will provide **up to 5 hours** of use
- To fully charge a flat battery takes at least **4 hours**
- **Low Battery** sign will light and a low priority alarm will sound when **15 minutes** remains in the battery

Front Panel Buttons and Symbols

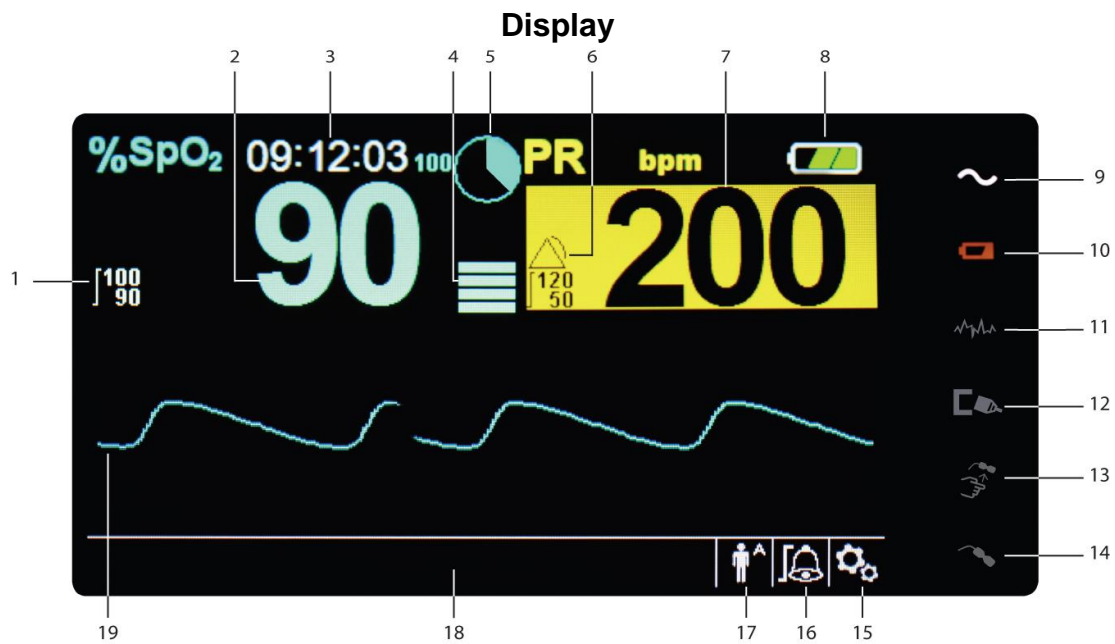
See Quick Guide for use on the top of the machine.

Front Panel







POX_30091_A

| | | | |
|---|--|---------------------------|--|
| 1 | | Alarm Audio Paused button | Press to silence and unsilence the alarm. |
| 2 | | Return button | Press to go to the main screen. |
| 3 | | Power On/Off button | Press and hold to turn the monitor on or off |
| 6 | | Jog dial | Use to move between monitoring system functions. |
| 7 | | LCD display panel | Use to monitor all patient information as well as warning messages |
| 8 | | SpO2 connector | Use to connect to the cable and sats probe. |



POX_30089_A

| | | | |
|----|--|----------------------------------|---|
| 1 | | Upper and lower set alarm limits | |
| 2 | | SpO2 | Indicates O ₂ saturation level |
| 3 | | Time | Current time (in hours, minutes & seconds) |
| 4 | | Pulse amplitude (blip bar) | Indicates pulse beat and strength |
| 5 | | SatSeconds™ icon | Alarm management for mild or brief alarms (if enabled) |
| 6 | | Alarm active icon | Appears with alarm message when an alarm is triggered |
| 7 | | Pulse rate | In beats per minute |
| 8 | | Battery status icon | <u>Charged battery</u> – steady green icon indicates fully charged battery <u>Low battery</u> – flashing yellow alarm indicates only enough power for 15 minutes operation <u>Critically low battery</u> – flashing red alarm indicates monitor will shut off in 5 minutes if not connected to mains power. |
| 9 | | AC power icon | Lights continuously when connected to mains power. |
| 10 | | Battery charge icon | Lights when is charging an internal battery. |
| 11 | | Interference icon | Lights when monitor has poor signal. It is common for it to intermittently light with patient movement. |
| 12 | | Sensor disconnect icon | Appears when the sensor is not connected to the monitor |
| 13 | | Sensor off icon | Appears when the sensor is not on the patient. |
| 14 | | Sensor message icon | Appears when the sensor is the wrong brand. |

| | | | |
|----|---|--------------------------|--|
| 15 |  | Options menu area | Appears when using the jog dial to enter various menus |
| 16 |  | Alarm Audio Paused / Off | <u>Alarm Audio Paused</u> - Appears when the alarm is paused for a period of time. <u>Alarm Audio Off</u> - Appears when the audible alarm is disabled. |
| 17 |  | Patient mode area | <u>Pediatric mode</u> - Visible in the patient mode area when the alarm limits are set to pediatric limit values |
| 18 | | Message area | Contains messages to notify the user of a condition or a request for action |
| 19 |  | Pleth waveform | Indicates strength of pulse signal |

Common problems and resolutions are outlined in the table below:

| Problem | Resolution |
|--|---|
| Battery Charging Indicator not lit | Check power cord Check battery Check AC power inlet Check power/ mains outlet |
| Sensor Message SpO2 Pulse search Signal Artifact Detected SpO2 Sensor Off SpO2 Cable/Sensor Disconnect SpO2 Loss of Pulse | Check patient is still, Check all connections Reposition sensor probe Check probe Choose alternate site Warm site Cover probe Remove nail polish Sensor (too tight) Replace the cable and/or sensor probe |
| No response to Power On/Off button press | Press On/Off button for more than 1 second. Ensure the power cord is properly connected. Ensure Power icon blinks. Ensure it does not share the same power source with other equipment. If the error continues, contact Patient Appliance Centre or ACC |
| No response to button press | Check whether the Return button has not been pressed during normal screen. If the error continues, contact Patient Appliance Centre or ACC |
| Frozen after power on | Press the Power On/Off button again. If the error continues, contact Patient Appliance Centre or ACC |
| System is frozen | This generates a beep tone. Press the power button over 15 seconds. If the error continues, contact Patient Appliance Centre or ACC |
| Blank screen | Press the Power On/Off. Check if power icon lights or blinks. |

| | |
|--|---|
| | If the error continues, contact Patient Appliance Centre or ACC |
| Screen does not function properly and the power-on beep tones do not sound | Do not use the monitoring system; contact Patient Appliance Centre or ACC |
| No sound generation | Verify setting point of volume is not 0 or 1. Verify alarm setup is not set to audible alarm paused. If the error continues, contact Patient Appliance Centre or ACC |
| Abnormally shut down message | Check any settings such as alarm limits and patient mode, are correct. Press the Power On/Off button. If the error continues, contact Patient Appliance Centre or ACC |
| Uses battery power even with mains power connection | Ensure good connection to power cord and wall . Check if power icon lights or blinks. Use the same power source with other equipment to check for power. Replace the power cord. If the error continues, contact Patient Appliance Centre or ACC |
| Low Battery / Critically Low- Battery condition | Connect to mains power until the internal battery is fully charged. Check power connection, Check if power icon lights or blinks. Use the same power source with other equipment to check for power. If the error continues, contact Patient Appliance Centre or ACC |
| Questionable patient measurements | Check patient condition. Replace sensor or cable Check all connections and reposition Remove sources of interference, such as mobile phone, radio. Remove bright light from probe. Contact ACC |
| Technical System Error | Do not use the monitor Contact Patient Appliance Centre or ACC |

If another error message/code is appears, turn monitor off and wait 10 seconds before turning it on again.

Equipment Breakdown

- **Please write down the error message/code number to help us to fix the problem**
- **Out Of Hours call your Home Ward and one can be loaned from the Technology Dependent area of ECS**

Oximeter Probes

- Please reuse your probes for as long as possible and **only replace if broken or not working**

Appendix 5. TRACHEOSTOMY PARENT/CARER COMPETENCIES

Name of Parent /Caregiver: _____

Name of Child: _____

This checklist is a guide for nursing staff teaching parents/carers how to safely care for a child with a tracheostomy (trachy). Additional education may be required depending on the child's medical condition. A separate teaching plan should be used for each caregiver.

As information is provided and/or skills are achieved, staff will date/initial the relevant boxes. Skills should be performed initially under supervision. **An appropriately experienced nurse should assess and sign off the parent/carers as competent.**

| OBJECTIVES That carers would be able to: | Discussed & Demonstrated | Parent/Carer performed under supervision | Parent/ Carer deemed competent |
|--|-----------------------------|---|---|
| INTRODUCTION: Understand: <ul style="list-style-type: none"> • Structure and function of the upper airway. • What a trachy is • Reason for their child's trachy. | | | |
| STOMA CARE: <ul style="list-style-type: none"> • Discuss & Demonstrate Routine stoma care. | | | |
| <ul style="list-style-type: none"> • Discuss and describe potential stoma problems and management including infection, skin irritation and over granulation. | | | |
| AIRWAY MANAGEMENT & SUCTION <ul style="list-style-type: none"> • Discuss signs of when to suction. | | | |
| <ul style="list-style-type: none"> • Demonstrate effective suction technique. | | | |
| <ul style="list-style-type: none"> • Operation of oximeter, battery, power, cable connection, alarms, on/off, how to identify when reading is correct, probe placement and use | | | |
| <ul style="list-style-type: none"> • Demonstrate use of home suction unit. | | | |
| <ul style="list-style-type: none"> • Outline cleaning of pump, emptying and washing canister (hot soapy water or disinfectant). • Bacterial filter changing: when signs of moisture or discoloured as seen through the clear side or AT LEAST every 2 months. • Require service yearly and when returned to PAC must be in a clean state (canister empty). | | | |
| <ul style="list-style-type: none"> • Describe potential causes, signs and management of respiratory distress | | | |
| HUMIDIFICATION <ul style="list-style-type: none"> • Explain the importance of humidification and how to provide this | | | |

| OBJECTIVES That carers would be able to: | Discussed & demon- strated | Parent/Carer performed under supervision | Parent/ Carer deemed competent |
|--|---|---|---|
| TRACHY TAPE CHANGE: <ul style="list-style-type: none"> Know when and how to change the trachy tapes or bead chains. | | | |
| TRACHY TUBE CHANGE: <ul style="list-style-type: none"> Discuss when to change the tube i.e. blocked, concerned becoming blocked, weekly or up to monthly. | | | |
| <ul style="list-style-type: none"> Demonstrate how to change a trachy tube. | | | |
| <ul style="list-style-type: none"> Parent/Carer deemed competent by experienced nurse: No. of tube changes required will vary. | | | |
| <ul style="list-style-type: none"> Demonstrate how to clean a trachy tube. | | | |
| EMERGENCY MANAGEMENT: <ul style="list-style-type: none"> Describe potential causes, signs and management of a blocked tube. | | | |
| <ul style="list-style-type: none"> Accidental decannulation. | | | |
| The ward CPR Train the Trainer teaches parent trachy CPR. For child specific information discuss with CNC TDC prior to the session. Demonstrate: <ul style="list-style-type: none"> Basic Life Support for a child with a trachy. Correct technique for using a self-inflating bag for resuscitation direct to trachy and to mouth/nose. | | | |
| <ul style="list-style-type: none"> State actions in event of power failure/equipment failure. | | | |
| GENERAL CARE: <ul style="list-style-type: none"> Discuss what to take when going out with the child. Discuss communication issues specific to child. Highlight contact/resource people for specific issues. Discuss community support available. | | | |
| ACTIVITIES OF DAILY LIVING: Explain issues related to: <ul style="list-style-type: none"> Bathing Feeding Schooling Toys & pets Swimming Hobbies/sports Travelling/transport Driving safely with your child | | | |

Appendix 6. TRACHEOSTOMY DISCHARGE SUPPLIES

- A consumables template is created by the CNC Technology Dependent Children prior to discharge. The family use this template to order consumables following discharge.
- Prior to discharge the Clinical Nurse Manager/ward need to order and provide **at least 2 weeks** consumables. This is to allow the family to place and receive their first order with the ECS following discharge. Parents will receive info on this process prior to discharge.
- The Oximeter and Suction are loaned from ECS. Complete a Loan Agreement Form and request on agility. **No hire/rental fees apply. Families should be provided this equipment during the trachy competency process**
- Other consumables codes are added to the template by other specialty Nurses

| ITEM | QUANTITY | DATE ORDERED | RECEIVED |
|---|-------------------------|--------------------------------------|----------|
| Suction Machine Portable | 2 | | |
| Oximeter (set default alarm limits specific to child via MTMU or CNC TDC) | 1 | | |
| See Consumables Template for size appropriate tracheotomy consumables (CNC TDC to complete) | At least 2 weeks supply | | |
| Self-Inflating Bag and Mask, disposable | 1 of each | | |
| PEEP valve, disposable (if required). Some patients require non-disposable Self-Inflating Bag - see CNC TDC | 1 | | |
| Suction spare pot kit | 1 | | |
| PNA Pot (for suction by parent if suction machine fails) | 1 - 2 | | |
| Scissors (supplied by parents) | Parents/carers | | |
| Copy of the current Airway Profile | 1 - 3 | | |
| Tegaderm 6x7cm (for patent upper airway) | 2 - 3 | | |
| Swedish Nose with oxygen (appropriate size) if not using oxygen | 3 - 4 | | |
| Nebuliser pot, trachy connection and O2 tubing | 1 | Provide with current ward pot/tubing | |

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