CONNECT WITH KIDS!

From Hospital to Home: Care of the Pediatric Home Ventilator Patient

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OBJECTIVES:

1. Identify reasons WHY a pediatric patient may require tracheostomy and home ventilator

2. Outline discharge criteria for pediatric home ventilator patients

3. Identify common tracheostomy emergencies

4. Learner will be able to troubleshoot common home ventilator alarms
Why does my patient have a tracheostomy?

- Chronic respiratory failure
- Airway obstruction
- Tracheo-laryngeal separation

Always have a plan!!
Routine Tracheostomy Care

- Tracheostomy tube is changed by caregiver once weekly
- Stoma care and velcro trach ties changed daily and PRN
- Bivona trach tubes are able to be cleaned and re-used up to 5 times per manufacturer recommendations
Reasons for Chronic Mechanical Ventilation

- Central
- Neuromuscular
- Airway
- Chronic Lung Disease
- Other organ failure
Discharge criteria

**Medical stability**
- No recent changes to support
- No acute events
- All care can be performed outside hospital

**Caregiver training**
- 2 adult caregivers trained on complete care
- Rooming in overnight to assure competence

**Home care**
- Home environment acceptable
- All equipment, supplies, home nursing care, is approved and in place
- Must have adequate support for 24/7 awake caregivers
Ventilator alphabet soup

• SIMV (synchronized intermittent mandatory ventilation) means the patient is on a “rate”

• VC (volume control) vs. PC (pressure control)

• PS (pressure support)

• PEEP (positive end expiratory pressure)

• LTV (laptop ventilator) vs. Trilogy
LTV1150 & TRILOGY 100
Trilogy specific settings:

- **S/T** (spontaneous/timed) patient is breathing spontaneously supported by a set pressure, but has a “back up” rate if they do not breath in a set time interval
- **AVAPS** (average, volume-assured pressure support): means we give the ventilator a range of pressures it can deliver in order to achieve a goal tidal volume
- **IPAP** (inspiratory positive airway pressure)
- **EPAP** (expiratory positive airway pressure)
Ventilator alarms

- When the ventilator alarms for ANYTHING, look at the patient and make an assessment
  - Does the child appear distressed?
  - Is the chest rising and falling?
  - Breath sounds?
  - Start at the trach and work your way back along ventilator tubing
    - Is the trach in place?
    - Is the trach patent?
    - How do you know?
Ventilator alarms

- High Pressure
- Low Pressure
- Low minute volume
- Disc/sens or circuit disconnect
- High f or high breath rate
- Apnea
High Pressure

Possible causes:
- Cough
- Hiccup
- Secretions/mucus plug
- crying

Interventions:
- Suction
- Change the trach
- Calm the child
Low Pressure

Possible causes:

• Something is disconnected

• Leak at the trach

Interventions:

• Assure trach is in place and ties are secure

• Check the cuff

• Follow vent tubing back from patient to the vent

• If you cannot figure it out, bag the child and consider switching to back up vent
Low minute volume/ventilation

Possible causes:
- Trach is decannulated
- Leak at trach stoma
- Secretions/mucus plug

Interventions:
- Look at the trach/ is it in?
- Suction the patient
- Check the cuff
Disconnect alarm
If you cannot figure out where the problem is...BAG your patient and then switch to back up ventilator

- LTV will say disc/sens  
- Trilogy will say circuit disconnect
My child is breathing fast. Why?

- LTV: high f
- Trilogy: high breath rate

Does the patient need to be suctioned?
Is there water in the vent tubing causing “autocycling”?
Is there a large air leak causing “autocycling”?
Has something else changed to make you think the child is sick?
Apnea

• Cessation of breathing for preset # of seconds, ie, 10, 20, 30 sec (determined by the provider)

• Ventilator is designed to rescue the patient until they start breathing again on their own
Trilogy specific alarm

- Low circuit leak

- There is NOT ENOUGH of a leak for patient to exhale

- Check the exhalation valve (aka whisper swivel valve) for secretions

- Bag the patient and change the whisper swivel valve or switch to back up vent
Resources


• http://www.stlouischildrens.org/health-resources/family-resource-center/interactive-learning


CASE STUDIES