

Virtual Simulation Participant Guide

Overview

The virtual simulation session is designed to be a training opportunity to build on virtual education sessions delivered through Connected Care (e.g. virtual tracheostomy workshop, virtual invasive ventilation workshop). The virtual simulations will allow participants to apply content learned from previous sessions and build problem-solving skills in caring for children requiring complex medical technology in the home.

Role of the Participant

Participants will observe virtual simulations, reflect on assessments, actions and interventions in the simulations and engage in discussions to highlight key learnings.

General Virtual Etiquette

- Ensure you have access to a computer that has audio and video capabilities.
- Sign in online at least 5 minutes before the session starts.
- Have a pen and paper for taking notes.
- Mute your microphone when you are not speaking.
- If you have internet issues you may need to leave and then sign back in.
- Please be patient if there is an internet delay for the simulation.
- Participate in the debrief after each virtual simulation
- Avoid multitasking when participating in virtual education

Virtual Simulation Guiding Principles

The simulation scenarios that you will be observing and engaging in discussions will demonstrate potential encounters that may occur in a child's home. This simulation activity is a learning experience and is designed to provide opportunities to apply previous learnings and experiences into action. Participants will be divided into two breakout groups using Zoom breakout rooms. In a safe learning environment, participants will have the opportunity to discuss what was observed, what actions to be taken next and reflect on key learnings from each scenario.

Preparing for the Virtual Simulation

Prior to attending, review the following slides, safety checklist and sample orders. These tools will support your participation in discussions during the simulation scenarios. Your facilitator(s) will refer to these throughout the workshop.

Learning Outcomes

- Discuss key features of invasive mechanical ventilation via tracheostomy
- Review the Trilogy 200 ventilator features
- Review alarm management of home ventilators
- Discuss simulation video scenarios for safe and effective care of a child receiving home ventilation via a tracheostomy
- Discuss process for safety checks when caring for a child requiring invasive ventilation

Invasive Ventilation Review

- What is invasive ventilation
- Circuit setup
- Trilogy 200 ventilator screen
- Common alarms

What is Invasive Ventilation?

Delivered by a mechanical ventilator - a machine that generates controlled flow of gas into a patient's airway



Assisted ventilation that involves the delivery of flow and pressure to the airway in order to affect the lung volume

The mechanical ventilator is attached to the tracheostomy tube



Trilogy 200 Ventilator

Flow Pathway

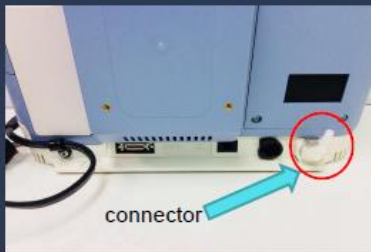
- A. Outlet of ventilator
- B. Short tubing into humidifier
- C. Long tubing from humidifier to trach



Review: Trilogy 200 Screen

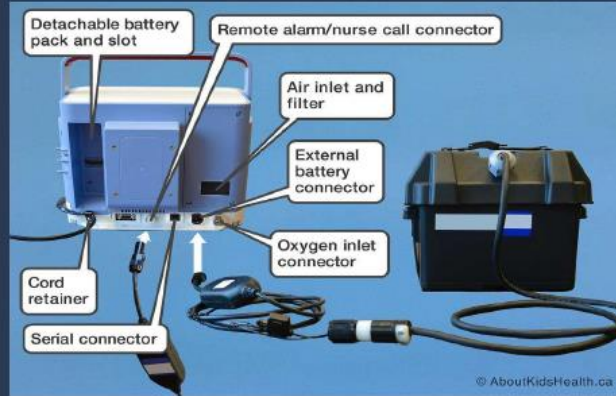


Adding Oxygen to the Trilogy Ventilator



Oxygen concentrator

Trilogy 200 Back of Ventilator & External DC Battery



Trilogy 200 Detachable Battery

Lithium Ion battery

- Duration: ~3 hrs
- Recharges when in the vent and plugged in
- Can take several hours to recharge if fully drained
- On the front of the ventilator screen, the battery being used will be outlined in a black box
- If no box around a battery source, it means AC power is being used



Let's Review Built-in Vent Alarms

Trilogy 200 Built-in Alarms	Action Required
Ventilator Inoperative - service required	Switch to back up vent and call VEP
Loss of Power - unit will shut down	Attach DC External battery, replace detachable battery to charged one or switch patient to charged back up ventilator
Low Circuit Leak	Check the exhalation connector and make sure it is not occluded
Check Circuit	<p>Check that the circuit type used matches what is selected in the Setup Menu</p> <p>Ensure tubing is not kinked or pinched</p> <p>Ensure there is no excess condensation/water in the tubing</p>

Let's Review the Programmable Vent Alarms

Common Trilogy Programmable Alarm	Common Reason for Alarm
Circuit Disconnect	Occurs when the breathing circuit is disconnected or has a large leak
Low Minute Ventilation	<p>Alerts you to decannulation with vent attached</p> <p>Secretions in the tracheostomy tube</p> <p>Leaks</p>
High Minute Ventilation	Partial or full obstruction of trach (because ventilator is trying to increase volume/flow to achieve the set pressures)
Low Respiratory Rate	Patient's respiratory rate falls below set parameter
High Respiratory Rate	Patient is in respiratory distress, needs suctioning or a tube change
Low Tidal Volume (exhaled)	<p>Occurs when the patient's exhaled tidal volume falls below what is set</p> <p>Check for leaks (patient, circuit, humidifier, connections)</p> <p>Check for airway occlusion – suction patient</p>
High Tidal Volume (exhaled)	Partial or full obstruction of trach

Alarms Display



Sample Orders

Trilogy 200 VEP# 1234

Settings			Prescription
Tracheostomy	Brand / Type		Bivona TTS cuffed
	Size		3.5 (2mL water)
Circuit type	Active	Passive	Passive
Circuit size	Ped	Adult	Ped
Circuit tubing	Heated		Heated: Bed vent
	Non-heated		Non-heated: Travel vent
Mode			PC
Dual Prescription	ON/OFF		OFF
AVAPS	ON/OFF		OFF
IPAP	cmH ₂ O		25
EPAP	cmH ₂ O		4
Breath rate	bpm		30
Inspiratory time	secs		0.8
Trigger type	FLOW	AUTO	Flow
Rise time	1-6		1
Trigger sensitivity	Lpm		1
Cycle sensitivity	%		25
Ramp length	0-45 min/OFF		0
Alarms & Options			
Circuit disconnect	60 sec-OFF		10
Apnea/Apnea rate	60 sec-OFF/bpm		OFF
Low / High V _{te} (exhaled tidal volume)	mL		Low: OFF High: 200
Low / High Minute Ventilation	Lpm / OFF		Low: 0.1 High: 5.0
Low / High RR (respiratory rate)	bpm / OFF		Low: OFF High: 60
Oxygen	Lpm		0



PAEDIATRIC HOME INVASIVE VENTILATION CARE SAFETY CHECKLIST

START OF SHIFT DISCUSSION WITH FAMILY CAREGIVERS

- Review the child's care plan and discuss any updates with family caregivers
- Establish a system to communicate with family caregivers in case of emergency/support required
- Discuss the use of Connected Care Live with family caregivers
- Confirm that prescribed settings/alarm parameters are on hand or taped to ventilator

BACKUP VENTILATOR

- Verify correct circuit setup
- Confirm settings and alarms against orders
- Check that internal and detachable batteries are charged or charging
- Ensure back up ventilator is readily accessible
- Check external battery is charged/charging and readily available with ventilator adaptor (DC cable and transformer setup) close by or already connected to bedside ventilator

BEDSIDE VENTILATOR

- Verify correct circuit setup
- Ensure exhalation port or device is unobstructed
- Confirm settings and alarms against orders
- Check that ventilator is plugged into AC power
- Check that internal and detachable batteries are charged or charging
- Ensure circuit and filters are clean
- Ensure there are no liquids near the ventilator
- Check that there is no water in circuit
- Check that oxygen connector and tubing attached or readily available

HEATED HUMIDIFIER

- Ensure heated humidifier is safely secured to a tabletop stand or pole mounted
- Check that the humidifier is plugged into AC power and turned on (there is no back up battery)
- Ensure the ventilator tubing connections are secure on the humidifier chamber
- Check the humidifier wires are connected in the correct places
- Check that the humidifier chamber is filled with sterile distilled water up to safe max water line
- Verify that humidifier is set to Invasive mode
- Verify that temperature reading is adequate and that there are no alarms

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OXIMETER

- Check that machine is plugged into AC power, charging internal battery
- Ensure oximeter is turned on and probe is connected to child
- Verify oximeter is reading accurately and there are no alarms
- Verify settings against orders
- Ensure extra oximeter supplies available (e.g. probes and stickers)

SUCTION MACHINE

- Check that unit is plugged into AC power and charging
- Ensure back-up suction machine is plugged into AC power/charging and readily available
- Verify that suction pressures are set appropriately
- Ensure enough supplies are available

EMERGENCY TRACHEOSTOMY KIT

- Spare tracheostomy tube (same size) with obturator and ties assembled
- One size smaller tracheostomy tube with obturator and ties assembled
- Scissors
- Pre-cut gauze
- Water soluble lubricant
- Normal saline tubes
- Gauze for cleaning stoma site
- Manual suction setup
- Syringe and sterile water tube for inflating a water cuff tracheostomy tube (if child has this type)
- Optional: one size smaller suction catheter in the event the small size tracheostomy tube is used
- Extra inner cannula if the child's tracheostomy tube has one

OTHER

- Perform manual resuscitation bag checks, ensure oxygen tubing is connected and bag is accessible
- Flashlight available
- Check that cell phone is charged
- Ensure contact numbers are available and know who to call and when

OXYGEN (PLEASE REFER TO CHECKLIST PROVIDED BY OXYGEN VENDOR)

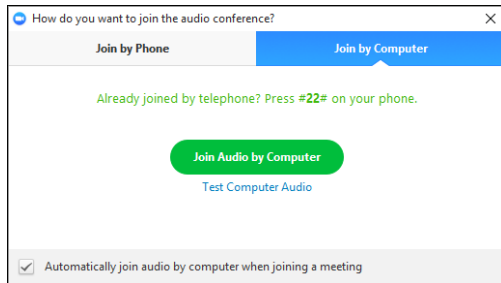
- Check that tanks are securely stored (at home and if traveling)
- Ensure regulators are attached properly and turned off if not in use
- Check that tanks are not empty
- Ensure concentrator is located in a well-ventilated area, plugged in and providing flow
- Check that oxygen tubing is connected to the oxygen source (i.e. concentrator, tank)
- Check that no oil, grease or petroleum-based products are on the equipment or the child
- Ensure you have the number to the oxygen vendor (check for a sticker on tank/concentrator)

How to Join a Zoom Meeting

Step 1: Click on the Zoom link that was sent to your email (check your personal, work and junk folders). Follow the prompts to download and run Zoom.

Step 2: Just before entering the meeting you will be prompted to enter a display name. This name is simply to identify you in the meeting and is not connected to your username.

Step 3: You will then be prompted to join audio. Select Join Audio by Computer (*TIP: by selecting the 'Automatically join audio by computer...' option you won't be prompted in the future*)



Step 4: Turn on your video if possible. If you are having issues with the quality of your video, you can turn it off, but turn it on to participate in discussions or to ask a question.

Step 5: Mute your microphone to avoid distracting noises and feedback sounds for the facilitator and other participants. Unmute to speak.

