

# Pediatric High Flow Oxygen Therapy with AIRVO

## Site Applicability

St. Paul's Hospital Emergency Department  
Mount Saint Joseph Hospital Emergency Department

## Practice Level

Respiratory Therapist

## Need to Know

Set up, weaning and escalation of flow and  $\text{FiO}_2$  will be carried out by the Respiratory Therapist (RT) in consultation with the Physician. The setup of high flow oxygen therapy is a basic competency for RT. The  $\text{FiO}_2$  is achieved by setting the  $\text{O}_2\%$  on the high flow blender.

Use of AIRVO is temporary in the SPH/MSJ emergency rooms, if patient cannot be weaned, must be transported to an available children's hospital when possible.

## Indications

- Prevention of, or relief from, hypoxemia with respiratory distress due to:
  - Pneumonia
  - Bronchiolitis (RSV)
  - Asthma
  - Chronic Lung Disease
  - Congestive heart failure
  - Congenital heart disease
- Continuing hypoxemia and/or signs of moderate to severe respiratory distress despite low flow oxygen therapy. Regular nasal prongs max flows:
  - Neonate less than 28 days: Max 1 L/min
  - Infant/Toddler 2 years or less: Max 2 L/min
  - Child more than 2 years: 4 L/min

## Contraindications

- Pneumothorax or other air leaks
- Excessive nasal secretions or severe rhinitis
- Upper GI Bleed
- Gastric or esophageal surgery

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- Inability to maintain airway
- Other airway disorders
- Bilateral choanal atresia
- Recent facial trauma or surgery

### Infection Control Precautions

Use of heated high flow oxygen systems including AIRVO is an Aerosol Generating Medical Procedure (AGMP). Follow appropriate infection control practices.

### Equipment and Supplies

- AIRVO unit
- AIRVO circuit with humidifier chamber
  - 22 kg or more RT202 Adult Breathing Circuit
  - Less than 22 kg RT330 Optiflow Junior Breathing Circuit
- Inhalation IV bag  
Interface: Optiflow Jr Nasal Cannula Large (Purple Octopus), XL (Green Turtle) or adult Optiflow Small cannula
- Oxygen tubing

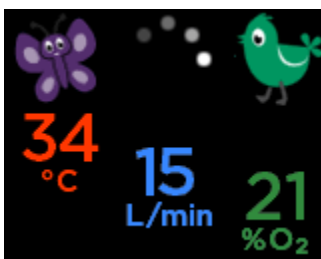
### Set Up and Circuiting

1. The unit must be placed below patients head height to allow the condensation to drain towards the water chamber.
2. Remove blue port caps and water feed tubing from the humidifier chamber and attach elbow adaptor to the chamber. Slide the chamber onto the heater plate by depressing the retaining bar and allowing it to click up into place when chamber is fully secured into the unit.
3. Hang sterile water bag and spike the bag.
4. Connect the BLUE end of the circuit to the AIRVO unit by sliding the blue collar up and plugging the connector to the unit. Slide the collar back down into place until a click is heard which indicates the tubing is attached properly.
5. Plug the unit in and turn on by pressing the ON/OFF button. It may take several minutes to warm up. **If using oxygen ensure the AIRVO is switched on before connecting oxygen.**
6. The disinfection status will come up on the display and will appear **GREEN** for new patients.
7. If the unit has been turned on for any reason since the last disinfection cycle was completed the traffic light will be **YELLOW**
8. When AIRVO unit is ready for use, **a check mark** will appear in the main screen and an audible alert is heard. A screensaver will be displayed if no key has been touched for 5 minutes. Press any key to deactivate the screensaver.

### Pediatric Patient Set Up

1. Perform point of care risk assessment on patient and confirm Physician order for Pediatric High Flow Oxygen Therapy.

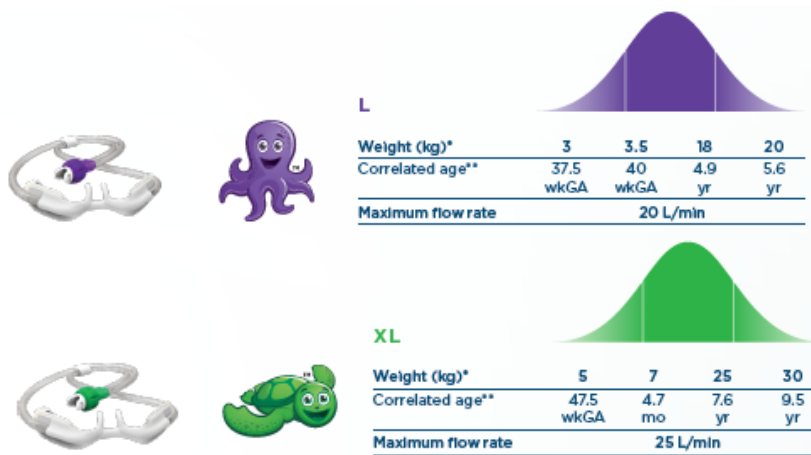
2. To switch to Pediatric mode on AIRVO, press the MODE button (Right arrow) and hold for 8 seconds. The AIRVO will beep once and a bird and butterfly will fly onto the screen. **If the bird and butterfly are already on the screen when turned on, AIRVO is already in Pediatric mode.**
  - a. **NOTE:** The AIRVO will save the settings from when it was last in use.



Pediatric Mode Home Screen

3. **Configure patient settings:** Use the Mode button to check settings:
  - a. **Depress and hold the up and down arrow keys simultaneously for 3 seconds** until an audible beep is heard to unlock and adjust. **(you have to be in the MODE screen to access this for each setting)**

**Note:** initial flow rates should be approximately 2 L/kg/min for pediatrics less than 12 kg. Prong sizes with AIRVO have max flow rates.



- b. Temperature will be set to 34 degrees in the pediatric mode.
  - c. Attach Oxygen line from AIRVO to flowmeter
4. Select and Connect appropriate sized high flow nasal cannula to AIRVO Circuit
5. **Once the AIRVO beeps and a checkmark appears on the screen it is ready for patient use:**  
Making sure flow and O<sub>2</sub> are on, apply cannula to patient and secure with wiggle pads
6. Assess patient comfort and response. Adjust flow rate and/or oxygen as needed

**Note: Pediatric Patients in SPH or MSJ emergency rooms will not get admitted. Patients may be held on HFOT in ED until transport to Children's hospital is available.**

## Weaning

1. Wean O<sub>2</sub>% to maintain SpO<sub>2</sub> as per the order set.
2. Once patient's WOB and inspiratory demand has improved, flow can be weaned
3. Once patient's FiO<sub>2</sub> is less than 30% and WOB is controlled, trial patient back on regular nasal prongs to maintain SpO<sub>2</sub> as ordered.

## Standby Discontinue and cleaning

1. When trialling patient off AIRVO or if patient transported for medical imaging, turn off the AIRVO unit and cover the Interface. The previous settings will be maintained when AIRVO turned back on.
2. When patient no longer needs AIRVO therapy:
  - a. Ensure the oxygen has been turned off.
  - b. Discard chamber, elbow, circuit, and water bag.
  - c. Wipe down AIRVO unit with cleaning wipes. Clean elbow with wipe and attach the RED disinfection kit.
  - d. Turn machine ON, it will automatically enter a **55 minute disinfection cycle**. You can turn machine off when cycle is finished. Retain the RED circuit on the AIRVO unit to indicate machine has been disinfected.

**NOTE: DO NOT DISCARD RED CLEANING CIRCUIT or Blue Filter**



## Documentation

1. Document Pt assessment and HFOT settings in IView
2. Create RT Note in DOCUMENTS, and chart pt. interactions.

## Resource Links

1. [High Flow Humidified Nasal Prong Oxygen Therapy](#): BC Children's Hospital
2. [AIRVO Heated High Flow Oxygen Therapy](#): Vancouver Coastal Health

## References

1. Fisher & Paykel. (2019). AIRVO 2. *User Manual*. <https://resources.fphcare.com/content/airvo-2-user-manual-ui-185045494.pdf>

<b>First Released Date:</b>	11-JAN-2023
<b>Posted Date:</b>	11-JAN-2023
<b>Last Revised:</b>	11-JAN-2023
<b>Last Reviewed:</b>	11-JAN-2023
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