Sensormedics 3100A High Frequency Oscillator

Purpose: The high frequency oscillator is used for patients with Respiratory Distress Syndrome and for those patients that have failed conventional mechanical ventilation.

Description: High Frequency Oscillatory Ventilation (HFOV) improves gas exchange by continuous alveolar recruitment with the use of increased mean airway pressures (MAP) and active exhalation. After each patient use the ventilator is to be set up, calibrated and a performance check out performed. The use of the oscillator is to be used on the order of the attending physician.

Indications:
1. RDS, rescue.
2. RDS, prophylaxis.
3. Failure of conventional mechanical ventilation.

Hazards:
1. Barotrauma.
2. Decreased venous return.
3. Intraventricular hemorrhage.
4. Hypocapnea.
5. Decreased cardiac output.
6. Hypotension.
7. PPHN.

Personnel: Respiratory therapists and technicians.

Procedure:
1. Obtain order and take vent to bedside.
2. Plug into power and gas sources. Turn on the ventilator.
3. Set the “Limit” and “Adjust” knobs to “Max”.
4. Set the MAP with the “Bias Flow” knob at 5-10 cmH20 above the prescribed MAP. *Note: Flows may be as low as 6-10 lpm.*
5. Use the “Adjust” knob to set the prescribed MAP.
   Note: If the patient requires a MAP greater than the “bias Flow” allows, repeat steps 3-5.
6. Set the “Power” at 3.00.
7. Set FiO2.
8. Set the High and Low pressure alarms at +/- 3 cmH20 of the MAP.
9. Place the patient on the ventilator.
10. Adjust the “Power” for adequate chest excursion.
11. Recommend a chest x-ray within 30-60 minutes.
12. Monitor per protocol.

NOTE: HFOV 3100A Management Strategy Guidelines-NICU
A copy of these guidelines accompany this procedure.

Circuit Calibration between patients:

1. Set “Bias Flow” to 20 lpm.
2. Set “Mean pressure” and “Adjust” to maximum.
3. Depress and hold “Reset” (oscillator off).
4. MAP display should read between 39 and 43. If not, adjust the patient circuit calibration screw on the right side of the ventilator until that range is achieved.

Ventilator performance checkout:

1. Set “Bias Flow” to 20 lpm.
2. Turn power on, oscillator off.
3. Set “Mean Pressure Limit” to maximum.
4. Adjust MAP to 19-21 cmH2O.
5. Set “Frequency” to 15 Hz.
6. Set “I-time” to 33%.
7. Turn oscillator on.
8. Turn “Power” to 6.00.
9. Center the piston.
10. Check the amplitude values against the graph on tip of the ventilator. If the values are in range, the ventilator is ready for placement.
11. Fill out the ventilator log sheet and place in the logbook. Fill out the blue sticker and place on the ventilator.

Infection Control:

The ventilator is to be cleaned with a hospital approved disinfectant solution after each patient use, set up, calibrated covered and stored in an appropriate location.

References:

Sensormedics’ Cardiopulmonary Review: Current Applications and Economics.

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