

Respiratory Therapy - Unit Practice Manual
John Dempsey Hospital - Department of Nursing
The University of Connecticut Health Center

PROCEDURE FOR: Magnetic Resonance Imaging Transport Ventilator Procedure

OBJECTIVE: To ensure safe ventilation of the intubated infant while undergoing the Magnetic Resonance Imaging (MRI) procedure.

RATIONALE: The intubated infant that undergoes Magnetic Resonance Imaging procedure will require a ventilator that is specifically designed to function inside the MRI room. This ventilator design is comprised of nonferrous parts and is able to support and ventilate the infant for the duration of the procedure.

PERSONNEL: Respiratory Therapist

PROCEDURE: 1. Indication:

a. The decision to use the MRI compatible ventilator is governed by a written order from the physician or neonatal advance practitioner for the procedure.

2. Equipment:

a. MRI compatible ventilator with a disposable 9 foot MRI patient circuit.

b. Self-inflating ambu bag and neonatal mask attached to the flow meter on the side of the ventilator.

c. A primary set of MRI compatible oxygen and air regulators labeled "#1" attached to nonferrous oxygen and air E cylinders each with a content of 2000 psi.

d. A secondary set of MRI compatible oxygen and air regulators labeled "#2" attached to nonferrous oxygen and air E cylinders each with a content of 2000 psi.

e. An aluminum nonferrous key to open tanks attached to the pole.

3. Storage:

a. A plastic bag placed over MRI compatible ventilator with sign attached to bag which states for "MRI use only".

b. The MRI compatible ventilator is stored in a locked closet noted as "God's Closet" - room CG-227A.

c. An additional set of two MRI compatible oxygen and two air nonferrous tanks are stored in the MRI room.

4. Function Check:

a. Verify oxygen and air E cylinders are nonferrous MRI compatible. A nonferrous **oxygen** cylinder is defined by color; top section of tank is green, the remaining section is silver. A nonferrous **air** cylinder is defined by color; top section is yellow, the remaining section is silver. Perform magnet check to all tanks to verify nonferrous tanks.

Respiratory Therapy - Unit Practice Manual
John Dempsey Hospital - Department of Nursing
The University of Connecticut Health Center

PROCEDURE FOR: Magnetic Resonance Imaging Transport Ventilator Procedure

- b. Turn on oxygen regulators and verify 2000 psi in each cylinder. If either condition is not met, exchange cylinder for a 2000 psi cylinder.
 - c. Turn on air regulators and verify 2000 psi in each cylinder. If either condition is not met, exchange cylinders for a 2000 psi cylinder.
 - d. Turn the primary set of air and oxygen E cylinders in the ON position noted by a numeric reading of 2000 psi. The primary set of cylinders are those that are positioned directly underneath the MVP-10 ventilator.
 - e. Verify safety pop-off valve is set to 35cm H₂O. Occlude wye of circuit and turn peak inspiratory pressure knob to maximum. Turn safety pop-off valve to read 35cm H₂O. Turn sliver ring to lock valve in position.
 - f. Complete pressure safety check. Occlude wye of ventilator circuit and turn peak inspiratory pressure to 35 and verify no leaks in circuit.
5. Safety Checklist:
- a. Complete verbal checklist to verify all ferrous objects have been removed from clothing of respiratory staff.
6. Transporting Patient into MRI Room:
- a. Transport patient into MRI room and connect patient to MRI compatible ventilator.
 - b. Turn on primary set of air and oxygen tanks. Leave secondary set of air and oxygen tanks off.
 - c. Attach ambu bag to flow meter on MRI compatible ventilator pole and set flow to 10 L/M. Turn off flow. Verify a neonatal mask is available with the ventilator system.
 - d. Select parameters for ventilator and place patient on ventilator.
 - e. Accompany nurse with infant and MRI compatible ventilator system to the MRI sled.
 - f. Secure ventilator circuit with blanket and tape. Guide ventilator circuit as sled moves the patient into the bore.
 - g. Verify the face of the MVP-10 ventilator and the primary air and oxygen gauges are visible from the observation room.
 - h. Monitor patient's oxygen saturation for changes in patient status from the observation room.
 - i. Monitor ventilator manometer for disruption in ventilator cycle.

Respiratory Therapy - Unit Practice Manual
John Dempsey Hospital - Department of Nursing
The University of Connecticut Health Center

PROCEDURE FOR: Magnetic Resonance Imaging Transport Ventilator Procedure

- j. Monitor air and oxygen gauges. When the air or oxygen gas of the primary set reaches the red zone at 600 psi, enter the MRI room and turn on the second set of air and oxygen tanks. Turn off the primary set of air and oxygen tanks.
 - k. Upon switching over to the secondary set of air and oxygen cylinders, verify gas content after 15 minute time period.
 - l. The respiratory therapist is to remain in the MRI observation room for the length of the procedure.
7. Emergency Situation:
- a. During an emergency the respiratory therapist is to assist the nurse in transporting the patient from the MRI room to the isolette outside the MRI room.
 - b. Assist the team with emergency situations by bag and mask to the patient or administer positive pressure ventilation via ETT.

APPROVAL:

EFFECTIVE DATE: 3/08

REVISION DATES: 9/08