

## Automatic Transport Ventilator

### I. Introduction

The use of an Automatic Transport Ventilator (ATV) requires Medical Control, is at the sole discretion of the base hospital medical director, and must be appropriately documented when used. The Emergency Medical Care Technician (EMCT) must be trained in the features and function of the ventilator being used for transport.

### II. Indications

- A. Any patient requiring ventilatory assistance in conjunction with basic or advanced airway adjuncts.
- B. Any patient requiring ventilatory assistance in conjunction with manual airway maintenance.

### III. Contraindications

- A. Patients weighing less than 16 Kg (35 lbs).
- B. Pneumothorax - tension pneumothorax (actual or suspected)
- C. Pulmonary over-pressurization syndrome (blast injury, water ascent injury, etc.)

### IV. Procedure

- A. Determine that a need for the use of the ATV exists.
- B. Attach ATV to an oxygen source and turn on O<sub>2</sub> cylinder. Assure all tubing is free of kinks.
- C. Attach patient valve assembly to the ATV.
- D. Set appropriate ventilator settings according to physician's orders or medical direction authority. Settings may include:
  - 1. Mode
  - 2. FIO<sub>2</sub>
  - 3. Tidal volume (TV)
  - 4. Respiratory rate (RR)
  - 5. Positive end-expiratory pressure (PEEP)
- E. If physician's orders are not available, the provider should utilize the following guidelines for initial ATV set-up (note: some devices may not have all settings):
  - 1. FIO<sub>2</sub> should be set at 100%.
  - 2. Determine the proper tidal volume setting. This is done by determining the patient's ideal body weight and multiplying it by 6-8 ml/kg. Begin with the lowest tidal volume limit.

## SAEMS PREHOSPITAL PROTOCOLS

3. Set respiratory rate (RR) to achieve ventilation goals (avoid hyperventilation). Recommended initial respiratory rates are:
    - i. Age > 14 yrs = 10
    - ii. Age 2-14 yrs = 20
    - iii. Age < 2 years = 25
  4. Set initial PEEP at 5 cm H<sub>2</sub>O (if available).
- F. Check alarm by occluding the patient valve assembly outlet. The audible pressure limit alarm should sound as the ventilator cycles through the delivery phase.
  - G. Attach the patient valve assembly to the airway device or mask used on the patient. If an ETCO<sub>2</sub> device is available, it should be placed between the patient valve assembly and the airway device.
  - H. Assess ventilations. Listen for bilateral lung sounds and observe for proper chest rise and fall which should appear normal and symmetrical.
  - I. Utilize continuous monitoring devices (SPO<sub>2</sub>, ETCO<sub>2</sub>, cardiac monitor, etc) if available and within the provider's scope of practice. Adjust ATV settings to achieve desired results.
  - J. Assess and manage the airway as you normally would for any patient with controlled ventilation.
  - K. Consider sedation for the patient if applicable and available. Follow medical direction's advice for dose and frequency.
  - L. If spontaneous breathing occurs, it may be desirable to reduce the respiratory rate (RR) as long as the patient's spontaneous rate is sufficient for their age and condition and they are maintaining adequate tidal volume.
  - M. Check oxygen cylinder pressure level frequently. This device will quickly deplete a "D" cylinder.

### V. Special Considerations

- A. Chest rise may not appear full in patients with COPD. Do not increase tidal volume (TV) past the upper TV limit.
- B. If lung sounds are absent or on one side only, remove the patient from the ATV and manually assist ventilations while ruling out airway obstruction, improper tube placement, or pneumothorax. Check all ATV settings (tidal volume, RR, etc.) and verify the device is operating properly.
- C. If chest expansion is not adequate, the rescuer should slowly increase tidal volume until chest expansion is adequate or the uppermost limit (for the patient's ideal body weight) is reached.
- D. If chest appears to over-expand, decrease tidal volume.

## SAEMS PREHOSPITAL PROTOCOLS

- E. Frequent evaluation of the patient's mental status and/or degree of agitation should be performed throughout the transport and adequate sedation should be administered per medical direction.
- F. Any time the ATV does not appear to be operating correctly, remove the patient from the ATV and assist ventilations with a BVM until the problem is resolved.