

	COUNTY OF SACRAMENTO EMERGENCY MEDICAL SERVICES AGENCY	Document #	8806.11
	<u>PROGRAM DOCUMENT:</u> Automatic Transport Ventilators (ATV)	Draft Date:	02/01/93
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 EMS Medical Director

 EMS Administrator

Purpose:

- A. To serve as an Automatic Transport Ventilator (ATV) skill guideline for an emergency patient by Paramedics in Sacramento County.

Authority:

- A. California Health and Safety Code, Division 2.5
- B. California Code of Regulations, Title 22, Division 9

Indications:

- A. Patients that are apneic or exhibiting agonal respirations requiring ventilator support, after a Paramedic has established and secured the airway with either a ~~nasal~~ or oral or **stomal** tracheal tube. ATVs may be used on patients in full arrest. The ATV must be approved for use on pediatric patients.

Contraindications:

- A. Patients with suspected pneumothorax/tension pneumothorax.

Equipment:

- A. Approved Automatic Transport Ventilator. (All ATV's must be approved by Sacramento County Emergency Medical Services **Agency** Medical Director)
- B. Oxygen Source.
- C. Bag-valve device.
- D. Intubation Equipment (all inclusive).
- E. End-tidal ~~CO2-Detector~~ **waveform capnography** (if patient has pulses).

Procedure:

- A. Determine need for ventilations or assisted ventilations.
- B. Establish airway and employ conventional Basic Life Support (BLS) airway adjuncts and ventilator support according to protocol.
- C. Paramedic shall perform oral or ~~nasal~~ **stomal** intubation according to appropriate protocol. Tube shall be secured and proper placement shall be confirmed using a bag-valve device and **wave form capnography** ~~conventional assessment methods~~.¹
- D. Assemble components of automated ventilator and insure proper working order, including pressure limit alarm.
- E. Determine proper Tidal Volume for patient. Use the following equation for adult and pediatric patients:
 1. 10 ml X weight in kilograms = Tidal Volume (10ml/kg).
 2. Set the Tidal Volume on the ventilator's control module accordingly.

- F. Set desired breaths per minute on the ventilator's control module:
 - 1. Adult: (12-15 per minute, adult)
 - 2. Pediatric: (20-24 per minute, pediatric)
- G. Remove bag-valve device and attach the outlet port of the ventilator assembly to the endotracheal tube.
- H. Observe chest rise during the ventilation cycles. Chest rise should appear normal and symmetrical. Personnel shall continue to monitor chest rise throughout the remainder of patient care, as is done normally using a bag-valve device.
- I. Personnel shall monitor PSI level in oxygen cylinder.

Precautions:

- A. The Paramedic is responsible for all airway management and must frequently reassess endotracheal tube placement. Bilateral breath sounds are to be checked after each patient movement (e.g. placing patient on gurney, moving patient to ambulance, loading patient into ambulance, etc.)¹

Special Information:

- A. Agencies using this equipment must be certain to follow the manufacturer's instructions to the letter regarding the use, maintenance, cleaning, and regular testing of the devices.
 - 1. The units must be disinfected, inspected, and tested after every patient use.
 - 2. The units shall undergo preventative testing and maintenance by qualified personnel annually.
 - 3. Agencies shall arrange for (at least) annual inspections and testing of the equipment by a manufacturer's representative (or designee). Documentation of this service shall be maintained in a service-log. This record shall be kept by each agency using ATV's.
- B. Agency personnel must be thoroughly trained and regularly re-trained in use of the device. Such training shall occur annually and shall be thoroughly documented.
- C. Agency personnel shall continually observe the patient and document patient response to any changes while the device is operational. Personnel shall chart the initial settings (rate/tidal volume), and any subsequent changes, when the device is utilized. Such documentation shall appear on the patient care report (PCR).

Automatic Transport Ventilators:

Only Automatic Transport Ventilators shall be authorized for use, and shall have the following minimum features.

- A. A lightweight connector with a standard 15-mm/22-mm coupling for a mask, endotracheal tube, or other airway adjunct.
- B. A lightweight (2 to 5 kg), compact, rugged design.
- C. Capability of operating under all common environmental conditions and extremes of temperature.
- D. A peak inspiratory pressure-limiting valve set at 60 cm H₂O with the option of an 80 cm H₂O pressure (available for use at the discretion of the medical director) that is easily accessible to the user.
- E. Minimal gas consumption (e.g. at a tidal volume of 1 L and a rate of 10 breaths per minutes [10-L/min ventilation], the device should run for a minimum of 45 minutes on an "E" cylinder).
- F. Minimal gas compression volume in the breathing circuit.

¹ *Automatic transport ventilators are not intended/nor shall be used to reduce current personnel staffing levels

- G. Ability to deliver a FiO₂ of 1.0.
- H. An inspiratory time of 2 seconds in adults and a maximal inspiratory flow rate of approximately 30 L/min in adults (15 L/min children).
- I. At least 2 rates, 10 breaths per minute for adults. If a demand flow valve is incorporated into the ATV, it should deliver a peak inspiratory flow rate on demand of at least 100/min at -2 cm H₂O triggering pressure to minimize the work of breathing.