

Use of the Exhalometer™ for Patient Transport within Acute Care Hospitals

The multifaceted problem of transporting ventilator-dependent patients has been the subject of many papers. Representative of these are the excellent review papers by Branson⁽¹⁾ and Zahodnic⁽²⁾. Those who have studied the problem universally agree that if a manual resuscitation device (MRD) is used during transport that the respiratory parameters (tidal and minute volumes) should be carefully controlled to avoid unintentional hypo- or hyperventilation; with their consequent problems “including alterations to blood gas and pH values... and alteration in hemodynamic stability (including cardiac arrest) occurring at a significant rate”^(2,3,4,5)

Notwithstanding this, ventilator dependent patients are regularly transported within acute care hospitals with MRDs and without respiratory monitoring. This is also contrary to the obvious intent of the AARC Clinical Practice Guideline, *Resuscitation in Acute Care Hospitals* when it states that “Manual resuscitators must provide for measurement of exhaled tidal volume”⁽⁶⁾.

The neglect of this requirement may be attributed to the fact that until now there has not been a convenient means of monitoring the patient’s respiratory parameters during transport.

The Exhalometer™, a small and inexpensive FDA cleared device, addresses this problem. It connects, with filter, directly to the expiratory port of the MRD and measures each exhaled tidal volume, the respiration rate and, importantly, the minute volume. The instrument also graphically displays each exhaled flow and does not display the exhaled tidal volume until the exhalation flow terminates. Breath stacking may therefore be avoided and the correct respiratory parameters easily administered.

The availability of this instrument may in many instances offset the necessity of using a transport ventilator, with consequent savings in cost and time.

References:

- (1) Branson, R.D. (1992). Intrahospital transport of critically ill, mechanically ventilated patients, *Respiratory Care*, 37 (7) 775-793.
- (2) Zahodnic, R.J. (2000) Intrahospital Transport of the Mechanically Ventilated Patient, *AARC Times* March 2000 26-29.
- (3) Singer, M., Vermaat, J., Hall, G., et al. (1994). Hemodynamic effects of manual hyperinflation in critically ill mechanically ventilated patients. *Chest*, 106(4), 1182-1187.
- (4) Braman, S.S., Dunn, S.M., Amico, C.A., & Millman, R.P. (1987). Complications of intrahospital transport in critically ill patients. *Annals of Internal Medicine*, 107(4), 469-473.
- (5) Gervais, H.W., Eberle, B., Konietzke, D., et al. (1987). Comparison of blood gases of ventilated patients during transport. *Critical Care Medicine*, 15(8), 761-763.

- (6) AARC Clinical Practice Guideline; Resuscitation in Acute Care Hospitals, *Respiratory Care* 1993; 1179-1188 ¶ 10.2.1.2.8., ¶ 10.2.5.3