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**A CASE STUDY: USE OF BIPHASIC CUIRASS VENTILATION UPON DIAGNOSIS OF AMYOTROPHIC LATERAL SCLEROSIS.**

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**Introduction:** A 68 year old white female was admitted to a sub-acute care rehabilitation facility after undergoing spinal cervical decompression surgery. The patient achieved minimal response to rehabilitation and was admitted to a long-term care facility. **Case Summary:** The patient was evaluated by neurology for progressive upper limb and respiratory muscle weakness. The evaluation resulted in a diagnosis of amyotrophic lateral sclerosis (ALS), a terminal disorder of unknown origin that is complicated by gradual reduction in lung volumes, impaired cough, speech and respiratory failure the principal cause of death. Pulmonary consultation recommended Biphasic Cuirass Ventilation™ (BCV), (Hayek Medical, London, UK), a method that uses a non-invasive cuirass (shell), connected to a module which actively controls both phases of respiration cycle. BCV is designed to increase functional residual capacity, promote airway clearance and cough assistance. A didactic and hands-on competency review was provided to the nursing staff. BCV was ordered every 6 hours for duration of 15 to 30 minutes per session as tolerated and received therapy daily for a period of 52 days. Respiratory parameters were measured daily pre and post therapy for 28 days by Pulmonary Services. Parameters were averaged and percent change documented in the medical record. **Discussion:** In this case BCV was initiated upon diagnosis of ALS improving the patient's tidal volume (363 ml  $\hat{=}$  34 %), vital capacity (0.950 L  $\hat{=}$  19 %), decrease in respiratory rate (17 BPM  $\hat{=}$  37%), improved comfort and tolerance between the equipment and patient interface. The nursing staff found BCV to be user-friendly and efficient in reducing the labor intensiveness of administering deep breathing exercise, chest physical therapy and cough assistance. We infer given the terminal nature of ALS and eventual respiratory failure, the early introduction of BCV may assist in establishing a Segway that "bridges" improvement in the patient's compliance and tolerance of the device. BCV also provided in this case greater comfort by not having to wear a full face BIPAP mask that prevents verbal communication as well as increasing the risk of facial tissue breakdown. Another added advantage is the delay BCV provides in the inevitable need for a tracheostomy and conventional mechanical ventilation. **Resource:** Cuirass Ventilation: A review and Update. Critical Care and Resuscitation 2004; 6: 113-122 Sponsored Research - None

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Cuirass (Shell) and Power Monitor