

MANIFESTATIONS OF PATIENT-VENTILATOR DYSYNCHRONY IN CRITICALLY ILL CLIENTS

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Purpose: Ventilator dysynchrony in the critically ill client may result in serious sequelae such as impaired gas exchange from hypoxemia and hypercapnia, as well as cardiovascular compromise from increased intrathoracic pressure. Clients may also perceive an increased work of breathing and sense of breathlessness due to excessive respiratory muscle workload. The dysynchrony phenomena may be unrecognized and untreated in the clinical setting. Moreover, nurses do not continuously monitor for patient-ventilator dysynchrony because the manifestations and biological measurements have not been well defined. Therefore, the aim of this study is to identify the manifestations of patient-ventilator dysynchrony in order to assist nurses and clinicians to objectively recognize its appearance in practice.

Methods: A prospective, descriptive design will be employed with 15 subjects in the Medical Respiratory ICU of a southeastern academic medical center. Informed consent will be obtained from the client or the authorized legal representative. Once consent is obtained and the subject is enrolled into the study, demographic data to describe the sample (including APACHE III, ventilator data) and factors that may affect level of sedation will be collected. Direct observation of patient synchrony will then occur over a two hour period. In addition, all patient behavior will be documented including any stimulation (caregiving activities) and environmental activity (family visits, bedside rounds, etc). This project is an extension of an ongoing sedation evaluation study (Dr. Sessler, PI). Continuous measures collected from that study will also be used to describe patient ventilator dysynchrony including respiratory rate, SpO₂, continuous graphic waveform of airway pressures and actigraphy (a measure of patient activity). Data analysis will be consistent with the study's descriptive design. Data from all continuous measures will be plotted with airway pressure to determine patterns that may assist in the description of patient-ventilator dysynchrony. A content analysis of observational data will also be conducted to provide a summary of patient ventilator synchrony patterns.

Findings: Data collection will be complete by December, 2004 allowing ample time for data analysis and presentation preparation.

Discussion: Describing manifestations of patient-ventilator dysynchrony will assist clinicians in identifying dysynchrony as well as its frequency. Once clinicians can describe the signs of this phenomenon, they will be able to propose the best treatment through sedatives/analgesics or new ventilator modalities, such as proportional assist ventilation.