

**Poster Session III  
Poster # 16**

***Patient Ventilator Dyssynchrony: Types, Frequency, Patterns And Predictors In Critically Ill Adults***

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**Purpose:** To describe types, frequency and patterns of patient ventilator dyssynchrony (PVD) over time and identify PVD predictors including patient characteristics, ventilator modes and sedation level.

**Theoretical Framework:** 50% of ICU patients require mechanical ventilation and 25% of adults studied have clinically significant PVD. PVD is defined as mismatched breaths between patient and ventilator and is associated with negative outcomes; however, little is known about the types, frequency, patterns and predictors of PVD. The Technologic Competence as Caring in Nursing theory, which posits that technology and caring coexist in the practice of nursing was used to underpin this study.

**Methods:** A convenience sample of 30 medical-surgical ICU adults were enrolled in this descriptive study and observed up to 90 minutes/subject. Continuous pressure-and-flow-waveform data were collected and sedation level was rated every 20 minutes with the Richmond Agitation Sedation Scale. Waveforms were coded for PVD type using a pre-developed scheme. PVD frequency was measured by Dyssynchrony Index (DI), the number of dyssynchronous breaths divided by the total number of breaths. PVD patterns were identified with lag analysis, detecting how often a specific PVD followed two types of PVD.

**Results:** 23% of all breaths in the sample were dyssynchronous. 93% of subjects had at least one incident of PVD and 77% experienced multiple PVD types. PVD occurred across all ventilated breath phases and ventilator modes. The most common PVD was Ineffective Trigger (63%) and Premature Termination (26%). We also found PVD not previously reported (patient gasp, active triggers, combined PVDs). The overall median DI (Interquartile Range [IQR]) was 4% (1% - 9%). Ineffective Trigger had the highest median DI (1.78%). The high DI group (6 subjects) had DI (IQR) of 61% (42% - 85%). Premature and Delayed Termination breaths were temporally associated with Multiple Triggers and Ineffective Triggers consecutively. Patients on SIMV-Volume mode experienced higher DI levels than other ventilator modes ( $F(2, 24) = 7.19, p < 0.0036$ ). Level of sedation did not affect DI ( $F(1, 25) = 1.33, p = 0.26$ ).

**Conclusions and Implications:** PVD occurs frequently and manifests diverse types. Nurse recognition and reduction of PVD is critically important to reduce its negative impact. These findings increase our knowledge of the patterns and predictors of PVD, thus point to possible prevention and management strategies.