An Algorithmic Approach to Terminal Ventilator Withdrawal: Pilot Testing (FR416-D)

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Objectives
• Describe a terminal ventilator withdrawal algorithm.
• Describe the outcomes of a pilot clinical trial of a terminal ventilator withdrawal algorithm.

Original Research Background: Terminal ventilator withdrawal entails the cessation of invasive mechanical ventilation to allow a natural death. There is little empirical evidence to guide the conduct of this common procedure. If the process is not well conducted, patients undergoing ventilator withdrawal are at very high risk for experiencing significant respiratory distress.

Research Objectives: (1) To establish the feasibility of a nurse-led algorithmic approach; (2) To demonstrate that the algorithm ensured greater patient comfort compared with usual care; and (3) To determine differences in the use of opioids and benzodiazepines.

Methods: A two-group, repeated measures observation design was used with one medical ICU (MICU) conducting the algorithm and a second MICU providing usual care. Patient respiratory comfort/distress was measured with the Respiratory Distress Observation Scale (RDOS). The algorithm guided three process decisions: (1) premedication, (2) withdrawal method, and (3) extubation decisions.

Results: MICU nurses and respiratory therapists from the intervention unit were trained to follow the algorithm in educational sessions of 1-hour duration; fidelity to the algorithm was subsequently confirmed. Fourteen patients evenly distributed by ethnicity and gender were enrolled, with 8 in the control ICU and 6 in the intervention unit. No significant differences in age, gender, ethnicity, consciousness, illness severity, or baseline RDOS were found. All patients in the control unit underwent a one-step terminal extubation process. There were no incidences of postextubation stridor in the intervention group, and three (38%) control patients experienced stridor. Patients in the intervention group had greater respiratory comfort compared with the patients in the control group (p <.05). Differences in medication use were found with the control unit favoring benzodiazepines, while the algorithm promotes morphine.

Conclusions: Feasibility and proof of concept were established in this pilot study. A powered, randomized controlled trial is planned.

Implications for Research, Policy, or Practice: An algorithmic approach to terminal ventilator withdrawal is a feasible means of ensuring patient comfort.