Objective: Describe the characteristics of and predictors for apnea and clinical interventions during emergency department procedural sedation

Methods: Prospective trial. Convenience sampling of ED patients undergoing propofol or ketofol sedation. End tidal CO\textsubscript{2} (ETCO\textsubscript{2}), respiratory rate, pulse rate, and SpO\textsubscript{2} were reccorded in 1 second intervals. Procedure times, drug delivery, and interventions were annotated. Kaplan-Meier curves were used to describe the onset of clinical interventions as a function of sedation time. Apnea was defined as 15 consecutive seconds of no respirations with carbon dioxide less than or equal to 10 mm Hg. Clinical interventions were estimated with a series of Cox proportional hazards survival models, with time to first apnea or clinical intervention as the dependent variable. The association between apnea and clinical intervention was also tested.

Results: 312 patients were analyzed. 53% were male. Apnea was preceded by ETCO\textsubscript{2} less than 30 mm Hg or greater than 50 mm Hg at 30, 60, and 90 seconds before onset. Clinical interventions were predicted by apnea, SO\textsubscript{2}, and propofol use. Increasing age predicted both apnea and interventions. Apnea was not predicted by respiratory rate or SpO\textsubscript{2}. Apnea occurred in half of the patients and 25% of the patients required clinical interventions. Clinical intervention was not predicted by abnormal respiratory rate or abnormal ETCO\textsubscript{2} level. 85% of the clinical interventions were minor. There were no cases of assisted ventilation, intubation, or complications.

Conclusion: ETCO\textsubscript{2} predicted apnea along a time course. Alterations in SpO\textsubscript{2}, apnea, and propofol use predicted clinical interventions. Increasing age predicted both apnea and clinical intervention.