

## PODCAST CAPSULE SUMMARY

Airway

# Is adequate preoxygenation about more than just 3 minutes?

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Paper discussed: Oliver M, Caputo ND, West JR, Hackett R, Sakles JC. Emergency physician use of end-tidal oxygen monitoring for rapid sequence intubation.

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Rapid sequence intubation (RSI) is a common procedure performed by emergency physicians for a variety of conditions. There are, however, several adverse events associated with it, including peri-intubation hypoxia, bradycardia, and cardiac arrest. In fact, we know that peri-intubation hypoxia is both common and harmful in both the emergency department (ED) and emergency medical services (EMS) settings.<sup>1-8</sup> Preoxygenation is aimed at denitrogenation and maximization of an oxygen “buffer” in the functional residual capacity to decrease the risk of peri-intubation hypoxia.<sup>9</sup> Common practice in emergency settings to achieve adequate preoxygenation is to ensure SpO<sub>2</sub> levels > 93% for at least 3 minutes.<sup>10</sup> Unfortunately, this practice may not adequately predict adequate preoxygenation.<sup>11</sup> End-tidal oxygen (EtO<sub>2</sub>) is a commonly measured value in anesthesia and, when > 85%, is considered an indication of adequate denitrogenation and preoxygenation.<sup>12</sup> Unfortunately, this is not commonly measured in emergency settings. It is possible that measuring EtO<sub>2</sub> in the ED may lead to better preoxygenation and less preoxygenation.

Dr. Oliver et al investigate this issue in *JACEP Open*.<sup>13</sup> They used a before-after methodology to assess the impact of EtO<sub>2</sub> on preoxygenation. They used the results of a previous study they completed that measured, in a blinded fashion, the EtO<sub>2</sub> of patients undergoing RSI in 2 academic EDs in New York City and Sydney, Australia as the “before” or control group. They then unblinded the EtO<sub>2</sub> values and again assessed

the EtO<sub>2</sub> value at the time of induction. They used a convenience sample of 100 adult non-arrest patients in each group and compared the effect of being able to see the EtO<sub>2</sub> value on achieving adequate preoxygenation, defined as an EtO<sub>2</sub> >85%.

Although the characteristics of both groups were similar, they found improved preoxygenation in the “after” group. Specifically, the median EtO<sub>2</sub> value in the control group was 80% and 90% in the intervention group. They also saw a larger proportion of patients with adequate preoxygenation: 26% in the control versus 67% in the intervention group.

The full paper is really worth reading, but the bottom line is there is a strong suggestion that measuring EtO<sub>2</sub> may give us a better indication of when we have adequately preoxygenated our patients. If confirmed in a randomized controlled trial, this could help make RSI in the emergency setting safer.

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