Sedation for critically ill patients has been provided for decades, and yet the types of sedatives and effects and consequences of sedation have been largely unexplored. Recently, new drugs and devices for intensive-care-unit (ICU) sedation have been introduced in the market, ranging from a selective \( \alpha_2 \)-adrenergic receptor agonist, dexmedetomidine, which provides sedation without causing respiratory depression and the patient remains wakeable, to inhaled anesthetics that allow sedation to a wide range of depths, from light sedation to a depth of general anesthesia, via the “anesthetic conserving device” (brand name AnaConDa).

The concept of sedation in the critical-care setting has evolved over the past 20 years, from the goal of inducing deep sedation (in which the patient is unaware of his or her surroundings) to the modern goal of keeping the patient awake and cooperative, or to a specified sedation goal, based on the given institution’s sedation protocol. Daily temporary discontinuation of sedatives reduces the duration of mechanical ventilation and ICU stay. Considering the emerging data, several questions still need answers. What types of sedation are ideal? What are the sedation targets for different patient populations? What are the short-term and long-term effects and consequences of sedation?

**Does One Size Fit All?**

In this issue of RESPIRATORY CARE, L’Her and colleagues report a study in which they explored an alternative modality to the classic administration of intravenous ICU sedation. For decades, volatile agents have been used in the operating room as short-term intraoperative anesthetics. Recently, new devices were approved in Europe for delivery of inhaled anesthetics in the ICU. These devices allow recycling of gas, which minimizes air pollution. L’Her and colleagues, in their observational study of 15 patients, found that isoflurane could be safely administered for a relatively long period (up to 15 d) and allowed for rapid awakening and hemodynamic stability at the doses used. No hepatic or renal adverse effects were found, which confirms other researchers’ findings. L’Her et al also suggest that the cost of isoflurane sedation is less than that of benzodiazepine sedation. These features seem ideal for ICU sedation.

The interpretation of these findings needs to account for several limitations of the study design and the sedation practices at L’Her’s institution. The patients received a relatively high concentration of isoflurane (end-tidal concentration \( \leq 1\% \), median value range 0.5–1.0%), and sedation was adjusted to achieve a Ramsay score of approximately 5 (range 2–6), at least in the acute phase of the critical illness. That sedation-depth range may not be generalizable to sedation used in other ICUs. Furthermore, despite targeting heavy sedation goals, isoflurane administration resulted in over-sedation after 24 hours in 6 of 15 patients. Although the risk of over-sedation is a concern, if high doses of isoflurane were used to achieve relatively deep sedation, the data suggest that a lower concentration might prove acceptable from a safety standpoint. However, importantly, this case series did not have a comparison group, so we must use caution regarding the inference about efficacy and safety. With these caveats, these data will definitely stimulate interest in the critical care community. Nevertheless, a difficult road lies ahead for the widespread use of inhaled anesthetics in critical care medicine. Will non-anesthesiology-trained intensivists and critical care nurses feel comfortable with providing inhaled anesthetics? Do established ICU privileges grant permission for clinicians not specifically trained in the use of anesthetics to deliver inhaled anesthetics? Are there sufficient data to demonstrate safety? Have concerns about excessive agent consumption and environmental contamination been adequately addressed? Are there sufficient efficacy data on inhaled anesthetics for ICU sedation? The answer to most of these questions is “not quite.”
Extending the Use of Inhaled Anesthetics Beyond the Operating Room

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