# Drug-induced sleep apnea is a safe and effective means to bring about sleep quickly with few side-effects

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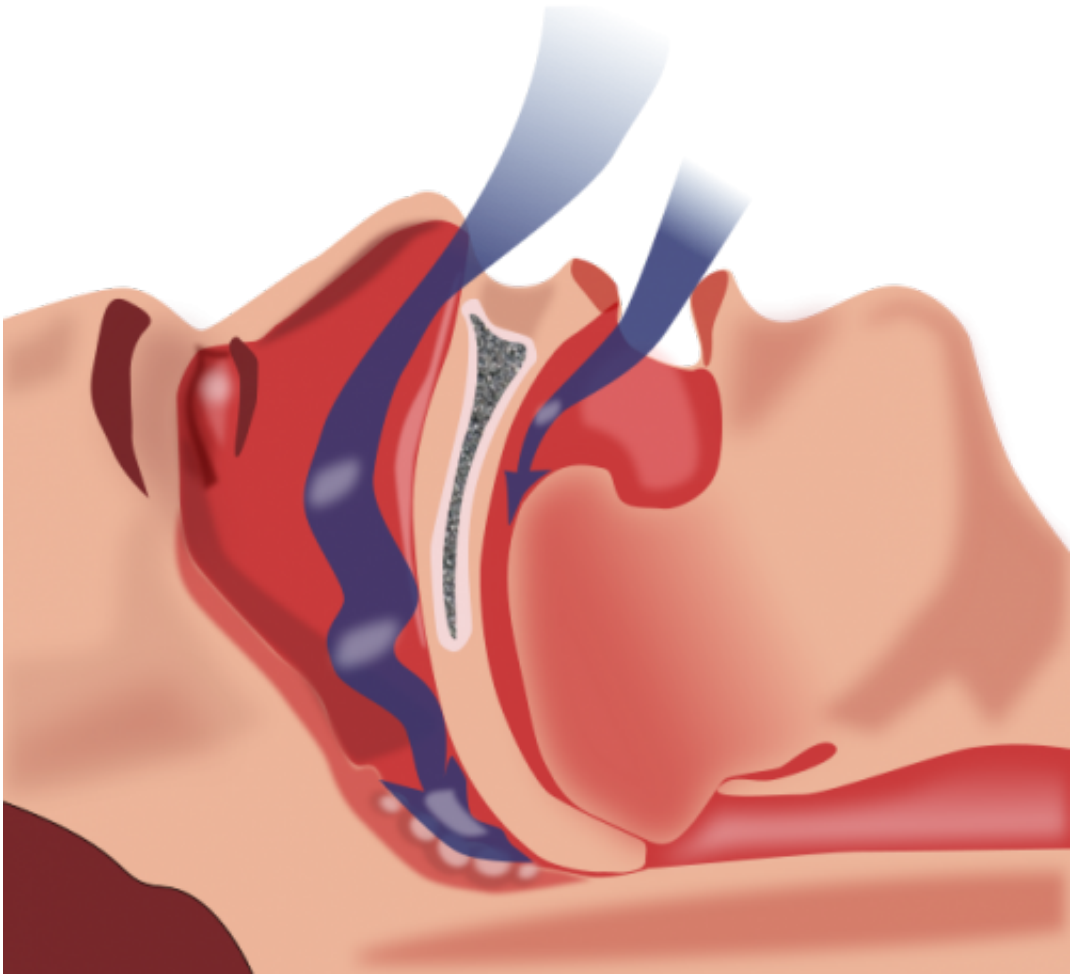

Illustration of obstruction of ventilation. Credit: Habib M'henni / public domain

(Medical Xpress)—Researchers from Penn Medicine have developed a safe and effective technique for inducing sleep in patients with severe obstructive sleep apnea. The new procedure, known as drug-induced sleep endoscopy (DISE), uses progressive doses of anesthesia to pharmacologically induce sleep to the point of the obstruction-causing apnea in a short time frame without a dip in blood oxygen level and with few side effects.

The Penn team recently tested the procedure in 97 patients with severe sleep apnea who were candidates for transoral robotic resection of the tongue, the removal of a section the tongue where it meets the epiglottis to prevent the tongue from obstructing the airway during sleep, the most common surgical procedure for the treatment of severe sleep apnea. Study results are reported in *Anesthesia and Analgesia*.

TransOral Robotic Surgery (TORS) was originally developed by Penn head and neck surgeons for the removal of benign and malignant tumors of the mouth and throat.

"The Continuous Positive Airway Pressure (CPAP) mask does not provide relief for every patient with severe sleep apnea and daily compliance can also be difficult for some patients," says Joshua Atkins, MD, PhD, lead author on the study and director of Anesthesia for Head and Neck Surgery. "In order to evaluate patients for surgery, we need to visualize the obstruction, often quickly and in an office visit, outside of the sleep lab."

DISE allows physicians to recreate the obstruction in that environment. The new procedure helps pinpoint the proper doses and timing of propofol – a short-acting drug commonly used to induce the anesthetic state– to safely and quickly bring patient's to the point during their sleep that this problem would occur.

DISE uses a Penn-developed algorithm that employs the patient's age and weight to determine the appropriate starting dose and the time and dose of a secondary infusion of anesthetic in order to smoothly increase drug levels over the range associated with obstruction. This smooth increase avoids overdosing and provides predictable procedure times.

Of the patients in the study, the median time to obstruction using DISE was 3.8 minutes. Previous studies, not using DISE, cite an average time to obstruction of 6.2 minutes. Oxygen saturation, the amount of oxygen in the blood, was also much better using DISE at 91 percent than during most sleep studies which range at about 80 percent for the standard sleep apnea patient. All patients completed DISE safely, with no adverse events. While other studies have demonstrated equivalent safety at the expense of longer procedure times, or equivalent procedure times at the expense of more adverse airway events, the current study achieves both.

"DISE is a niche procedure with a growing number of clinical reports in the literature," says Atkins. "We have shown here that it can be a safe and effective means of assessing patients for surgery to treat severe sleep apnea in a way that reduces the reliance on provider experience to estimate the proper levels of anesthetic, improving care and minimizing variability between providers."

**More information:** *Anesthesia and Analgesia*, journals.lww.com/anesthesia-an … ced_Sleep.98434.aspx

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