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# Intensive care quality of sleep improved by new drug, reports study

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A new sedative drug has been shown to improve the sleep quality and comfort levels of intensive care patients, compared to the most commonly-used medication, according to research published today in the journal JAMA.

US and UK researchers compared the effects of the new drug dexmedetomidine with the commonly used sedative lorazepam, both of which reduce the pain and anxiety experienced by mechanically ventilated ICU patients and which help them to tolerate invasive procedures such as the insertion of catheters and feeding tubes.

While the routinely-administered lorazepam successfully lessens discomfort, it has also been associated with an increased risk of brain dysfunction, including coma and delirium, which prolong patients' time in hospital and raise the chance of death.

Now trials led by researchers at Vanderbilt University Schools of Medicine and Nursing in the US have shown that dexmedetomidine can provide better sedation and analgesia whilst at the same time reducing instances of coma and delirium.

The double-blind randomised controlled trials administered either dexmedetomidine or lorazepam for up to 120 hours to 106 volunteer adult mechanically ventilated ICU patients.

They found that around 30 per cent fewer patients in the

dexmedetomidine group experienced coma, and that this group also experienced an average of four more coma-free and delirium-free days over study days one to 12 than those using lorazepam.

At the same time, dexmedetomidine proved to be a more effective sedative, with 80 per cent of the dexmedetomidine group sedated to the target level over the course of the trial, compared with 67% of the lorazepam group.

The study, carried out by researchers at Vanderbilt University, Tennessee, builds on the pioneering work of Professor Mervyn Maze of Imperial College London, who discovered and patented the sedative and hypnotic properties of dexmedetomidine in 1986, whilst he was at Stanford University.

“This study is a very big step forward,“ said Professor Maze. “Though it was not a large study in terms of number of patients, it conclusively shows that some sedative drugs have a more beneficial effect on sleep pathways than others."

Doctors estimate that an intensive care patient under sedation typically gets about two hours sleep out of every 24 hours. Professor Maze adds:

“Good quality sleep, both coma-free and delirium-free, is critical for a patient in intensive care, as we know this can improve their chances of beating off further illness and infection, and ultimately their survival. The study shows that dexmedetomidine could be very good news for those very sick patients in ICU.

“After 20 years of studying it, and understanding its mechanism of action and successfully predicting the application, it’s wonderful to have a demonstration of how the molecule actually improves the patient’s quality of life. It’s a great example of how translational medical research

brings benefit to patients."

After uncovering the molecular mechanism for its sedative effect in rodents, Professor Maze collaborated with Professor Nick Franks, also of Imperial College London, to understand how alpha-2 agonist drugs such as dexmedetomidine differ from benzodiazepine drugs such as lorazepam through studies of human volunteers.

The researchers hope that future studies measuring the quality of sleep experienced by ICU patients using different types of sedative will provide a greater understanding of the effects of the different drugs on brain dysfunction.

Source: Imperial College London