

**Patient State Index (PSI) Measures Depth of Sedation in Intensive Care Patients.**

Schneider G, Heglmeier S, Schneider J, Tempel G, Kochs EF. *Intensive Care Med.* 2004 Feb;30(2):213-6.

**Objective**

To investigate whether the electroencephalogram (EEG)-based Patient State Index (PSI) indicates the level of sedation as measured by Ramsay score in intubated and mechanically ventilated patients in the ICU.

**Methods**

*Design:* Prospective, single-blinded observer study. *Setting:* Surgical intensive care unit.

*Patients:* Forty-one consecutive adult patients requiring intubation and ventilation during intensive care therapy.

**Results**

Following skin preparation with alcohol and placement of EEG electrodes, PSI was recorded while patients were ventilated and sedated with constant drug infusion rates. After 30 min, the level of sedation was measured by an assessor, who was blinded to PSI values, using the Ramsay sedation score. For analysis, the mean of PSI values measured during the last minute before clinical assessment of sedation was calculated. General Linear Model (GLM) analysis revealed significant differences between the PSI values at different levels of sedation as measured by the Ramsay score, except for the differentiation of level 5 from levels 4 and 6 ( $p > 0.3$ ) and level 2 from level 3, where only a trend was reached ( $p = 0.077$ ). The prediction probability of PSI was  $0.920 \pm 0.037$ .

**Conclusion**

As the high prediction probability and the analysis of paired comparisons suggest, PSI may be used to quantify the level of propofol/sufentanil sedation in ICU patients. Further studies are required to test whether these promising results can be verified for other drug combinations.