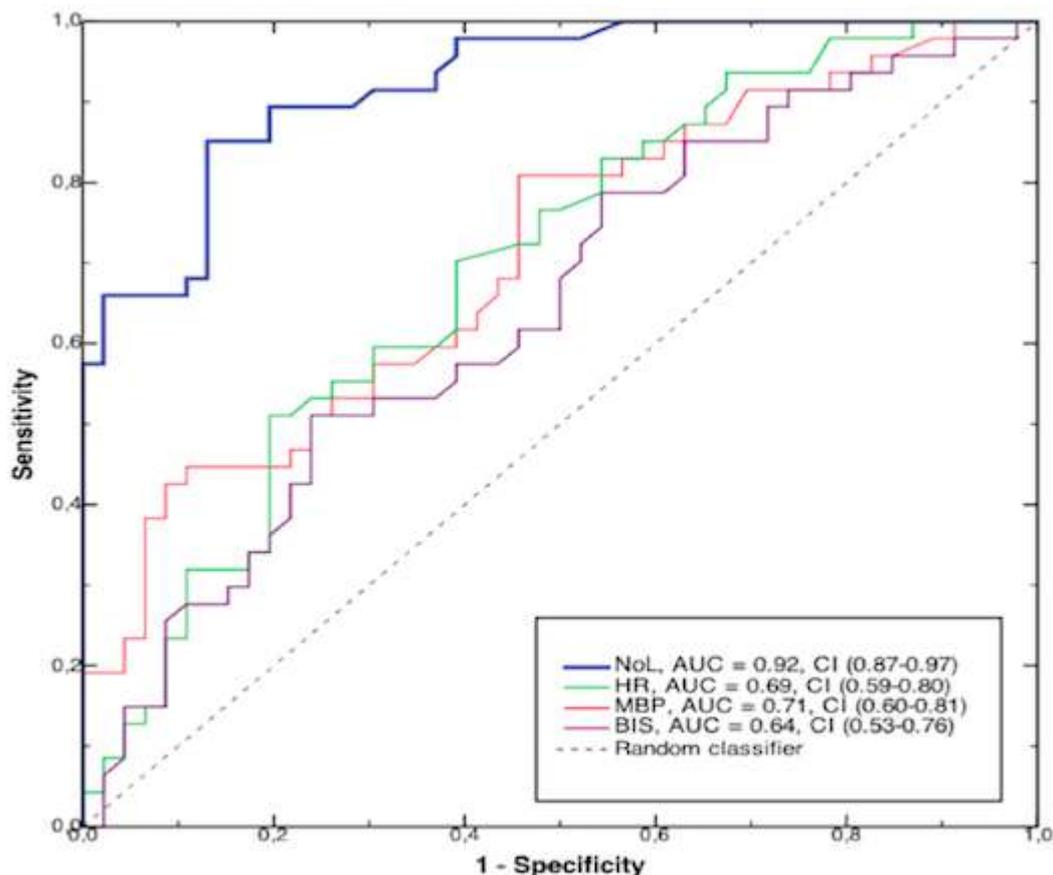


01AP09-6 - Impact of different remifentanyl doses on the Nociception Level (NOL) index response to intra-operative noxious stimuli

Stöckle P.-A., Renaud-Roy E., Maximos S., Verdonck O., Fortier L.-P., Richebé P. University of Montreal, Dept of Anaesthesiology & Pain Medicine, Montreal, Canada **Background:** Several indices based on a single parameter have been recently used to monitor nociception intensity under general anesthesia (GA). The PMD monitor (Medasense Biometrics, Israel) uses the NOL index, a multiparametric index derived from heart rate (HR), HR variability, plethysmograph wave amplitude, skin conductance and its fluctuations. The index ranges from 0 (no pain) to 100 (max pain). With the latest version PMD-200, we assessed the NOL response during noxious stimuli at various doses of remifentanyl (RF) to show an inverse correlation between RF dose and NOL.

Methods: 26 patients received desflurane-RF based GA with an epidural analgesia (EA) for laparotomy. A tetanic stimulation was applied to the forearm of the patients at 3 RF doses (0.005 $\mu\text{g}/\text{kg}/\text{min}$, 0,05 and 0,1 $\mu\text{g}/\text{kg}/\text{min}$). Pre- and post-stimulation NOL values were compared. ROC curves were made to assess the ability of the NoL to discriminate between noxious and non-noxious state. Correlation between RF dose and post-stimulation NOL values was assessed. NCT#02884778.

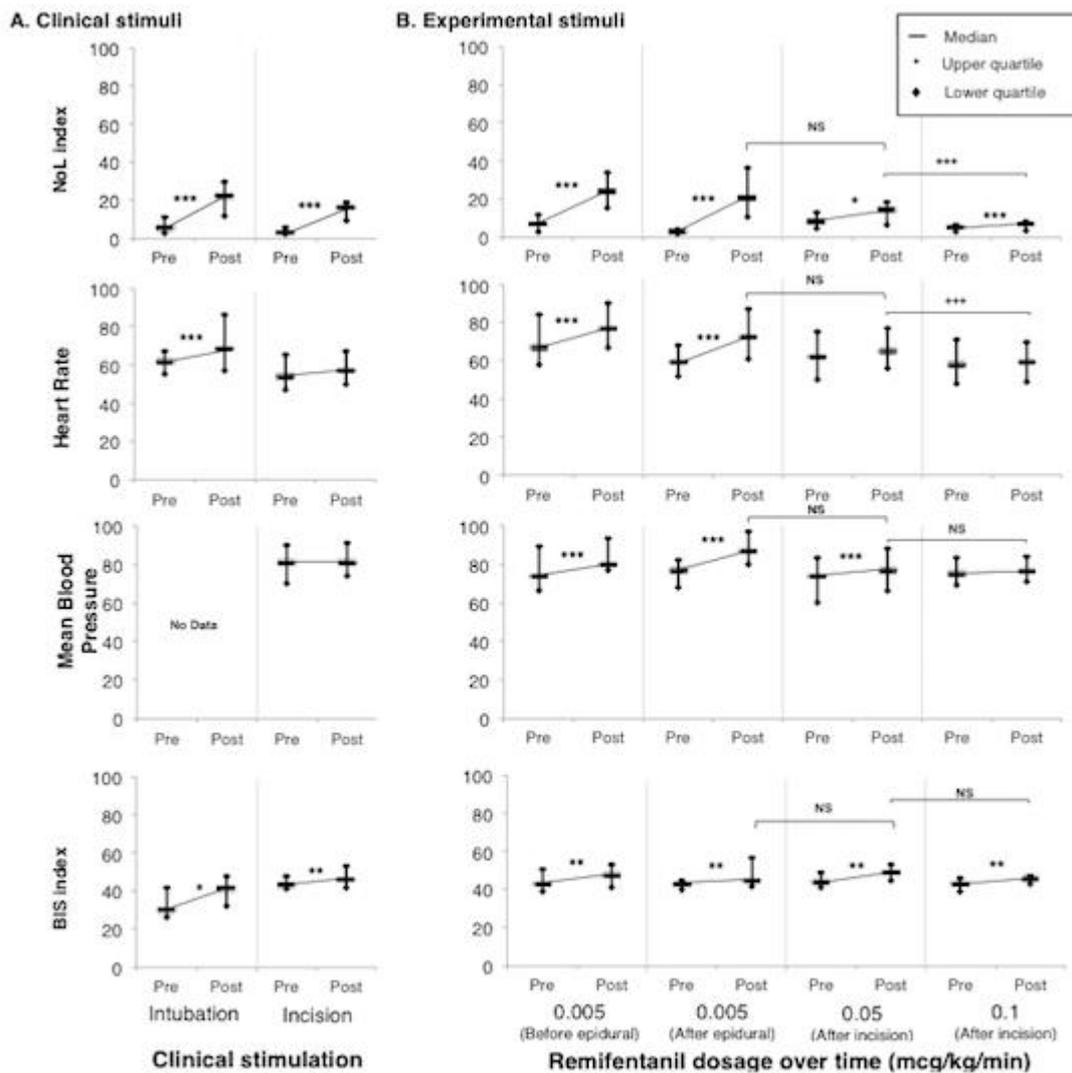
Results: AUC (noxious vs non-noxious states) for NOL was 0.92 vs 0.69, 0.71, 0.64 for HR, MBP and BIS respectively.



Receiver operating characteristics curve analysis of discrimination of experimental noxious stimulus at minimal remifentanyl dosage (0.005 mcg/kg/min). NOL: Nociception Level index; HR= Heart Rate; MBP= Mean arterial Blood Pressure; BIS= Bispectral index.

[AUC NOL vs HR MAP BIS]

Pre-stimulation NOL values ranged from 5 to 8 with no difference with higher RF infusion. Post-stimulation values at RF doses of 0.005 before and after epidural load, 0.05, and 0.1 $\mu\text{g}/\text{kg}/\text{min}$ were, respectively, 24, 21, 14 and 7, significantly higher than the pre stimulation values ($p < 0.0083$).



Reaction of individual measures to experimental stimuli at different remifentanyl (RF) infusion dosage. Pre to post-stimulation comparison using Wilcoxon rank signed test * $P < 0.0042$, ** $P < 0.001$, *** $P < 0.0001$. Post-hoc analysis with Wilcoxon rank signed test * $P < 0.025$ ** $P < 0.001$.

[Pre- and post-stimulation values]

Post-stimulation values significantly decreased with higher RF dose.

Correlation between NOL values and RF doses was $r = -0.584$ ($p < 0.0001$).

Conclusion: NOL values after stimulus decreased with high RF doses, showing a significant inverse correlation between opioid dose and NOL index. The high sensitivity and specificity of the NOL index suggests its great potential as a monitor of nociception intensity during anesthesia.