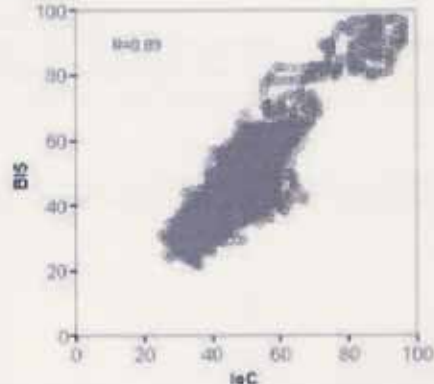
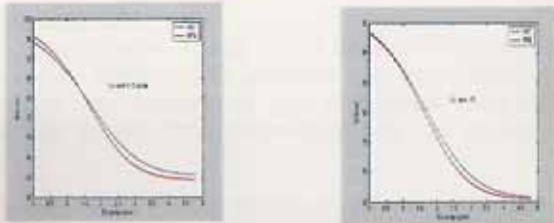
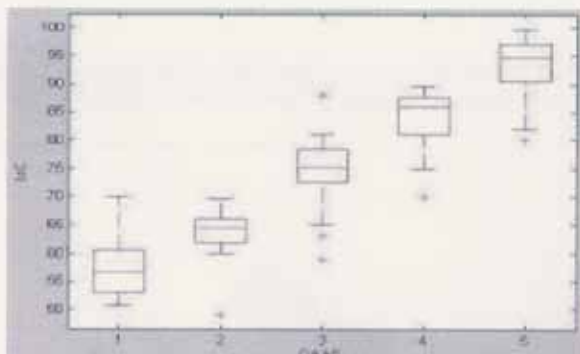
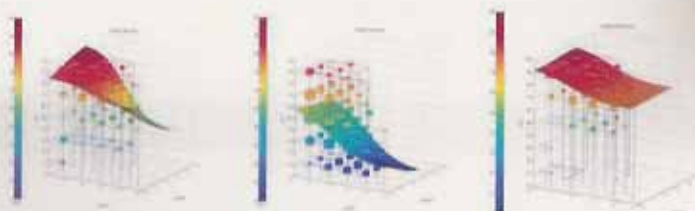
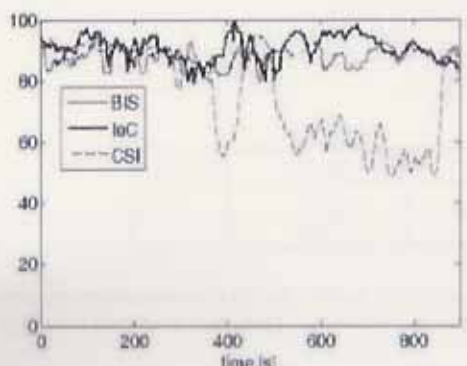


	Objective	Methodology	Result	Publication and author
1	<p>Compare a new Index of Consciousness (loC) with the Bispectral Index (BIS-XP) and the Observers Assessment of Alertness and Sedation Scale (OAAS)</p>	<p>12 patients scheduled for cardiac surgery. All patients were induced with Sevoflurane. Five minutes after the patient had reached the Observers Assessment of Alertness and Sedation scale, atracurium and remifentanil were administered.</p>	<p>The Pk (SE) values for loC and BIS were 0.94(0.04) and 0.84(0.07), respectively. The figure shows the loC versus BIS for all recorded measurements, resulting in a Spearman's rank correlation of 0.89.</p> 	<p><b>Comparison of the Index of Consciousness (loC) and the Bispectral Index during Sevoflurane Anesthesia.</b></p> <p>Hector Litvan et al.</p> <p><b>A1029 ASA2006</b> October 16, 2006 2:00 PM -4:00 PM Room Hall E, Area I</p>
2	<p>The objective of this work was to compare a recently introduced index of hypnosis, the Index of Consciousness (loC) (Morpheus Medical, Spain) to the Bispectral index (BIS) (Aspect MS, USA), in patients undergoing Ultrasonographic Endoscopy (USE) under sedation and analgesia</p>	<p>120 patients undergoing USE under sedation with a combination of propofol and remifentanil. Sedation level was quantified by an observer using the Ramsay Sedation Score (RSS).</p>	<p>The ability to predict the changes in RSS, estimated by means of the Pk values (Standard Error) were for loC 0.85 (0.14) and for BIS 0.81 (0.16).</p> 	<p><b>Bispectral Index and Index of Consciousness as Measures of Sedation for Endoscopic Procedures.</b></p> <p>Pedro L. Gambus et al.</p> <p><b>A802 ASA2007</b> October 14, 2007 2:00 PM -4:00 PM Room Hall D, Area J,</p>

	Objective	Methodology	Result	Publication and author
3	<p>The propose of this study was to validate a new commercial Index of Consciousness (IoC) by comparing it with the Observers Assessment of Alertness and Sedation Scale(OAAS) during the induction of anesthesia.</p>	<p>30 patients scheduled for cardiac surgery. In all patients the standard departmental procedure for inhaled induction was applied: sevoflurane atracurium and remifentanil.</p>	<p>The IoC shows good agreement with the OAAS scale during induction with sevoflurane. The IoC shows good agreement with the OAAS scale during induction with sevoflurane. Little overlap was seen between OAAS 5 to 3 (awake levels) and OAAS 2 to 1 (anesthetised).</p> 	<p><b>Assessment of the Index of Consciousness (IoC) during Sevoflurane Anesthesia.</b></p> <p>Mari L. Maestre et al</p> <p><b>A78</b>  <b>ASA2007</b>                      October 13, 2007                      9:00-11:00 AM                      Room Hall D, Area B,</p>
4	<p>The objective of this study was to assess whether an Adaptive Neuro Fuzzy Inference System (ANFIS) could be used for modelling the interaction between propofol and remifentanil during sedation for ultrasonographic endoscopy (USE).</p>	<p>177 patients undergoing USE received a fixed concentration of either propofol or remifentanil</p>	<p>The study shows that the ANFIS approach is valid for modelling interaction between propofol and remifentanil as the validation measures did not show significantly larger values than those obtained during training.</p> <p>AAI [no-stimulation]    BIS [no-stimulation]    IoC [no-stimulation]</p> 	<p><b>Validation of an Adaptive Neuro Fuzzy Inference System (ANFIS) interaction surface between propofol and remifentanil using AAI, BIS and IoC.</b></p> <p>Pedro L. Gambus et al.</p> <p><b>ISAP 2007</b></p>

	Objective	Methodology	Result	Publication and author									
5	<p>The objective of the data analysis presented in this work was to compare Bispectral index (BIS, Aspect MS, USA) and the Index of Consciousness (loC, Morpheus Medical, Spain), both measures extracted from the raw EEG of patients undergoing Ultrasonographic Endoscopy (USE) under sedation and analgesia with propofol and remifentanyl.</p>	<p>112 patients who underwent USE under deep sedation with a combination of propofol and remifentanyl were analyzed. The patients were randomized to one out of eight different groups according to the drug combination received. Propofol and remifentanyl were infused using a TCI system</p>	<p>BIS and loC had the ability to predict the changes in the RSS, as can be demonstrated by Pk values and standard error.</p> <table border="1"> <thead> <tr> <th></th> <th>BIS</th> <th>loC</th> </tr> </thead> <tbody> <tr> <td>P</td> <td>0.81</td> <td>0.85</td> </tr> <tr> <td>(SE)</td> <td>(0.16)</td> <td>(0.14)</td> </tr> </tbody> </table> <div style="display: flex; justify-content: space-around;"> <div> <p>Error bars show 95% C.I. of mean</p> </div> <div> <p>Error bars show 95% C.I. of mean</p> </div> </div>		BIS	loC	P	0.81	0.85	(SE)	(0.16)	(0.14)	<p><b>Assessing the level of sedation by the Index of Consciousness (loC) or the bispectral index (BIS) during ultrasonographic exploration (USE).</b></p> <p>Pedro L. Gambus et al</p> <p><b>Sedar 2007</b> Abril 26-28, 2007</p>
	BIS	loC											
P	0.81	0.85											
(SE)	(0.16)	(0.14)											
6	<p>The purpose of this study was to validate a new device for monitoring the level of consciousness, the loC-view during propofol anaesthesia. The Index of Consciousness (loC) was compared with the Bispectral Index (BIS-XP, and Sedation Scale (OAAS)</p>	<p>20 patients scheduled for cardiac surgery. In all patients the propofol induction was applied. Five minutes after the patient had reached OAAS 1, atracurium and continuous remifentanyl infusion were administered and the trachea was intubated.</p>	<p><b>Pk: BIS and loC</b></p> <table border="1"> <thead> <tr> <th></th> <th>BIS</th> <th>loC</th> </tr> </thead> <tbody> <tr> <td>Pk</td> <td>0.91</td> <td>0.93</td> </tr> <tr> <td>(SE)</td> <td>(0.04)</td> <td>(0.03)</td> </tr> </tbody> </table> <div style="display: flex; justify-content: space-around;"> <div> </div> <div> </div> </div>		BIS	loC	Pk	0.91	0.93	(SE)	(0.04)	(0.03)	<p><b>Validation of the loC-view device for monitoring the level of consciousness during propofol anaesthesia.</b></p> <p>Hector Litvan et al.</p> <p><b>ESA 2007</b></p>
	BIS	loC											
Pk	0.91	0.93											
(SE)	(0.04)	(0.03)											

	Objective	Methodology	Result	Publication and author						
7	<p>This monitor calculates a new Index of consciousness (IoC) based on a chaos mathematical analysis, termed Symbolic Dynamics (SD), of the frontal EEG.</p>	<p>The SD is transforming a time series into a symbol sequence which provide a model for the orbits of dynamical system via a space of sequence.</p>	<p>The loC-View has been validated during cardiac anaesthesia using sevoflurane and propofol (1) and has also been validated during sedation for ultrasonographic exploration (5). Comparison have been made with the Bispectral Index (BIS-XP) and correlated to the Observers Assessment of Alertness and sedation Scale (OAAS).</p> <p>The Pk (SE) value for loC, and BIS with sevoflurane were 0.94 (0.04) and 0.84(0.07) respectively (1).</p> <p><b>Discussion:</b> The loC-view is a promising portable new device, characterised by the implementation of an advanced mathematical analysis for assessing the level of consciousness during anaesthesia.</p>	<p><b>loC-View, A new monitor of depth of anaesthesia</b></p> <p>Hector Litvan</p> <p>TIVA, 2007 September 27-29, 2007</p>						
8	<p>A monitor for the level of consciousness should be able to maintain high index values while the subject is awake.</p> <p>The three monitors included in this study use the same 0-100 scale, where 40-60 is considered adequate range for general anaesthesia. The probability of values below 60 in the awake state should therefore be very low in order for the device to have high sensitivity/specificity for separating awake and anaesthetised states.</p>	<p>After ethical committee approval, fifteen subjects (8 male, 7 female, age 41(12) years) were included in the study. All subjects were monitored simultaneously with the three monitors, BIS (Aspect Medical, USA), loC (Morpheus Medical, Spain) and CSM (Danmeter, Denmark). The subjects were asked to rest with eyes closed, while counting with low but audible voice.</p>	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>loC</th> <th>BIS</th> <th>CSI</th> </tr> </thead> <tbody> <tr> <td>86.13(10.3)</td> <td>89.8(7.4)</td> <td>65(16.2)</td> </tr> </tbody> </table>  <p>The above figure shows an example of a recording from one of the study subjects</p>	loC	BIS	CSI	86.13(10.3)	89.8(7.4)	65(16.2)	<p><b>Baseline stability of the Index of Consciousness (IoC). A comparison with the Bispectral index (BIS) and the Cerebral State Index (CSI)</b></p> <p>M. Revuelta</p> <p>ESA 2008 3AP7-4</p>
loC	BIS	CSI								
86.13(10.3)	89.8(7.4)	65(16.2)								

9	<p>Sedation-analgesia for minimally invasive diagnostic and therapeutic procedures is provided in the gastrointestinal endoscopy area as fast track anaesthesia. The objective of this work was to compare a recently introduced index of hypnosis, the index of consciousness (IoC) (Morpheus Medical, Spain) to the bispectral index (BIS) (Aspect Medical Systems, MA, USA), in patients undergoing Itrasonographic endoscopy (USE) under sedation and analgesia with propofol and remifentanil.</p>	<p>120 patients undergoing USE under sedation with a combination of propofol and remifentanil were randomized into eight different groups according to the drug combination received (propofol: 0, 1.5, 2, and 3 mg/ml and remifentanil: 0, 0.5, 1, and 2 ng/ml)</p>	<p>A total of 1304 RSS were measured in 110 patients. The ability to predict the changes in RSS was estimated by means of the Pk values (SD). The values were for IoC 0.85 (0.14) and for BIS 0.81 (0.16).</p> <p>Conclusion. The IoC was able to satisfactorily assess the level of sedation during administration of propofol and remifentanil for sedation during USE. A RSS of 4, optimal level of sedation for USE, is associated with a mean IoC value of 73 (CI 71-75).</p>	<p><b>Index of consciousness as a measure of sedation for ultrasonographic endoscopy: a randomized controlled study.</b></p> <p>P. Gambus, E. Weber Jensen</p> <p>Proceedings of the 7th International Symposium Memory and Awareness in Anaesthesia</p> <p><b>Supplement BJA, June 2008</b></p>
10	<p>The purpose of this study was to validate the changes in level of consciousness before and after onset of ECC.</p> <p>A new commercial Index of Consciousness (IoC) was compared with the Observers Assessment of Alertness and Sedation Scale (OAAS/S) during the induction of anaesthesia. The IoC is based on a chaos mathematical analysis, termed Symbolic Dynamics (SD), of the frontal EEG [1]</p>	<p>After Ethical Committee approval, 30 patients scheduled for valve replacement surgery were studied.</p> <p>ANAESTHESIA:nA standardized inhaled induction of anaesthesia was performed in all patients using 8% sevoflurane until loss of consciousness during ECC, sevoflurane was administered at 0.7% directly into the machine while maintaining the remifentanil infusion at 0.3-0.5 µg kg<sup>-1</sup> min<sup>-1</sup>.</p>	<p>The IoC shows good agreement with the OAAS/S during induction with sevoflurane.</p> <p>The Pk (SE) values for the IoC was 0.94 (0.01). No changes in the IoC values were found 5 min before and after the onset of ECC.</p>	<p><b>Assessment of the Index of Consciousness (IoC) during cardiac anaesthesia</b></p> <p>J Galan et al.</p> <p><b>EACTA 2008</b></p>

11	<p>The level of Consciousness of patients undergoing survey evolves continuously as the effect of the anesthetic is counteracted by the surgical stimuli. In this work, the Index of Consciousness, a recent index which uses the information from EEG spectrum and symbolic dynamics through a fuzzy inference system, is introduced. The bispectral index BIS, is used to validate the IOC.</p>	<p>The monitors of depth of anesthesia, based on the analysis of the electroencephalogram (EEG), have been progressively introduced into the daily practice to provide additional information about the state of the patient.</p>	<p>A good correlation is found between both indexes, IOC presents a significantly prediction probability <math>P_k</math> of the level of sedation than BIS, and can thus be considered as an interesting measure of the consciousness.</p>	<p><b>Validation of the Index of Consciousness (IoC) during Sedation / Analgesia for Ultrasonographic Endoscopy.</b></p> <p>Weber, E. et al.</p> <p>EMBS 2008.</p>												
12	<p>The purpose of this study was to compare a new Index of Consciousness (IoC) with the Middle Latency Auditory Evoked Potentials (AAI) and the Observers Assessment of Alertness and Sedation Scale (OAAS) during the induction of anaesthesia. The IoC is based on a chaos mathematical analysis, termed Symbolic Dynamics, of the frontal EEG.</p>	<p>After Ethical Committee approval, data was collected from 12 patients scheduled for cardiac surgery. All patients were induced with 8% sevoflurane applying one of the standard departmental procedures. Five minutes after the patient had reached OAAS 1, the trachea was intubated and the study was finished. The IoC was recorded using a prototype of the IoC-view monitor and the AEP was recorded using the AEPmonitor/2 (Danmeter A/S, Odense, Denmark). The IoC and the AAI were registered while awake (OAAS 5) and at loss of consciousness (OAAS 1), defined as loss of response to mild shaking and prodding.</p>	<p>The <math>P_k</math> for IoC and AAI was 0.99 and 0.98, respectively. The Table shows the mean (SD) for IoC and AAI at OAAS 5 and OAAS 1. Both IoC and AAI were significantly different at OAAS 5 and OAAS 1.</p> <table border="1"> <thead> <tr> <th></th> <th>IoC</th> <th>AAI</th> </tr> </thead> <tbody> <tr> <td>OAAS 5</td> <td>95.1(3.6)</td> <td>57.7(16.1)</td> </tr> <tr> <td>OAAS 1</td> <td>47.9(3.7)</td> <td>21.33(6.11)</td> </tr> <tr> <td>p-value</td> <td>&lt;0.01</td> <td>&lt;0.01</td> </tr> </tbody> </table>		IoC	AAI	OAAS 5	95.1(3.6)	57.7(16.1)	OAAS 1	47.9(3.7)	21.33(6.11)	p-value	<0.01	<0.01	<p><b>First scientific IoC abstract presented at the European Society of Anesthesiologists. Comparison of the index of Consciousness (IoC) and the Auditory Evoked Potentials Index (AAI) during sevoflurane induction of general anaesthesia.</b></p> <p>Litvan, H, et al.</p> <p>A81- ESA. 2006.</p>
	IoC	AAI														
OAAS 5	95.1(3.6)	57.7(16.1)														
OAAS 1	47.9(3.7)	21.33(6.11)														
p-value	<0.01	<0.01														

13	<p>The purpose of this study was to validate a new level of consciousness monitor, the index of Consciousness (IoC, IoC-view, Morpheus Medical, Spain) by comparing it with the Bispectral Index (BIS, Aspect Medical, USA) and the Cerebral State Index (CSI, CSM, Danmeter, Denmark) during general anaesthesia for cardiac surgery with sevoflurane, remifentanil and atracurium.</p>	<p>After ethical committee approval and written patient consent, data from 35 patients were recorded during general anaesthesia for elective cardiac by-pass surgery. All patients were induced with 8% sevoflurane, until the Observers Assessment of Alertness and Sedation Scale (OAAS) level 1 was reached, and then set at 1% end-tidal sevoflurane. Subsequently remifentanil and atracurium were administered, the trachea was intubated and the procedure continued as usual. The prediction probability (Pk) was calculated both during induction and during maintenance.</p>	<p>The three indices performed equally well during the induction phase and were able to predict the level of consciousness of the patients satisfactorily. During maintenance the IoC and the BIS showed good agreement with the clinical signs. The SCI was significantly influenced by the administration of atracurium therefore the agreement with the OAAS scale during the maintenance phase was significantly less for CSI than for IoC and BIS.</p>	<p>Validation of the Index of Consciousness (IoC) during sevoflurane and remifentanil anaesthesia. A comparison with the Bispectral Index and the Cerebral State Index.</p> <p>Revuelta, M. + BJA 2008.</p>
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