

## CEREBRAL OXIMETRY - REFERENCE LIST

### FORE-SIGHT® Absolute Cerebral Oximeter (Near Infrared Spectroscopy)

1. Gilmore MM, Stone BS, Shepard JA, Czosnyka M, Easley RB, Brady KM. Johns Hopkins University School of Medicine, Baltimore, MD, USA.  
**Relationship between cerebrovascular dysautoregulation and arterial blood pressure in the premature infant.**  
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2. Kasman N, Brady K. Stanford University School of Medicine, Stanford, CA, USA, Texas Children's Hospital, Baylor College of Medicine, Houston, TX, USA.  
**Cerebral oximetry for pediatric anesthesia: why do intelligent clinicians disagree?**  
*Paediatr Anaesth.* 2011 May;21(5):473-8.
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**Hemodynamic and Cerebral Saturation Changes during Sustained Supraventricular Tachycardia (SVT) episodes.**  
*Presented at CCAS 2011.*
4. Fischer GW, Lin H-M, Krol M, Galati MF, DiLuozzo G, Griep RB, Reich DL. Department of Anesthesiology, Mount Sinai Medical Center, New York, NY, USA.  
**Noninvasive cerebral oxygenation may predict outcome in patients undergoing aortic arch surgery.**  
*J Thorac Cardiovasc Surg.* 2011 Mar;141(3):815-21.
5. Fischer GW. Department of Anesthesiology, Mount Sinai Medical Center, New York, NY, USA.  
**Recent advances in application of cerebral oximetry in adult cardiovascular surgery.**  
*Semin Cardiothorac Vasc Anesth.* 2008 Mar;12(1):60-9. Epub 2008 Apr 7.
6. Faulkner J, Hartley M, Tang A. Lancashire Cardiac Centre, Blackpool, UK.  
**Using cerebral oximetry to prevent adverse outcomes during cardiac surgery.**  
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7. Zaouter C, Arbeid E.  
**Influence of ambient light on cerebral oximeters.**  
*Br J Anaesth.* 2010 Dec;105(6):873-4.
8. Hassan MA, Rozario C, Elsayed H, Morcos K, Millner R. Blackpool Victoria Hospital, Blackpool, United Kingdom  
**A novel application of cerebral oximetry in cardiac surgery.**  
*Ann Thorac Surg.* 2010 Nov;90(5):1700-1.
9. Martens PR, Dhaese HL, Van den Brande FG, Van Laecke SM.  
**External cardiac massage improved cerebral tissue oxygenation shown by near-infrared spectroscopy during transcatheter aortic valve implantation.**  
*Resuscitation.* 2010 Nov;81(11):1590-1.

10. Highton D, Elwell C, Smith M. The National Hospital for Neurology and Neurosurgery, University College London Hospitals, Queen Square, London, UK.  
**Noninvasive cerebral oximetry: is there light at the end of the tunnel?**  
*Curr Opin Anaesthesiol. 2010 Oct;23(5):576-81.*
  
11. Henick WP, Mathews DM, Mellor A, Reich NT, Neuman GG, Anesthesiology, St. Vincent's Catholic Medical Center, New York, NY, USA.  
**Phenylephrine bolus given to treat hypotension decreases cerebral oxygen saturation.**  
*Presented at American Society of Anesthesiologists Annual Meeting 2010 #A396.*
  
12. De Naeyer S, De Deyne CS, Lathouwers K, De Sloovere V, Heylen R, Department of Anesthesiology, Ziekenhuis Oost-Limburg, Genk, Belgium and Faculty of Medicine, Hasselt University, Hasselt, Belgium.  
**Non-invasive absolute cerebral oximetry and intraluminal shunting during carotid endarterectomy.**  
*Presented at American Society of Anesthesiologists Annual Meeting 2010 # A398.*
  
13. Lathouwers K, De Deyne CS, Jans F, De Sloovere V, Heylen R. Department of Anesthesiology, Ziekenhuis Oost-Limburg, Genk, Belgium and Faculty of Medicine, Hasselt University, Hasselt, Belgium.  
**Non-invasive absolute cerebral oximetry during inhalational anesthesia in young children.**  
*Presented at American Society of Anesthesiologists Annual Meeting 2010 #A939.*
  
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**Decrease of cerebral oxygen saturation in prone position during spine surgery measured by absolute cerebral oximetry.**  
*Presented at American Society of Anesthesiologists Annual Meeting 2010 #LB07.*
  
15. Weiner MM, Fischer GW, Torillo TM, Lin HM, Rosenblatt MA. Department of Anesthesiology, Mount Sinai School of Medicine, New York, NY, USA.  
**The effect of anesthetic technique on cerebral oxygenation in the beach chair position.**  
*Presented at American Society of Anesthesiologists Annual Meeting 2010 #A1532.*
  
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**Non-invasive cerebral oxygen saturation during beach chair positioning in healthy volunteers.**  
*Presented at American Society of Anesthesiologists Annual Meeting 2010 #A1686.*
  
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**Beach chair positioning results in significantly lower cerebral oxygen saturations.**  
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**Lactate flux during carotid endarterectomy under general anesthesia: correlation with various point-of-care monitors.**  
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**Influence of steep trendelenburg position and CO<sub>2</sub> pneumoperitoneum on cardiovascular, cerebrovascular, and respiratory homeostasis during robotic prostatectomy.**  
*Br J Anaesth 2010;104(4):433-9.*
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Department of Anesthesiology, NorthShore University HealthSystem, Evanston, IL, USA.  
**Cerebral oxygen desaturation events assessed by near-infrared spectroscopy during should arthroscopy in the beach chair and lateral decubitus positions.**  
*Anesth and Analg. 2010;111(2):496-5.*
21. Mittnacht AJC. Department of Anesthesiology, Mount Sinai Medical Center, New York, NY, USA.  
**Near infrared spectroscopy in children at high risk of low perfusion.**  
*Cur Opin Anaesthesiol 2010;23:342-7.*
22. Said M, Niforatos N, Rais-Bahrami K. Childrens National Medical Center and The George Washington University School of Medicine, Washington, DC, USA.  
**Testing a new NIRS method to measure mesenteric oxygenation of preterm infants that compensates for meconium and transitional stool interference.**  
*Presented at the American Academy of Pediatrics 2010 #10103.*
23. Niforatos N, Said M, Rais-Bahrami K. Childrens National Medical Center and The George Washington University School of Medicine, Washington, DC, USA.  
**Cerebral Oximetry Monitoring in Preterm Infants with Respiratory Distress Syndrome.**  
*Presented at the American Academy of Pediatrics 2010 #10896.*
24. Chouthai N, Gopal SP, Graham P. Childrens Hospital of Michigan and Wayne State University, Detroit, MI, USA.  
**Cerebral Oximetry Using Near-Infrared Spectroscopy (NIRS) in Newborns with Hypoxic Ischemic Encephalopathy (HIE) Who Qualify for Clinical Whole Body Hypothermia (WBH).**  
*Presented at the American Academy of Pediatrics 2010 #11601.*
25. DeBurghgraeve F, DeDeyne C, Truijen J, Vandermeersch E, Heylen R.  
**Cerebrovascular reactivity (by CO<sub>2</sub> challenge) can be monitored by non-invasive absolute cerebral oxygen saturation (FORE-SIGHT Technology).**  
*Eur J Anaesthesiol 2010;27(Suppl 47):3AP8-4.*
26. DeBurghgraeve F, DeDeyne C, Oosterbosch J, Vandermeersch E, Heylen R.  
**Monitoring of absolute cerebral oxygen saturation (FORE-SIGHT Technology) during endoscopic shoulder surgery: beach chair positioning or conventional side positioning.**  
*Eur J Anaesthesiol 2010;27(Suppl 47):3AP8-1.*
27. Ramakers F, DeDeyne C, Jans F, Vandermeersch E, Heylen R.  
**New technology of non-invasive cerebral oximetry (FORE-SIGHT Technology) to monitor cerebral perfusion during resuscitation from cardiac arrest (CPR).**  
*Eur J Anaesthesiol 2010;27(Suppl 47):3AP6-11.*
28. DeNaeyer S, DeDeyne C, Lansink W, Vercauteren M, Heylen R.  
**Non-invasive absolute cerebral oximetry (FORE-SIGHT Technology) during carotid endarterectomy.**

*Eur J Anaesthesiol 2010;27(Suppl 47):3AP6-10.*

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**Postoperative monitoring of non-invasive cerebral oxygen saturation after carotid endarterectomy.**  
*Eur J Anaesthesiol 2010;27(Suppl 47):3AP8-3.*
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**Acute peripheral oxygen desaturation does not result in significant decreases in cerebral oxygen saturation.**  
*Eur J Anaesthesiol 2010;27(Suppl 47):7AP4-7.*
31. DeNaeyer S, DeDeyne C, Jans F, Vercauteren M, Heylen R.  
**Monitoring of absolute cerebral oxygen saturation during induction of general anesthesia.**  
*Eur J Anaesthesiol 2010;27(Suppl 47):3AP8-2.*
32. Kazan R, Bracco D, Hemmerling TM.  
**Reduced cerebral oxygen saturation measured by absolute cerebral oximetry during thoracic surgery correlates with postoperative complications.**  
*Br J Anaesth. 2009;103(6):811-16.*
33. Fischer GW, Benni PB, Lin H-M, Satyapriya A, Afonso A, DiLuozzo G, Griep RB, Reich DL.  
**Mathematical model for describing cerebral oxygen desaturation in patients undergoing deep hypothermic circulatory arrest.**  
*Br J Anaesth. 2010;104(1):59-66.*
34. Joshi B, Brady K, Lee J, Easley B, Panigrahi R, Smielewski P, Czosnyka M, Hogue CW Jr.  
**Impaired autoregulation of cerebral blood flow during rewarming from hypothermic cardiopulmonary bypass and its potential association with stroke.**  
*Anesth Analg. 2010;110(2):321-8.*
35. MacLeod DB, Ikeda K, Vacchiano C. Department of Anesthesiology, Duke University Medical Center, Durham, NC, USA.  
**Absolute and trending accuracy of FORE-SIGHT and INVOS cerebral oximeters in healthy volunteers.**  
*Presented at American Society of Anesthesiologists 2009.*
36. Murphy GS, Szokol JW, Vaughn JA, Marymont JH, Vender JS. Department of Anesthesiology, NorthShore University HealthSystem, Evanston, IL, USA.  
**The incidence of cerebral oxygen desaturation events during surgery in the beach chair position.**  
*Presented at American Society of Anesthesiologists 2009.*
37. Lathouwers KM, De Deyne CS, Mestrum R, Lauwers G, Heylen RJ. Department of Anesthesiology, Ziekenhuis Oost-Limburg, Genk, Belgium.  
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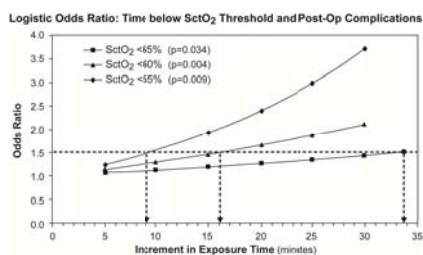
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**Risk of post-op complications below different cerebral oxygenation thresholds during aortic surgery.**

*Presented at American Society of Anesthesiologists 2009.*



40. Brijen L. Joshi, Brady K, Hogue CW. Departments of Anesthesiology & Critical Care Medicine, The Johns Hopkins Medical Institutions, Baltimore, MD, USA.

**Real time monitoring of cerebral blood flow autoregulation with NIRS during cardiac surgery.**

*Presented at American Society of Anesthesiologists 2009.*

41. Lathouwers KM, De Deyne CS, Lansink W, Mestrum R, Heylen RJ. Department of Anesthesiology, Ziekenhuis Oost-Limburg, Genk, Belgium.

**Non-invasive absolute cerebral oximetry (FORE-SIGHT) during carotid endarterectomy.**

*Presented at American Society of Anesthesiologists 2009.*

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**Absolute cerebral oximetry (FORE-SIGHT) in beach chair positioning for shoulder surgery.**

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43. Hemmerling TH, Kazan R, Minardi C, Charabati S, Bracco D. Department of Anesthesiology, McGill, Montreal, Quebec, Canada.

**Cerebral desaturations in thoracic surgery: possible positive correlation with cognitive dysfunction.**

*Presented at American Society of Anesthesiologists 2009.*

44. Kussman BD, Laussen PC, Benni PB, McElhinney DB, McGowan FX. Department of Anesthesiology, Perioperative & Pain Medicine, Children's Hospital Boston and Harvard Medical School, Boston, MA, USA.

**Validation of the FORE-SIGHT pediatric NIRS cerebral oximeter.**

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**Non-invasive monitoring of brain oxygen saturation during temporary clipping applied for complex cerebral aneurysm surgery.**  
*Presented at Society of Neurosurgical Anesthesia and Critical Care 2009.*
46. De Deyne CS, Mestrum R, Lansink W, Lathouwers K, Jans F, Lauwers G, Schroe H, Heylen RJ. Departments of Anesthesia and Cardiothoracic Surgery, Ziekenhuis Oost-Limburg, Genk, Belgium.  
**Non-invasive absolute cerebral oximetry: a new guide during carotid endarterectomy?**  
*Presented at Society of Neurosurgical Anesthesia and Critical Care 2009.*
47. Desloovere V, De Deyne CS, Wuyts J, Peuskens D, Deckers J, Daenekindt T, Weyns F, Jans F, Heylen RJ. Departments of Anesthesia and Neurosurgery, Ziekenhuis Oost-Limburg, Genk, Belgium.  
**Minimal invasive supra-orbital incision for cerebral aneurysm clipping: implications for anesthesia management.**  
*Presented at Society of Neurosurgical Anesthesia and Critical Care 2009.*
48. Sterken J, De Deyne CS, Lansink W, Lauwers G, Lathouwers K, Vander Laenen M, Jans F, Heylen RJ. Departments of Anesthesia and Cardiothoracic Surgery, Ziekenhuis Oost-Limburg, Genk, Belgium.  
**Monitoring of non-invasive absolute brain oxygen saturation to detect cerebral hyperperfusion after carotid endarterectomy.**  
*Presented at European Society of Intensive Care Medicine.*
49. D'Haeseleer K, De Deyne CS, Wuyts J, Peukens D, Vander Laenen M, Jans F, Heylen R. Department of Neurosurgery and Anesthesiology, Ziekenhuis Oost-Limburg, Genk, Belgium.  
**Non-invasive monitoring of brain oxygenation for complex cerebral aneurysm surgery.**  
*Presented at European Society of Intensive Care Medicine.*
50. Vanden Boer S, De Deyne CS, Weyns F, Daenekindt T, Jans F, Vander Laenen M, Heylen R. Departments of Anesthesia and Neurosurgery, Ziekenhuis Oost-Limburg, Genk, Belgium.  
**Monitoring of absolute cerebral oxygen saturation during craniotomy for acute intracerebral bleeding.**  
*Presented at the European Society of Intensive Care Medicine.*
51. Lathouwers KM, De Deyne CS, Jans F, Crits T, Vundelinckx G, Heylen RJ. Departments of Anesthesia and Neurosurgery, Ziekenhuis Oost-Limburg, Genk, Belgium.  
**New technology of non-invasive cerebral oximetry to assess cerebral perfusion during resuscitation from cardiac arrest (CPR).**  
*Presented at the European Society for Emergency Medicine.*
52. Lamote S, De Deyne CS, Lansink W, Jans F, Heylen R. Departments of Anesthesiology and Cardiothoracic Surgery, Ziekenhuis Oost-Limburg, Genk, Belgium.  
**Non-invasive monitoring of absolute cerebral oxygen saturation during elective shunting procedure for carotid endarterectomy.**  
*Eur J Anaesthesiol 2009;26(Suppl 45):3AP6-9.*

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**Monitoring of absolute cerebral oxygen saturation during craniotomy for acute intracerebral bleeding.**  
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54. Somers R, De Deyne CS, Jans F, Oosterbosch J, Heylen R. Departments of Anesthesiology and Orthopedic Surgery, Ziekenhuis Oost-Limburg, Genk, Belgium.  
**Monitoring of absolute cerebral oxygen saturation during endoscopic shoulder surgery: Benchchair positioning compared to conventional positioning.**  
*Eur J Anaesthesiol 2009;26(Suppl 45):3AP6-11.*
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**Monitoring of brain oxygenation during complex cerebral aneurysm surgery by FORE-SIGHT.**  
*Eur J Anaesthesiol 2009;26(Suppl 45):7AP5-8.*
56. De Troy E, De Deyne CS, Vanderspeeten K, Jans F, Heylen R. Departments of Anesthesiology and Abdominal Surgery, Ziekenhuis Oost-Limburg, Genk, Belgium.  
**Monitoring of brain oxygenation during hyperthermic intraperitoneal chemotherapy (HIPEC) procedures.**  
*Eur J Anaesthesiol 2009;26(Suppl 45):3AP6-10.*
57. Alfonso A, Fischer GW. Department of Anesthesiology, Mount Sinai Medical Center, New York, NY, USA.  
**Influence of positional changes on SctO<sub>2</sub> and CBV.**  
*Presented at Outcomes 2009: "The Key West Meeting".*
58. Weiner M, Fischer GW, Torillo T, Jeng C, Rosenblatt MA. Department of Anesthesiology, Mount Sinai Medical Center, New York, NY, USA.  
**Cerebral oximetry monitoring in patients undergoing surgery with regional anesthesia in the beach chair position.**  
*Presented at Outcomes 2009: "The Key West Meeting".*
59. Wintermark P, Hansen A, Warfield SK, Soul J. Montreal Children's Hospital, QC, Canada, Children's Hospital Boston, Boston, MA, USA.  
**Near-Infrared Spectroscopy Versus Magnetic Resonance Imaging To Study Brain Perfusion in Newborns with Hypoxic-Ischemic Encephalopathy.**  
*Presented at the American Academy of Pediatrics 2011 #4750-6.*
60. Fischer GW, Lin HM, DiLuozzo G, Griep RB, Reich DL. Departments of Anesthesiology and Cardiothoracic Surgery, Mount Sinai Medical Center, New York, NY, USA.  
**Decreased cerebral tissue oxygen saturation during aortic surgery increases length of stay.**  
*Presented at Outcomes 2009: "The Key West Meeting".*

61. Lee JK, Kibler KK, Benni PB, Easley RB, Czosnyka M, Smielewski P, Koehler RC, Shaffner DH, Brady KM. Department of Anesthesiology and Critical Care Medicine, Johns Hopkins University School of Medicine, Baltimore, MD, USA.  
**Cerebrovascular reactivity measured by near-infrared spectroscopy.**  
*Stroke* 2009 May;40(5):1820-6.
- The results of the experiments presented here have two important implications. First, the results imply that the non-intracranially invasive the Hemoglobin Volume Index (HVx) has a potential clinical role in the care of patients at risk of neurologic injury. Second, the conceptual model used to derive the pressure reactivity index (PRx) is now better supported by the close agreement between the HVx and PRx.
62. Fischer GW, Torrillo TM, Weiner MM, Rosenblatt MA. Departments of Anesthesiology and Cardiothoracic Surgery, Mount Sinai Medical Center, New York, NY, USA.  
**The use of cerebral oximetry as a monitor of the adequacy of cerebral perfusion in a patient undergoing shoulder surgery in the beach chair position.**  
*Pain Pract* 2009;9(4):304-7.
63. MacLeod DB, Ikeda K, Vacchiano C. Department of Anesthesiology, Duke University Medical Center, Durham, NC, USA.  
**Simultaneous comparison of FORE-SIGHT and INVOS cerebral oximeters to jugular bulb and arterial CO-oximetry measurements in healthy volunteers.**  
*Anesth Analg* 2009;108(SCA Suppl);1-104.
- The results demonstrate that the FORE-SIGHT cerebral oximeter monitor has greater precision with respect to measuring absolute cerebral tissue oxygen saturation than the INVOS cerebral oximeter monitor.
64. MacLeod DB, White W, Newman MF, Ikeda K, Mathew JP. Department of Anesthesiology, Duke University Medical Center, Durham, NC, USA.  
**Decreased forebrain cerebral tissue oxygen saturation is associated with cognitive decline after cardiac surgery.**  
*Anesth Analg* 2009;108(SCA Suppl);1-104.
- Decreases in intraoperative SctO<sub>2</sub> are associated with POCD. The lack of association with Domain 1 is explained by the fact that the Randt test is typically associated with temporal and parietal lobe function and thus not measured by a monitor of frontal lobe cerebral tissue oxygen saturation.
65. Fischer GW, Lin HM, DiLuozzo G, Griep RB, Reich DL. Departments of Anesthesiology and Cardiothoracic Surgery, Mount Sinai Medical Center, New York, NY, USA.  
**Decreased cerebral tissue oxygen saturation during aortic surgery increases risk of post-op complications.**  
*Anesth Analg* 2009;108(SCA Suppl);1-104.
- SctO<sub>2</sub> values and prolonged DHCA times were found to be associated with major complications, prolonged extubation times, and ICU/Hospital LOS. This study suggests that prolonged intraoperative periods of time with SctO<sub>2</sub><60% correlate significantly with an increased risk of having major complications and an increased LOS.
66. MacLeod DB, et al.  
Department of Anesthesiology, Duke University Medical Center, Durham, NC, USA.  
**Relationship of cerebral oximetry measured hemoglobin per volume of tissue to arterial blood hemoglobin.**  
*Anesth Analg* 2008;106;S-120.

67. Johsi B, Brady K, Stearns J, Hogue C. Johns Hopkins Hospital, Baltimore, MD, USA.  
**Continuous monitoring of cerebral blood flow autoregulation during cardiac surgery in adults with near infra-red Spectroscopy: preliminary results.**  
*Anesth Analg 2009;108(SCA Suppl);1-104.*
- These preliminary results demonstrate that NIRS based CO-oximetry monitoring can accurately detect the lower CBF autoregulatory threshold in patients undergoing cardiac surgery.
68. Hemmerling TM, et al. McGill University, Montreal General Hospital, Montreal, Quebec, Canada.  
**Significant decrease of cerebral oxygen saturation during single lung ventilation measured using absolute oximetry.**  
*Br J Anaesth 2008 Dec;101(6):870-5.*
- Thoracic surgery with single lung ventilation (SLV) seems to be associated with significant decrease of cerebral tissue oxygen saturation (SctO<sub>2</sub>) in the majority of patients. Generally, parameters like peripheral oxygen saturation or PO<sub>2</sub> are used to guide SLV during thoracic surgery; our preliminary results indicate that these parameters are not sufficient to detect significant cerebral drops in SctO<sub>2</sub> in % oxygen saturations.
69. Fenik JC, Rais-Bahrami K, Rivera O, Short BL. Departments of Neonatology and Biomedical Engineering, Children's National Medical Center & The George Washington University School of Medicine, Washington, DC, USA.  
**Neonatal cerebral oximetry monitoring during ECMO cannulation.**  
*Presented in part at: the American Pediatric Society Annual Meeting, Toronto, Canada, May 2007 & the American Academy of Pediatrics National Conference & Exhibition, San Francisco, CA. October 2007.*
- 17 subjects were monitored pre- ECMO to at least 48 hours after cannulation. Of the 17 subjects, 12 experienced low cerebral tissue oxygen saturation (SctO<sub>2</sub>) < 60% during pre-ECMO surgery, with most exhibiting the lowest SctO<sub>2</sub> values between cannulation to the onset of ECMO. Two subjects received cardiopulmonary resuscitation (CPR) during surgery and experienced very low SctO<sub>2</sub> (5% and 36%). Pulse oximetry was found to be unreliable during CPR because of diminished pulsatile flow. SctO<sub>2</sub> increased above 60% after the onset of ECMO for all subjects and remained stable. **Conclusion:** Neonates are vulnerable to cerebral oxygen desaturation during the pre-ECMO surgical period.
70. Hemmerling TM, et al. Department of Anesthesia, McGill University, Montreal General Hospital, Montreal, Quebec, Canada.  
**Cerebral desaturation during single lung ventilation correlates with postoperative morbidity.**  
*Canadian Journal of Anesthesia 55:474373.*
71. Hemmerling TM, Kazan R, Bluteau M Eng, D Bracco. Department of Anesthesia, McGill University, Montreal General Hospital, Montreal, Quebec, Canada.  
**Unilateral ventilation during gastroesophagectomy detected by absolute cerebral oximetry.**  
*Anesth Analg 2008;106;S-7.*
- A significant drop of SctO<sub>2</sub> indicated unilateral ventilation and caused the anesthetist to verify the proper positioning of the double-lumen tube. Changes of SctO<sub>2</sub> might be more sensitive than changes in blood gas monitoring or peripheral saturation to indicate unilateral ventilation. The drop of SctO<sub>2</sub> was the only parameter indicating unilateral ventilation in this patient.

72. Hemmerling TM, Kazan R, Bracco D. Department of Anesthesia, McGill University, University of Montreal, Montreal, Canada.  
**Inter-hemispheric cerebral saturation differences during thoracic surgery with lateral head positioning.**  
*Br J Anaesth 2009 Jan;102(1):141-2.*
- Cerebral tissue oxygen saturation SctO<sub>2</sub> is not equal between the two hemispheres during thoracic surgery in the lateral position. The lower hemisphere has generally a lower SctO<sub>2</sub>. Lower venous return gradient and higher cerebral venous blood volume may explain these differences.
73. Fischer GW, Stone M. Department of Anesthesiology, Mount Sinai School of Medicine, New York, NY, USA.  
**Cerebral air embolism recognized by cerebral oximetry.**  
*Semin Cardiothorac Vasc Anesth 2009 Mar;13(1):56-9.*
74. Fischer GW, et al. Anesthesiology and Cardiothoracic Surgery, Mount Sinai Medical Center, New York, NY, USA.  
**FORE-SIGHT Cerebral Oximeter: a possible solution to Methylene Blue interference.**  
*Anesthesiology 2008;109:A251.*
75. Fischer GW, et al. Department of Anesthesiology and Cardiothoracic Surgery, Mount Sinai Medical Center, New York, NY, USA.  
**Modeling the rate of decrease in brain oxygen saturation during DHCA with cerebral oximetry.**  
*Anesthesiology 2008; 109:A900.*
76. Fischer GW, et al. Department of Anesthesiology and Cardiothoracic Surgery, Mount Sinai Medical Center, New York, NY, USA.  
**Patterns in brain oxygen saturation during aortic surgery.**  
*Presented at Outcomes 2008: "The Key West Meeting".*
77. MacLeod DB, Ikeda K, Keifer JC, Moretti E, and Ames W. Department of Anesthesiology, Duke University Medical Center, Durham, NC, USA.  
**Validation of the CAS Adult Cerebral Oximeter during hypoxia in healthy volunteers.**  
*Anesth Analg 2006;102:S162.*
- "This study supports the feasibility of non-invasive NIRS SctO<sub>2</sub> as an estimate of cerebral tissue oxygenation during episodes of oxygen desaturation. There was a strong correlation with the global indices of tissue oxygen supply and demand, arterial and jugular bulb oxygen saturations respectively."
78. Fischer GW, Reich D, Plestis KA, Griep RB. Departments of Anesthesiology and Cardiothoracic Surgery, Mount Sinai Medical Center, New York, NY, USA.  
**Results utilizing absolute cerebral oximetry monitoring suggest the need for tailored patient management during cardiac surgery.**  
*Presented at the Outcomes 2006: "The Key West Meeting".*
- The absolute cerebral oximeter (FORE-SIGHT, CAS Medical Systems) could be used as a guide for patient management during cardiac surgery.

79. Fischer GW, Reich D, Plestis KA, Griep RB. Departments of Anesthesiology and Cardiothoracic Surgery, Mount Sinai Medical Center, New York, NY, USA.

**The application of absolute cerebral oximetry during aortic surgery.**

*Anesthesiology* 2006;105:A430.

- “Cerebral oximetry provides continuous, real time monitoring brain oxygenation measurements during the absence of arterial pulsatility and cerebral perfusion, when other vital sign monitoring (i.e. pulse oximetry) cease to function. Our preliminary experience shows that absolute cerebral oximetry is useful in clinical settings to identify “catastrophic events” that may occur during the course of surgeries that would otherwise have been missed.”

80. Rais-Bahrami K, Rivera O, and Short BL. Department of Neonatology, Children's National Medical Center, Washington, DC, USA.

**Validation of a noninvasive neonatal optical cerebral oximeter in veno-venous ECMO patients with a cephalad catheter.**

*J Perinatol* 2006 Oct;26(10):628-35.

- “We recommend the use of this noninvasive method (cerebral oximetry, FORE-SIGHT) as an alternative to blood draws for cerebral venous saturation measurements in neonates requiring extracorporeal life support.”

81. MacLeod DB, Ikeda K, Moretti E, Keifer JC, Grocott H. Department of Anesthesiology, Duke University Medical Center, Durham, NC, USA.

**Using the CAS Cerebral Oximeter to estimate cerebral venous oxygen saturation.**

*Anesthesiology* 2005;103:A16.

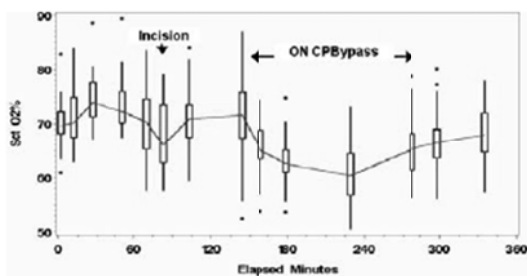
- This study supports the feasibility of non-invasive NIRS SvO<sub>2</sub> as an estimate of cerebral tissue oxygenation during episodes of oxygen desaturation. There was a strong correlation with the global indices of tissue oxygen supply and demand, arterial and jugular bulb oxygen saturations respectively.

82. MacLeod DB, Ikeda K, White W, Keifer JC, Moretti E. Duke University Medical Center, Durham, NC, USA.

**Pilot study of FORE-SIGHT Cerebral Oximeter in cardiac patients.**

*Anesth Analg* 2007;104:5-129.

- In this study, the median SctO<sub>2</sub> value of awake patients was 70%. **Awake SctO<sub>2</sub> variability was small (SD 3.9%) independent of age, skin color and gender.** The pre-CPB median SctO<sub>2</sub> 72% dropped to 60% during CPB before returning to 68% at chest closure. VS patients showed longer periods below all 3 thresholds of SctO<sub>2</sub> values.



83. Benni P, Chen B, Fenik, J et.al. CAS Medical Systems, Inc., Children's National Medical Center, Washington, DC, USA.

**Cerebral and pulse oximetry monitoring of newborns: clinical observations.**

*Abstract of a Poster Presented at the International Symposium on Innovations and Advancements in Monitoring Oxygenation and Ventilation.*

*(ISIAMOV 2007)*

- The FORE-SIGHT Cerebral Oximeter was used to monitor neonates undergoing veno-venous or veno-arterial ECMO.
- 30 subjects were studied with a total of >1200 hours of cerebral and pulse oximetry data collected.

Conclusion: Pulse oximetry is often unreliable as an indicator of arterial blood oxygenation during low or zero perfusion events, especially during circulatory arrest due to diminished or non-existent pulsatile arterial blood flow. Pulse oximetry is not a direct indicator of cerebral tissue oxygen saturation. Cerebral oximetry offers a direct method to measure cerebral tissue oxygen saturation and potentially predicts brain injury caused by an impaired balance between cerebral oxygen supply and demand. These results demonstrate the value of cerebral oximetry to monitor the effectiveness of CPR in situations in which pulse oximetry is unreliable. Cerebral oximetry is a promising modality for bedside monitoring in the NICU and is complementary to pulse oximetry.

84. Benni PB, Chen B, Dykes FD, Wagoner SF, Heard M, Tanner AJ, Young TL, Rais-Bahrami K, Rivera O, Short BL.

**Validation of the CAS neonatal NIRS system by monitoring vv-ECMO patients: preliminary results.**

*Adv Exp Med Biol. 2005;566:195-201.*