The Department of Anesthesiology
Faculty of Medicine
Université de Montréal

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Cerebral oximetry monitoring in anesthesiology

By André Denault, MD, FRCPC, Alain Deschamps, MD, PhD, FRCPC, and John Murkin, MD, FRCPC

Objectives:

This issue of *Anesthesiology Rounds* will:

- Highlight the significance of cognitive dysfunction in cardiac surgery
- Describe the principles of operation for cerebral oximetry
- Identify the role of cerebral oximetry in the prevention of cognitive dysfunction
- Present the protocol currently in use at the Montreal Heart Institute.

Questions: *(True or False)*

1. Cognitive dysfunction is common after myocardial revascularization surgery.
   True ❑ False ❑

2. In pediatric cardiac surgery, cerebral saturation below 50% is associated with higher mortality.
   True ❑ False ❑

3. Changes in cerebral oximetry from the baseline values of a patient have no clinical significance.
   True ❑ False ❑

4. Cerebral oximetry has been found to be useful in several cases of accidental cerebral vessel occlusion.
   True ❑ False ❑

5. Normal values for cerebral oximetry are always above 90% and are usually higher in women.
   True ❑ False ❑

6. Severe cerebral desaturation has been correlated with lesions observed on brain magnetic resonance imaging.

   True ❑ False ❑

7. The penetration of photons originating in a cerebral oximetry device is about 2.5 cm, and the investigated volume is about 2.5 cm^3.

   True ❑ False ❑

8. The ischemic threshold for cerebral oximetry is around 47% saturation; at 45% saturation, lactate production increases, electroencephalograph (EEG) signal diminishes from 35% to 40% saturation, and the threshold of 30% – 35% saturation is associated with deficiencies at the cellular level.

   True ❑ False ❑

9. Two randomized trials demonstrated that cerebral oximetry reduces the prevalence of cerebrovascular accidents.

   True ❑ False ❑

10. In cardiac surgery, cerebral oximetry allows the detection of occult brain hypoperfusion caused by inadequate aortic cannulation.

    True ❑ False ❑

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