Practice anaesthesia equipements

L2

Bispectral index (BIS) analysis



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Bispectral index (BIS) analysis

is used for monitoring depth of anesthesia using a proprietary algorithm derived from complex electroencephalogram (EEG) parameters.

It's useful in preventing intraoperative awareness and guiding the anesthetist to administer hypnotic drugs especially in high-risk patients.

It also decreases the requirement of intraoperative anesthetic drug besides facilitating early extubation and postoperatively decreasing the recovery time and the incidence of postoperative nausea and vomiting.



Components:

1. Display:

a) BIS (as a single value or trend).

b) facial electromyogram, EMG.

c) EEG suppression measured.

d) signal quality index (SQI) which indicates the amount of interference from EMG

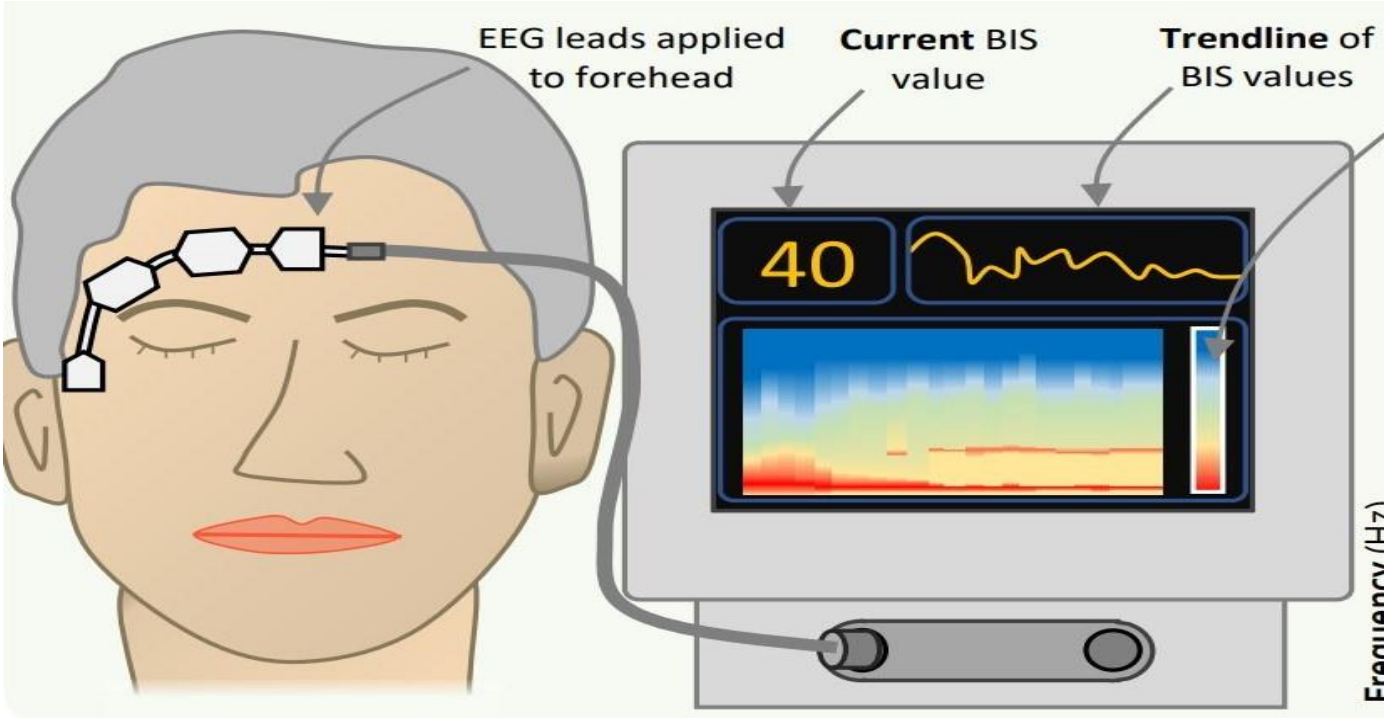
2. A forehead sensor with four numbered electrodes (elements) and a smart chip. The sensor uses small tines, which part the outer layers of the skin, and a hydrogel to make electrical contact.

3. A smaller pediatric sensor with three electrodes is available .it has a flexible design to adjust to various head sizes and contours

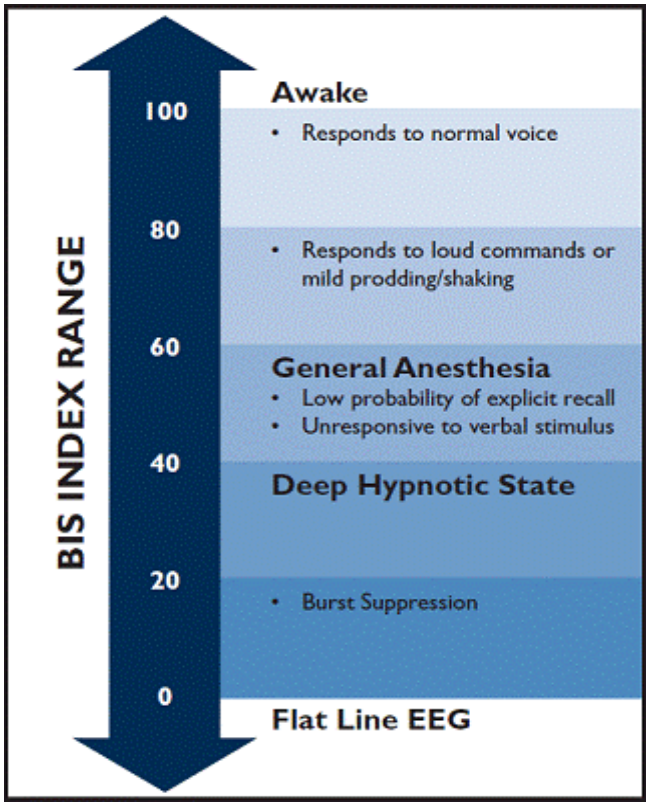
Bispectral Index Sensor:

1. The BIS sensor is a replaceable single-use self-prepped multielectrode component. After wiping the patient's forehead with an alcohol swab and letting it dry to ensure a signal of reasonable good quality, the four electrodes are applied to the patient's forehead.

2. The sensor is applied on the forehead at an angle. It can be placed on either the right or left side of the head. Element number 1 is placed at the center of the forehead, 5 cm above the nose. Element number 4 is positioned just above and adjacent to the eyebrow. Element number 2 is positioned between number 1 and number 4. Element number 3 is positioned on either temple between the corner of the eye and the hairline. The sensor will not function beyond the hairline. Each element should be pressed for 5 seconds with the fingertip.







Problems and safety features

1.Hypothermia of less than 33°C results in a decrease in BIS levels as the brain processes slow.

2.Interference can be from diathermy or EMG.

3.BIS cannot be used to monitor hypnosis during ketamine anaesthesia. This is due to ketamine being a dissociative anaesthetic with excitatory effects on the EEG.

4.Sedative concentrations of nitrous oxide (up to 70%) do not appear to affect BIS.

5.As with any other monitor, the use of BIS does not obviate the need for critical clinical judgement.