

6,000 patients at increased risk for awareness with explicit recall

Patients receive:

- Midazolam (30 mcg/kg [ideal body mass] IV within 20 minutes of anesthesia induction), unless contra-indicated.
- Propofol for anesthesia induction, unless contraindicated.
- Volatile anesthetic technique using Desflurane, Sevoflurane or Isoflurane.
- Opioids and muscle relaxants at the discretion of anesthesia practitioners.
- Antagonism of neuromuscular blockade at the end of surgery.

3,000 patients randomized to each group. Every 150 patients from Washington University and every 50 patients from University of Chicago and University of Manitoba will be block randomized by group (1 BIS: 1 ETAG)

Group 1: BIS
(Bispectral Index)

Volatile anesthetic concentration will be adjusted to maintain BIS between 40 and 60, if deemed appropriate by anesthesia practitioners.

Group 2: ETAG
(End-tidal anesthetic gas)

Volatile anesthetic concentration will be adjusted to maintain end-tidal anesthetic gas between 0.7 and 1.3 minimum alveolar concentration, if deemed appropriate by anesthesia practitioners. Anesthesia practitioners will be blinded to BIS values.

Outcomes:

Primary:

Anesthesia awareness with explicit recall (AWR)

Secondary (examples):

- Anesthetic concentrations & BIS values
- Anesthetic consumption
- Dreaming
- Thirty day, 1-year and 2-year mortality
- Hospital and intensive care unit length of stay
- Psychological symptoms and PTSD
- Postoperative delirium
- Postoperative symptoms (e.g., nausea, pain)
- Postoperative recovery times