

# Routine EEG in the TTM2-trial

## 1 Recommendations

In line with standard clinical practice, a routine EEG should be initiated by the attending physician according to local routines and performed 48-96 hours after randomisation in participants who remain unconscious. If this interval coincides with a weekend, the EEG may be delayed.

### 1.1 Set-up

- $\geq 16$  electrodes + reference + ground and a registration time of  $\geq 20$  minutes
- If full-montage continuous EEG-monitoring is used please perform stimulations and fill in the EEG-data for a 20-minute period within the recommended time-window in the eCRF
- Sedation is recommended to be stopped or kept as low as possible
- Store all EEG-data digitally and in full length. After patient inclusion is completed each center will be asked to export the local clinical EEG data (EDF+ format, bipolar montage, without video), which will be centrally analysed retrospectively according to standardised criteria and blinded to clinical data. Reimbursement for the export and sending of the EEGs will be offered.

### 1.2 Blinding

The local clinical EEG-report will be available to the attending physician. The local EEG-specialist is blinded to the two intervention arms (temperature level) but not to other clinical data, which should be included in the EEG-referral.

### 1.3 Testing reactivity

Reactivity should be tested in all patients and include the following:

- **Sound stimulations** - Call the patient's name, clapping hands for a few seconds. Should be repeated at least 2 times with an interval of more than 20 seconds.
- **Pain stimulations** - Recommended to include at least one proximal stimulation for instance sternal rubbing, jaw compression or squeezing of trapezius/deltoid/nipples. Should be repeated at least 2 times with an interval of more than 20 seconds.

## 1.4 EEG categorisation

The result of the local clinical EEG-report is documented using the following categories:

- Highly malignant EEG pattern (Yes/No)
  - Suppressed background with or without superimposed periodic discharges
  - Burst-suppression pattern with or without superimposed discharge
- EEG background is reactive to external stimuli (Yes, to any stimulus-type / No, to all stimulus-types tested)

## 1.5 Definitions

The definitions for suppression, burst-suppression and EEG-reactivity are based on the American Clinical Neurophysiology Society's Standardized Critical Care EEG terminology (Hirsch)

### 1.5.1 EEG-reactivity

Change in cerebral EEG activity to stimulation. This may include change in amplitude or frequency, including attenuation of activity. Appearance of muscle activity or eye blink artefacts or SIRPIDs (Stimuli Induced Rhythmic, Periodic or Ictal Discharges) do not qualify as reactive EEG.

### 1.5.2 Highly malignant EEG

Definitions of the highly malignant patterns (Westhall 2016).

- Suppressed background ( $<10\mu\text{V}$  the entirety of the record) with (**figure B**) or without (**figure A**) superimposed periodic discharges.
- Burst-suppression background with (**figure D**) or without (**figure C**) superimposed discharges with suppression periods ( $<10\mu\text{V}$ ) constituting  $>50\%$  of the recording.