



EEG-trending for critical care



NeuroTrend

Hours of EEG on a single screen

A solution is needed

Continuous EEG monitoring is an important tool to recognize clinically invisible deteriorations in critically ill patients. However, manually reviewing continuous EEG recordings requires substantial resources, which are always limited in intensive care units. As a consequence, brain activity of critically ill patients is rarely monitored.

NeuroTrend, the solution for EEG monitoring

We introduce "NeuroTrend", a new system for automatic analysis and trending of continuous EEG recordings from critically ill patients. NeuroTrend extracts the essential information from the EEG of ICU patients and compiles an easy to read condensed graphical representation on a single screen. This allows quickly reading off trends in the neurological state of the patient's brain

Automatic pattern detection

NeuroTrend detects periodic discharges, rhythmic delta-, theta- and alpha activity, spike-waves including their localization, frequency and amplitude. The physician gathers significant patterns and their changes and trends within a few seconds.

Quantitative EEG-analysis

NeuroTrend also shows essential information about the background EEG. Burst suppressions, the predominant frequency, general amplitude and symmetry and can be read off easily in the quantitative EEG panels and in the amplitude-integrated EEG. This allows a quick assessment of the state and trend of the patient.

Many hours of EEG on a single screen

NeuroTrend graphically visualizes the results of several hours of EEG on a screen. The software works in real time and allows reading off trends in the functional state of the patient's brain in one glimpse. You can zoom in from minutes to days in order to get the amount of details needed.

Implements the new ACNS standard

NeuroTrend is based on the American Clinical Neurophysiology Society's Standardized Critical Care EEG Terminology. A summary of the patterns is displayed on the screen written in the nomenclature of the standard.

Pattern features	
Localization	Generalized/Lateralized
Amplitude	10 – 400 μ V
Frequency	0.25 – 16 Hz
Background EEG	
Burst Suppression	Amplitude attenuation and suppression time
Frequency Bands	Proportions and predominance
Amplitude-integrated EEG	Amplitude and symmetry

EEG patterns	
PD	Periodic discharges
RDA	Rhythmic delta activity
RDA+S	RDA + superimposed sharp waves or spikes Sharply contoured RDA
SW	Rhythmic spike and wave Rhythmic sharp and slow wave Rhythmic polyspike and wave
RTA	Rhythmic theta activity
RAA	Rhythmic alpha activity

NeuroTrend

Detect changes and trends within seconds

Localization, Frequency, Amplitude

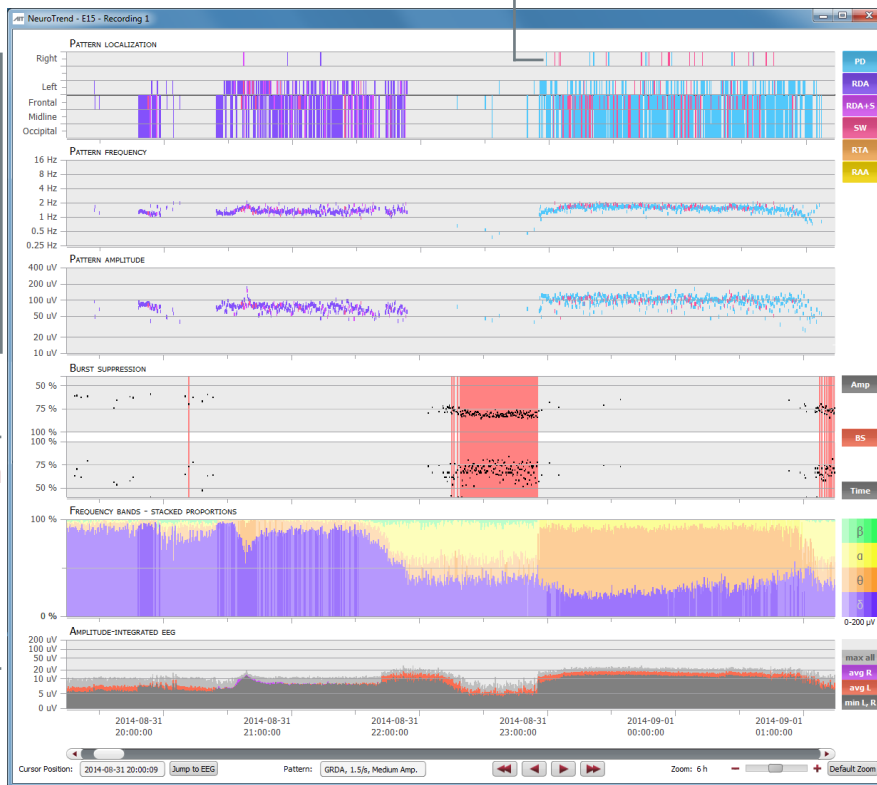
The type of the detected patterns can be easily read off. Trends in frequency and amplitude are highly visible.

EEG-patterns

One marker is equivalent to one detected pattern. The length and intensity of the abnormal EEG-activity can be easily measured.

Color Code

A color code helps to identify the different EEG-patterns and quickly notice important events and changes over time.



Burst suppression

Red lines make burst suppressions easy to find. NeuroTrend gives additional information on relative amplitude attenuation and suppression time.

Frequency Bands

The height of the color band shows the relative proportion of the frequency band. The intensity of the color is a measure of the amplitude of the signal.

AEEG

Trends of the mean amplitude of the EEG can be tracked and asymmetries are quickly recognized by the color.

Jump to EEG

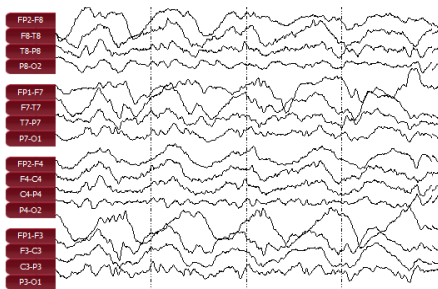
In one click you can synchronize NeuroTrend with the EEG displayed in the viewer.

Summary

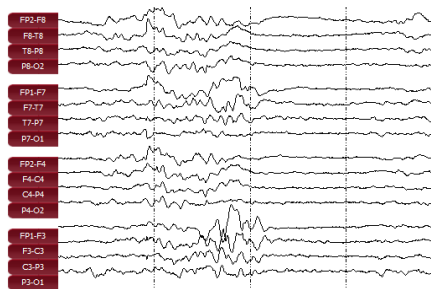
A summary of the pattern can be simply copied into the final report.

Zoom

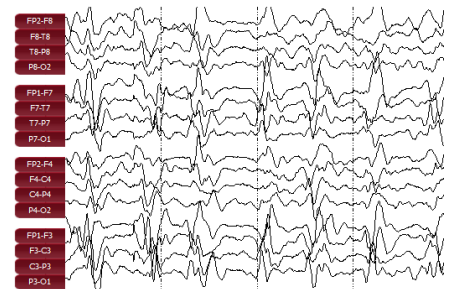
Zoom in and out.



NeuroTrend finds generalized and left lateralized rhythmic delta activity (RDA) with medium amplitude and a frequency of 1.5/s. An electrographic seizure of 10 min and a status epilepticus that lasts 1.5 h can be easily recognized.



NeuroTrend shows burst suppression (BS) with an amplitude attenuation of 82% (Amp) and a relative suppression time of 76% (Time).



NeuroTrends detects generalized periodic discharges (PD) of medium amplitude and a frequency of 1.5/s. The episode lasts 2 h and goes over into burst suppression again.

NeuroTrend

Your benefits:

Continous patient surveillance.

NeuroTrend is the perfect tool to assist you during continuous EEG monitoring on the ICU. It can immediately detect degradations and changes of the patient's state even in cases without or with very unclear clinical correlates.

Quick EEG review – Saves time.

NeuroTrend allows you to instantaneously get a good overview of several hours of EEG recordings. You can quickly find and zoom into epochs featuring relevant EEG patterns and easily look into the conventional EEG representation.

Assisted EEG interpretation – Saves resources.

Reviewing continuous EEG recordings is extremely time consuming and requires the expertise of an experienced neurologist. Using NeuroTrend simplifies the interpretation of EEGs such that only intermediate experience is required for monitoring and for a first EEG inspection. The expert neurologist can be consulted only if indicated by trends calculated by NeuroTrend.

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