

Multimodal signal acquisition and data processing using ICM+

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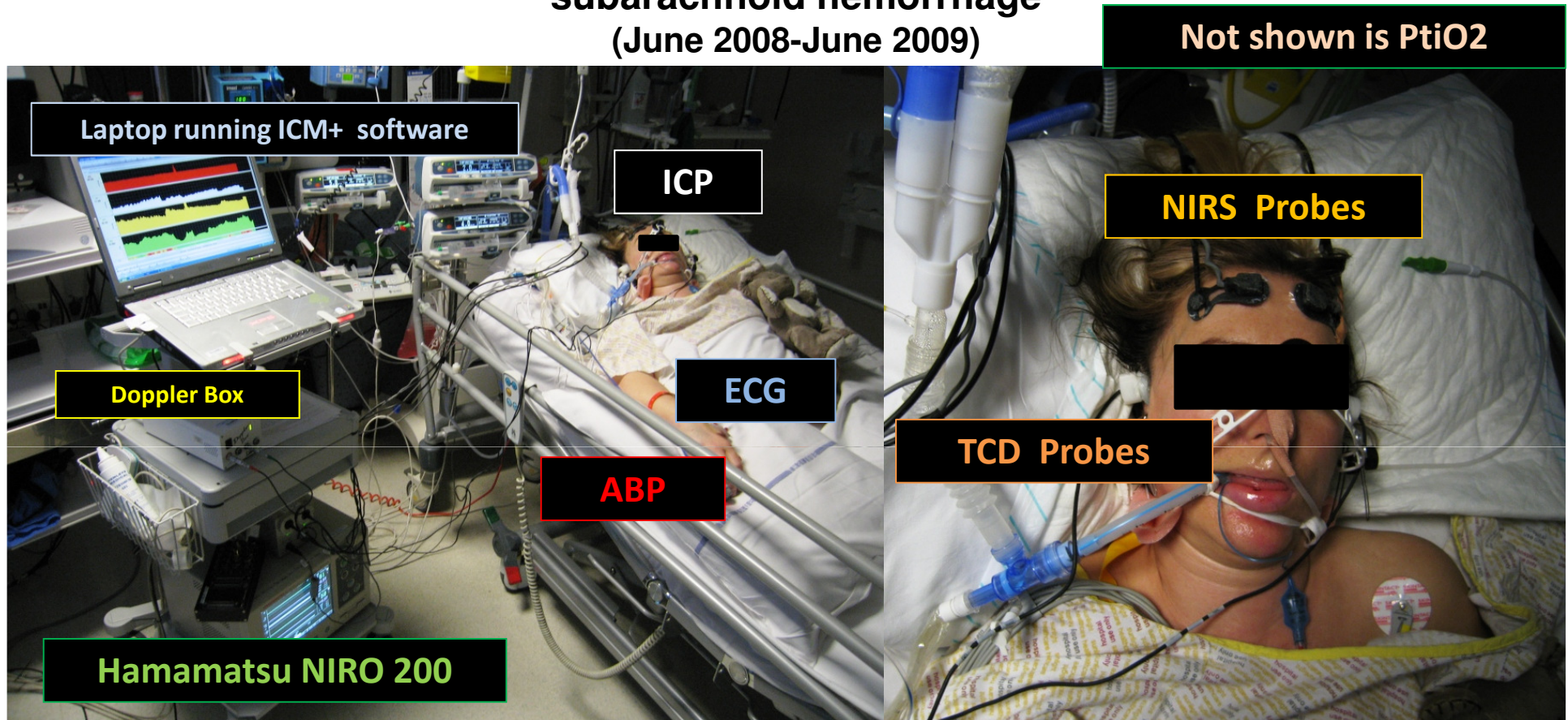
Klinik und Poliklinik für Neurochirurgie
Universitätsspital Basel

Department of Clinical Neuroscience
Neurosurgery Unit



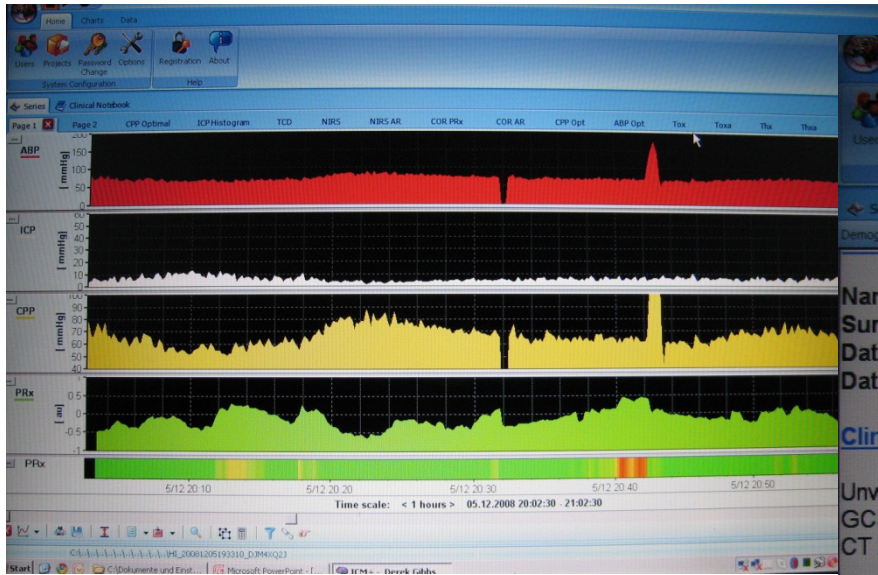
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**Study of non-invasive monitoring of cerebral autoregulation and cerebrovascular reactivity in patients with head injury and subarachnoid hemorrhage
(June 2008-June 2009)**

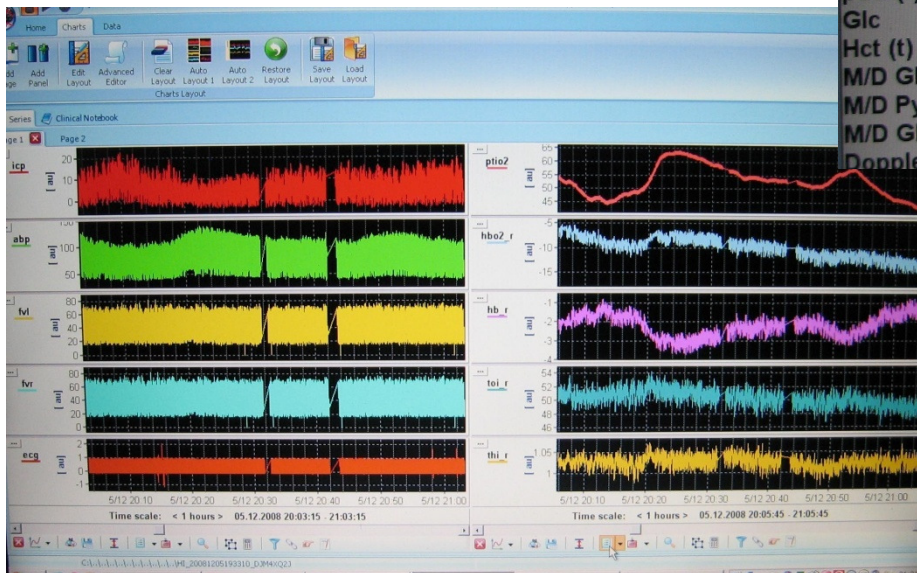


**ABP, ICP, ECG, (PtiO₂), NIRS, TCD
52 recordings in 27 patients with SAH (total 62.5 hours)
109 recordings in 49 patients with TBI (total 136.2 hours)**

**ABP, ICP, ECG, (PtiO₂), NIRS, without TCD
120 longtime recordings in 40 patients with TBI (total 1760 hours)**



ICM+ file



Raw data file

Derek Gibbs - ICM+ (v. 7 RC 4)

Home Charts Data
Users Protects Password Change Options Registration About
System Configuration Help

Series Clinical Notebook
Demographics Project Data Copy Notes One Column Sections Fonts Tabs

Name [Redacted] MidInitial
Surname [Redacted] HospitalNo 1886021
DateOfBirth 31/08/1938 Sex Male
DateOfIctus 04/12/2008 DateOfAdmission 04/12/2008

Clinical background:
Unwitnessed fall
GCS 15, fitted at home
CT frontal contusions both sides

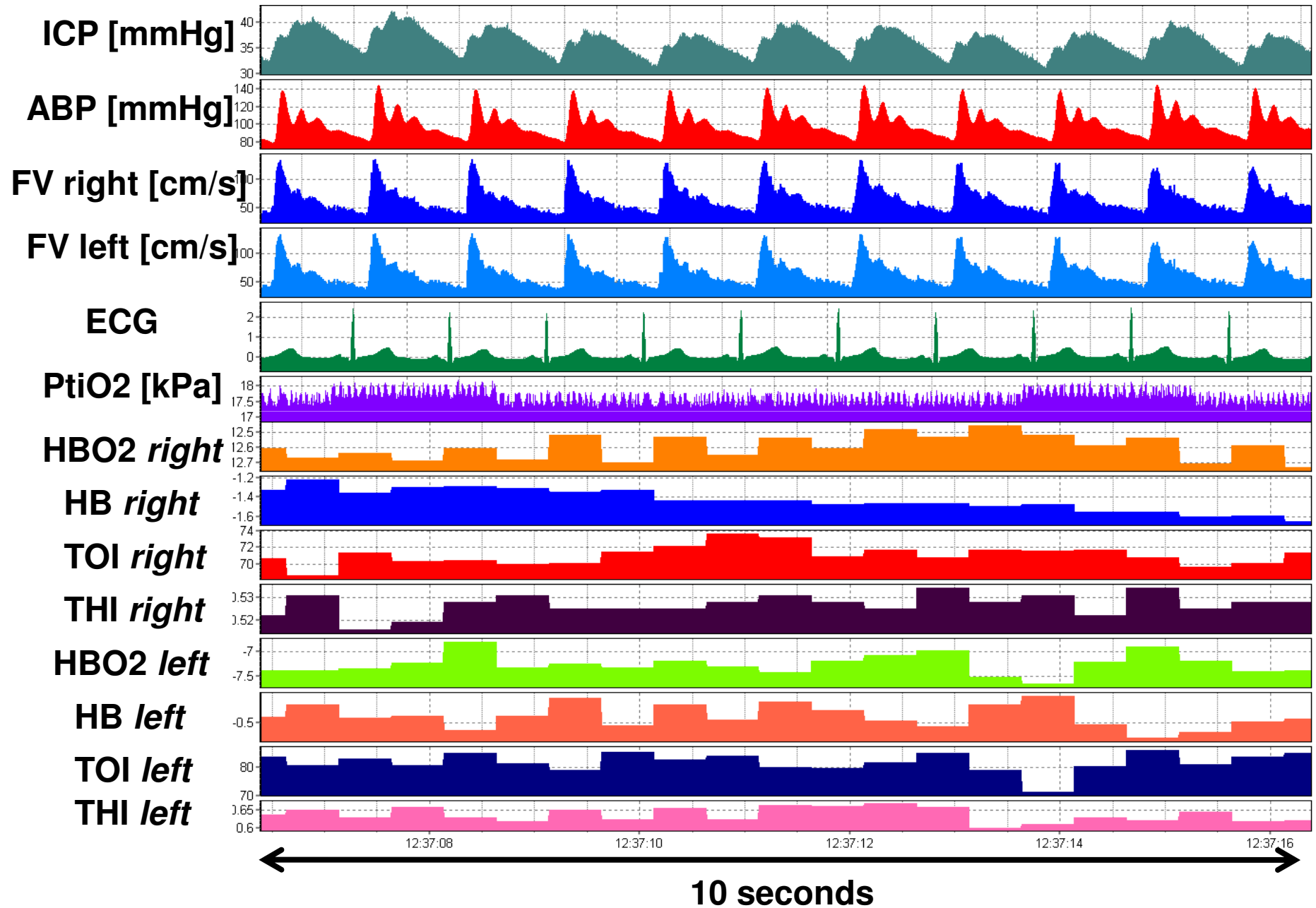
Project specific clinical data:

GCS	15	GCS now	4
pH (t)	7.392	pCO2 (t)	4.64
pO2 (t)	18.38	Na	140.9
Glc	9	Hb (t)	12.1
Hct (t)	36.4	SpO2	99.0
M/D Glu	1.4	M/D Lac	3.5
M/D Pyr	95	M/D Gly	140
M/D Glt		M/D L/P	36.8

left side 35mm

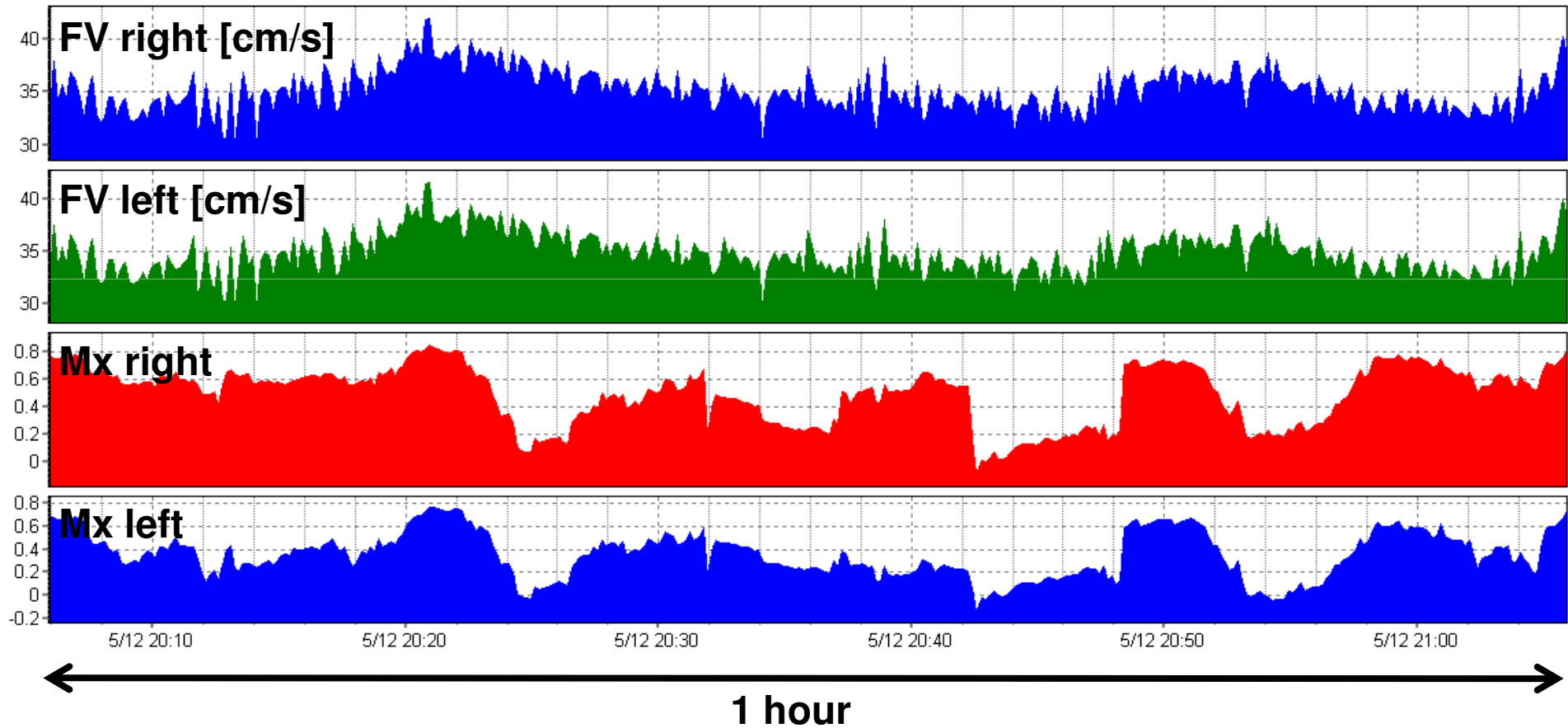
Clinical Notebook

Example of multimodal signal acquisition



Example 1

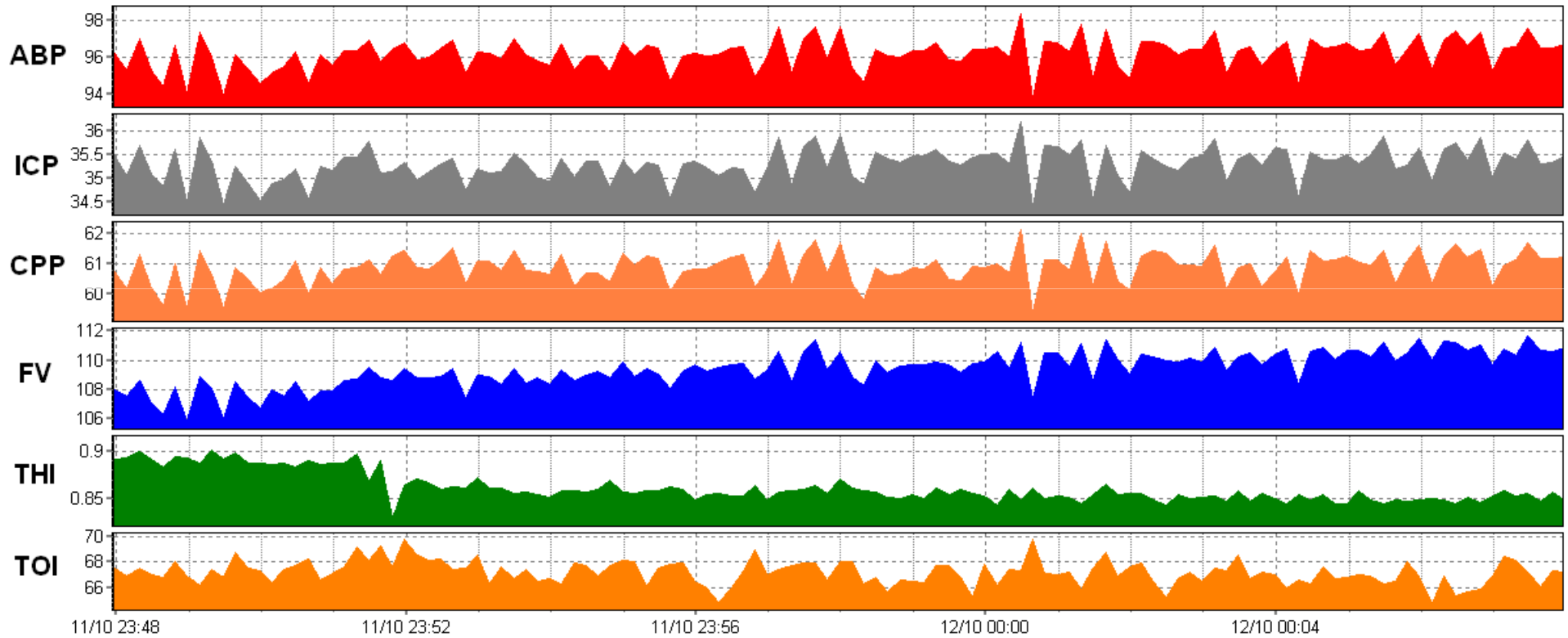
ICM+ file



Duplication of TCD signal

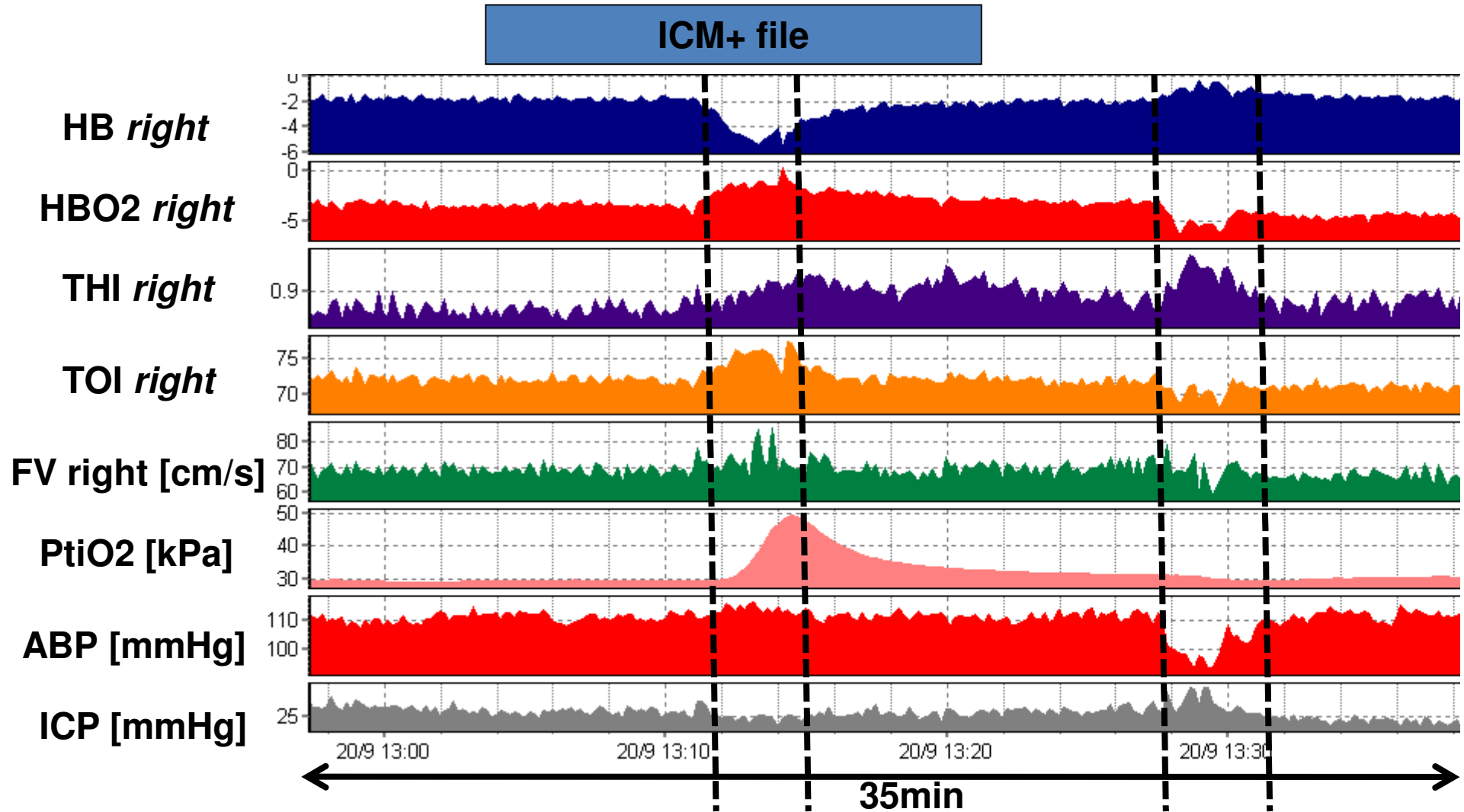
Example 2

ICM+ file



pCO₂=10.82, pH=7.117

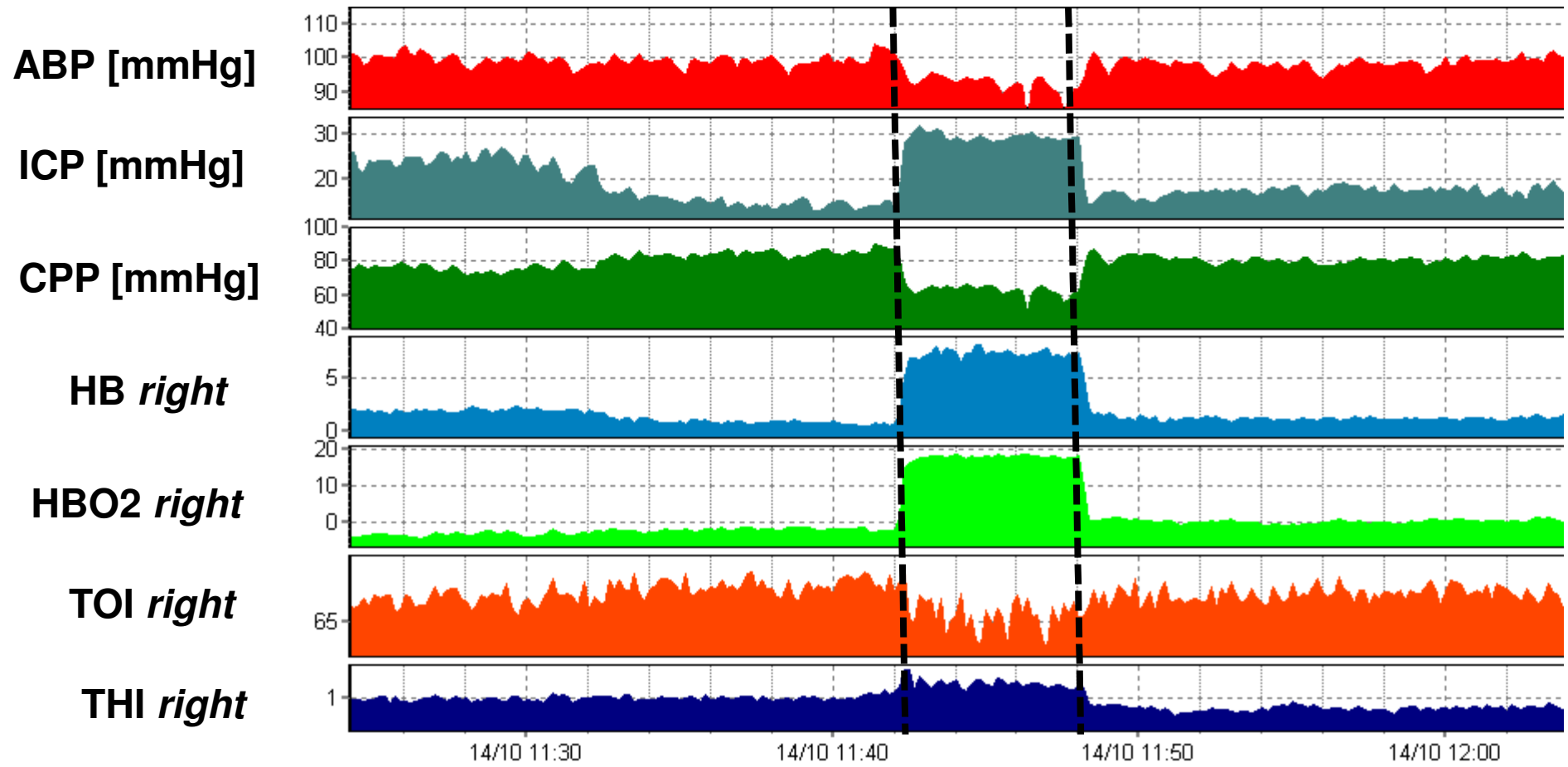
Example 3



Increase in FiO2 and PEEP

Example 4

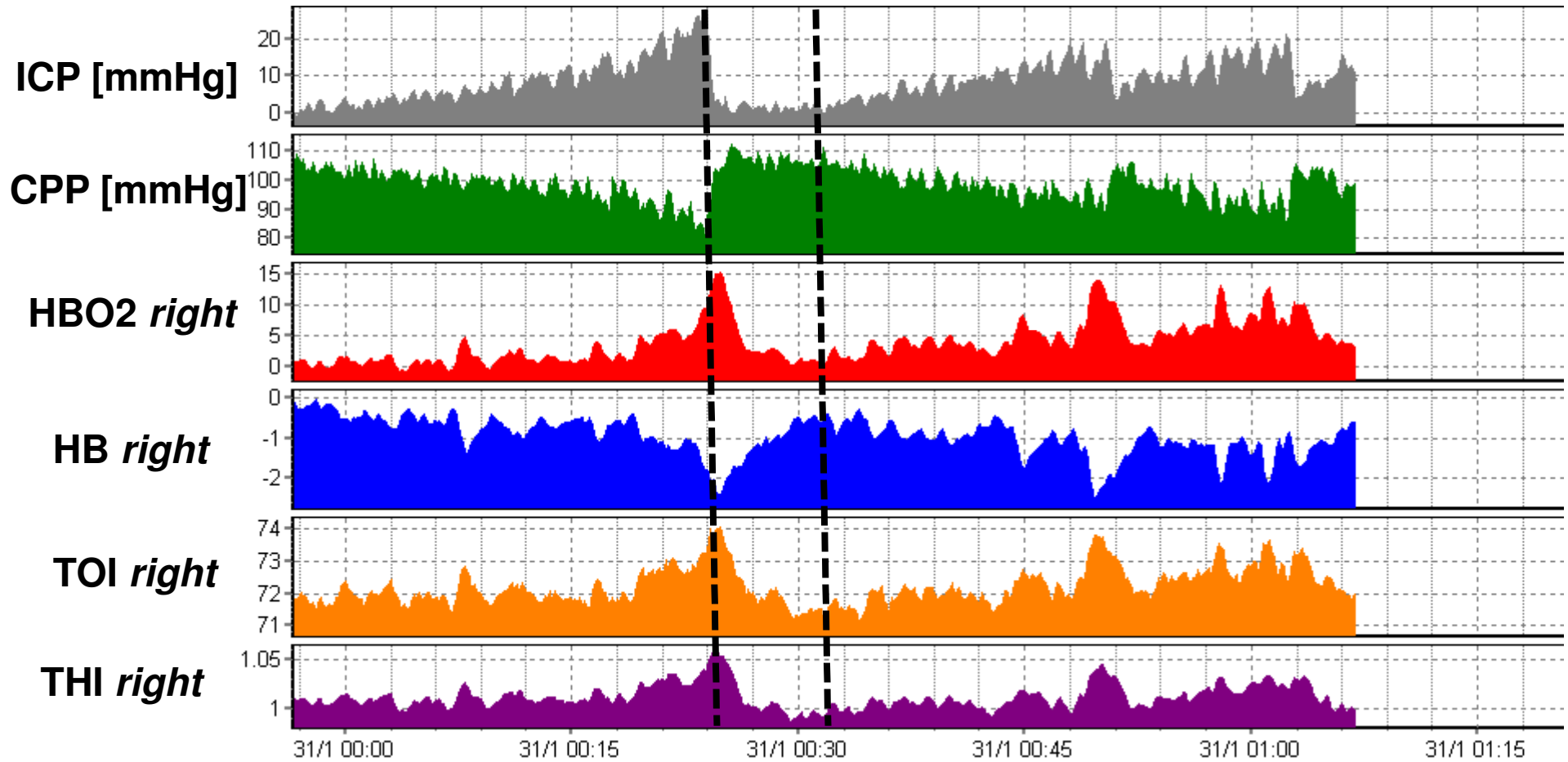
ICM+ file



Change in head position

Example 5

Raw data file



Occlusive Hydrocephalus

Data acquisition with ICM+

1. Create a mask for the baseline data
2. Before recording start, check the signals
3. Make notes, annotations, mark events
4. Before re-analyzing, cut out artifacts and go through the raw data