**Introduction**

Severe brain injury can lead to disorders of consciousness (DOC). Prognostication is a fundamental concern for DOC patients, as medical treatment and rehabilitation therapy depend on this information. However, despite many efforts, the prediction of outcome for a chronic DOC patient is still challenging and requires more researches. Here, for research purpose only, we present a package "pDOC" to predict more than one year outcome in chronic DOC patients (>1months from time of initial injury). The package "pDOC" includes two prognostic models based on clinical characteristics only and the combination of clinical characteristics and resting state fMRI. The two models can calculate and output a probability of consciousness recovery for individual patient. These models were developed and validated in 112 chronic DOC patients from two medical centers in China. The combination model discriminated between patients who would later recover consciousness and those who would not with an accuracy of around 90%. Nonetheless, the models are in the phase of research, and it need more validation. Here, we provide this prognostic information for informational purposes only.

**Important Note**

We disclaim any warranty concerning its accuracy, timeliness, and completeness, and any other warranty, express or implied, including warranties of merchantability or fitness for a particular purpose. For medical treatment or answers to personal questions, we strongly encourage you to consult with a qualified health care provider.

**Prerequisite software**

* Matlab 2010 or later
* SPM8 or later

**How to use**

1. prepare your data
   * If you plan to only use the clinical characteristics to predict outcome, please record the patient's incidence age, duration of unconsciousness and etiology and direct to the 2nd step.
   * If you plan to combine the resting state fMRI and clinical characteristics to predict outcome, you need to prepare your fMRI data in addition to recode the clinical characteristics as mention above. The present "pDOC" program only uses the NIfTI format for the fMRI data. So please convert your dicom to a series of 3D NIfTI files each with a suffix of **nii.** We recommend to use the tool "dcm2nii" (<http://www.cabiatl.com/mricro/mricron/dcm2nii.html>)**.** Then please move these nii files into a folder, for example, a "fMRI" folder which is locate in the "patient\_name" folder.
2. Run "pDOC"
   * In Matlab command window, change working directory to the package installation folder, and input "pDOC" and enter. We recommend to add the package installation folder, e.g. K:\DOC\program, into the Matlab search path.
   * If only use the clinical characteristics to predict outcome, please input the patient's clinical characteristics and then click "Calculation". The program will output a probability of consciousness recovery in a figure. Notably, the program will not save the results in this case.
   * If combine the resting state fMRI and clinical characteristics to predict outcome, please firstly input the patient's clinical characteristics, and check "Using resting state fMRI" and choose the directory that contains the resting state fMRI data. After click "Calculation", the program will preprocess the fMRI data and calculate network connectivity. The time depends on your computer and the size of your fMRI data.. In general, it will take 30~40 minutes to finish the whole calculation. The program will automatically save the preprocessing results and predicted score in a log file that will be located in the "patient\_name" folder.