

Prediction of the Therapeutic Outcome

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Major depressive disorder is one of the most common and disabling disorders worldwide. Although a number of various treatment options (pharmacological, psychotherapeutic, neurostimulation etc.) is available, no single treatments is universally effective. Therefore, the identification of factors predicting a priori or early in treatment response or potential resistance is one of the most pressing needs in depression treatment. Most evidence coming from research relies on statistical significance that implies scientific but not necessarily clinical usefulness. 'Clinical' predictor should be reproducible, reliable, inexpensive, non-invasive and easily accessible in order to use in daily clinical practice. There are also many methodological issues coupled with predictor or biomarkers research as a definition of clinical significance, discrimination ability of predictors, need for cross-validation of results and prospective testing as well [2]. Clinical and preclinical studies have identified a number of biological (biomarkers), clinical and psychological factors potentially associated with treatment outcome and several of them were replicated (depression severity, early improvement of depressive symptoms, theta cordance and other EEG predictors, BDNF serum level, anterior cingulate metabolism, 5-HTT polymorphism etc.) [1]. Despite the intensive research there is no sufficient evidence for any biological or other factor to be established as predictor of treatment outcome in routine clinical practice or to be an integral part of guidelines for treatment. For the future, a multivariable approach combining markers of response from various research domain may be beneficial to achieve clinically significant prediction.

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[1] Breitenstein B, Scheuer S, Holsboer F. Are there meaningful biomarkers of treatment response for depression? *Drug Discov Today* 2014;19:539-61.

[2] Perlis RH. Translating biomarkers to clinical practice. *Mol Psychiatry* 2011;16:1076-87.