explained by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorder, or a personality disorder. A patient may have both ADHD and ASD. Symptoms are now referred to as "presentations": Combined, predominantly inattentive, and predominantly hyperactive-impulsive presentations.

References.
1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders : DSM-5. 5th Ed. Arlington, VA: American Psychiatric Association; 2013:947.

BIOLOGICAL MARKERS IN DIAGNOSIS OF ADHD

BIOLOGICALLY BASED NOSOLOGY FOR ADHD

Investigators at Oregon Health and Science University and other centers attempt to refine subtyping of childhood ADHD by using biologically based behavioral temperament types. Groups were validated using 3 external validators: cardiac measures of respiratory sinus arrhythmia, CNS functioning via functional MRI, and clinical outcomes at 1-year follow-up. Three novel types of ADHD were recognized: mild (normative emotion regulation), surgent (extreme levels of positive approach-motivation), and irritable (extreme levels of negative emotionality, anger, and poor soothability). These types were stable over time and showed unique patterns of cardiac physiological response, resting-state functional brain connectivity, and clinical outcomes. This biologically informed temperament-based typology is thought to provide a superior description of heterogeneity in the ADHD population than any current classification. (Karalunas, et al. Subtyping attention-deficit/hyperactivity disorder using temperament dimensions: toward biologically based nosologic criteria. **JAMA Psychiatry** 2014 Jul 9).

COMMENTARY. The use of a combination of biological markers may help to reduce heterogeneity and to identify homogeneous phenotypes of ADHD. A consensus report of the World Federation of Societies of Biological Psychiatry (WFSBP) task force on biological markers and the World Federation of ADHD determined in 2012 that no reliable ADHD biomarker had been described to date, but some promising candidates (e.g. olfactory sensitivity, substantial echogenicity) exist. The development of ADHD markers is hindered by sample heterogeneity due to etiological and phenotypic complexity and age-dependent co-morbidities [1].

References.
1. Thome J, et al. World J Biol Psychiatry. 2012 Jul;13(5):379-400.

EEG THETA/BETA RATIO IN DIAGNOSIS OF ADHD

Investigators at the Research Institute Brainclinics, Nijmegen, Netherlands, conducted a meta-analysis on the Theta/Beta ratio (TBR) during Eyes Open from location Cz (the electrode halfway between the inion and the nasion) in the EEG of children/adolescents 6-18 years of age with and without ADHD. In nine studies identified with a total of 1253 subjects with and 517 without ADHD, the grand-mean effect size (ES) of the TBR decreased from 0.75 to 0.62 with increasing age, explained by an