Table H-2. Diagnostic accuracy of included studies with subjects ages 7-17

| **Quality (Study)**a**N Subjects****Diagnostic Tool(s)** | **Gold Standard** | **Overall Accuracy** | **AUC** | **Sensitivity** | **Specificity** | **PPV** | **NPV** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Biometric devices** |  |  |  |  |  |  |  |
| Poor quality (Martin-Martinez, 20124)63 subjects (31 ADHD, 32 non-ADHD)1. Actigraphy-PCA1 [Px00(15 min, D) + Pz22 (1 min, FR) + Py01 (15 min, AA)]
 | Case group was diagnosed as having the combined kind of ADHD according to the DSM-IV criteria | 90.48% | 94.96% | 96.77% | 84.38% |  |  |
| **EEG and imaging studies** |  |  |  |  |  |  |  |
| Fair quality (Markovska-Simoska, 20165)60 subjects (30 ADHD, 30 non-ADHD)1. EEG Theta-Beta Ratio2. EEG absolute theta3. EEG absolute beta4. EEG relative theta5. EEG relative beta | Team of neuropsychologist, pediatrician and clinical psychologist. Also used Conners rating scale |  |  | 58.6%100%86.2%68.6%0% | 92.2%71.1%34.4%60.0%100% |  |  |
| Fair quality (Gonzalez, 20136)43 subjects (22 ADHD, 21 non-ADHD)1. EEG IM generalized
2. EEG IM beta band
 | Physical examination, clinical interview and a structured checklist covering DSM-IV and ICD-10 criteria | 86.7%74.4% |  | 81.80%63.60% | 90.50%90.50% |  |  |
| Fair quality (Liechti, 20137)62 subjects 1. ADHD, 30 non-ADHD)
2. EEG + event-related potentials–including all stepwise variables
 | Children with ADHD combined subtype (DSM-IV), aged 8–16 years, were diagnosed using the semi-structured clinical diagnostic interview PACS (parentalaccount of children’s symptoms; plus Conners teacher rating scale—revised | 72.6% |  | 71.9% | 73.3% |  |  |
| Fair quality (Castro-Cabrera, 20108)46 subjects (23 ADHD, 23 non-ADHD)1. Event-related potentials–best combination of features
 | Medical diagnostic was determined by neurophysiological evaluation based on clinical criteria of DSM IV | 91.3% | 94% | 96% | 87% |  |  |
| Fair quality (Soliva, 20109)Subgroup = ADHD subtypes78 subjects (39 ADHD, 39 non-ADHD)1. MRI of caudate body volume
 | ADHD subjects were diagnosed by a team consisting of a psychologist and a psychiatrist. Scoring was based on parent and teacher rating scales, as well as a semi-structured clinical interview, which systematically reviewed DSM-IV-TR criteria for ADHD, oppositional-defiant disorder, conduct disorder, and depressive and anxiety disorders (DICA-IV). | 84% |  | 60.0% | 95.0% |  |  |
| **EEG, imaging, and CPT studies** |  |  |  |  |  |  |  |
| Fair quality (Kim, 201510)97 subjects (53 ADHD, 44 non-ADHD)1. EEG theta-phase gamma-amplitude coupling
2. EEG delta wave
3. EEG theta/beta ratio
4. IVA CPT commission error
5. IVA CPT omission error
 | ADHD Diagnosis was based on a Korean version of the Diagnostic Interview Schedule for Children Version IV (DISC-IV) and the diagnoses were confirmed by multiple child and adolescent psychiatrists. The DISC-IV uses diagnostic criteria as specified in DSM-IV.  | 71.1%63.3%58.7%75.3%68.1% |  | 60%56%49%66%58% | 23%27%30%18%27% |  |  |
| Fair quality (Kim, 201511)157 subjects (85 ADHD, 72 non-ADHD)1. EEG delta wave
2. EEG theta wave
3. EEG theta/beta ratio
4. IVA CPT commission error
5. IVA CPT omission error
 | ADHD Diagnosis was based on a Korean version of the Diagnostic Interview Schedule for Children Version IV (DISC-IV) and the diagnoses were confirmed by multiple child and adolescent psychiatrists. The DISC-IV uses diagnostic criteria as specified in DSM-IV.  | 60.8%56.4%45.7%82.1%78.6% |  | 60.1%48.2%47.1%68.1%64.7% | 43.0%40.5%49.4%9.54%13.7% |  |  |
| Fair quality (Ogrim, 201212)101 subjects (62 ADHD, 39 non-ADHD)1. EEG theta
2. EEG theta/beta ratio
3. Visual CPT omission error
 | All diagnoses were according to DSM IV-TR and accepted clinical guidelines. A senior neuropsychologist (GO) was responsible for diagnostic conclusions after discussions in the team, which included a pediatrician and a clinical psychologist. | 63%58%85% |  |  |  |  |  |
| **CPT studies** |  |  |  |  |  |  |  |
| Fair quality (Park, 201613)Subgroups = ADHD subtype114 subjects (79 ADHD, 35 non-ADHD)1. Advanced Test of Attention
 | DSM-4 criteria and Korean version of the K-SADS-PL-K | 72.8% |  | 84.8% | 45.7% | 77.9% | 57.1% |
| Fair quality (Zelnik, 201214)230 subjects (179 ADHD, 51 non-ADHD)1. TOVA (Test of Variables of Attention)
 | Clinical diagnostic work-up included a family interview about the behavioral and neurodevelopmental history of the child, neurological evaluation and observation at the physician’s office, utilization of the DSM-IV diagnostic criteria, and employment of the Conners Rating Scales |  |  | 91.1% | 21.6% | 80.3% | 40.7% |
| Fair quality (Berger, 201015)58 subjects (45 ADHD, 13 non-ADHD)1. Continuous performance functions tests (CPT)
2. TOVA
3. Conners CPT
4. TOVA + Conners CPT
 | A neurologic examination, the completion of DSM-based questionnaires by parents and teachers, and neuropsychologic evaluation confirmed the diagnosis | 94.8%––– |  | 100%75%52%64% |  |  |  |
| **CPT and executive function studies** |  |  |  |  |  |  |  |
| Fair quality (Bloch, 201216)34 subjects (27 ADHD, 7 non-ADHD)1. Cambridge Neuropsychological Testing Automated Battery
2. TOVA
 | Consensus achieved on a structured interview by a psychologist using DSM-IV based assessment and a clinical interview by child and adolescent psychiatrist |  |  | 57%-71%63% | 7%-22%85% | 94% | 37% |
| **Executive function studies** |  |  |  |  |  |  |  |
| Good quality (Klenberg, 201017)Subgroups = sex & ADHD subtype916 subjects (215 ADHD, 701 non-ADHD)1. Attention and Executive Function Rating Inventory
 | Diagnoses were based on structured interviews of parents and children and a parent rating scale (ADHD RS-IV: Home Version) and teacher reports from school | 91% (boys)93% (girls) | 87%subtype | 85% (boys)83% (girls)81% (subtype) | 84% (boys)85% (girls)76% (subtype) |  |  |
| **Biometric devices** |  |  |  |  |  |  |  |
| Fair quality (Caudal, 201118)112 subjects (52 ADHD, 60 non-ADHD)1. Electro-interstitial scans
 | Children diagnosed with ADHD according to the DSM-IV and further examinations |  |  | 80% | 98% |  |  |
| **Observational assessment studies** |  |  |  |  |  |  |  |
| Fair quality (Ferrin, 201219)Subgroup = age1185 subjects (1055 ADHD, 130 non-ADHD)1. Neurological subtle signs
 | ADHD status was categorically defined by the semistructured clinical interview of their parent’s K–SADS–PL, and dimensionally by the Conners’ Global Index (CGI). The K-SADS-PL is a semi-structured diagnostic interview designed to assess current and past episodes ofpsychopathology in children and adolescents according to DSM-IV criteria.  | 84%  | 90.3% (<13 year)77.9% (≥13 year) |  |  |  |  |
| Poor quality (Carballo, 201420)Subgroup = ADHD subtypes523 subjects (283 ADHD, 240 non-ADHD)1. Strengths and Difficulties Questionnaire
 | Positive ADHD diagnosis based exclusively on the ADHD RS-IV which assesses DSM-IV-TR ADHD symptoms |  |  | 38.3% (ADHD)84% (ADHD-C)25% (ADHD-I)77.8% (ADHD-HI) | 66.7% (ADHD)60.0% (ADHD-C)75.0% (ADHD-I)66.7% (ADHD-HI) |  |  |

a See Methods section “Quality Assessment of Individual Studies” for definitions of quality assessment ratings.

Abbreviations: ADHD=attention deficit hyperactivity disorder; ADHD-C=ADHD combined type; ADHD-HI=ADHD hyperactive/impulsive type; ADHD-I=ADHD inattentive type; AUC=area under the curve; CPT=continuous performance test; EEG=electroencephalogram; IVA=integrated visual and auditory; MRI=magnetic resonance imaging; NPV= negative predictive value; PPV= positive predictive value; TOVA=test of variables of attention