A Novel Computer-Prompted Tandem Rating Assessment for Adult ADHD Clinical Trials

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ABSTRACT

BACKGROUND: Variability in assessment of adult ADHD is a potential contributor to clinical trial failure. Challenges during adult ADHD trials include systematic application of childhood criteria to adult symptoms and consistent scoring by eliciting and weighting frequency, severity, and impairment information. A computer administered adult prompted interview (cADHD) developed as a quality assurance tool for the ADHD-RS-IV rating scale was deployed in a single-blind with placebo run-in pilot study of an investigational compound (EB-1020-SR) conducted by expert investigators at three sites. The cADHD guides raters through the interview, providing prompted examples, selecting subsequent prompts, and ensuring that the rater obtains a standard minimum fund of information about symptom presence, frequency, severity, and impairment before rating each scale item; the cADHD also generates a second rating for each item. We report rater and computer generated cADHD baseline data for endpoint change results from this pilot trial.

METHOD: A computer-driven prompted interview was created for the 18 item ADHD-RS-IV and supplied to the three investigative sites conducting the study. For each item, site raters were computer-prompted as to symptom presence and then asked to enter data about pervasiveness, severity, and impairment. Prompts were based in part on a public-domain World Health Organization adult ADHD scale. Programmed computerized follow-up question paths were driven by previous responses. Site raters chose and entered their own scores for each item. Unshown to the rater, the computer internally generated scores following a programmed algorithm based on the clinical characteristics the rater had input. Per protocol, the cADHD prompted ADHD-RS-IV rater scores served as the primary outcome measure. At the sponsor-determined interim analysis, cADHD rater scores served as the primary outcome measure. The cADHD computer-prompted tandem assessment for the 18 item ADHD-RS-IV and supplied to the three investigative sites conducting the study. For each item, site raters were computer-prompted as to symptom presence and then asked to enter data about pervasiveness, severity, and impairment. Prompts were based in part on a public-domain World Health Organization adult ADHD scale. Programmed computerized follow-up question paths were driven by previous responses. Site raters chose and entered their own scores for each item. Unshown to the rater, the computer internally generated scores following a programmed algorithm based on the clinical characteristics the rater had input. Per protocol, the cADHD prompted ADHD-RS-IV rater scores served as the primary outcome measure. At the sponsor-determined interim analysis, cADHD rater scores served as the primary outcome measure. Baseline to endpoint change was examined using paired t-tests. Baseline variability was examined through standard deviations

RESULTS: 10 raters participated at the 3 sites and rated a total of 333 subject visits. Internal consistency of rater and computer cADHD total scores across visits was high (Cronbach’s alpha=.92 and .91, respectively) (see Table 1). Both rater and computer cADHD Total ADHD-RS-IV scores showed a significant baseline to endpoint change (observed cases, N=37; baseline visit N=43) (Figure 1), which occurred also for the Inattention and Hyperactivity/Impulsivity subscales scores (all ps < .0001) (see Table 2). The correlations between rater and computer total and individual item scores were high (total=.94, individual items all greater than .80, mean=.87) (see Table 3). Rater ADHD-RS-IV Inattention variability (baseline SD=6.91) was good in comparison to that reported in other clinical trials using the paper ADHD-RS-IV and other ADHD scales (e.g., Wilens et al, 2005; Adler, et al, 2009).

CONCLUSIONS: The cADHD computer-prompted tandem assessment for adult ADHD showed feasibility as a rating aid and resulted in significant baseline to endpoint changes with good internal consistency and relatively low variability in comparison to non-computer-prompted ADHD scales.

REFERENCES

Table 1

<table>
<thead>
<tr>
<th>Item</th>
<th>Rater cADHD Total Score</th>
<th>t(36)=12.33</th>
<th>p &lt; 0.0001</th>
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Figure 1: Rater and Computer ADHD-RS Scores

1. Park to give close attention to details or make careless mistakes in schoolwork. 0.91
2. Fidgets with hands or feet or squirms in seat. 0.81
3. Has difficulty sustaining attention in tasks or play activities. 0.87
4. Leaves seat in classroom or in other situations in which remaining seated is expected. 0.92
5. Does not seem to listen when spoken to directly. 0.91
6. Bums about or climbs excessively in situations in which it is inappropriate. 0.91
7. Does not follow through on instructions or fails to finish work. 0.91
8. Has difficulty playing or engaging in leisure activities quietly. 0.91
9. Persecutory delusions. 0.91
10. Grandiose ideas (e.g., schizophrenia, histrionic personality) that required separate mental effort. 0.91
11. Scares easily. 0.91
12. Total score. 0.91
13. Shows things necessary for tasks or activities. 0.91
14. Blurt out answers before questions have been completed. 0.88
15. Is easily distracted. 0.91
16. Has difficulty sequencing. 0.91
17. Impulsives or act on impulse. 0.91

TOTAL SCORE: 50.00

Table 2

<table>
<thead>
<tr>
<th>T-Tests of Baseline vs Endpoint</th>
<th>Rater (ADHD-RS-IV)</th>
<th>t(36)=12.33</th>
<th>p &lt; 0.0001</th>
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<tbody>
<tr>
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<td>Computer (ADHD-RS-IV)</td>
<td>t(36)=9.28</td>
<td>p &lt; 0.0001</td>
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<tr>
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<td>Water (ADHD-RS-IV)</td>
<td>t(36)=7.27</td>
<td>p &lt; 0.0001</td>
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Table 3

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<tr>
<th>Correlations</th>
<th>Raster Computer cADHD</th>
<th>Rater</th>
<th>Computer</th>
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