

The Clinical Utility of Combinatorial Pharmacogenomic Testing for Patients with Depression: A Meta-Analysis

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BACKGROUND

- Pharmacogenomic testing has emerged as a possible data-driven approach to treatment decisions for patients with Major Depressive Disorder (MDD); however, there is mixed evidence available for the utility of pharmacogenomic testing depending on the test used and study population.
- Meta-analyses provide a high level of evidence and can be useful in evaluating the overall utility of a testing approach for clinical use.
- Given the meaningful differences between tests, all tests need to be evaluated separately and meta-analyses should be performed for each individual pharmacogenomic test.
- Here, we present the results of a meta-analysis of prospective, two-arm studies examining the clinical utility of using the combinatorial pharmacogenomic test, GeneSight Psychotropic®, to inform treatment decisions for patients with MDD who had at least one prior medication failure.

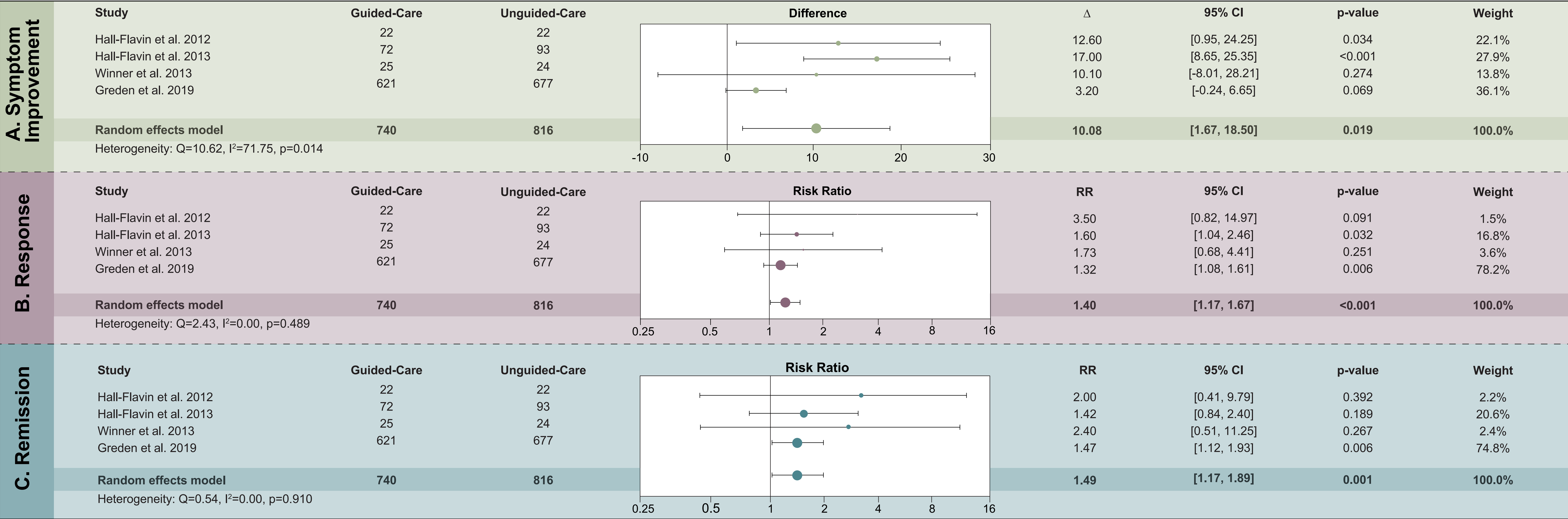
METHODS

- The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Guidelines were utilized for this meta-analysis.
- A systematic search was performed, and all identified reports were screened to identify two-arm, prospective studies evaluating the clinical utility of this specific test that included patients ≥18 years of age diagnosed with MDD who had at least one prior medication failure.
- All included studies assessed symptom improvement, response, and remission using the 17-item Hamilton Depression Rating Scale (HAM-D17).
- The pooled mean effect of symptom improvement and pooled relative risk ratio (RR) of response and remission were calculated using a random effect model.
- Overall, 1,556 patients were included from four studies (two open-label studies and two randomized controlled trials (RCT)).
- Sub-analyses were performed according to study type.

RESULTS

- Patient outcomes were significantly improved for patients with MDD whose care was guided by the specific combinatorial pharmacogenomic test results compared to unguided-care (Figure 1).
- Heterogeneity in effect size across studies was significant, but moderate for symptom improvement, and was not significant for response and remission.
- When the analysis was restricted to RCTs, all endpoints remained significant.
 - Symptom Improvement: 10.08, [1.67, 18.50], 0.019
 - Response RR: 1.40, [1.17, 1.67], <0.001
 - Remission RR: 1.49, [1.17, 1.89], 0.001

Figure 1. Forest plot of random-effects meta-analysis of four prospective, two-arm studies that examined the clinical utility of GeneSight Psychotropic in guiding treatment decisions for patients with MDD. (a) Average difference in symptom improvement (b) relative risk ratio for response, and (c) relative risk ratio for remission between guided- and unguided-care. Circle size indicates weight in overall analysis.



CONCLUSIONS

- In a meta-analysis of 4 independent studies, all outcomes were significantly improved for patients in the GeneSight Psychotropic® guided-care arm vs TAU.
 - This meta-analysis adds to the body of evidence supporting the clinical utility of using GeneSight Psychotropic® to guide medication selection for patients with MDD.
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