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 approach to make data-driven treatment decisions for patients with Major Depressive Disorder (MDD).
- However, there is mixed evidence for the utility of pharmacogenomic testing due to differences in tests used, populations studied, and outcomes evaluated.
- 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.
- 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.

Objective

- 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 1 prior medication failure.
- Overall, 1,556 patients were included from 4 studies [2 open-label studies and 2 randomized controlled trials (RCTs)].
- 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 of response and remission were calculated using a random effects model.
- Sub-analyses were performed according to study type.

REFERENCES: **1.** Brown, L. et al., .2020., *Pharmacogenomics*. doi: 10.2217/pgs-2019-0157

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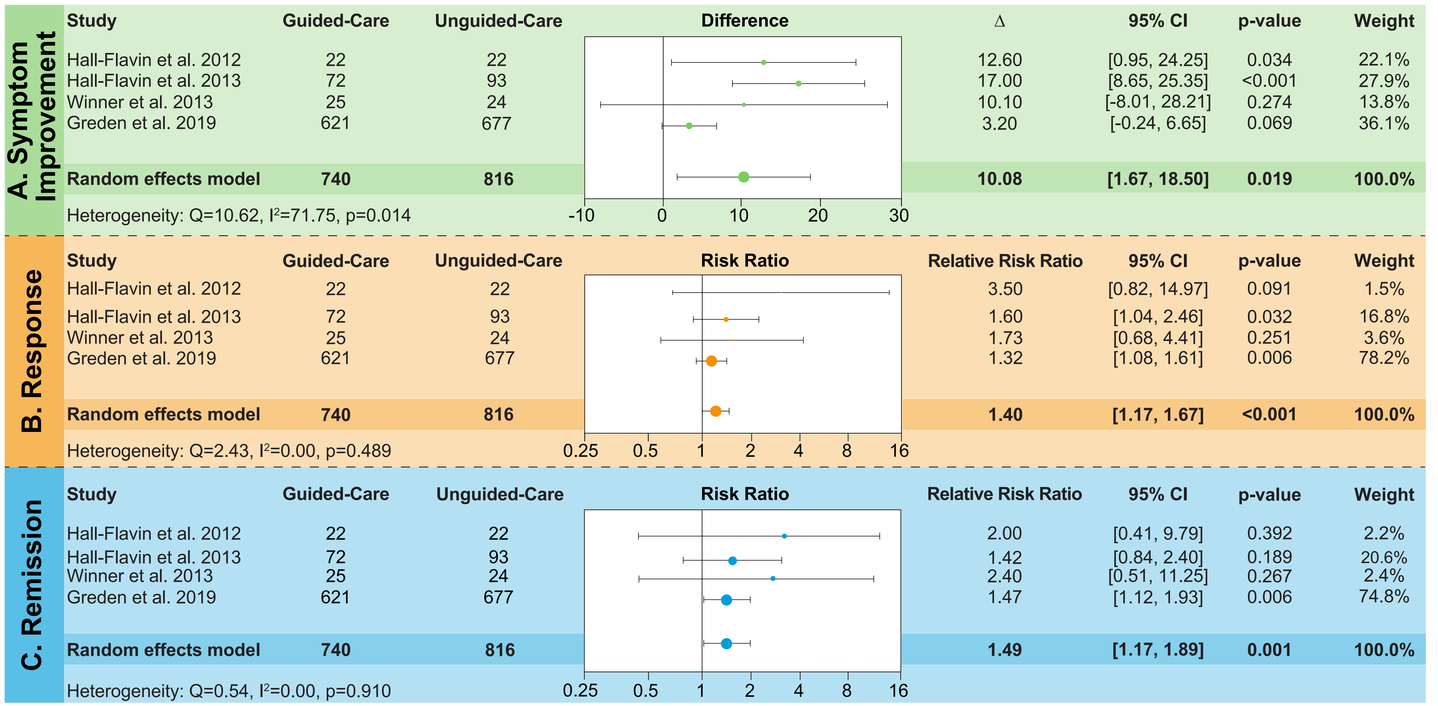
RESULTS

- 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, but was not significant for response and remission.
- When the open-label studies were assessed separately, symptom improvement and response were significantly improved in the combinatorial pharmacogenomic guided-care group versus unguided-care group.
- When the analysis was restricted to RCTs, all 3 evaluated outcomes were significantly improved in the combinatorial pharmacogenomic guided-care group versus unguided-care group.

Figure 1. Meta-analysis of 4 prospective clinical utility studies of GeneSight® Psychotropic

Forest plot of random-effects meta-analysis of 4 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.



CONCLUSION

- In a meta-analysis of 4 independent studies, all outcomes were significantly improved for patients in the GeneSight® Psychotropic guided-care arm versus unguided-care.
- This meta-analysis adds to the body of evidence supporting the clinical utility of using GeneSight® Psychotropic to inform medication selection for patients with MDD who have failed at least 1 medication. [1]