

A calculator to estimate the likelihood of antidepressant response

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As in any other field of medicine, when a depressed person visits a psychiatrist for treatment of depression, they like to be informed of the odds that they will respond to the medication they are prescribed. Unfortunately, there has been no precise way to predict antidepressant response in individual patients.

It would be very nice to have an equation that would enable doctors to predict the likelihood that individual patients would respond to specific treatments. Accurate predictions are likely to be challenging. The ability to accurately predict the likelihood of antidepressant response for individual patients could be an important step in developing individualized treatment plans.

The effectiveness of antidepressant medications varies tremendously across patients and the overall effectiveness of current medications is lower than previously expected. For example, the largest antidepressant trial ever conducted—the NIMH STAR*D study—provided somewhat discouraging news about the effectiveness of antidepressants. Only 30% of patients responded to their initial antidepressant and after one year and up to four different treatments, 30% of patients did not achieve remission.

In this issue of *Biological Psychiatry*, Dr. Roy Perlis at Massachusetts General Hospital has taken an important step toward this objective.

He gathered data collected from the STAR*D study and used multiple

[prediction models](#) to identify [statistical patterns](#). Using the best-performing model, he then generated an online [risk calculator](#) and [visualization tool](#) that provides a graphical estimate of an individuals' risk for [treatment resistance](#).

"To address the needs of individual [depressed patients](#), we will need to find ways to design psychiatric treatments to respond to the differences among patients with depression. The 'depression calculator' that emerges from the STAR*D trial is one step forward in this effort," said Dr. John Krystal, Editor of *Biological Psychiatry*. "To do better than this, we will need to include biomarkers that may serve the function that blood tests and blood pressure measurements serve in other areas of medicine."

Perlis agrees, commenting that "There has been great emphasis on the discovery of biomarkers to help predict clinical outcomes. No doubt this effort will succeed eventually. On the other hand, it's entirely possible that clinical features can help get us part of the way there - that clinical features can help make useful predictions."

"The analogy I would draw is the Framingham score for predicting cardiovascular risk. It's far from perfect, and there's plenty to criticize - but it has at least spurred efforts to use prediction in a clinical setting. It has also provided a platform to which biomarkers can be added, as they are identified," he added.

In the meantime, the whole point of providing a clinical calculator online is to allow clinicians to try it out - to see what could be done, if the will and the resources were there.

More information: The article is "A Clinical Risk Stratification Tool for Predicting Treatment Resistance in Major Depressive Disorder" by Roy H. Perlis ([doi: 10.1016/j.biopsych.2012.12.007](https://doi.org/10.1016/j.biopsych.2012.12.007)). The article appears in *Biological Psychiatry*, Volume 74, Issue 1 (July 1, 2013)

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