COMPARISON OF TMS OUTCOMES IN COMPLEX MAJOR DEPRESSIVE DISORDER: BRAINSWAY AND NEUROSTAR
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Objectives
We compared Brainsway and Neurostar TMS outcomes in complex Major Depressive Disorder (MDD).

Methods
Twenty-six consecutive young adults with MDD admitted to Yellowbrick, a neuropsychiatric treatment center for emerging adults aged 17 - 30, received Neurostar TMS (n = 15) or Brainsway DTMS (n = 11) standard treatment protocols. On average, the patients had 5 Axis-I SCID diagnoses. Over 59% had made suicide attempts requiring hospitalization, with 38.5% of those making multiple attempts.

Introduction
There are two primary FDA-approved TMS devices: Neurostar and Brainsway Deep TMS (DTMS). They are comparable in mode of operation and system for delivery of electromagnetic fields to the prefrontal cortex. They differ in depth and breadth of penetration into the cortex. The Brainsway DTMS penetrates up to 3-4 cm deep compared to 1.5 cm for the Neurostar. Whether depth of penetration translates into improved outcomes is an open question, particularly with severe, complex MDD.

Results
Neurostar and Brainsway produced comparable improvement Pre- to Post-TMS in depressive symptoms (BDI F = 14.64, p < .001; MADRS F = 12.87, p < .002). They differed, however, in mean number of sessions required in the acute phase (Brainsway M = 28.8 vs. Neurostar M = 45.5, t = 3.55, p < .002); and total (Brainsway M = 35.4 sessions vs. Neurostar M = 56, t = 3.91, p < .001).

Discussion
Both the Brainsway and Neurostar TMS devices produced significant improvements in complex MDD, but Brainsway DTMS did so in almost half the number of sessions. This suggests that Brainsway’s deeper and broader penetration mobilizes a faster, more efficient and coordinated cortical response than does Neurostar. The findings are qualified by the absence of random assignment. Nevertheless, they offer hope to patients who have not met TMS inclusion criteria based on severity and complexity.

Percent Prevalence of Diagnoses

BDI Improvement Scores

Acute Treatment

MADRS Improvement Scores

Total Treatment