

Is TMS Cost-Effective?

November 09, 2015 | [Major Depressive Disorder](#), [Depression](#), [Transcranial Magnetic Stimulation](#)

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RESEARCH UPDATE

Repetitive transcranial magnetic stimulation (rTMS) is known to be a safe, noninvasive, treatment for major depressive disorder (MDD), but how does cost compare with that of pharmacotherapy?

Australian researchers [compared](#) the cost-effectiveness of rTMS with pharmacotherapy in treatment-resistant patients with MDD (ie, those who have failed at least 2 courses of antidepressant therapy).¹ They found that, although both pharmacotherapy and rTMS are clinically effective, rTMS is more cost-effective.

Considering that up to 40% of patients with MDD either do not respond to or tolerate pharmacotherapy and that up to 85% of patients who do respond can be expected to relapse within 15 years, exploration of methods that more economically sustain quality of life is worthwhile.



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Although several studies have compared the cost of rTMS with that of electroconvulsive therapy, [only one](#) has compared the pharmacoeconomics of rTMS with that of pharmacotherapy for MDD.² In that 2009 study, rTMS provides an incremental cost-effectiveness ratio of USD \$34,999 per quality-adjusted life-year (QALY). (The willingness-to-pay threshold was set at USD \$50,000 per QALY.)

To further explore the issue, the [Australian research team](#)¹ used a 3-year Markov microsimulation model with 2-monthly cycles to compare costs and QALYs of rTMS and standard pharmacotherapy with a variety of commonly used antidepressant medications. These include selective serotonin reuptake inhibitors, serotonin and norepinephrine reuptake inhibitors, tricyclic agents, noradrenergic and specific serotonergic antidepressants, and monoamine oxidase inhibitors. Data were also extracted from published literature, cost reports, and expert opinion. Incremental cost-utility ratios and univariate and multivariate probabilistic sensitivity analyses were applied.

rTMS, which induces an electrical current in a localized region of the cerebral cortex, requires a patient to present 3 to 5 times per week for 4 to 6 weeks of treatment. Treatment sessions last about 40 minutes. No anesthesia or muscle relaxants are needed. Patients can resume normal activities immediately after a session, although common adverse events include mild-to-moderate posttreatment headache and mild pain or discomfort at the treatment site.

<http://www.psychiatrictimes.com/major-depressive-disorder/tms-cost-effective/page/0/2>

Although use comes with a warning of potential seizure induction, no seizures were reported during clinical trials, and the postmarketing incidence rate, at less 0.1% per patient, is lower than that seen with standard pharmacotherapy. This, in itself, may render rTMS a superior choice for patients with concerns about adverse effects of pharmacologic agents regardless of cost concerns.

The Markov model showed that QALYs gained were 1.25 with rTMS vs 1.18 with antidepressant therapy, and costs were somewhat lower for rTMS in AUD: \$31,003 vs \$31,190 (\$22,124 vs \$22,260). The willingness-to-pay threshold in Australia is AUD \$50,000 per QALY gained. Given that threshold, the findings showed that the probability that rTMS was dominant (ie, provided better patient quality-of-life at lower cost) was 32%, and the probability that rTMS was cost-effective compared with antidepressant therapy was 41%.

The bottom line

Sensitivity analyses confirmed the superiority of rTMS in terms of value for money compared with antidepressant medications, with multivariate analysis showing that the probability of rTMS being either dominant or cost-effective compared with antidepressant therapy exceeded 70%. The findings confirmed those of the earlier study.²