

TMS TRENDS

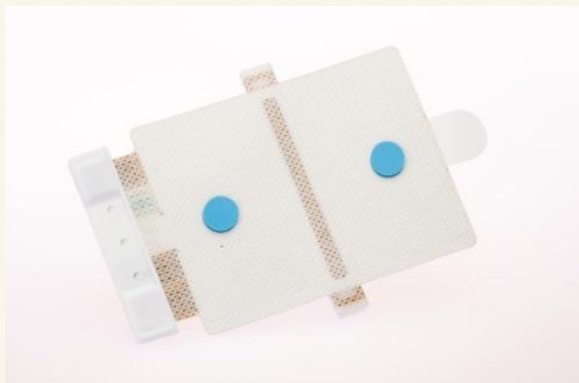
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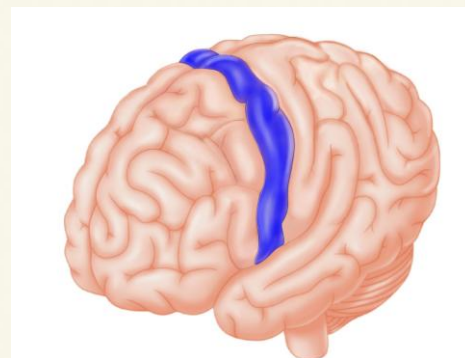
THE SENSTAR TREATMENT LINK

Among the many innovative features of the NeuroStar TMS Therapy System, perhaps the most unique component is the SenStar Treatment Link. This single-use disposable component serves four primary purposes during each TMS Therapy treatment session.

First, it includes a contact sensing element that detects when the coil is properly positioned against the patient's head and alerts the operator if contact is lost. In addition, it detects the level of the magnetic field being applied by the coil via a closed-loop magnetic field detector, which ensures consistency of treatment pulse strength. The treatment link also reduces the magnetic field at the patient's scalp without affecting the deeper therapeutic field in the cortex. This feature acts to reduce scalp stimulation and reduces patient discomfort during treatment. Last, the SenStar provides a clean hygienic surface for each treatment session.



Pictured above is the patient contact surface of the SenStar treatment link



The primary motor cortex

DETERMINING THE MOTOR THRESHOLD

TMS Therapy for treatment-resistant depression is applied to the left dorsolateral prefrontal cortex (PFC) of the brain. The location of the left PFC is determined by using an easily identified region of the brain – the primary motor cortex as a reference point.

This most important and critical first step in the TMS treatment process is locating the primary motor cortex – necessary for positioning the TMS therapy coil. Using external skull landmarks as a guide, single magnetic pulses are used to probe the primary motor cortex. When the part of the primary motor cortex that controls the thumb on the right hand is stimulated, the thumb will twitch visibly with each magnetic pulse.

After this location is found, the magnetic field strength required to cause the right thumb to twitch is determined in order to calibrate the field strength of pulses to be used in the actual therapeutic stimulation. The amount of magnetic field strength in a pulse needed to elicit a visible twitch in the right thumb 50% of the time is referred to as the motor threshold (MT).

The MT varies from patient to patient because of naturally occurring variation in cortical excitability between individuals. The MT value is important because it determines the correct setting for TMS dosing on a per-patient basis. TMS therapy is delivered at a magnetic field strength that is 120% of the MT value.