

# Obsessive-compulsive disorder

OCD is a mental health condition characterized by recurrent, intrusive thoughts (obsessions) and repetitive behaviors or mental acts (compulsions) aimed at reducing distress.

A debilitating psychiatric disorder characterized by anxiety-provoking intrusive thoughts (obsessions) that lead to stereotyped motor, cognitive acts, or rituals that are performed (compulsions) to relieve the associated anxiety <sup>1)</sup>.

It affects up to 2% of the population and is the 10th leading cause of disability worldwide <sup>2) 3)</sup>.

12–20% of cases remain refractory to standard behavioral psychotherapy and medical treatment with serotonin reuptake inhibitors (SSRI) or atypical antipsychotics <sup>4)</sup>.

DBS targets explored for OCD include the anterior limb of the internal capsule (ALIC), nucleus accumbens (NAc), ventral capsule / ventral striatum (VC/VS), [subthalamic nucleus](#) (STN), and inferior thalamic peduncle (ITP) <sup>5) 6)</sup>

The FDA recently granted a humanitarian device exemption approving the use of VC/VS DBS for medically intractable OCD.

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[Obsessive](#)-compulsive disorder (OCD) is an [anxiety](#) disorder characterized by intrusive thoughts that produce uneasiness, apprehension, fear or worry (obsessions), repetitive behaviors aimed at reducing the associated anxiety (compulsions), or a combination of such obsessions and compulsions.

## Symptoms

Include excessive washing or cleaning, repeated checking, extreme hoarding, preoccupation with sexual, violent or religious thoughts, relationship-related obsessions, aversion to particular numbers and nervous rituals such as opening and closing a door a certain number of times before entering or leaving a room. These symptoms are time-consuming, might result in loss of relationships with others, and often cause severe emotional and financial distress. The acts of those who have OCD may appear paranoid and potentially psychotic. However, people with OCD generally recognize their obsessions and compulsions as irrational and may become further distressed by this realization.

A number of psychological and biological factors may be involved in causing obsessive-compulsive disorder.

Other disorders with similar symptoms include obsessive-compulsive personality disorder (OCPD), an autism spectrum disorder, or disorders where perseveration (hyperfocus) is a feature in ADHD, PTSD, bodily disorders, or just a habit problem.

## Scales

Standardized rating scales such as [Yale Brown Obsessive Compulsive Scale](#) can be used to assess the

severity of symptoms.

## Treatment

see [Obsessive-compulsive disorder treatment](#).

## Obsessive-compulsive disorder case series

[Obsessive-compulsive disorder case series](#).

## Retrospective anatomical overlay studies

In a retrospective anatomical overlay study combining clinical outcomes and structural neuroimaging. It leverages [connectomic\\_analysis](#) and normative [tractography](#) data to assess the therapeutic relevance of different [Deep Brain Stimulation](#) (DBS) targets in [treatment-resistant OCD](#) (TR-OCD). The research draws from 26 patient cases across two neurosurgical centers, making it a multi-center retrospective cohort study <sup>7)</sup>.

## Summary and Critical Analysis

The study addresses a fundamental assumption in the field of psychiatric neurosurgery: the existence of a “common pathway” for DBS in OCD. Specifically, it explores whether disparate DBS targets, such as the [anteromedial subthalamic nucleus](#) (amSTN) and the [superolateral\\_medial\\_forebrain\\_bundle](#) (slMFB), ultimately influence a shared network responsible for symptom improvement.

Key Findings:

The [Obsessive-Compulsive Disorder Response Tract](#) (ORT) is shown to be a subset of the broader slMFB.

DBS targeting the amSTN may also reach into slMFB territories, but the effects cannot be wholly attributed to the ORT.

The [dorsomedial\\_prefrontal\\_cortex](#) (dmPFC) is identified as a potential hub for sub-network convergence.

slMFB appears to encompass all relevant OCD sub-networks and may serve as a superior, unified target when stimulated near the [ventral\\_tegmental\\_area](#) (VTA).

Strengths:

The use of individualized [volume\\_of\\_activated\\_tissue](#) (VAT) modeling allows for a precise correlation between anatomical targeting and clinical outcome.

A robust integration of patient-specific data with normative [connectome](#) atlases.

Suggests clinically relevant refinements to current DBS targeting strategies by deconstructing the notion of a singular therapeutic pathway.

Limitations:

As a retrospective analysis, the study lacks randomization and prospective validation.

Only two DBS targets are examined; this might limit generalizability across other less commonly used targets.

Clinical outcomes are reduced to [yale\\_brown\\_obsessive\\_compulsive\\_scale](#) (Y-BOCS) scores at 24 months, without deeper exploration of functional or quality-of-life changes.

Implications: This study challenges the [common\\_pathway\\_hypothesis](#), advocating for a more nuanced understanding of network-specific effects in OCD. It highlights the sIMFB's potential as a comprehensive DBS target, particularly when precision targeting near the VTA is feasible. Importantly, it emphasizes that "one tract fits all" may be an oversimplification in psychiatric neuromodulation.

## Conclusion

Rather than reinforcing the prevailing notion of a singular optimal fiber tract for all DBS treatments in OCD, this study advocates for individualized targeting that respects the complexity of OCD's distributed sub-networks. The findings hold potential for reshaping future [surgical\\_planning](#), emphasizing [network\\_neuroscience](#) over simplistic tract-based heuristics.

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Mol Psychiatry. 2025 Apr 6. doi: 10.1038/s41380-025-03008-x. Epub ahead of print. PMID: 40189699.

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