

# روانپزشکی مداخله ای و سایکوسرجری، راهبردهای ترکیبی برای اختلالات مقاوم به درمان

## Interventional Psychiatry and Psychosurgery: Combined Strategies for Treatment-Resistant Disorders

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# Headlines

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Definition and Importance of Interventional Psychiatry and Psychosurgery

Advanced Psychosurgery

Treatment-Resistant Disorders (TRDs)

Challenges in Treatment: Limitations of existing therapies and the need for novel approaches

Combined Approaches

Practical Examples

Emerging Technologies

Ethical and Legal Considerations

Future Directions

Conclusion

# Interventional psychiatry and Neuromodulation

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Interventional psychiatry involves using rapid-acting medications and neuromodulatory techniques, which can improve mental illness symptoms.

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ou may already be familiar with some of the treatment approaches of this psychiatric subspecialty, which include

[electroconvulsive therapy \(ECT\)](#),

[transcranial magnetic stimulation \(TMS\)](#),

[ketamine infusions](#), [esketamine nasal spray](#),

[deep brain stimulation \(DBS\)](#),

[vagus nerve stimulation \(VNS\)](#)

More than 20 methods...

# Neuromodulation in Modern Psychiatry

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This presentation explores the evolution of neuromodulation in psychiatry, from the early days of electroconvulsive therapy (ECT) to today's cutting-edge technologies. We'll delve into the various approaches, their efficacy, safety, and the future of this rapidly evolving field.



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# Electroconvulsive Therapy (ECT)

## Gold Standard for Severe Depression

ECT remains the gold standard for treating severe depression, achieving 60-80% efficacy rates.

## Modernized Approach

Modern ECT utilizes controlled electric currents (0.5-0.9 amperes) and ultra-brief pulse widths to minimize cognitive side effects.



# Transcranial Magnetic Stimulation (TMS)

## 1 Non-invasive Brain Stimulation

TMS uses magnetic pulses (1.5-2.5 Tesla) to stimulate specific brain regions.

## 2 Proven Efficacy

Clinical trials demonstrate significant response rates (58%) and remission rates (37%) in treating depression.

## 3 Expanding Applications

FDA-cleared for depression, OCD, anxiety, and smoking cessation, with a typical treatment course of 20-30 sessions.

# Deep Brain Stimulation (DBS)

## Targeted Brain Stimulation

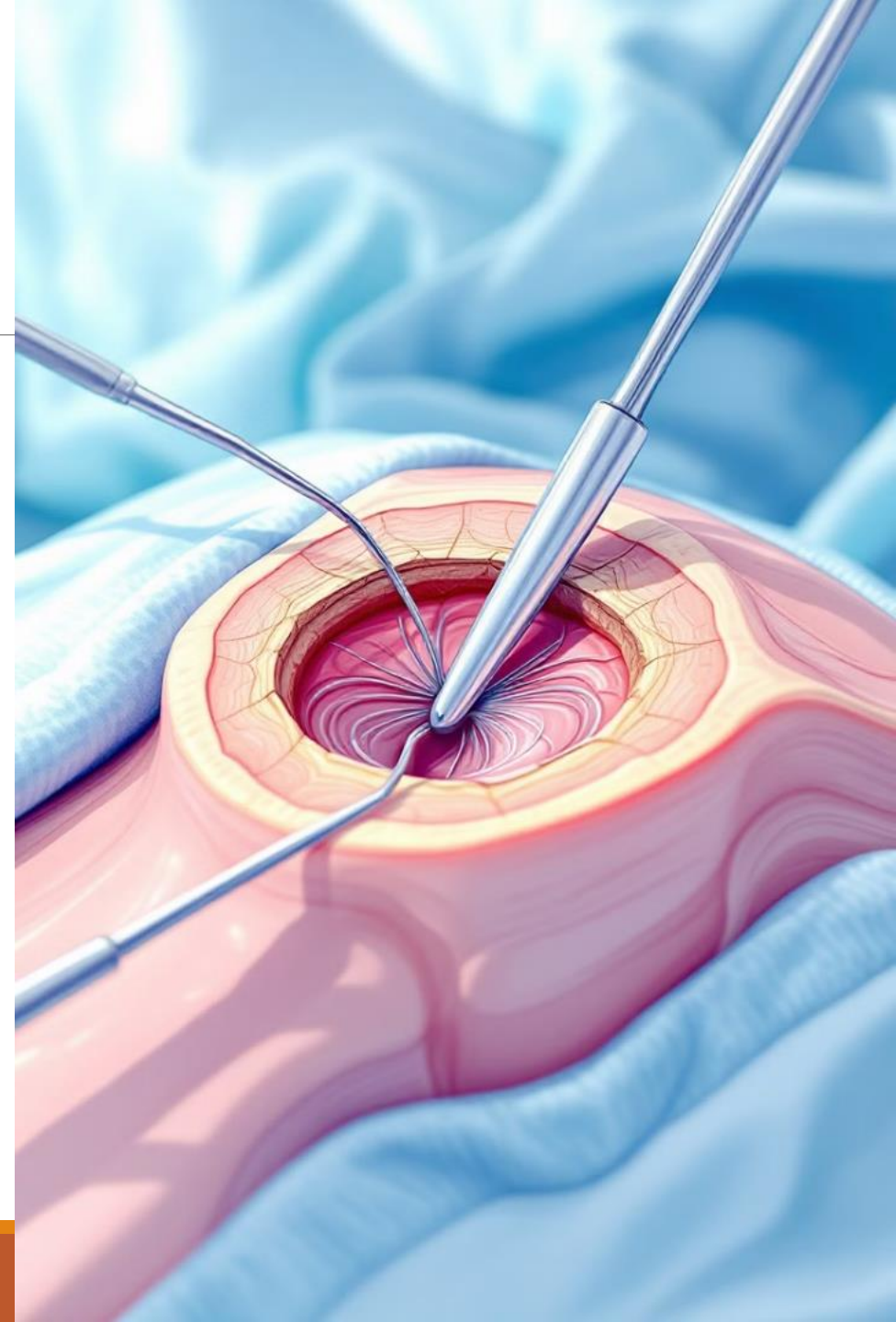
DBS involves surgically implanting electrodes in specific brain areas, such as the subcallosal cingulate, nucleus accumbens, and anterior limbic insular cortex.

## Significant Response Rates

Studies show a 65% response rate in treating treatment-resistant depression.

## Continuous Stimulation

DBS involves continuous stimulation at frequencies of 130-180 Hz.







# Vagus Nerve Stimulation (VNS)



## FDA-approved for Depression

VNS is FDA-approved for treatment-resistant depression, with a 40% response rate after one year.



## Targeted Stimulation

The implanted device delivers stimulation to the vagus nerve at 20-30 Hz.



## Long-Term Benefits

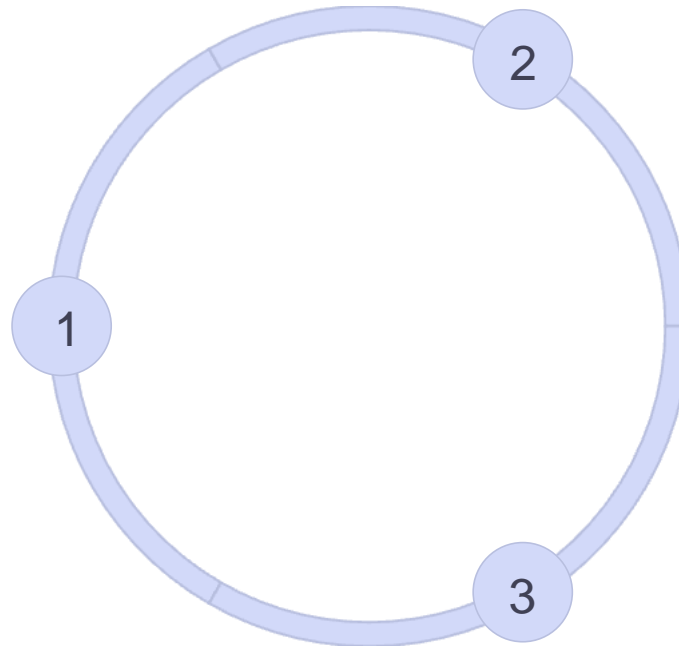
VNS offers a long-term treatment option with a battery life of 8-10 years.

# Transcranial Direct Current Stimulation (tDCS)

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## Home-Use Devices

tDCS involves applying low-intensity electrical currents (1-2 mA) to the scalp.



## Cost-Effective Treatment

Home-use tDCS devices are available for \$400-800, offering a cost-effective alternative to traditional treatments.

## Modest Improvement

Studies show a 30% improvement in depression symptoms with daily 20-minute sessions for 2-6 weeks.



# Novel Neuromodulation Methods

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1

## Focused Ultrasound (FUS)

FUS uses high-intensity sound waves to stimulate specific brain areas, offering a non-invasive alternative to DBS.

2

## Optogenetics

Optogenetics is being explored in clinical trials, using light to control genetically modified neurons.

3

## Closed-Loop Systems

Closed-loop systems are being developed to monitor brain activity in real-time and adjust stimulation accordingly.

# Comparison of Efficacy and Safety

1

## ECT: Highest Efficacy, Most Side Effects

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ECT offers the highest efficacy (80%) but is associated with more side effects.

2

## TMS: Moderate Efficacy, Minimal Side Effects

TMS provides moderate efficacy (58%) with minimal side effects.

3

## DBS: Targeted Efficacy, Surgical Risks

DBS offers targeted efficacy (65%) but involves surgical risks.

4

## VNS: Gradual Improvement, Long-Term Benefits

VNS provides gradual improvement (40%) with long-term benefits.

5

## tDCS: Modest Effects, Excellent Safety Profile

tDCS delivers modest effects (30%) with an excellent safety profile.



# Future Directions and Conclusions

1

## Personalized Neuromodulation

AI is playing an increasingly important role in personalizing neuromodulation treatments.

2

## Integration with Neuroimaging

Neuroimaging techniques are being integrated to guide treatment planning and monitor responses.

3

## Emerging Technologies

Novel technologies like neural dust are being developed to further enhance neuromodulation capabilities.

4

## Expanding Access

Efforts are underway to reduce costs and expand access to neuromodulation treatments.

## ترکیب درمان های غیرتهاجمی و جراحی روانی در اختلالات روانپزشکی

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در بیمارانی که به هیچ یک از درمان های غیرتهاجمی پاسخ نداده اند، استفاده از ترکیب  
psychosurgery و non-invasive neuro-intervention  
گزینه ای جدی و مورد توجه است.

## مزایای درمان های ترکیبی

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افزایش تنظیم پذیری درمان بر اساس نیاز بیمار: این رویکرد به پزشکان این امکان را می دهد که درمان را بر اساس ویژگی ها و نیازهای خاص هر بیمار تنظیم کنند.

## مداخلات غیرتهاجمی بعد از جراحی

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در بیمارانی که تحت psychosurgery قرار گرفته اند، مداخله non-invasive neuro-intervention که می تواند برای بهبود عملکرد شناختی بعد از جراحی استفاده شود rTMS با فرکانس بالا در نواحی پیشانی (prefrontal) است. این روش به بهبود عملکرد شناختی و کاهش علائم اختلالات روانی کمک می کند.



## رویکردهای نوین در درمان OCD

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برای بیمارانی که به درمان های دارویی و روش های non-invasive neuro-intervention پاسخ کافی نداده اند، استفاده از DBS همراه با داروهای مهارکننده بازجذب سروتونین SSRIs به عنوان قدم بعدی درمان پیشنهاد می شود. این رویکرد می تواند به بهبود علائم اختلال وسواسی-جبری (OCD) کمک کند.

## چالش های اخلاقی در روش های Ablative psychosurgery

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مهم ترین چالش اخلاقی در روش های Ablative psychosurgery برگشت ناپذیری تغییرات مغزی است. این ، موضوع نیاز به دقت و احتیاط در انتخاب بیماران و روش های درمانی را افزایش می دهد.



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# Conclusions and Clinical Recommendations

Combination therapy holds great promise for treating resistant psychiatric disorders, offering improved outcomes and a broader range of therapeutic options. Continued research, refined protocols, and collaborative efforts are essential for maximizing its benefits and expanding access to this innovative approach.

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Thank you for your attention

