

Mobile Transcranial Magnetic Stimulation Program for LACDMH

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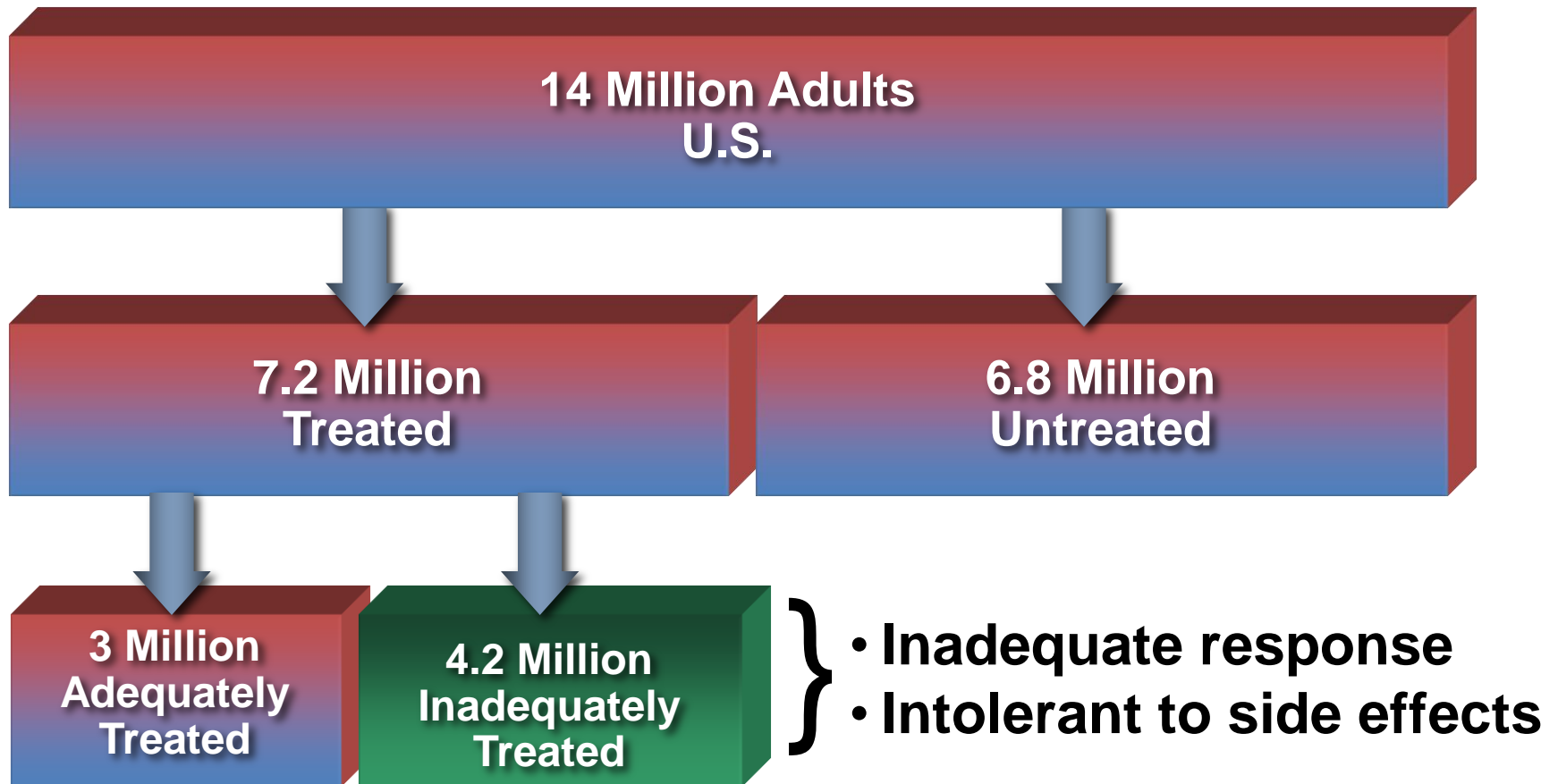
LACDMH Juvenile Justice Mental Health Program

Assistant Clinical Professor

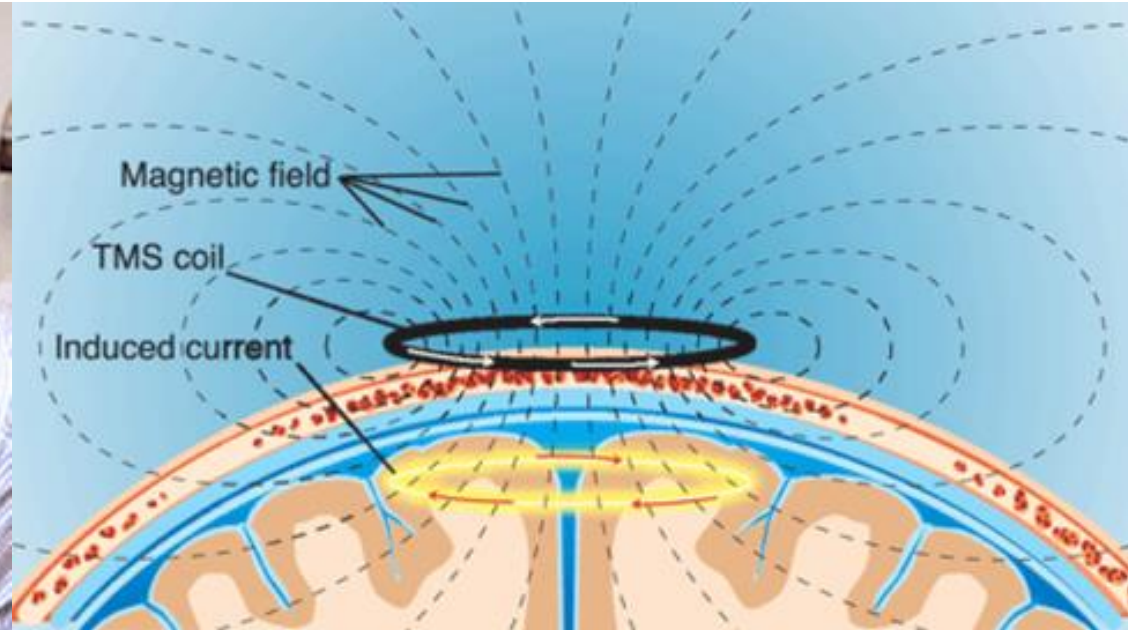
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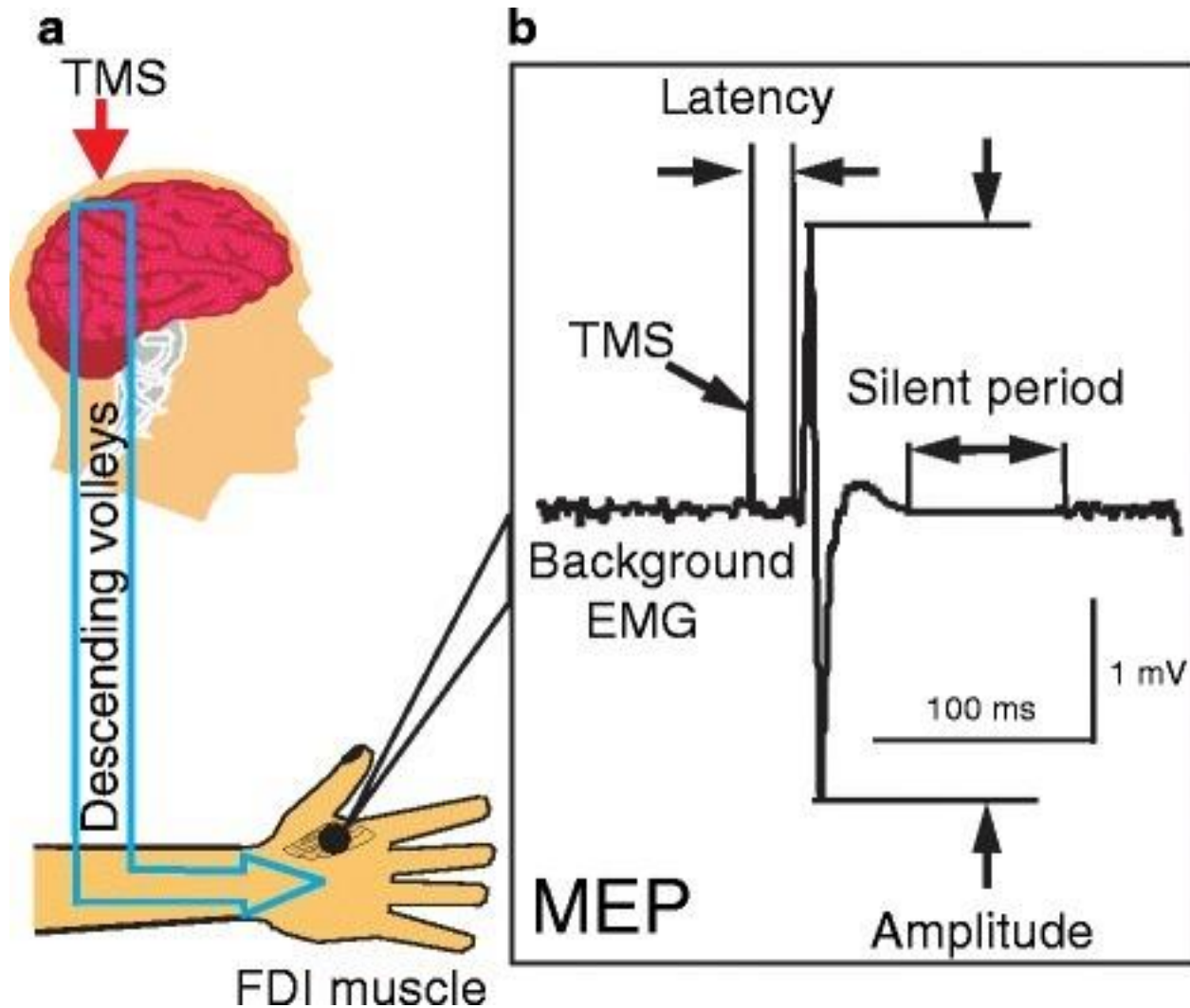
Depression: Treatment Refractory Symptoms



What Is Transcranial Magnetic Stimulation (TMS)?



TMS Causes Cortical Neurons To Fire



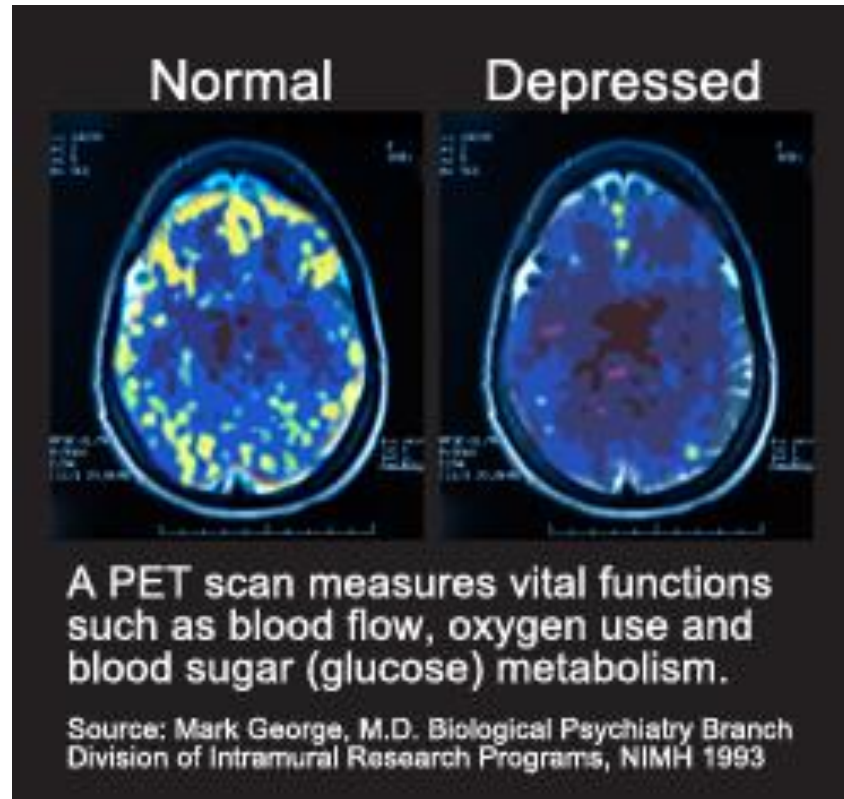
TMS Variables

- Where – location of coil
- When – timing of pulses
- How strong – intensity of magnetic pulses
- How many – number of pulses

How do MRI and TMS Differ?

	MRI	TMS
Magnetic Field Strength	1.5 Tesla	2 Tesla
Rate of Change of Magnetic Field	20 T/s	20,000 T/s
Induces Current in Brain	No	Yes

TMS for Depression



- Altered cortical activity in depressed patients
 - Hypofunctioning of DLPFC
 - Enhance activation using rTMS

Neuronetics Trial (O'Reardon 2007)



- RCT w/155 active, 146 sham, 3000 pulses, 5d/week, 4-6 wks
- Unmedicated
- Primary outcome measure: change in MADRS

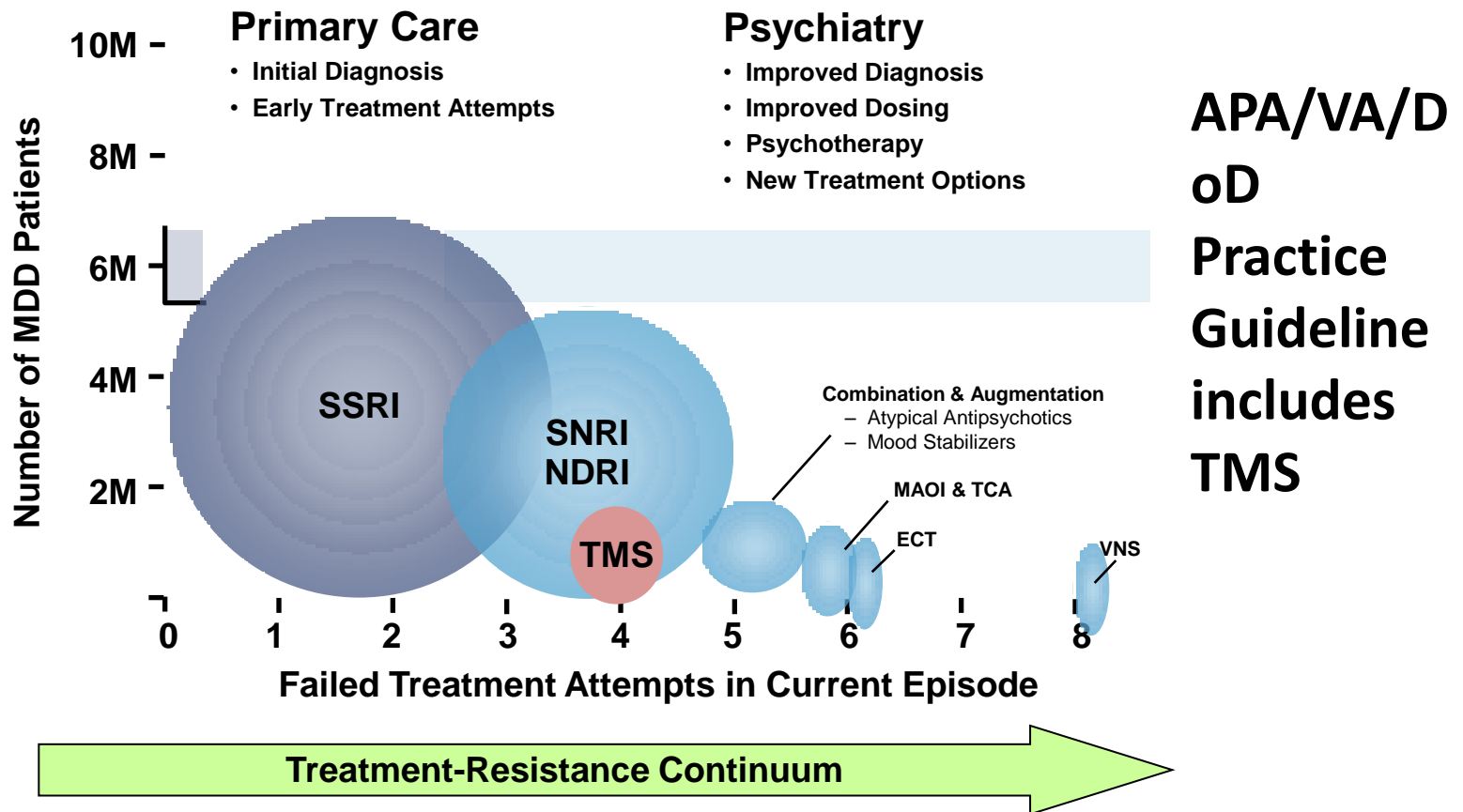
TMS: FDA Approval

- Approved for patients with depression who have failed at least 1 antidepressant
- 3 large RCT – two industry sponsored, one NIH, numerous smaller trials
- More recent meta-analyses show about 30% response and 19% remit (placebo 10, 5%), NNT 6 and 8 (Berlim 2014)
- 5 devices now available

Long Term Efficacy and Safety

- Pain – decreases over course of treatment (Brockhardt 2013)
- Seizure risk – 1:30000 treatments
- Durability – at 12 months 62% of initial responders remained, 36% had more TMS (Dunner 2013)
- Improvement in quality of life and functional status acutely and at 6 months (Solvason 2014)

TMS Has Become Standard Practice



Kessler RC et al. *Arch Gen Psychiatry*. 2005;62(6):617-627; Kessler RC et al. *JAMA*. 2003;289(23):3095-3105; Herrmann RC. *Am J Psychiatry*. 1995;152(6):869-875.

Other Uses

- Bipolar depression (Nahas 2003)
- Suicidal crisis (George 2014)
- Schizophrenia (Slotema 2014)
- OCD (Berlim 2013)
- Substance use disorders (Enokibara 2016)
- PTSD (Karsen 2014)
- Autism
- Cognitive impairment/Traumatic brain injury

Barriers to TMS

- Access – not provided by community psychiatrists
- Adherence – the treatment requires 5 days per week x 6 weeks

Solution To Barriers: Mobile TMS



Project Goal: Mobile TMS

- Create a network of mobile TMS treatment centers
- Bring an effective treatment for depression directly to people of LAC
- Start by treating individuals with depression who reside in Board and Care (B+C) facilities

Why Board + Care Residents?

- Some of the most symptomatic individuals in the county
- Often tried many medications
- Remain impaired in spite of great efforts to ameliorate symptoms
- Difficulty with treatment adherence
- Treatment with TMS is warranted but barriers exist – mobile TMS may overcome these

Plan

- Obtain TMS device and customized van
- Outreach and education with B+C facilities throughout LAC in order to recruit individuals with depression
- Clinical treatment
- Measure treatment outcomes
- Analyze data and disseminate results
- Expand program as appropriate

Conclusions

- TMS is a safe, effective treatment for depression and may be beneficial for other psychiatric disorders
- Many patients in B+C have depression among other symptoms and may benefit from TMS
- Mobile TMS will bring this treatment directly to these patients
- Expand the range of treatments offered by LACDMH

Questions and Feedback