

# Offering Transcranial Magnetic Stimulation to Eligible Patients with Treatment-Resistant Depression

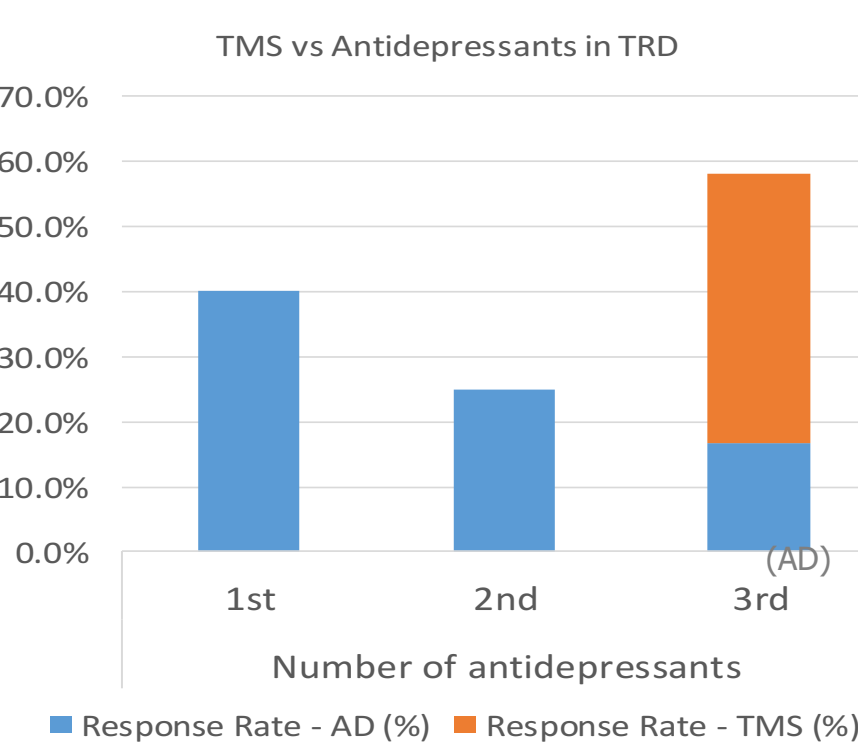
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## Aim

- We aim to increase the rate at which transcranial magnetic stimulation (TMS) is offered to eligible patients at KTPH Psychological Medicine from 15% to 60% over 6 months.

## Background

- More than 35% of patients do not respond to 2 trials of antidepressants, defined as treatment-resistant depression (TRD)
- TMS is a brain stimulation procedure that is evidence-based for TRD
- Magnetic fields applied over the head generate small electric currents to stimulate the underactive neurons
- 30 daily (week day) sessions of 3 to 37 minutes each, conducted in clinic over 6 weeks



**3 times more likely** to be effective than the next antidepressant trial

**Minimal side effects**, no known long-term side effects, no cognitive side effects

## Team Members

Name	Designation	Department
Dr Tay Yi Hang	Consultant	Psychological Medicine
Ng Kwee Hiang Carol	Senior Nurse Clinician	Nursing
Tan Wan Ling	Assistant Nurse Clinician	Nursing
Dr Tan Ling Wei Bryan	Psychiatry Resident	Psychological Medicine
Dr Thng Ern Wei Christabel	Consultant	Psychological Medicine

## Interventions / Implementation

- 6 Plan-Do-Study-Act cycles** addressed the top root causes on our Pareto chart
- Key Interventions**

1) Adopted evidence-based, **shorter TMS protocols** that reduce time to remission from **6 weeks to 2-3 weeks**

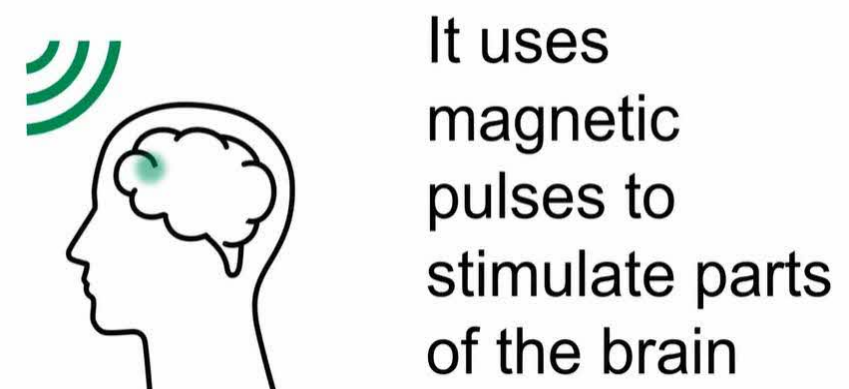
Day 1	Day 2
Session 1	Session 2
30 daily (week day) sessions = 6 weeks	
Session 1   50-minute break   Session 2	Session 3   50-minute break   Session 4
30 twice-daily (week day) sessions = 3 weeks	
Session 1   50 minute break   Session 2   50 minute break   Session 3	Session 4   50 minute break   Session 5   50 minute break   Session 6
30 thrice-daily (week day) sessions = 2 weeks	



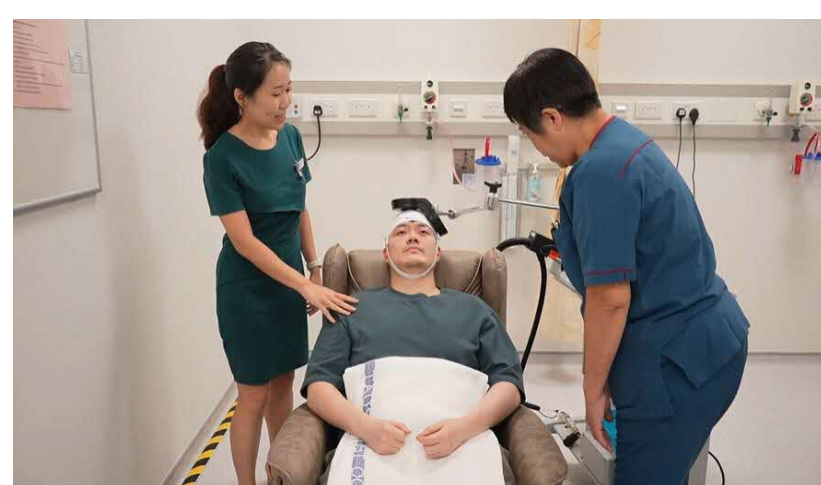
2) Initiated a novel, **nurse-led TMS Counselling Service**:

Rather than offering TMS to patients during clinic, psychiatrists can refer to TMS nurses who will call patients up to counsel about TMS and schedule them for an assessment if they are interested.

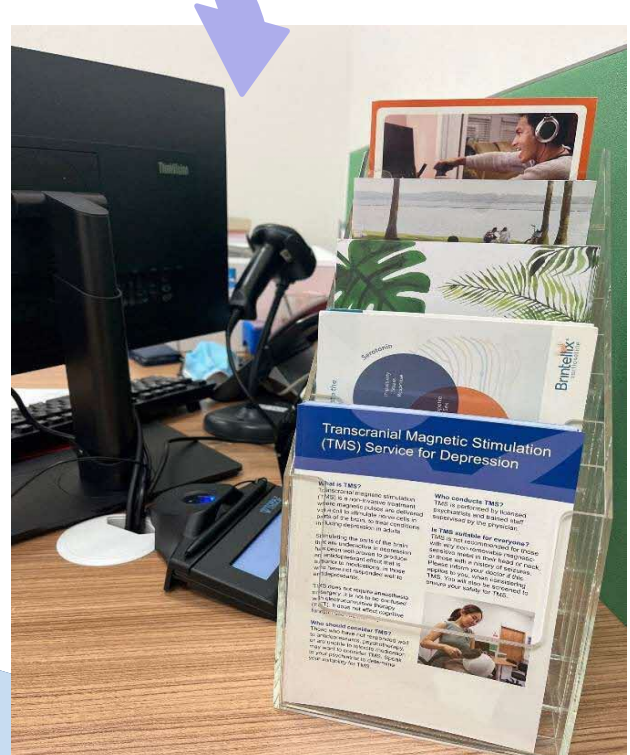
3) **TMS video** screened on loop in clinic waiting areas increased awareness such that patients were bringing up TMS before they were even offered



It uses magnetic pulses to stimulate parts of the brain



4) Regular **email reminders** and a **revamped leaflet design and display** in clinic were simple and effective strategies to remind psychiatrists to consider TMS



## Onward 2026

### Expand acute care beyond hospital (Strategic Priority 3)

- Increased chance to remission in TRD
- Reduced admissions
- More patients discharged from specialist care to GPs and the community

### Quality and Patient Safety

- Improved quality of patient care to those with TRD when more take up TMS, without compromising on safety

### Operational Resilience

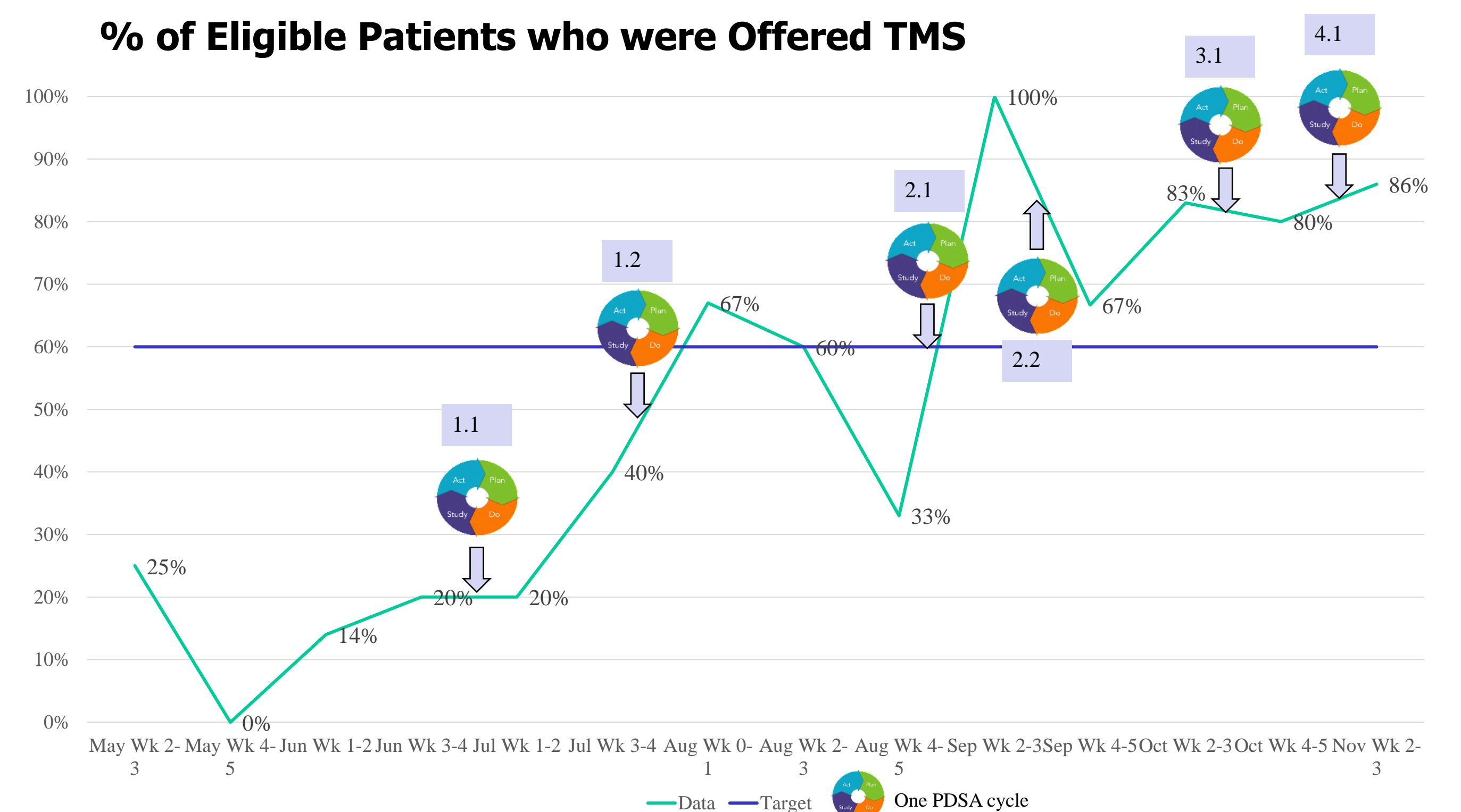
- Reduced waste (administrative processes and disposables incurred) by half with new TMS protocols
- Smoother referral process

### Staff Well-Being

- TMS practitioners have greater flexibility taking leaves
- Less time spent in clinic offering TMS

## Results & Outcomes

- TMS is being offered to about **86%** of eligible patients, a significant increase from 15%, following 6 PDSA cycles



- 31% of eligible patients took up TMS, and 100% of those patients who took up TMS eventually completed the course
- 69% reduction in depression rating scores** for patients who completed the TMS course (>50% deemed as good response)

- Reduced traveling time

- Get better in half the time
- Reduced time spent in clinic



- ~\$2190 per year saved by every patient for each year spent in remission following TMS

- Reduced absenteeism

- Less leave taken to attend Psy appointments
- Improved socio-occupational function



- Improved relationships with family and friends
- Increased sense of agency over mental health care plans

- Smoother referral process

- Reduced waste
- Increased TMS utilisation
- Stakeholder satisfaction



## Conclusion

We observed cost and time savings to patients and staff, and better quality of clinical care through effective and sustainable interventions which can also be replicated in TMS clinics elsewhere.

Acknowledgements: We would like to thank Jack Lau for patiently assisting us with our TMS publicity materials, and Chan Sue Mei, Doreen Lau and James Wong for their invaluable guidance on the quality improvement methodology.