

Background

- Methamphetamine use disorder (MUD) among pregnant individuals poses substantial risks to maternal and fetal health.
- Given the scarcity of approved treatments, exploration of off-label interventions like Naltrexone/Bupropion and non-invasive methods such as Transcranial Magnetic Stimulation (TMS) has gained attention.

Objective

This study aimed to compare the cost-effectiveness of TMS against Naltrexone/Bupropion and no intervention for pregnant individuals diagnosed with MUD, providing valuable insights for future interventional trials targeting this demographic.

Methods

- Utilizing a decision tree model, this study assessed direct medical costs and clinical outcomes in a hypothetical cohort of 1000 pregnant individuals diagnosed with MUD.
- Primary outcomes centered on the proportion of fullterm vaginal deliveries resulting in infants of normal weight.
- Probabilities, costs, and adverse event data were sourced from existing literature and adjusted to 2023 US dollars.
- Various sensitivity analyses, including tornado diagrams and Monte Carlo simulations, were performed to gauge the robustness of the findings.
- TreeAge Pro 2021, R1 was used to conduct this costeffectiveness study.

Comparative Cost-Effectiveness Analysis of Interventions for Perinatal Methamphetamine Use Disorder: A Decision Modeling Method

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Results

- The use of TMS was projected to yield 760 full-term vaginal deliveries resulting in infants of normal weight. This contrasts with rates of 540 for Naltrexone/Bupropion and 500 for the absence of treatment.
- At a willingness-to-pay (WTP) threshold of \$50,000, indicating a consistent and stable outcome, showcasing that TMS stands out as a cost-effective intervention compared to the Naltrexone/Bupropion.

Table 1. Model inputs

Parameter	Estimate	Lower	Upper
		bound	bound
TMS treatment	29.6 %	23.7 %	35.6
response			
Naltrexone/Bupr	13.6%	10.2%	16.9%
opion treatment			
response			

Figure 1: Decision tree model



Conclusion

- This comprehensive analysis highlights the potential cost-effectiveness of TMS as an intervention for perinatal MUD, surpassing Naltrexone/Bupropion.
- These findings present critical insights for healthcare decision-makers, emphasizing the need to explore TMS in this population through well-designed interventional trials to confirm its efficacy and economic viability.

Refer	ences			
Liu et al.				
Trivedi	i et al.			
-term Enter prob	Low-birth weight Enter prob Normal birth weight			
-term Enter prob	Enter prob Low-birth weight Enter prob Normal birth weight Enter prob			
-term Enter prob	Low-birth weight Enter prob Normal birth weight Enter prob Low-birth weight			
-term Enter prob	Enter prob			



Figure 3: Cost-Effectiveness Acceptability Curve



 Table 2. Cost, Effectiveness, and Incremental Cost-Effectiveness
 Ratio, Base Case

Strategy	Cost	Incremental Cost	Effectiveness	ICER
TMS	\$43426	Ref	76%	
No Treatment	\$67447	\$24021	50%	-25%
Injectable Naltrexone	\$70800	\$27374	54%	-22%
and oral Bupropion				



ne / Bupropion vs. TMS (WTP: 50000.00)

		Cost of preterm delivery
		Cost of Naltrexone/Bup
		Cost of TMS
		Ceserain in treated group
		death in non treated
		Cost of low-birth weight
		low birth weight in non treated
		Ceserian in non treated
		low birth weight in treated group
		pre-term birth in non treated
		Naltrexone reduction in use
		Naltrexone Non-treatment SE WTP: 50000.00
-50000.00	0.00	50000.00

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References and contacts

