Cost-Effectiveness Analysis of Differential Target Multiplexed™ Spinal Cord Stimulation in Sweden

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Objective

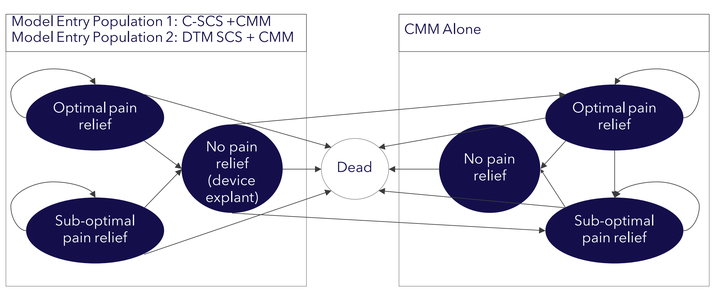
Differential Target Multiplexed™ (DTM) Spinal Cord Stimulation (SCS) has been shown to be more effective than conventional SCS (C-SCS) in reducing pain in patients with chronic low back pain (LBP).

This study assessed the cost-effectiveness of DTM-SCS, C-SCS and conventional medical management (CMM), from the Swedish payor and societal perspectives. ICERs were compared for the following scenarios:

Methods

One-year decision tree phase followed by a long-term (15-yr) Markov model with 3-month cycles (Fig 1)

Fig 1: Markov model structure (beyond 1 year)



Results from a randomized clinical trial were used to determine pain responder rates at one year[1,2]

Costs and effects were discounted at 3%, with separate analyses performed using payer and societal perspectives.

Results

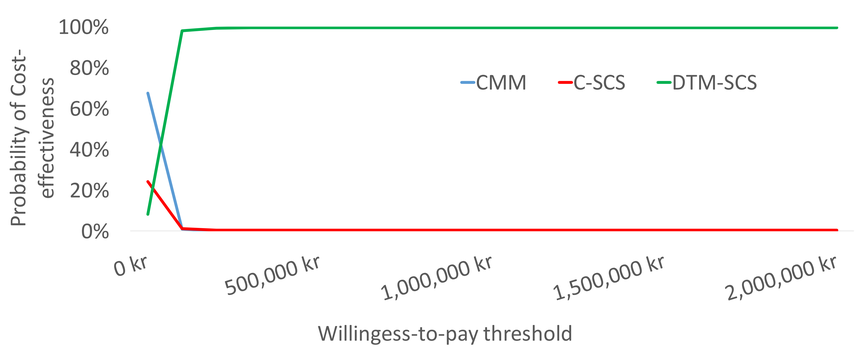
The ICER for DTM-SCS vs. CMM was lower for both definitions of optimal pain relief compared with C-SCS vs. CMM; indicating greater cost-effectiveness with newer waveforms (Table 1). In all scenarios, SCS was cost-effective compared to CMM, regardless of stimulation setting (C-SCS or DTM-SCS).

Table 1: ICERs – Payer Perspective

Scenario	ICER		
	C-SCS vs. CMM	DTM-SCS vs. CMM	DTM-SCS vs. C-SCS
Base-case – 'Optimal' pain relief > 50% improvement in pain score	25,116 kr	15,932 kr	4,035 kr
Profound responders - 'Optimal' pain relief >80% improvement in pain score	43,342 kr	20,116 kr	3,781 kr

One-way sensitivity analyses demonstrated at a willingness-to-pay of 500,000 kr / QALY, DTM-SCS was predicted to be cost-effective vs. CMM in 99.6% of simulations (Fig 2).

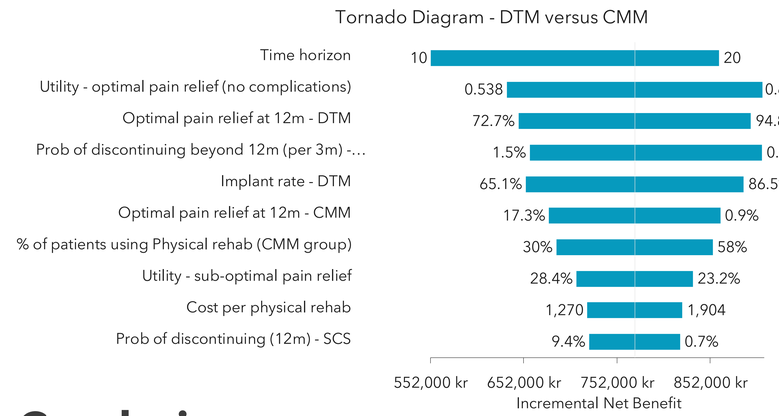
Fig 2: Cost-effectiveness acceptability curve (15-year horizon) – payer perspective



Results (continued)

One-way sensitivity analyses indicated the most influential model parameters on ICERs were: the % of patients achieving optimal pain relief at 12 months, CMM societal costs, and model time horizon (Fig 3).

Fig 3. One-Way Sensitivity (DTM-SCS vs. CMM) – Payer perspective



Conclusions

- Limitation: The EQ-5D data used as model inputs to generate utility scores were based on older data not specific to DTM[2]; as the DTM RCT did not collect this information
- These results strongly suggest that DTM-SCS is cost-effective from both payer and societal perspective; providing even more value than C-SCS.

References

1. Fishman M et al. Twelve-month results from multicenter, open-label, randomized controlled clinical trial comparing differential target multiplexed spinal cord stimulation and traditional spinal cord stimulation in subjects with chronic intractable back pain and leg pain. Pain Practice, 2021;21(8):912-923.
2. Kumar K et al. Spinal cord stimulation versus conventional medical management for neuropathic pain: a multicentre randomised controlled trial in patients with failed back surgery syndrome. Pain, 2007;132:179-188.

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