

# Spinal Cord Stimulation (SCS) Reduces Morphine Milligram Equivalents (MME) For Chronic Non-Cancer Pain

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## BACKGROUND / OBJECTIVES

- Chronic Pain is a prevalent condition that impacts over 20% of adults in the United States Alone
- Since data on chronic pain was being tracked, the number of patients suffering had continued to rise
  - Since 2016 the number of adults suffering from chronic pain have increased over a million<sup>1</sup>
- Chronic Pain is challenging to treat and a significant source of healthcare expense<sup>2</sup>
  - Opioid class medications are a leading treatment modality for maintenance of chronic pain<sup>3</sup>
- Long-term opioid class medications have a myriad of deleterious consequences like tolerance, reinforcement, addiction, and death<sup>4</sup>
  - Since the turn of the century, opioid overdose deaths have increased 6-fold<sup>5</sup>
- Spinal Cord Stimulation (SCS) is an effective alternative to long-term therapy for patients with chronic pain but, little is known about its impact on opioid consumption

### Objectives:

- Identify patients with chronic, non-cancer pain that are on a maintenance dose of opioids and collect their demographic and dosage information
- Determine the timeline of each patients' chronic pain journey including their baseline MME and date of SCS implant
- Access the Texas Prescription Monitor Program (PMP) to evaluate the change in opioid
- Calculate the change MME throughout each patients' baseline to implant date to 6 months post-implant

## MATERIALS & METHODS

- Our study population are from the Advanced Pain Institute of Texas in Lewisville, TX
- Inclusion Criteria
  - Age above 18 years
  - Currently on long-term opioid class medication for maintenance of their chronic pain prior to SCS implant
  - Underwent SCS within the study dates of October 2017 and March 2022
  - Must have failed other non-invasive treatment for their chronic pain and not candidates for spinal surgery
- MME were calculated at three points in time for each participant
  - Initial Date of Service to the Private Practice [Baseline MME]
  - Date of permanent SCS implant [Implant Date MME]
  - 6 months after SCS [Post SCS MME]
- Each of these 3 points in time were calculated using a 3 month-average of the preceding and flanking months
  - Example: Patient presented in February 2019 and underwent SCS July 2019
    - [Baseline] = Average of January, February, and March 2019 MME
    - [Implant Date] = Average of June, July, and August 2019 MME
    - [Post SCS] = Average of December 2019, January 2020, and February 2020

## STATISTICAL APPROACH & RESULTS

- 26 participants met inclusion criteria and were included in our study
- Paired t-tests were conducted four our study
  - From [Baseline] MME and 6-months postoperatively from SCS implant
  - At date of SCS implant and 6-months postoperatively from SCS permanent implant

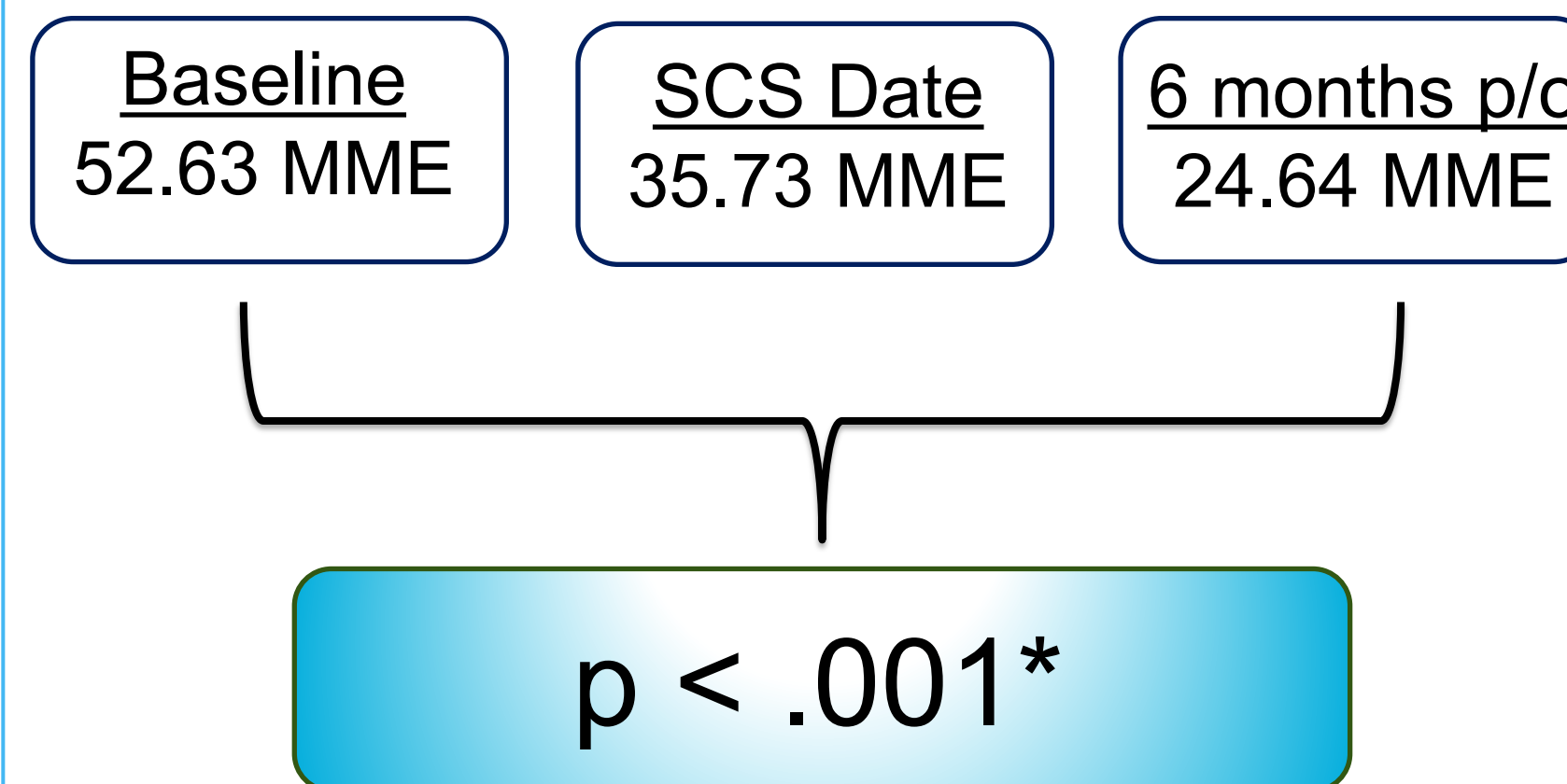


Table 1: SPSS Screenshot from paired t-test results

		Patient Sex	Age at SCS Implant	Initial Morphine Equivalent	Morphine Equivalent at SCS Implant	Morphine Equivalent at 6-month Post-Implant
N	Valid	26	26	26	26	26
	Missing	0	0	0	0	0
Mean			62.50	52.627	35.731	24.635
Std. Deviation			10.328	45.0747	52.7820	31.9661

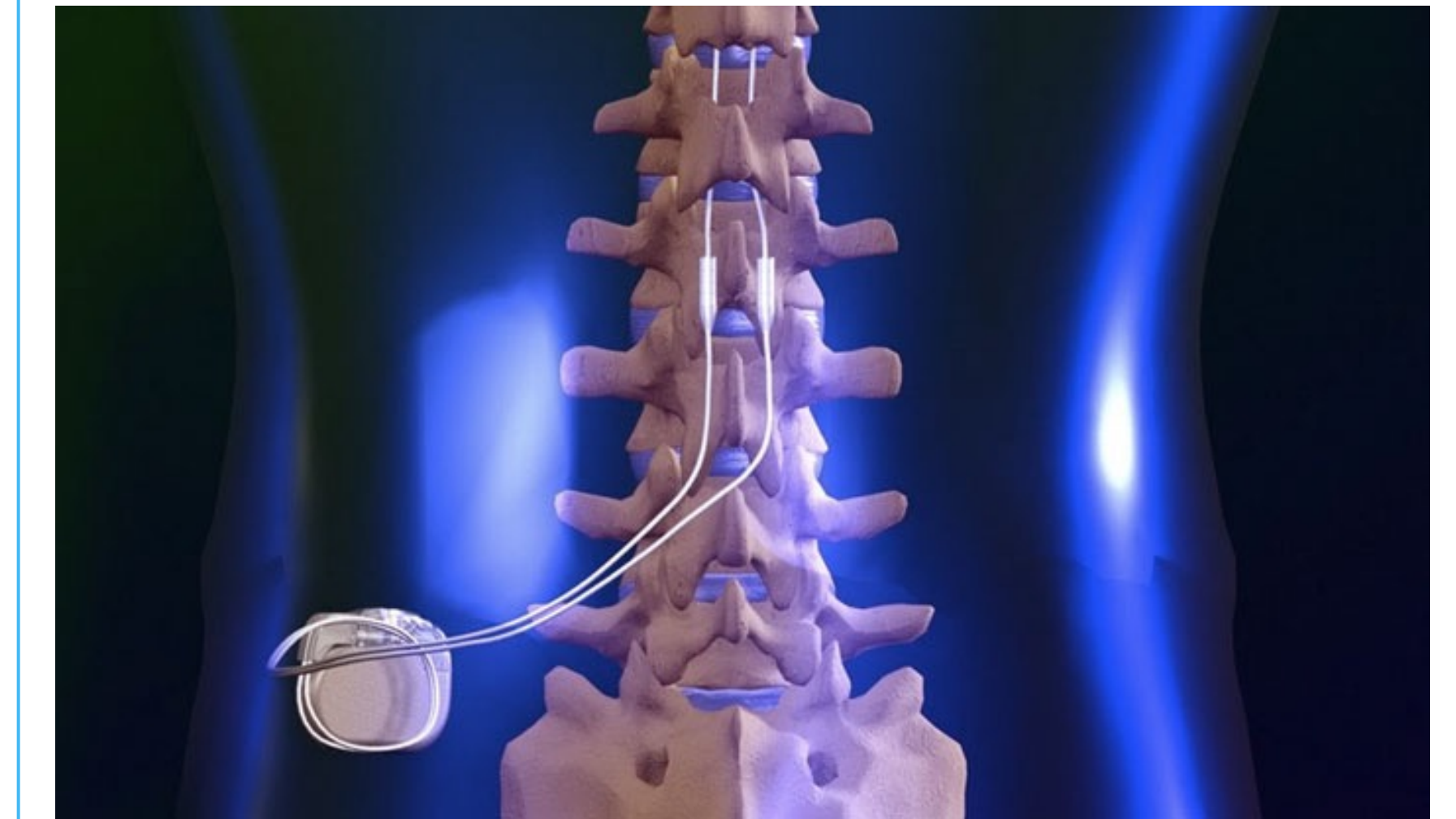
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## PARTICIPANT DEMOGRAPHICS

- 29 adults met inclusion criteria after our initial review
  - 3 patients did not follow-up postoperatively to the private practice and such their Texas PMP was not accessed and their [Post-op] MME was not known and were intentionally left out of the analysis
- Final sample included 26 adults
  - Median age of 62.5 years (SD of 10.33)
    - Range from 42 to 80
  - 15 women (58%) and 11 men (42%)
  - 14 (54% had no documented ethnicity), 10 (38% Identified as White), and 2 (8% Identified as Mixed Race)

Figure 1: Pictorial representation of a Spinal Cord Stimulator Inside the Vertebral Column



## CONCLUSIONS & NEXT STEPS

- The mean MME for our sample decreased over time
  - There was a significant reduction in MME from baseline to 6 months post-op ( $p < .001$ )
  - A trend was observed from SCS implant date to 6 months post-op ( $p = .11$ )
- Our study suggests that SCS may not only be a safe and effective alternative for chronic pain, but may subsequently reduce MME in patients therefore reducing their relative risk for addiction and overdose death
- The association between opioid consumption and SCS remains incompletely understood
- More studies are needed to determine the degree to which these two factors influence each other



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