

MetroHealth Medical Center

RESEARCH DAY 2023
Abstract Submission Form

Poster Title: Effect of the Cough Stimulation System (CSS) on the Life Quality of Family Caregivers of Tetraplegics

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Category: Physical Medicine and Rehabilitation /Clinical Research

Introduction: The impact of cervical spinal cord injury (SCI) on the individual affected is undoubtedly devastating. This injury often includes paralysis of the expiratory muscles resulting in an ineffective cough mechanism resulting in the development of respiratory tract infections, which are common causes of morbidity and mortality. Secretion management and risk of aspiration are also frequent concerns. Typically, less attention is paid to the family caregiver (CG), often referred to as the silent patient, who is also impacted significantly.

Objectives: To assess the impact of the CSS on the life quality of family CG of study participants following system implantation.

Participants: Primary family CG (n=15) of participants with SCI completed questionnaires before and following use of the CSS

Results: Each enrolled participant had marked expiratory muscle weakness as reflected in maximum expiratory pressure measurements ranging from 1 to 25% predicted (mean $12 \pm 6\%$). With use of the CSS, each participant experienced significant clinical improvement in terms of restoration of an effective cough and ability to manage airway secretions. The level of CG stress in the management of airway secretions was significantly reduced from 1.2 ± 0.3 to 0.5 ± 0.2 and 0.5 ± 0.2 (where 0: Not at all; 1: a little; 2: quite a bit; 3: very much) at the 1- and 2-year marks ($p < 0.05$ for each timepoint, compared to pre-implant). There were also significant reductions in caregiver sense of fear or panic when providing care ($p < 0.05$ for each timepoint, compared to pre-implant). The perception of overall quality of life improved from 3.9 ± 0.4 to 5.3 ± 0.4 and 5.5 ± 0.4 (where CG rates on a scale of 0 to 7; where 0: Very Poor; and 7: Excellent) at the 1- and 2-year timepoint respectively ($p < 0.05$ for each timepoint, compared to pre-implant).

Conclusion: Following implantation of the CSS, there were significant improvements in CG life quality related to the respiratory status of study participants.

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Approved by the MetroHealth IRB as protocol number: IRB98-00091: Spinal Cord Stimulation to Restore Cough (Initial approval: 10/26/1998) and IRB15-00014: SCS with Wire Leads to Restore Cough (Initial approval: 4/10/2015).