

Mobile Decision Support System for Nurse Management of Neuromodulation Therapy

<https://www.neurodegenerationresearch.eu/survey/mobile-decision-support-system-for-nurse-management-of-neuromodulation-therapy/>

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Country

USA

Title of project or programme

Mobile Decision Support System for Nurse Management of Neuromodulation Therapy

Source of funding information

NIH (NINDS)

Total sum awarded (Euro)

€ 2,596,338.53

Start date of award

11/02/2015

Total duration of award in years

4

The project/programme is most relevant to:

Parkinson's disease & PD-related disorders

Keywords

Decision Support Systems, Deep Brain Stimulation, neuroregulation, Nurses, Clinical Decision Support Systems

Research Abstract

? DESCRIPTION (provided by applicant): Deep brain stimulation (DBS) has tremendous

potential to improve the lives of patients with a wide range of chronic illnesses. Good outcomes from DBS for Parkinson's disease (PD) are strongly correlated to accurate electrode placement and to careful post-operative selection of stimulation parameters (voltage, pulse width, frequency, active electrode contact(s), among others). Although DBS is beneficial for a variety of disorders, a persistent problem has been extensive, costly programming time after the electrode leads are implanted. This is largely because there are very few tools available to assist clinicians in this process, and as a result DBS programming can require a significant degree of experience and expertise, as well as a substantial amount of time for the clinician to search for optimal device settings. Over the last few years computational models have been developed to predict and visualize the effects of DBS based on the neuroanatomy of individual patients. Recently these models have shown promise for improving the efficiency of DBS programming, and have been incorporated into a clinical decision support system. The long-term goal of this research is to improve the lives of patients with neurological disease that are treated with DBS. The objective of this application is to prospectively test the use of DBS clinical decision support tool in post-operative clinical care. The central hypothesis is that the use of a DBS clinical decision support system for individual patient management will enable considerable time savings and reduced burden on patients and caregivers. This hypothesis has been formulated from pilot studies that have shown dramatic decreases in DBS programming time compared to standard care for clinicians who used an iPad-based decision support system (99% time savings from over 4 hours to 2 minutes). The rationale for the proposed research is that computational models, clinical informatics, and mobile computing devices can be used to enable DBS management in a way that has never before been possible. Guided by strong preliminary data, this hypothesis will be tested in two specific aims: 1) Measure the effectiveness of DBS decision support system in an established PD clinic; 2) Measure the effectiveness of DBS decision support system by home health nurses. Under the first aim we will compare programming time and clinical outcomes for patients managed using the clinical decision support system compared to standard care. Under the second aim we will assess the effects of the system on patient and caregiver strain when used by home health nurses. This approach is innovative because it provides an iPad-based clinical decision support application (app) to enable nurses and physicians to quickly focus on stimulation settings that are likely to be most effective. The proposed research is significant because it will provide powerful tools to the health care providers who will be able to provide the greatest benefit for DBS patients. The knowledge gained could enable a future model for DBS management where care is provided in both clinical and home settings by skilled nurses who use expert systems for guidance.

Lay Summary

PUBLIC HEALTH RELEVANCE: The proposed research is relevant to NIH's mission because of its potential to improve patient outcomes, reduce caregiver burden, and reduce the cost of care for Parkinson's disease patients treated with Deep Brain Stimulation (DBS). The knowledge from this study is relevant to public health because it could improve treatment for a range of neurological disorders including other movement disorders such as dystonia or essential tremor, as well as conditions such as depression, Tourette syndrome, obsessive compulsive disorder or Alzheimer's disease.

Further information available at:

Types:

Investments > €500k

Member States:

United States of America

Diseases:

Parkinson's disease & PD-related disorders

Years:

2016

Database Categories:

N/A

Database Tags:

N/A