4300

Evaluation and structure of the pilot funding program at the University of North Carolina CTSA Hub (NC TraCS)

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OBJECTIVES/GOALS: The goals of this evaluation were 1) to describe the pilot grant application cycle and processes at NC TraCS, 2) to illustrate the impact of pilot grants on extramural grant funding, and 3) to provide a framework for other institutions to utilize for the evaluation of pilot grant programs. METHODS/STUDY POPULATION: From 2009-2019 the NC TraCS pilot program funded 925 projects, varying from $2,000 to $100,000. Pilot grants are available to any researcher affiliated with the university as well as partner institutions and community stakeholders. For this evaluation we analyzed data on pilot applicants (demographics, type of pilot, funding status, resubmissions, etc.) and outcomes (extramural funding, publications, etc.) yielded from funded pilots. In addition to summary statistics, we also calculated return on investment (ROI) for the program as a whole and by specific grant type. We will use bibliometric network analysis to assess productivity, citation impact, and scope of collaboration. RESULTS/ANTICIPATED RESULTS: There have been 2,777 submitted proposals with an acceptance rate of 33.3%. Unfunded proposals can resubmit, 61.8% of resubmitted applications are successfully funded, and 29.6% of funded applications are resubmissions. The $2,000 awards accounted for 43.4% of all grants awarded but only accounted for 6.4% of all pilot funds awarded. Success of proposals was proportional to the number of applications from each academic unit. 60.8% of funded applicants were affiliated with the School of Medicine and account for 65.3% of all funding awarded from 2009-2019. Additionally, we plan on analyzing return on investment rates to illustrate the impact of pilot awards on future research funding. DISCUSSION/SIGNIFICANCE OF IMPACT: Pilot grants can lead to subsequent extramural grants, publications, and successful translation of research into practice. This evaluation will assist our institution in understanding the impact of pilot grants and will provide a road map for other institutions evaluating their own programs.

4365

Family-Based Study of Sleep in Autism Spectrum Disorder without Intellectual Disability*

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OBJECTIVES/GOALS: Autism spectrum disorder (ASD) is characterized by difficulties in communication and social interaction as well as restricted and repetitive behaviors. Sleep problems are a common concern in children with ASD that can persist into adulthood. This study aims to further explore sleep in ASD without intellectual disability (ASD w/o ID). METHODS/STUDY POPULATION: We recruited individuals of both sexes with ASD w/o ID (probands) and relatives as part of the Autism Spectrum Program of Excellence (ASPE) at the University of Pennsylvania. Actimetry data were collected via a wrist-worn tri-axial accelerometer for 21 days. Data from 212 participants were considered. We analyzed sleep data using the algorithms GGIR, ChronoSapiens, and PennZzz. The sleep traits of proband and sibling pairs were compared using paired t-test or Wilcoxon signed-rank test. We used the Social Responsiveness Scale, Second Edition (SRS-2) to assess social impairment and restricted/repetitive traits. We compared SRS-2 scores to sleep traits using partial Spearman or Pearson correlations adjusting for age (171 participants). RESULTS/ANTICIPATED RESULTS: Probands demonstrated later sleep onset ($p = 0.03$), decreased M10 average (10-hour period of highest activity/day; $p = 0.006$), decreased relative amplitude (measure of rest-activity rhythm; $p < 0.001$), and decreased total daytime activity ($p = 0.005$) compared to siblings. Regarding social function and restricted/repetitive traits, adult males showed an inverse correlation between SRS-2 total score and sleep efficiency ($r = -0.2$, $p = 0.04$) and a positive correlation between SRS-2 total score and intradaily variability ($r = 0.3$, $p = 0.02$). Adult females showed an inverse correlation between SRS-2 total score and M10 average ($r = -0.3$, $p = 0.02$) and between SRS-2 total score and relative amplitude (self-report $r = -0.4$, $p = 0.001$; informant $r = -0.3$, $p = 0.005$). DISCUSSION/SIGNIFICANCE OF IMPACT: This study focuses on the analysis of sleep traits in ASD including the relationship between social function and sleep. Thus far, the most robust findings are decreased daytime activity and relative amplitude in individuals with ASD w/o ID compared to siblings. We have also shown that ASD social impairment may be related to sleep dysfunction.

4107

Implementation and evaluation of a novel protocol that uses clinical biomarkers to promote early diagnosis and treatment of Neurodevelopmental Disabilities

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OBJECTIVES/GOALS: Our objective was to establish a new protocol to evaluate new biomarkers to detect Neurodevelopmental Disabilities (NDD) in high-risk infants. As early intervention results in better outcomes, our goal was to implement the protocol to promote earlier NDD diagnosis and referral for treatment. METHODS/STUDY POPULATION: We implemented a new protocol using the General Movement Assessment (GMA), Hammersmith Infant Neurological Examination (HINE), and Capute Scales to evaluate infants who were at high risk of NDD. To determine the success of our protocol with these biomarkers, we studied former premature infants who were evaluated in follow-up clinic from 10/1/2018-10/1/2019. We defined our primary and secondary outcomes as the ages of neurodevelopmental diagnoses and referral to early intervention services before and after implementation of the new protocol, respectively. Our hypotheses were that infants who were evaluated with these biomarkers would be diagnosed with NDD and be referred for treatment at younger ages than their counterparts. RESULTS/ANTICIPATED RESULTS: Approximately 120 patients were evaluated during the time period that was defined. About half were evaluated prior to implementing the GMA and HINE, and the remainder were evaluated using GMA and other developmental measures. We anticipate that infants who underwent GMA will be diagnosed with NDD and referred for therapies at a younger age than their counterparts. DISCUSSION/SIGNIFICANCE OF IMPACT: Through our translational research, we will transform the standard of care for high-risk infants by incorporating clinical biomarkers into

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