
BIOGRAPHICAL SKETCH

NAME: Malow, Beth Ann

eRA COMMONS USER NAME: BMALOW

POSITION TITLE: Professor of Neurology and Pediatrics; Burry Chair in Cognitive Childhood Development

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Northwestern University, Evanston, IL	BS	06/1984	Medical Science
Northwestern University, Chicago, IL	MD	06/1986	Medicine
School of Public Health, University of Michigan, Ann Arbor, MI	MS	04/1997	Clinical Research

A. Personal Statement

My research focuses on sleep and autism, including clinical trials. I have begun moving into the field of autism services research focused on transition-age youth and adults. I received a Master's Degree in Clinical Research Design and Statistical Analysis from the University of Michigan. At Vanderbilt University Medical Center, I am Vice-Chair for Clinical Research in our Department of Neurology. I am Principal Investigator (PI) for two networks, Vanderbilt's Network for Excellence in Neuroscience Clinical Trials (NeuroNEXT), which focuses on neurological conditions including autism, and Vanderbilt's Autism Speaks Autism Treatment Network (AS ATN), which focuses on setting standards of care for medical comorbidities in children with autism. I have served as PI or co-investigator on federally-funded, foundation, and industry grants related to autism and hold an endowed chair in autism research. Relevant to this project, I have served as a site PI on ECHO Autism and am currently serving on the Hub Team on ECHO Autism Transition.

B. Positions and Honors

1986-1987 Research Associate, Burke Rehabilitation Center, Cornell University, White Plains, New York
1987-1988 Intern, Beth Israel Medical Center, New York, New York
1988-1991 Resident, Harvard-Longwood Neurological Training Program, Boston, Massachusetts
1991-1994 Postdoctoral Fellow, Clinical Neurophysiology, National Institutes of Health, Bethesda, Maryland
1994-2001 Assistant Professor of Neurology, Department of Neurology, University of Michigan
2001-2003 Associate Professor of Neurology, Department of Neurology, University of Michigan, Ann Arbor, Michigan (with tenure)
2003-Pres Professor of Neurology and Division Chief, Sleep Disorders, Department of Neurology, Vanderbilt University, Nashville, Tennessee (with tenure)
2003-Pres Investigator, Vanderbilt Kennedy Center for Research on Human Development, Vanderbilt University, Nashville, Tennessee
2004-Pres Associate Director, Vanderbilt Clinical Research Center, Vanderbilt University, Nashville, TN
2005-Pres Director, Vanderbilt Sleep Research Core, Vanderbilt University, Nashville, Tennessee
2010-Pres Professor of Pediatrics (Secondary Appointment)
2011-Pres Burry Chair in Cognitive Childhood Development, Department of Pediatrics
2014-2015 Graduate, Executive Leadership in Academic Medicine (ELAM) program

Honors

1985 Alpha Omega Alpha, Northwestern University
2002 Elected Member, American Neurological Association (ANA)
2008 Health Care Provider Award, Mayor's Advisory Committee for People with Disabilities
2009 Pfizer Visiting Professorship in Neurology, University of Alabama, Birmingham
2010 Robert Haslam Lectureship in Pediatrics, Hospital for Sick Children, Toronto

2012 Sleep Science Award, American Academy of Neurology
2017 Bruce Berg Lectureship, UCSF Division of Pediatric Neurology

Experience

2016- Pres NeuroNEXT Education Committee, Co-Chair
2016- Pres Sleep Research Society Physician Scientist-Pipeline Committee
2018 CPDD Study Section, Ad Hoc Reviewer
2018-Pres Autism Council for State of Tennessee, Vice Chair

C. Contributions to Science

My research has focused on a variety of areas related to autism research. A full list of my publications (>100 peer-reviewed) is located at: <https://www.ncbi.nlm.nih.gov/myncbi/beth.malow.1/bibliography/public/>

1. Sleep in Autism/Clinical Trials- Approximately 50-80% of children with autism spectrum disorder (ASD) have sleep problems. These problems are very common and not only affect child health, but child daytime behavior and family functioning. In our work, we initially performed descriptive studies documenting an association between parent report of sleep in ASD and objective studies (polysomnography and actigraphy). These studies were followed by interventional trials of supplemental melatonin (NICHD Pilot Clinical Trial), and parent sleep education (HRSA multicenter trial) and showing improvements in sleep, daytime behavior, and family functioning.

- a. Maxwell-Horn A, Malow BA. Sleep in Autism. *Semin Neurol*. 2017;37(4):413-418.
- b. Malow BA, Marzec ML, McGrew SG, Wang L, Henderson LM, Stone WL. Characterizing sleep in children with autism spectrum disorders: A multidimensional approach. *SLEEP* 2006;29(12): 1563-1571.
- c. Malow BA, Adkins KW, McGrew SG, Wang L, Goldman SE, Fawkes D, Burnette C. Melatonin for sleep in children with autism: A controlled trial examining dose, tolerability, and outcomes. *Journal of Autism and Developmental Disorders*. *J Autism Dev Disord*. 2012;42(8):1729-1737. (NICHD R01 Pilot Clinical Trial).
- d. Malow BA, Adkins KW, Reynolds A, Weiss SK, Loh A, Fawkes D, Katz T, Goldman SE, Madduri N, Hundley R, Clemons T. Parent-based sleep education for children with autism spectrum disorders. *J Autism Dev Disord*. 2014; 44(1):216-28. (HRSA Multisite Clinical Trial).

2. Real World Effectiveness Research— My research in sleep and autism includes specific projects that have real world effectiveness. For example, we have developed a practice pathway for pediatric clinicians to help identify, evaluate, and manage insomnia in clinical settings. We also have developed practical approaches to actigraphy research. We have also developed instruments for parents and clinicians to measure sleep and sleep outcomes.

- a. Malow BA, Crowe C, Henderson L, McGrew S, Wang L, Song Y, Stone WL. A sleep habits questionnaire for children with autism spectrum disorders. *Journal of Child Neurology* 2009; 24(1): 19-24.
- b. Malow BA, Byars K, Johnson K, Weiss S, Bernal P, Goldman SE, Panzer R, Coury D, Glaze DG. A practice pathway for the identification, evaluation and management of insomnia in children and adolescents with autism spectrum disorders. *Pediatrics*. 2012;130 Suppl 2:S106-24.
- c. Fawkes DB, Malow BA, Weiss SK, Reynolds A, Loh A, Adkins K, Wofford D, Wyatt AD, Goldman SE. Conducting actigraphy research in children with neurodevelopmental disorders-A practical approach. *Behavioral Sleep Medicine* 2014; 12:1–16.
- d. Malow BA, Connolly HV, Weiss SK, Halbower A, Goldman S, Hyman SL, Katz T, Madduri N, Shui A, Macklin E, Reynolds AM. The Pediatric Sleep Clinical Global Impressions Scale-- A new tool to measure pediatric insomnia in autism spectrum disorders. *J of Developmental and Behavioral Pediatrics* 2016;37(5):370-6.

3. Transition-Age Youth and Adults with Autism- -Focus on Health and Provider Training- Autism spectrum disorder (ASD) affects an increasing number of adults with high levels of anxiety, depression, insomnia and other factors that affect mental health and well-being (e.g., unemployment, limited education) in relation to their capabilities. There is a pressing need to develop interventions targeted at increasing mental

health and well-being in this population. We have studied medical conditions in this population and developed resources for primary care providers including ECHO Autism Transition.

a. Goldman SE, Alder ML, Burgess HJ, Corbett BA, Hundley R, Wofford D, Fawkes DB, Wang L, Laudenslager ML, Malow BA. Characterizing sleep in adolescents and adults with autism spectrum disorders. J Autism Dev Disord 2017; 47(6):1682-1695.

b. Shouse J, Malow B, McMillan E, & Cheetham T. Innovative tools for health care in adults with intellectual and developmental disabilities. NADD Bulletin 2017;20(1), 3-7.

c. Malow BA, Stobbe G, Cheak-Zamora NC, Curran A, Davis K, Hess A, Loftin RL, Mazurek MO, Mirza-Agrawal M, Tapia M, Sohl K. ECHO Autism Transition: An innovative approach for increasing access to healthcare for adolescents and young adults with autism spectrum disorder. Presented at the 2019 International Meeting for Autism Research, Montreal, Canada, 2019

d. McDonald TA, Williams ZJ, Harden M, Ye F, Fan R, Malow BA. Reasons I interact with the outside world: Motivations and barriers to community engagement and social interaction in adults on the autism spectrum. Presented at the 2019 International Meeting for Autism Research, Montreal, Canada, 2019

4. Research Training and Mentorship - Throughout my career, I have developed expertise in mentoring trainees. I initially served on the Clinical Research Subcommittee of the American Academy of Neurology and the Research Committee of the American Academy of Sleep Medicine, and gave presentations at these meetings and others on grant writing and mentorship aimed at trainees and junior faculty. I continued this work in my faculty position at Vanderbilt, serving as the Chair of the ANA/NINDS Career Development Symposium (training program for K awardees), and most recently, participating in the Sleep Research Society Physician Scientist Pipeline Committee and as co-chair of the NeuroNEXT Education Committee. My role as a mentor will inform and strengthen my involvement as a mentee on this K18 Award.

Examples of peer-reviewed publications in which I provided mentorship to trainees in autism research (they are listed as first authors):

a. Goldman SE, Adkins KW, Calcutt MW, Carter MD, Goodpaster RL, Wang L, Shi Y, Burgess HJ, Hachey DL, Malow BA. Melatonin in children with autism spectrum disorders: Endogenous and pharmacokinetic profiles in relation to sleep. J Autism Dev Disord. 2014; 44(10):2525-2535.

b. Veatch OJ, Pendergast JS, Allen MJ, Leu RM, Johnson CH, Elsea SH, Malow BA. Genetic variation in melatonin pathway enzymes in children with autism spectrum disorder and comorbid sleep onset delay. J Autism Dev Disord. 2015;45(1):100-10

c. Harder R, Malow BA, Goodpaster RL, Iqbal F, Halbower A, Goldman SE, Fawkes DB, Wang L, Shi Y, Baudenbacher F, Diedrich A. Heart rate variability during sleep in children with autism spectrum disorder. Clin Autonomic Res. 2016; 26(6):423-432.

d. Veatch OJ, Sutcliffe JS, Warren ZE, Keenan BT, Potter MH, Malow BA. Shorter sleep duration is associated with social impairment and comorbidities in ASD. Autism Research 2017;10(7):1221-1238.

D. Research Support

Ongoing Research Support

NIH/NINDS 1U24NS107128 Malow (PI) 07/01/2018- 06/30/2023

Vanderbilt Site for Network of Excellence in Neuroscience Clinical Trials

The major goal of this project is to establish a site for neuroscience clinical trials at Vanderbilt.

Dr. Malow serves as the PI for the Vanderbilt site and also serves on the Network-wide CTSA and Publications and Data Sharing Committee, and co-chairs the Industry Pipeline Committee

NIH/NCATS 6UL TR002243-01 Bernard (PI) 06/01/2017-02/28/2022

Vanderbilt Institute for Clinical and Translational Research (VICTR)

The major goal is to support the infrastructure for clinical and translational research.

Role: Co-I (Vanderbilt CRC Associate Director)

NIH/NHLBI 1R01HL134015 Pack (PI) 08/15/2016-04/30/2020

Approaches to Genetic Heterogeneity of Obstructive Sleep Apnea

The major goal of this project is to study the genetic contributions to sleep apnea.

Role: Site PI

Autism Speaks Malow (PI) 09/01/2017 – 8/31/2020

Autism Treatment Network Clinical Treatment Center

The major goal of the project is to establish an Autism Treatment Network site at Vanderbilt to develop standards of care for the medical management of children with autism spectrum disorders.

Role: Site PI and Sleep Specialist.

Health Resources and Services Administration Kuhlthau (PI) 09/01/2015 – 08/31/2020
Autism Intervention Research Network on Physical Health (AIR-P)

The major goal of this project is to support guideline development within the Autism Treatment Network nationally and at the Vanderbilt site

Role: Site Co-PI and Sleep Specialist.

Subcontract under AIR-P Malow (PI) 06/01/2019-08/31/2020

Evaluation of a Multimedia Sleep Education Package in Children with Autism Spectrum Disorder

The major goal of this project is to pilot test an online sleep education program for children with autism in a multisite trial involving electronic consents, educational materials, and surveys.

Awarded

Department of Defense Malow (PI) 09/01/2019-08/31/2022

A Novel Provider-Focused Training Program to Serve Transition-Age Youth and Adults with Autism Spectrum Disorder

The major goal of this project is to develop and pilot-test a tele-education program for providers caring for adults with autism spectrum disorder.

Completed Research Support

American Sleep Medicine Foundation Malow (PI) 02/04/16-02/3/2019

Behavioral Sleep Education for Children with Insomnia and Autism Spectrum Disorders: Partnering with Community Practices

The major goal of this project is to test the model of community practices providing behavioral sleep education

Health Resources and Services Administration, ECHO Autism Sohl (PI) 09/01/2016-03/01/2018

The major goal of this multisite project is to test the effectiveness of a telehealth program for primary care providers caring for children with autism spectrum disorder.

Role: Site PI

NIH/NIDDK 1R21DK110657 Jaser (PI) 08/01/2016-06/30/2018

Sleep Promotion to Improve Diabetes Management in Adolescents

The major goal is to develop a behavioral sleep intervention to improve diabetes management.

Role: Co-I

Vanderbilt Trans-institutional Program Malow (PI) 09/01/16-06/30/2018

Optimizing Health and Well-Being in Adults with Autism Spectrum Disorders

The major goal of this project is to establish Spectrum Pathways, a program focused on health and well-being for adults with autism.

Autism Speaks Malow (PI) 01/01/2011 – 8/31/2017

Autism Treatment Network Clinical Treatment Center

The major goal of the project is to establish an Autism Treatment Network site at Vanderbilt to develop standards of care for the medical management of children with autism spectrum disorders.

Role: Site PI and Sleep Specialist. Dr. Malow also is the co-chair of the AS ATN sleep workgroup.

Department of Defense Idea Development Award Cheak-Zamora (PI) 09/30/2014-9/29/2017

Improving Healthcare Transition Planning and Health-Related Independence for Youth with ASD and their Families

The major goal of this project is to validate a series of surveys for caregivers of youth with ASD.

Role: Site PI

Meharry-Vanderbilt Community Engagement Research Core Malow (PI) 04/01/15-09/30/16
Parent-Based Sleep Education in Autism: A Community-Academic Research Partnership

The major goal of this project is to pilot training of personnel in community settings in parent-based sleep education

Simons Foundation 01/01/14-9/30/2015
Treatment of Children With Autism Spectrum Disorders and Epileptiform EEG With Divalproex Sodium

The major goal of this project is to determine the effect of divalproex sodium on epileptiform activity, behavior, and cognition in children with autism spectrum disorders.

Role: Site PI (Overall PI: Dr. Sarah Spence)

Neurim Pharmaceuticals Malow (site PI) 10/01/13-9/30/2017

Randomized, Placebo-Controlled Study to Investigate the Efficacy and Safety of Circadin® To Alleviate Sleep Disturbances in Children with Neurodevelopmental Disabilities NEU CH 7911

The major goal of this project is to test Circadin® in children with neurodevelopmental disorders

Special Hope Foundation McMillan (PI) 04/01/16-12/31/2017

Impact of Case-Based Telehealth Training for Primary Care Providers of Adults with IDD

The major goal of this project is to develop a telehealth program for primary care providers caring for adults with intellectual and developmental disabilities.

Role: Co-Investigator