

Acute Flaccid Myelitis Task Force Update

Co-Chairs: Ruth Lynfield and Tina Tan

Board of Scientific Counselors, Deputy Director for Infectious
Diseases,
December 5, 2019

AFM Task Force - Terms of Reference

Present findings, observations, and outcomes to CDC Board of Scientific Counselors (BSC) for the Deputy Director for Infectious Diseases for discussion, deliberation, and decision

- Etiologies and pathogenesis
 - Evaluate current understanding and the pathogenic mechanisms of AFM
 - Review available data and develop hypotheses about possible or likely etiologies and the pathogenesis of AFM
 - Propose new studies, study designs, laboratory techniques, assays, and other activities to address specific hypotheses on AFM etiologies and pathogenesis
 - Develop and prioritize findings and observations for the BSC to utilize in the development of recommendations for areas of further study or investigation
- Clinical treatment
 - Build on existing information on clinical practices by seeking information on clinical experience with the treatment of AFM
 - Identify research gaps in the diagnosis and treatment of AFM
 - Develop potential findings and observations on patient management

- **BSC Members**

- Emily Erbeling, National Institutes of Health
Div. of Microbiology & Infectious Diseases (*Ex Officio*)
- Ruth Lynfield, Minnesota Dept. of Health
- Tina Tan, Ann & Robert H. Lurie Children’s Hospital of Chicago

- **AFM Clinical and Research Experts**

- Leslie Benson, Boston Children’s Hospital, Dept. of Neurology
- Benjamin Greenberg, University of Texas Southwestern Medical Center, Dept. of Neurology and Neurotherapeutics
- Bryan Grenfell, Princeton University, Ecology and Evolutionary Biology and Public Affairs, Woodrow Wilson School
- Tory Johnson, Johns Hopkins University School of Medicine, Dept. of Neurology
- Bonnie Maldonado, Stanford University School of Medicine, Depts. of Pediatrics and Health Research and Policy
- Kevin Messacar, University of Colorado School of Medicine
Dept. of Pediatrics

- John Modlin, Bill & Melinda Gates Foundation, Polio Research and Policy
- Avi Nath, National Institutes of Health, National Institute of Neurological Disorders and Stroke
- Carlos Pardo-Villamizar, Johns Hopkins University School of Medicine, Dept. of Neurology, Johns Hopkins Transverse Myelitis Center
- Cristina Sadowsky
Kennedy Krieger Institute
International Center for Spinal Cord
- Matthew Schniederjan, Emory University School of Medicine, Dept. of Pathology
- Nate Smith, Arkansas Dept. of Health
- Jill Taylor, New York State Dept. of Health, Wadsworth Laboratory
- Ken Tyler, University of Colorado School of Medicine
Chair, Dept. of Neurology
- Arun Venkatesan, Johns Hopkins University School of Medicine, Div. and Physical Med of Neuroimmunology and Neuroinfectious Diseases

AFM Task Force – Activities Since May 2019

BSC Meeting

- May, June, September, October 2019: conference calls
 - Discussion of outcome measures
 - Updated CSTE case definition
 - CDC communications including AFM Vital Signs
 - Lab updates
 - Epidemiology Updates
 - Update on the NIH natural history study
 - Transverse Myelitis Association/Siegel Rare Neuroimmune Association
- November 2019: in-person meeting
 - Reviewed CDC preparedness activities for 2020 season
 - Reviewed ongoing research projects and other activities
 - Prioritized research questions

AFM Task Force – Main Categories for Action and Research

- Communication and education
- Surveillance
- Diagnostic tool development
- Pathogenesis
- Risk factors studies
- Therapeutics and vaccines
- Treatment and rehabilitation

AFM Task Force – High Priority Activities by Category

Category	Priority Activities
Communication & education	<ul style="list-style-type: none">• Strengthen communication and education efforts targeting health care providers, parents, and general public
Surveillance	<ul style="list-style-type: none">• Identify cases and investigate temporal and geographic correlations of AFM cases with circulating viruses through the use of strong, integrated surveillance systems• Better characterize the molecular epidemiology of EV-D68 by collecting strains from AFM and non-AFM patients and conducting whole genome sequencing• Measure national seroepidemiology of EV-D68• Integrate viral surveillance and serology with computational models to analyze and predict EV-D68 epidemiologic dynamics and relationships to AFM epidemiology*

*Activities may be done by partners

AFM Task Force – High Priority Activities by Category (cont.)

Category	Priority Activities
Risk factor studies	<ul style="list-style-type: none"> • Identify risk factors through the epidemiologic and natural history studies • Identify genetic determinants of risk
Diagnostic tool development	<ul style="list-style-type: none"> • Develop immunologic assays(e.g., EV-D68 IgM) in CSF or serum for rapid diagnostics • Characterize exposure to infectious agents in sera and CSF using novel diagnostic platforms such as peptide arrays
Pathogenesis	<ul style="list-style-type: none"> • Determine viral molecular determinants of neurotropism, cell death, paralytic potential, and unique receptors used by EV-D68 strains* • Characterize viral pathogenesis using animal models • Identify other humoral factors (e.g., decreased mucosal IgA antibodies) associated with increased risk of AFM

*Activities may be done by partners

AFM Task Force – High Priority Activities by Category (cont.)

Category	
Therapeutics & vaccines*	<ul style="list-style-type: none">• Initiate early stage EV-D68 vaccine development• Screen FDA-approved panels for potential antiviral activity• Develop EV-D68 therapeutic monoclonal antibodies
Treatment & rehabilitation	<ul style="list-style-type: none">• Standardize outcome measures (strength, QoL, community participation)• Evaluate long term outcomes of AFM patients• Long term follow-up of AFM patients

*Activities may be done by partners

Acknowledgements

- AFM Task Force Members
- Sarah Kidd
- Manisha Patel
- Janell Routh
- Adriana Lopez
- Mona Marin
- Angela Guo
- Amie Nisler
- Jeanette St. Pierre
- Tom Clark
- Steve Oberste
- Mark Pallansch
- William Weldon
- Jennifer Anstadt
- Allan Nix
- Nancy Messonnier

Questions for BSC

- Preparedness
 - Any other considerations for CDC's response plan?
 - Does BSC endorse the response plan?
- Research agenda
 - Additional suggestions to make the CDC research agenda more robust?
- Priorities
 - Any other high priority areas for consideration?
- Other recommendations?