Infection Associated Neuropsychiatric Conditions

The Intersection of Infectious Disease and Mental Health

Infection Associated Neuropsychiatric Conditions (IANC) refers to a group of medical conditions in which certain infections trigger inflammation in the brain and immune system responses that lead to sudden or chronic changes in mood, behavior, thinking, and movement. These infections can include:

- **Lyme disease** - a bacterial infection spread by tick bites.
- **Bartonella** - a bacterial infection commonly linked to cat scratches, bites, and tick exposure.
- **PANS** (Pediatric Acute-onset Neuropsychiatric Syndrome) - a sudden onset of severe neuropsychiatric symptoms after an infection or other trigger.
- **PANDAS** (Pediatric Autoimmune Neuropsychiatric Disorder Associated with Streptococcal infections) - a subset of PANS specifically linked to strep infections.

Infections can trigger immune responses that mistakenly attack healthy brain tissue. This can lead to dramatic behavior and mood changes, anxiety, obsessive-compulsive symptoms, tics, and other neurological effects.

Lyme Disease	Bartonella	PANS and PANDAS
Lyme disease is the most common vector-borne disease in the United States. According to CDC, an estimated ~476,000 Americans are diagnosed and treated for Lyme disease each year. These numbers likely underestimate total cases because many infections go undetected or unreported. Lyme is expanding geographically, increasing case spread.	A group of Bartonella bacterial infections cause thousands of infections annually in the U.S. Currently, there is no national tracking system for all forms of Bartonella, so the full burden is unknown.	Estimates from the literature and clinical community suggest as many as 1 in 200 children may meet criteria for PANS or PANDAS, though the true prevalence is not well established. These conditions often begin in early school-age children and can be long-lasting into adulthood if untreated.

Federal agencies are increasing attention to infection associated neuropsychiatric impacts.

- HHS, CDC, and NIH support surveillance and research related to Lyme disease, immune-mediated conditions, and neuropsychiatric outcomes.

Interagency coordination efforts are underway, but remain limited.

- No coordinated federal framework currently exists to fully address IANC.

Clinicians and patient organizations are advancing awareness and data sharing.

- Medical experts, researchers, and nonprofit organizations are working to improve recognition, share emerging evidence, and identify research and care gaps related to IANC.

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In recent months, HHS has elevated discussion of the neuropsychiatric impacts of Lyme disease and related infections, including during the Lyme Disease Roundtable, reflecting growing federal attention to IANC. This focus presents an opportunity for Congress and federal agencies to strengthen research, surveillance, and clinical guidance to better address the full public health impact of IANC.

1. Systemic Recommendations	
1.1 Integrate IANC into the National Public Health Strategy for Vector-Borne Diseases	CDC, OASH
1.2 Establish standardized IANC case definitions for both pediatric and adult populations	CDC, CMS, HRSA, NIH, SAMHSA
1.3 Implement national IANC surveillance through CDC using serologic, direct-detection, and clinical evaluation data	CDC, CMS, DoD, HRSA, VA
2. Research Funding Recommendations	
2.1 Support large retrospective studies to assess infectious contributors to treatment-resistant mental illness	NIH, SAMHSA, VA
2.2 Fund biomarker discovery and validation for IANC diagnosis and stratification	CDMRP, FDA, NIH
2.3 Invest in clinical trials evaluating treatments for IANC including Lyme, Bartonella, PANS / PANDAS.	CDMRP, NIH, PCORI
2.4 Fund biobanks collecting specimens from individuals with vector-borne disease, IACI, and IANC	DoD, NIH, VA
2.5 Expand federally funded research on bartonellosis as an underrecognized multisystem condition	CDC, NIH, USDA
2.6 Support mechanistic studies examining immune, inflammatory, and neurobiological pathways in IANC	CDMRP, NIH
2.7 Fund economic and health system impact studies assessing IANC-related costs to families and governments	AHRQ, CDMRP, CMS, NIH, HRSA
2.8 Establish a federally supported working group for PANS/PANDAS	NIH, CDC, HRSA
3. Clinical Care Recommendations	
3.1 Develop and fund multidisciplinary care models for IANC evaluation and treatment	AHRQ, CMS, HRSA, NIH
3.2 Support prospective, evidence-generating treatment studies in real-world clinical settings	CMS, HRSA, NIH, PCROI
3.3 Expand clinician education and continuing medical education (CME) on IANC recognition and evaluation	CDC, HRSA, SAMHSA
3.4 Support integrated screening protocols for abrupt or treatment-resistant psychiatric presentations	CDC, CMS, SAMHSA

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