



TBE among US civilian travelers and laboratory workers

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TBE among US travelers

TBE case identification in US

- TBE is not nationally notifiable
- No commercially-available test to diagnosis TBE
- Limited testing at academic centers, state public health laboratories, and US government facilities
 - Molecular and serologic testing available at CDC
- Identification relies on clinician to consider TBE in differential for returning travelers with clinically compatible illness

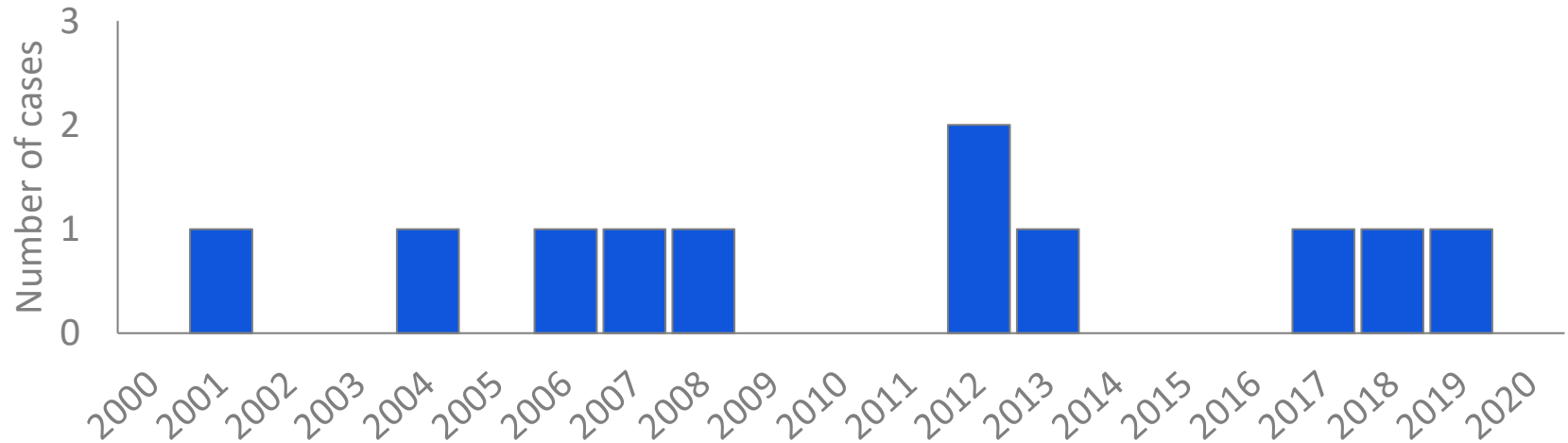
TBE case classification

- Clinically compatible illness AND laboratory evidence of infection
- Confirmed case
 - TBE virus antigen or nucleic acid, OR
 - ≥ 4 -fold change in virus-specific neutralizing antibody titers*, OR
 - IgM antibodies with virus-specific neutralizing antibodies*, OR
 - IgM in CSF without IgM to other endemic arboviruses
- Probable case
 - IgM in serum or CSF with not other testing performed

*Titers also need to be 4-fold higher than other closely related flaviviruses (e.g., Powassan virus)

Overview of TBE cases among US travelers*

- Prior to 2000, only one TBE case reported among US travelers†
 - 4 yo developed meningoencephalitis after returning from Hungary
- From 2000-2020, 11 TBE cases have been identified

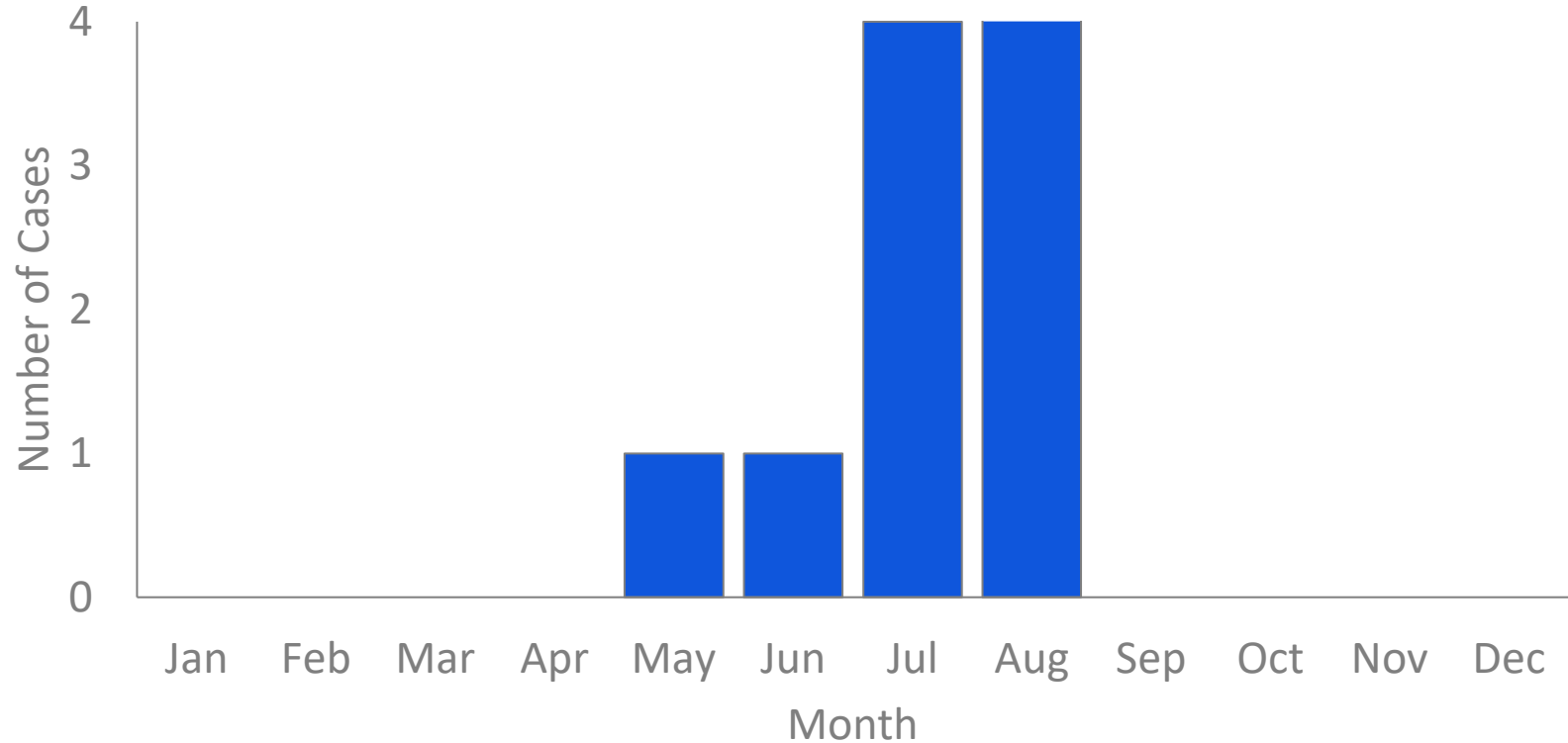


*Excludes cases among military and their dependents; †Cruse et al. Am J Dis Child. 1979 Oct;133(10):1070-1.

Sex and age of TBE cases — US traveler, 2000–2020 (N=11)

Demographics	No. (%)
Sex	
Male	10 (91)
Age in years	
0-19	3 (27)
20-39	2 (18)
40-59	4 (36)
≥60	2 (18)

Month of onset of TBE cases — US travelers, 2000–2020 (N=11)



Clinical syndromes for TBE cases — US travelers, 2000–2020 (N=11)

Clinical syndrome	No. (%)
Encephalitis	7 (64)
Meningitis	4 (36)

Outcomes for TBE cases — US travelers, 2000–2020 (N=11)

Outcome	No. (%)
Survived	9 (82)
Sequelae*	3 (27)
No sequelae	6 (55)
Died	0 (0)
Unknown	2 (18)

*Mild cognitive issues (n=2), neurologic (n=1)

Countries of probable acquisition of TBE – US travelers, 2000–2020 (N=11)

- Czech Republic (n=2)
- Sweden (n=2)
- Switzerland
- Switzerland or Austria
- Finland
- Russia (n=3)
 - Siberia
 - Siberia or other parts
 - Eastern
- China

Duration of travel for TBE cases — US travelers, 2000–2020 (N=11)

- Duration of travel documented for all cases
- Median = 24 days (range: 7 days to 2 months)

Travel-related information for TBE cases — US travelers, 2000–2020 (N=11)

- Activities
 - Hiking (n=3)
 - Substantial outdoor exposure in rural areas (n=2)
 - Camping (n=1)
 - Fishing (n=1)
 - Working on rental property (n=1)
 - Unavailable for 3 travelers (27%)
- Tick bite reported in 6 persons (55%)
 - >1 bite for 4 persons

Summary of TBE cases among US travelers

- Low number of cases
- Majority of cases in males; both adult and pediatric travelers
- Sequelae reported one-third of cases; severe outcomes rare
- Infection acquired in late spring and summer
- Infection acquired in countries throughout risk area
- Risk activities occurred in tick-habitats

TBE virus infections among laboratory workers

Information on TBE virus and laboratory worker infections

- Handled at biosafety level (BSL) 4 or enhanced BSL-3*
- Data on TBE virus infections in laboratory workers obtained from literature and surveys sent to national and international labs in 1976 and 1978†
- Since report of surveys published, one additional case reported‡
- Most laboratory workers routinely vaccinated against TBE

*Enhanced BSL-3 is BSL-3 level containment procedures with additional precautions: 1) enhanced respiratory protection of personnel against aerosols; 2) HEPA filtration of exhaust air from the laboratory; 3) personal body shower upon exit; and 4) restricted access.

†The Subcommittee on Arbovirus Laboratory Safety of the American Committee on Arthropod-Borne Viruses. Am J Trop Med Hyg 1980

‡Avsic-Zupanc T et al. Clin Diagn Virol. 1995;4(1):51-9.

TBE virus infections in laboratory workers*

- 46 TBE virus infections identified among laboratory workers
 - 36 (78%) disease cases, including 2 deaths
 - 10 (22%) asymptomatic infections
- Route of transmission
 - 10 (22%) aerosol
 - 36 (78%) unknown
- 4 among US laboratory workers
 - 3 disease cases, including 2 deaths, and 1 asymptomatic infection
 - All aerosol exposure
 - None received vaccine

*The Subcommittee on Arbovirus Laboratory Safety of the American Committee on Arthropod-Borne Viruses. Am J Trop Med Hyg 1980 and Avsic-Zupanc T et al. Clin Diagn Virol. 1995;4(1):51-9.

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

