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Back to Table of Contents
Previous Next

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Articles

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Tickborne encephalitis in the Czech Republic

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Tickborne encephalitis (TBE) is endemic in virtually all countries in central and eastern Europe. It is caused by several closely related but distinct flaviviruses. Three subtypes are recognised at present: a Far-Eastern subtype, a Siberian subtype and a European subtype. The Siberian subtype is associated with Russian spring-summer encephalitis and is transmitted predominantly by the tick *Ixodes persulcatus*, whereas the European subtype causes central European encephalitis and is transmitted by *Ixodes ricinus*.

Clinical features

The clinical spectrum of acute TBE ranges from symptoms of mild meningitis to severe meningoencephalitis with or without myelitis [1]. The incubation period of central European tickborne encephalitis is seven to 14 days [2]. Onset is generally biphasic. The first phase involves a non-specific influenza-like illness with fever, headache, nausea, and vomiting, lasting about a week. After a period of remission lasting a few days, the fever returns with aseptic meningitis or encephalomyelitis. The case fatality rate is 1-5% and about 20% of survivors have neurological sequelae. Residual motor defects are rare.

Russian spring-summer encephalitis is more serious, with a more acute illness and a case fatality rate of about 20%. Up to 60% of survivors are left with neurological sequelae, including flaccid paralysis.

Prevention

Vaccination using licensed vaccines is the only real way to prevent TBE. Two commercially available vaccines are used in Europe: new versions of Encepur produced by Chiron Behring, Germany and FSME-IMMUN by Baxter, Austria. The conventional vaccination schedule consists of 3 doses at Day 0, 1-3 months and 9-12 months after the second dose.

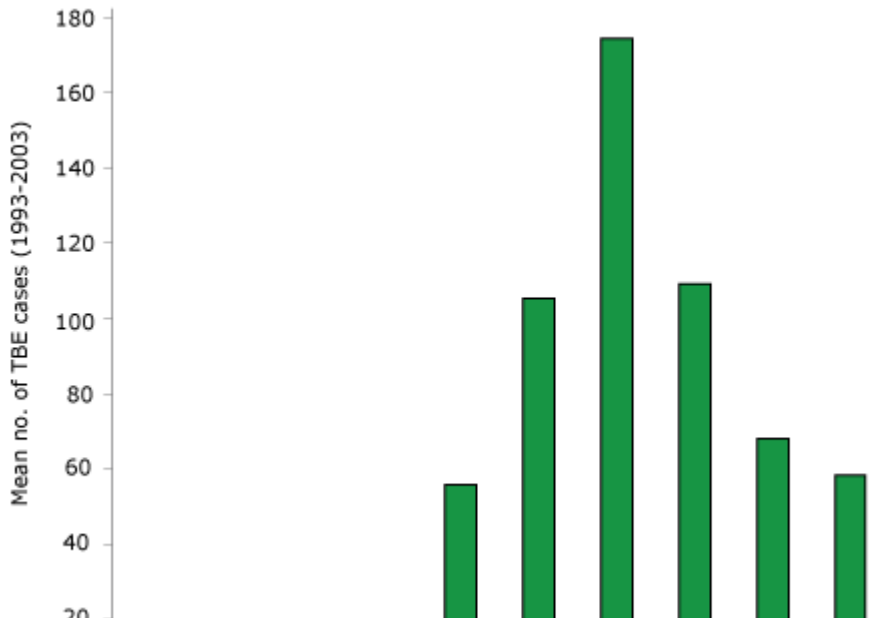
After 30 years of development, both vaccines are now available in adult and paediatric formulations that cause few adverse side effects.

Encepur is licensed for rapid immunisation at days 0, 7 and 21, and this provides protection two weeks after the second dose of vaccine. The FSME-IMMUN rapid schedule involves two vaccine doses given two or three weeks apart. This two dose rapid schedule is only recommended for immunisation protection over the summer months because, unlike the Encepur schedule, its protection is only optimum for six months.

TBE trends in the Czech Republic

The population of the Czech Republic is near 10 million. In 2003, the approximate incidence of tickborne encephalitis was 5.9 per 100 000 population. Incidence is higher in regions south of Prague near the city of Ceske Budejovice. There has been constantly high incidence near the town of Pilsen in the western part of the Czech Republic. Recently, TBE foci have been identified in the northern part of the province of Bohemia. In the east of the country there hass been a high incidence near Olomouc. Clinical cases of TBE are notified from April until November every year (Figure 1).

Figure 1. Seasonality of TBE in the Czech Republic by particular months. Source: EPIDAT, (the Czech national database), by permission of C. Benes, National Institute of Public Health, Prague



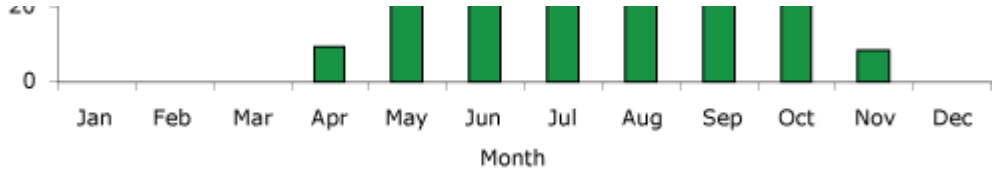
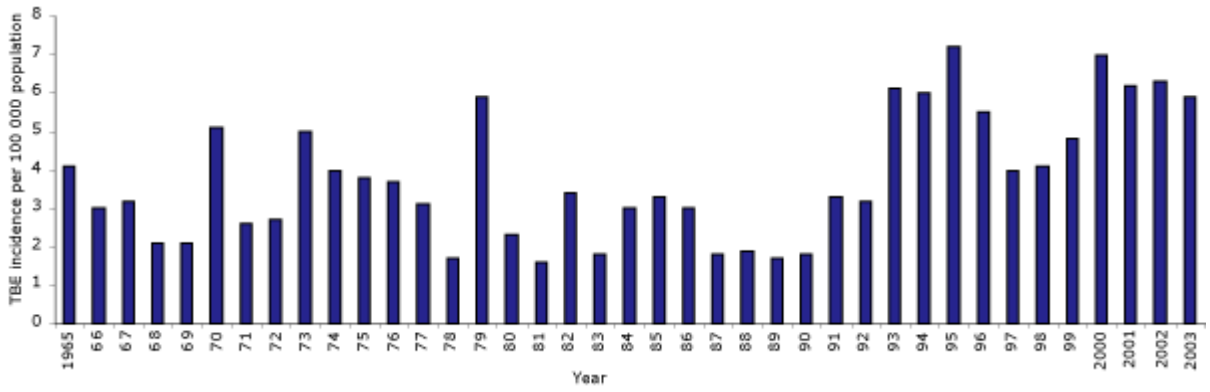


Figure 2. TBE incidence in the Czech Republic 1965-2003. Source: EPIDAT, by permission of C. Benes, National Institute of Public Health, Prague



Since 1970, the incidence of TBE has changed twice: during the 1980s, incidence fell by about 30% compared to previous levels, but in 1993 incidence doubled to its present level, about 50% above its pre-1980 level [3] (Figure 2).
No single factor can adequately explain the rising incidence of the disease in the Czech Republic. The changing weather pattern in the past few years is a possible factor. The average annual temperature in the Czech Republic increased very slightly from 1970, but then much more markedly from 1989 [4], and rainfall patterns have also changed, possibly affecting tick survival and development rates. Changes in the geographical distribution of *Ixodes ricinus* have been observed, with ticks appearing at higher altitudes in mountains than in earlier years [Dr. Daniel, National Institute of Public Health, Prague, personal communication, 2004] [5].

There is no direct support from state institutions to target residents in areas of high endemicity for vaccination. There is partial financial support for vaccination of children and adolescents under the age of 18 across the whole country (with reimbursement of a single dose of vaccine), but childhood cases tend to recover spontaneously. Private companies immunise employees who work in forests.

The risk of acquiring TBE has been evaluated in two published studies from the United States (US) [6] and Austria [7]. In Kosovo, the risk for members of a US military unit that trained in a highly endemic area was evaluated. The TBE virus infection rate was 0.9/1000 man-months of exposure. For an unvaccinated tourist staying for 4 weeks in a highly endemic province of southern Austria (Steiermark/Styria), the risk of acquiring TBE was 1/10 000 man-months of exposure [7]. Based on total numbers of tourist overnight stays in Austria during the summer season, about 60 travel-associated cases of clinical TBE could be expected to occur among holidaymakers after their stay in Austria.

Effective and protective inactivated vaccines are available, inexpensive and have been licensed in the Czech Republic for more than 10 years. Visitors to the Czech Republic and other endemic areas should consider three factors before deciding on whether to be vaccinated: length of stay, place of residence (urban or rural), and whether or not they intend to visit high risk areas (in the Czech Republic, this would be the south, and parts of western Bohemia). Vaccination is recommended for those travellers who intend to stay longer than three weeks, who intend to visit rural areas in endemic regions, or who plan to camp.

References:

1. Haglund M, Günter G. Tick-borne encephalitis – pathogenesis, clinical course and long term follow up. *Vaccine* 2003; 1; **21 Suppl 1**:S11-8
2. Wetherall DJ, Ledingham JGG, Warrell DA, eds. Oxford textbook of medicine. 3rd ed. Oxford/NY/Tokyo: Oxford University Press, 1996.
3. Beran J. Tick-Borne encephalitis in the Czech Republic. Eurosurveillance Weekly; 5(13): 28/03/2001
4. Randolph SE. Evidence that climate change has caused 'emergence' of tick-borne diseases in Europe? Int J Med Microbiol 2004; 293 Suppl 37:5-15.
5. Daniel M, Danielova V, Kriz B, Kott I. An attempt to elucidate the increased incidence of tick-borne encephalitis and its spread to higher altitudes in the Czech Republic. Int J Med Microbiol 2004; 293 Suppl 37:55-62
6. McNeil JG, Lednar WM, Stansfield SK, Prier RE, Miller RN, Central European Tick-Borne Encephalitis: Assessment of Risk for Persons in the Armed Service and Vacationers. J Infect Dis 1985; 152(3):650-651
7. Rendi- Wagner P. Risk and Prevention of Tick-borne encephalitis in travellers, Oral Presentation at: 8th Conference of the International Society of Travel Medicine, May 2003, New York, USA

back to top

Back to Table of Contents

Previous **Next**

To top | Recommend this page