

ST05 TBE & H5N1: What is the Impact for Travelers?**ST05.1 Tick-borne Encephalitis - from Epidemiology to Vaccination Recommendation**

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Tick-borne encephalitis (TBE) is a preventable disease, which is rapidly becoming a growing public health problem in Europe and other parts of the world. TBE is endemic in regions of 27 European countries and new risk areas are discovered every year.

Treatment of TBE is symptom-related, there is no causal-orientated therapy available. At least 10,000 cases of TBE are referred to hospitals each year, yet the incidence of TBE is so far not fully recognized. The reason for this is that TBE produces clinical features similar to those of many other types of meningitis and/or encephalitis. Vaccination is the only efficient protection.

Austria is the country with the highest TBE vaccination rate in Europe. According to representative surveys, 87 percent of Austrians have had at least one TBE vaccination, and 66 percent are within the officially recommended vaccination schedule.

In a recently published study it was shown that, compared with vaccinations for other diseases, TBE vaccination has a very high protective effectiveness of about 99 percent. As a result, the annual numbers of new TBE infections in Austria have dropped to about 10 percent of the levels registered in the pre-vaccination era - even though Austria's neighboring countries have witnessed a dramatic increase in TBE infections. Between 2000 and 2006, at least 2,800 TBE cases in Austria - about 20 of them lethal - were prevented by vaccination. Unfortunately, the high vaccination coverage has no effect on the circulation of the TBE virus in nature, because humans are only accidental hosts and the virus does not depend on humans for survival.

Today, social marketing is an essential and indispensable tool of science-oriented social medicine as it strives to integrate the concept of disease prevention into public health care. The International Scientific Working Group (ISW-TBE), comprised of internationally recognized scientific experts from endemic countries with extensive personal expertise in the field of TBE, provides the scientific background to public health recommendations on various topics, such as TBE in children, TBE and the golden agers, or TBE and travelers.

One of the main future challenges will be to change the general perception of TBE vaccination from being a measure for people living in endemic regions to general vaccination of the entire population. Especially among people traveling from non-endemic countries to endemic areas, there is still a lack of awareness of the disease.

ST05.2 From Childhood to Golden Age: Increased Mobility - Increased Risk of Contracting TBE?

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Over the past three decades, TBE has become a growing public health problem in Europe and other parts of the world, with an increasing number of more than 13,000 cases of TBE requiring hospitalization every year. But not only is the number of reported cases increasing every year, so are travel streams from non-vaccinated persons from non-endemic to high-risk areas which are spread all over Eastern, Central but also increasingly some parts of Northern, Southern and Western Europe. Based on good statistical data the risk to contract TBE in a highly endemic area is comparable to the risk to get typhoid fever in India (1:10,000/mo). Whereas there is no doubt that vaccination against typhoid fever (a treatable disease by the way) should be recommended to travelers going to India, TBE is a mostly neglected risk for travelers coming to endemic areas. During their holidays most tourists spend a part of their time outdoors with exposure prone activities. More than one third of tourists visiting Austria in summer time e.g. are coming for hiking or mountaineering experience - not knowing that TBE already conquered regions of 1,500 m above sea level. Event tourism (sports, culture, politics, religion) more than "regular tourism" is especially dedicated to and focused on a specific motive to travel ("event") - resulting in the likelihood of neglecting other travel-related issues in general and travel-associated health risks in detail. Information on health risks associated with leisure time, fun, holidays etc. is not appreciated, neither by the travelers themselves nor by the travel agencies (who in fact play a crucial role in building awareness).

Recommendations:

Travel medicine practitioners should do their best to raise awareness about TBE among travelers and to inform them about preventive measures. Tick bite prevention (e.g. by using repellents) is important, vaccination is even more so. Not only "adventurous tourists" but also short term travelers going to TBE endemic areas should be vaccinated against TBE if they plan to go for outdoor activities. If someone has no access to the vaccine at home and is traveling to or through countries where the vaccine is available, the series could be started as soon as this strategy of prevention is accepted and can be completed during following stays.

Since ticks may transmit other infectious agents as well tick bite prevention is important in both vaccinated and unvaccinated people.

ST05.3 Vero Cell Derived Whole Virus H5N1 Vaccine: Clinical Update

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The rapid spread of avian influenza (H5N1) and the transmission to humans has induced world-wide fears of a new pandemic. Vaccines are considered the most effective means to control influenza outbreaks, however, the conventional methodologies used to manufacture H5N1 vaccines have a number of disadvantages. In particular egg supplies required for vaccine production could be endangered by H5N1 infections of chicken flocks. Also clinical trials to date with non-adjuvanted H5N1 split vaccine formulations have demonstrated that very high antigen doses are required to induce seroconversion in immunised subjects. An alternative strategy involves the use of a wild-type virus grown in a continuous cell culture (Vero) system to derive an inactivated whole virus vaccine. Candidate vaccines based on clade 1 (Vietnam/1203/2004/H5N1) and clade 2 (Indonesia/05/2005/H5N1) strains have been developed and demonstrated to be highly immunogenic and protective in animal models.

Results of clinical trials to date with clade 1 (Vietnam 1203/2004) and clade 2 (Indonesia/05/2005) strain vaccines indicate (i) the vaccines are well tolerated (ii) vaccine doses as low as 3.75 or 7.5 µg generate a robust immune response (iii) the non-adjuvanted formulation is more immunogenic than an alum adjuvanted formulation (iv) the vaccines induce antibodies which are capable of neutralising not only homologous strains but also viruses from other H5N1 clades or subclades.

These data indicate that this cell culture strategy allows the high yield production of a pandemic vaccine and the whole virus vaccine based on the wild-type virus has the potential to induce broadly protective immune responses.

ST05.4 Impact of Seasonal and H5N1 Influenza on Travelers

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Seasonal influenza is a highly infectious disease causing annual epidemics that are extraordinarily unpredictable in both timing and magnitude. In contrast to most other viral acute respiratory infections with similar clinical symptoms, influenza is usually more severe and is commonly associated with complications. Seasonal influenza is an underappreciated cause of morbidity and mortality, which affects approximately 5 - 15% of the population annually. At least 40 000 people die each year from influenza in the EU.

Seasonal influenza is considered to be one of the most frequent vaccine-preventable infections in travelers. In temperate climates, influenza is a typical wintertime disease. During the rest of the year, only sporadic cases are reported. In the tropics, the virus can be isolated year-round, and epidemics of disease can occur at any time of the year.

Global travel likely contributes to the rapid spread of influenza, especially as air travel has increased dramatically over the past years. There are also other types of travelers at increased risk, especially those on cruise ships and tour groups, as influenza transmission is enhanced in crowded conditions, e.g., Hajj, the Olympic Games, or other big competitions. The proportion of senior travelers who often suffer from influenza complications is increasing as well.

H5N1 avian influenza is primarily a disease in birds. The virus does not easily cross the species barrier and there are only several hundred H5N1 confirmed cases in humans. Most people have been infected by direct contact with sick or dead birds carrying the H5N1 virus. Direct contact could happen during activities such as visiting live bird or poultry markets and preparing or consuming raw or undercooked bird products (e.g., meat, eggs, and blood). Such activities should be avoided by travelers. Frequent hand washing is recommended not only for H5N1 prevention but as a general preventive measure against infectious diseases.

Seasonal influenza vaccination remains the main preventive measure to help protect against the annual morbidity and mortality associated with influenza. In Europe, there are different national recommendations and risk group specifications for annual vaccination but recommendations for travelers are rare. Vaccination, as the most effective medical intervention against influenza, should be offered also to the travelers (of any age) as a recommended vaccination.