In order to determine the performance, and particularly the sensitivity and specificity, of the Focus HSV-2 ELISA in Chinese STD settings, 105 serum specimens were collected from patients attending the STD Clinic of the Chinese Academy of Medical Sciences, and the Peking Union Medical College Institute of Dermatology. The results obtained with the Focus HSV-2 ELISA were compared with those determined by the Western blot method.

The seroprevalence of HSV-2, as determined by Western blot, was 55.2% (58/105 specimens) in the study population. The Focus HSV-2 ELISA and Western blot results were concordant (both negative or both positive) for 89.5% of the 105 specimens, with 92.0% sensitivity and 95.7% specificity, and positive and negative predictive values of 95.8% and 91.7%, respectively, if specimens with equivocal ELISA results were excluded from the calculation. The sensitivity and specificity were 79.3% and 95.7%, respectively, if the samples with equivocal ELISA results were considered negative, and were 93.1% and 93.6%, respectively, if the samples with equivocal ELISA results were considered positive. Analysis with a receiver operator characteristic curve demonstrated that the best index cut-off value to optimise the assay performance in this population was 0.9, with a sensitivity of 93.1% (95% CI, 83.3–98.0%) and a specificity of 93.6% (95% CI, 82.4–98.6%). If the manufacturer’s recommended index cut-off value of 1.1 was used, the sensitivity was only 79.3%.

In summary, the sensitivity and specificity of the Focus HSV-2 ELISA in a Chinese STD population were satisfactory but, compared with other countries, a lower index cut-off value might be required for optimal sensitivity and specificity.

Y.-P. Yin, X.-S. Chen*, B. Song, X. Yao, Z.-J. Hu and W.-Z. Li
National Center for STD Prevention and Control, Chinese Academy of Medical Sciences & Peking Union Medical College Institute of Dermatology, 12 Jiangwangmiao Street, Nanjing, Jiangsu 210042, China
*E-mail: chenxs@vip.163.com

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REFERENCE

Immunisation against tick-borne encephalitis by widely used vaccines: short-term history and current recommendations
Tick-borne encephalitis (TBE) virus, transmitted by ticks, remains a serious health problem in central/eastern Europe and Asia. TBE virus is a member of the Flavivirus family. The biology of the main vector ticks, *Ixodes ricinus* and *Ixodes persulcatus*, is understood in so far as it is clinically relevant [1]. In the recent article by Charrel et al. [2], the authors state that vaccination is the most important means of prevention of TBE. In this context, the authors provide an overview of available TBE vaccines. However, the data provided do not include important information regarding recent TBE vaccine developments and discussions on TBE immunisation schedules for primary and booster immunisation.

Two commercially available vaccines and their formulations are currently used widely in central and eastern Europe, namely new versions of Encepur (Chiron Vaccines, Marburg, Germany) and FSME-IMMUN (Baxter Vaccines, Vienna, Austria) (Table 1). The development of an inactivated vaccine was initiated in 1971. Various versions of this first TBE vaccine (FSME-IMMUN) have been approved since 1976. In 1999, the preservative thiomersal was removed, and a new formulation, free of thiomersal and human serum albumin (TicoVac), was introduced in 2000. However, an increased rate of reported cases of high fever and febrile convulsions in children was noted. Human albumin was subsequently
re-introduced into the vaccine formulation in 2001, with a resulting dramatic reduction in reports of adverse events with this amended formulation (FSME-IMMUN new) compared to TicoVac [3]. A paediatric formulation is available with half the antigen dose in a 0.25-mL volume (FSME-IMMUN Junior) [4].

The first TBE vaccine specifically for children, Encepur K, was licensed in 1994 in Germany, with a reduced antigen content compared with the preparation for adults. Although very rare, a number of children had allergic reactions, probably caused by the polygeline content [5]. Therefore, polygeline was removed from the vaccine, and improved and polygeline-free TBE formulations were developed, namely Encepur Adults (0.5 mL), licensed for use in individuals aged > 12 years, containing 1.5 µg of inactivated TBE virus antigen (strain K 23), and Encepur Children (0.25 mL), containing 0.75 µg of inactivated TBE virus antigen [5]. TBE vaccines from both the above manufacturers can be considered safe and highly protective [3–5], and the conventional vaccination schedule for both vaccines comprises three doses at day 0, months 1–3 and months 9–12 (or 5–12 months after the second dose).

Accelerated immunisation schedules have also been described for both vaccines. A rapid immunisation schedule comprising three doses at days 0, 7 and 21 has been licensed for the historical and current versions of Encepur Adults and Encepur Children. Protective TBE antibodies can be measured 2 weeks after the second dose, and protective immunity can be attained for at least one TBE season [6,7]. Thus, this immunisation schedule is recommended when offering TBE prophylaxis at short notice, e.g., for individuals travelling to endemic TBE areas, or when the tick season has already started [8]. The first booster dose should be given after 12–18 months if long-term protection is required [8]. The accelerated regimen for the FSME-IMMUN formulations (Inject, Adult, Junior) comprises two vaccine doses given 2–3 weeks apart (licensed for the Czech Republic, Austria and Germany) [9,10]. Fourteen days after the second dose, 92.9% of subjects already have ELISA values of > 126 VIE U (Vienna units)/mL, increasing to 96.4% and 98.2% at days 21 and 42, respectively, after the second dose of vaccine [10]. However, no clear information regarding the duration of protective immunity is available.

Formerly, booster doses were recommended at 3-year intervals. However, recent studies have questioned the necessity of such short booster intervals [7,11,12]. As a result, the Austrian immunisation board now recommends a first booster dose at 3 years after primary immunisation, with subsequent boosters every 5 years for individuals aged < 60 years, but every 3 years for individuals aged > 60 years [9]. When using the rapid immunisation schedule (three doses at days 0, 7 and 21), the first booster dose is recommended after 12–18 months. Subsequent boosters should be given every 5 years for individuals aged < 60 years, but every 3 years for individuals aged > 60 years [8].

J. Beran
Department of Infectious Diseases, University Hospital, Hradec Králové, Czech Republic
E-mail: jiri.beran@vakcinace.cz

Table 1. Different formulations of the FSME-IMMUN and ENCEPUR vaccines

<table>
<thead>
<tr>
<th></th>
<th>FSME-IMMUN Inject s (1999)*</th>
<th>FSME-IMMUN 0.5 Adult (since 2001)</th>
<th>Encepur Adults (since 2001)</th>
<th>FSME-IMMUN 0.25 Junior</th>
<th>Encepur Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strain</td>
<td>Neudoerfl</td>
<td>Neudoerfl</td>
<td>K-23</td>
<td>Neudoerfl</td>
<td>K-23</td>
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<td>Passages</td>
<td>PCEC</td>
<td>PCEC</td>
<td>PCEC</td>
<td>PCEC</td>
<td>PCEC</td>
</tr>
<tr>
<td>Production</td>
<td>PCEC</td>
<td>PCEC</td>
<td>PCEC</td>
<td>PCEC</td>
<td>PCEC</td>
</tr>
<tr>
<td>Amount of antigen</td>
<td>2–3.5 µg</td>
<td>2.4 µg</td>
<td>1.5 µg</td>
<td>1.2 µg</td>
<td>0.75 µg</td>
</tr>
<tr>
<td>Adjuvant</td>
<td>Al(OH)₃</td>
<td>Al(OH)₃</td>
<td>Al(OH)₃</td>
<td>Al(OH)₃</td>
<td>Al(OH)₃</td>
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<tr>
<td>Preservative</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Stabiliser</td>
<td>HSA</td>
<td>HSA</td>
<td>No additional</td>
<td>HSA</td>
<td>No additional</td>
</tr>
<tr>
<td>Age limitations</td>
<td>&gt; 1 year</td>
<td>&gt; 16 years</td>
<td>≥ 12 years</td>
<td>≥ 16 years</td>
<td>&lt; 12 years</td>
</tr>
<tr>
<td>Shelf-life</td>
<td>18 months</td>
<td>18 months</td>
<td>24 months</td>
<td>18 months</td>
<td>24 months</td>
</tr>
<tr>
<td>Adjusted</td>
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<td>0.5 mL</td>
<td>0.5 mL</td>
<td>0.25 mL</td>
<td>0.25 mL</td>
</tr>
</tbody>
</table>

HSA, human serum albumin; PCEC, purified chicken embryo cells.
*Available in the Czech Republic, Hungary, Russia and the Baltic states.
*Passages of master seed have been done on mouse brain.
REFERENCES

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