



## **European Network for Diagnostics of "Imported" Viral Diseases**

**European Commission – DG SANCO**

**Dossier n° 2000/SID/035**

**ENIVD – European Network for Diagnostics of "Imported" Viral Diseases**

## **INTRODUCTION**

Considerable attention has recently been directed to emerging and re-emerging infections in national and international discussions. Infectious diseases are a continuing menace to all people, regardless of age, gender, lifestyle, ethnic background, and socio-economic status. They cause suffering and death, and impose an enormous financial burden on society.

Numerous viral outbreaks in the last years like Ebola in Kikwit/Zaire, Côte d'Ivoire, and Liberia in 1996/97 and Nipah Virus in Malaysia in 1998 led to the building of the European Network for Diagnostics of "Imported" Viral Diseases (ENIVD). The list of VHF's comprise more than a hundred pathogens endemic in different parts of the world. No laboratory alone is capable to cover the whole spectrum. Therefore close co-operation is the only solution to improve the situation for diagnostics of these viral threats in the future. With the increased danger of biological attacks the need for a quick and reliable diagnostic becomes even more important for all European countries. Therefore scientists from university medical centres, country health departments, and hospitals all over Europe have raised this network and agreed to collaborate on a few major tasks for the future, fixed in a manifest signed by all members and their institutions.

The ENIVD members meet regularly since 1995 Sharing the duties and strengthen the collaboration in the EC to enhance the emergency preparedness in all participating countries to the benefit for their citizens. The ENIVD comprises laboratories of all EC-countries and several other European States. The members collaborate on diagnostic matters, and support each other with material and expertise.

### **COMMUNITY ADDED VALUE OF THE EUROPEAN NETWORK FOR DIAGNOSTICS OF "IMPORTED" VIRAL DISEASES (ENIVD)**

Reliable and fast information exchange is a very important task in outbreak investigation and preparedness against any infectious agent. The major task of the ENIVD is to facilitate the quick information exchange between the diagnostic laboratories and the public health institutions.

This goal is reached by several strategies: The members meet once a year and exchange information together with representatives from EC and WHO. During these meetings new strategies for future collaborations and improvements of diagnostics for "imported" viral diseases in Europe are planned for the coming year.

The continuous information flow regarding outbreaks is provided by a restricted website with weekly updated information on outbreaks under investigation by WHO and a information system restricted to all participating laboratories. This allows a quick distribution of urgent information to all partners and helps to increase the awareness for these kind of diseases.

For the community the ENIVD provides a public website with several useful information on Viral Haemorrhagic Fever Viruses like: list of expert laboratories all over Europe with complete address, fact sheets for different VHF's, overview on all diagnostic tests performed by the respective laboratories, and other specific links. We also provide an overview on high security infectious disease units (HSIDUs), and recommendations for management and control of VHF's worked out by the ENIVD advisory group which are very helpful in case of an import of a suspected VHF case to Europe. The events of the 11<sup>th</sup> September and fears of biological threats led to an increase of approximately 10.000 requests per month to our website.

The higher demand for diagnostic of VHF's in the recent years makes it necessary to improve the diagnostic methods for these kind of diseases and threats because commercial diagnostic test are often not available. The use of in-house and non registered commercial tests based on different diagnostic methods requires a serious evaluation regarding quality.

One task in the recent years was the evaluation of diagnostic quality in participating laboratories regarding sensitivity and specificity of the diagnostic tests used. These EQA are performed by providing the participating laboratories with a panel of samples for a respective diagnosis of a viral disease or infection. These samples consist of aliquots of

either antibody (IgM, IgG) or virus materials necessary for diagnostic purposes. The diagnostic laboratories have to perform their diagnostic method on these samples and report their diagnostic results like antibody titre or virus found to the organiser of the EQA. At the end of the EQA all laboratories receive the list of results found by all participating laboratories including the information on the sample material.

Until now the network carried out EQAs: 2 for Hanta (Serology) 2 for Dengue (Serology and PCR) and 1 for Filo, Lassa and Poxviruses (PCR). During these external quality assurance tests we found great differences regarding the quality of the participating laboratories. Whereas some laboratories performed a very good quality diagnostic, some others need to improve their methods and techniques. The results of these EQAs clearly point out that we have to proceed to improve the quality of diagnostic urgently, especially under the perspective of future biological threats.

In the last decade several viral threats emerged or re-emerged in Europe like Crimean Congo Haemorrhagic Fever, Tick borne encephalitis virus, West Nile Virus Hanta and others. Most of these viruses are known to be endemic in certain regions of Europe for many years but now numbers of infected humans are increasing or occasional outbreaks are causing severe infections or death. Up to now the reasons for the increase in numbers and invasion of new areas are unknown. Climate changes like mild winters and/or changes of human behaviour are under speculation. Because most of these diseases are transmitted by animal hosts like Hanta, or by rodents, or West Nile by mosquitoes, and CCHF and TBE by ticks the distribution is linked to the distribution of the host and/or vectors. Further analysis regarding distribution of infectious pathogens in the host and the disease in people getting in contact with it have to be performed to reduce the number of infections and to improve the quality of life for European citizens. This goal will be reached in close collaboration with European epidemiologists performing surveillance studies and together with public health institutions of the respective countries. This also requires further development of the co-operation between the laboratories, for improving diagnostic tests together with partners all over Europe.

Expanding the EC by new member countries also means the integration of new partners facing the same situation regarding diagnostic quality as all the present partner laboratories. Also the new member laboratories have to provide their countries with diagnostic of high standard quality which will require close collaboration and constant improvement of diagnostic methods not achievable for one laboratory alone. The integration of new partner laboratories from, Slovenia, Lithuania, Slovakia, Czech Republic, Bosnia-Herzegovina and is already in progress. Other partners from Poland, Bulgaria, Malta, Norway, and Hungary and Switzerland are interested to be a member in the future.

The task of fighting viral infection diseases by a quick and reliable diagnostic is a common goal for all partners and achievable only in close collaboration of medical staff, laboratories, and public health institutions.

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