

## VBORNET - European Network for Arthropod Vector Surveillance for Human Public Health

### Editorial

The objective of VBORNET is to establish a European Network of entomological and public health specialists in order to assist ECDC in its preparedness activities on vector borne diseases (VBD). This will be achieved in three steps:

1. Establishment of the *VBORNET consortium* who will develop the *VBORNET network* and the *VBORNET inventory*.
2. Establishment of a *VBORNET network* of contributing members who are representative of the wide range of vector-borne disease related research and public health (PH) activities currently ongoing in Europe. One of its main tasks in year one will be to set the basis for Pan-European administrative unit distribution maps of the major arthropod vectors of diseases. Subscription is on a voluntary basis;
3. Establishment of a *VBORNET inventory* which aims at making an exhaustive catalog of VBD and related public health (PH) activities (and expertise) in Europe.

Given the diversity of topics related to VBD in Europe the *VBORNET network* cannot be seen as a static group, but will be in permanent evolution, with *VBORNET network members* activated from the *VBORNET inventory* at any stage according to priorities and technical needs.

#### **What is the value for you to become a VBORNET network member?**

As an active network member contributing information to VBORNET you will have access to the VBORNET raw VBD data and resources, have the possibility to contribute to VBD/PH priority setting in Europe as a member of expert panels (e.g. annual VBORNET meeting) and be listed as an official VBORNET network member.

#### **How will the VBD community as a whole benefit from VBORNET?**

VBORNET aims to make available through internet regularly updated vector distribution maps of the major arthropod vectors of diseases in Europe, inventory of VBD and related PH expertise, publications, surveillance and control activities, and a monthly newsletter with news items and events. The VBORNET webpage and platform will be very soon available.

#### **What is VBORNET expecting from you as a network member?**

The VBORNET network is looking for VBD experts who are interested in data sharing and networking. At this early stage VBORNET will focus on acquiring baseline data on confirmed vector presence at various administrative scales (NUTS 1-2-3) and quality control of the various VBORNET database inputs. VBORNET network members can be representatives of other existing VBD networks.

#### **How can you become a member of the VBORNET network?**

Contact the VBORNET with a short e-mail confirming your interest in joining the network and how you can contribute to strengthen the network at: [vbornet@ecdc.europa.eu](mailto:vbornet@ecdc.europa.eu) .

Looking forward to a successful collaboration!

The VBORNET consortium.

## The VBORNET work-packages

Four work-packages (WP) have been implemented to conduct the various VBORNET activities. Each are described in detail in this document and a scheme with the interrelationships is given below (Fig.1).

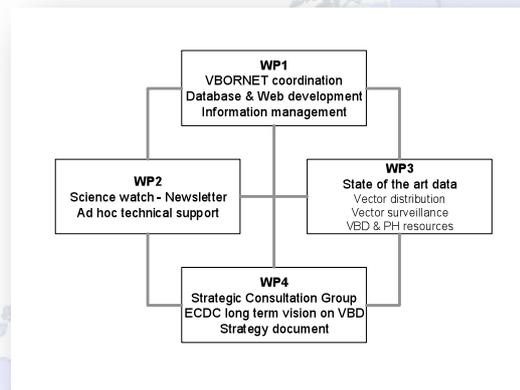


Figure 1 - The VBORNET WP structure.

For each WP a coordinator has been nominated who is in charge of achieving the objectives of its WP and communicating with the other WP's to ensure all activities are in phase. This is also replicated at ECDC level. For WP 3 and 4 respectively additional vector and public health focal points have been identified. Coordination provides the necessary administration and management back-up, communication platforms and ICT tools. The VBORNET Steering Committee includes ECDC, the VBORNET Secretariat, the WP leaders and the vector and public health focal points (Fig. 2)



Figure 2 – Participants to the VBORNET kick-off meeting at ECDC in Stockholm: (1) Francis Schaffner, (2) Annick Lenglet, (3) Lara Payne, (4) Renaud Lancelot, (5) Hervé Zeller, (6) William Wint, (7) Wim Van Bortel, (8) Didier Fontenille, (9) Pierre-Edouard Fournier, (10) Joke Van Der Giesen, (11) Jolyon Medlock, (12) Céline Gossner, (13) Katrin Leitmeyer, (14) Bulent Alten, (15) Guy Hendrickx, (16) Paolo Calistri, (17) Zdenek Hubalek, (18) Gert Olsson, (19) Evelyn Depoortere

## Work-package 1

### Secretariat: Information management and coordination

Leader: Guy Hendrickx

Guy Hendrickx, DVM, PhD, is Managing Director of Avia-GIS, Zoersel (Belgium), a consultancy specialized in the development of spatial information systems for decision support. He is a veterinarian with more than 25 years of experience in spatial epidemiology, the spatial modeling of VBD's and the management of multidisciplinary research teams. In VBORNET, Guy is in charge of overall management and coordination.

VBORNET is a framework contract established with ECDC. At start the objectives for the first year have been set and activities planned. In the following years these objectives will be adapted according to the changing needs and priorities of ECDC and resources will be made available accordingly by ECDC. It is the task of WP1 to coordinate the various activities of the network by providing project management input, organize meetings and communication between consortium partners and provide all the necessary ICT support to develop databases, web-archives and information systems, as well as public mapping tools.

The deliverables for the first year of the WP1 are: The establishment of the vector and public health networks, the design, implementation and maintenance of ECDC compatible databases and web portals taking into consideration future uses and agreed standards and formats;

- gathering of available validated data;
- production of state of the art vector distribution and surveillance maps at three administrative unit levels: NUTS 1-2-3;
- identification of data gaps in the compiled databases.

## Work-package 2.1

### Science watch

Leader Paolo Calistri

Paolo Calistri, DVM, is an epidemiologist working at the Italian national reference centre for veterinary epidemiology (IZSA&M). He is a veterinarian with more than 15 years of experience in animal diseases and zoonoses epidemiology, modelling and risk analysis. In VBORNET he is in charge of preparing the monthly VBORNET Newsletter and its special issues.

The main objective of this work-package is to produce a monthly scientific electronic newsletter (NL) which includes relevant information on recently published papers and news items on:

- The distribution of arthropod vectors of disease in Europe;
- Ongoing vector control and surveillance activities;
- Entomological studies of particular relevance to public health;
- A review of upcoming VBD related events and meetings.

All network members will be encouraged to share and comment information on relevant VBD topics.

During the first year four special NL issues will also be produced with the expert advice of VBORNET network members. Topics will include:

- Mosquito vectors and mosquito-borne diseases of public health relevance with particular reference to the spread of *Aedes albopictus* and the occurrence of other invasive mosquito species (January 2010).

- Tick vectors and tick-borne disease of public health relevance with particular reference to *Hyalomma sp* and their role in Crimean-Congo hemorrhagic fever (CCHF) and a focus on distribution shifts of *Ixodes ricinus* (March 2010).
- Phlebotomine vectors of public health relevance with particular reference to the distribution limits of phlebotomine species in the Mediterranean region (May 2010).
- Other arthropod vectors transmitting diseases of public health relevance with particular reference to distribution hotspots of diseases transmitted by such vectors (July 2010).

## Work-package 2.2

### Ad hoc technical support

Leader Jolyon Medlock

Jolyon Medlock, MSc, is a medical entomologist with more than 10 years experience. He is leading the Medical Entomology Group at the HPA which is responsible for advising UK government on the risks from vectors and their diseases. His team's current work focuses on nationwide UK surveillance of mosquitoes and ticks, field-based research on the impact of wetland management on mosquitoes, habitat management on ticks and has provided evidence-based risk assessments on a range of vector and VBD emergence issues.

The objective of this work-package is to provide ad-hoc technical advice to ECDC on all vector-related aspects of vector-borne disease issues in Europe. For the first year, WP2.2 will focus on developing risk assessments on invasive mosquitoes (e.g. *Aedes albopictus*, *Aedes aegypti*, *Ochlerotatus japonicus*), and key tick vector species (e.g. *Hyalomma marginatum* and the expanding range of *Ixodes ricinus*). These assessments will incorporate a variety of topics including: vector distribution, abundance, seasonality, preferred hosts, aquatic/terrestrial habitats, anthropophily, environmental thresholds/ constraints/development criteria, morphological identification issues, species-specific control methods, disease vector status, role of reservoir hosts, zoonotic implications and transmission dynamics.

Outputs from WP 2.2 will inform ECDC factsheets and risk communication material. It will also be used to stimulate discussion through contributions to the special issue newsletters.

## Work-package 3

### Vector distribution and surveillance

Leader Wim Van Bortel

Wim Van Bortel, PhD, is senior researcher in the entomology unit of the parasitology department at the ITM, Antwerp (Belgium). He has more than 15 years experience in mosquito research overseas and is currently leading MODIRISK, one of the first national projects in Europe aiming at identifying resident and invasive mosquito species and computing country wide distribution models per species (Benelux). In VBORNET he is in charge of developing the entomological component of the VBORNET network and database.

The main objective of this work-package is to establish and maintain databases on vector distribution and surveillance in Europe.

Data gathered by the Network will be used to create Pan-European vector distribution maps at three sub-national scales (NUTS 1-2-3). These maps will be freely available on ECDC website by August 2010.

During the first year particular focus will be given to a limited number of arthropod vectors: Mosquitoes: *Aedes albopictus*, *Aedes aegypti* and other invasive mosquito species.

- Ticks: *Hyalomma sp* and *Ixodes ricinus*. For the latter particular attention will be given to species limits and shifts.
- Phlebotomines: distribution limits of species of particular interest in the transmission of leishmaniasis and viruses around the Mediterranean.
- Other vectors: focus will be on the identification of disease hotspots transmitted by fleas and lice.

This list will be extended afterwards.

The information on vector surveillance will include an inventory of surveillance activities in the EU for mosquito, tick and phlebotomine vectors of human public health importance at national and sub-national level. Such information will be collected through specific questionnaires (by vector and by country) which will be sent to VBD contact points identified by the Steering Committee. An important part of the work will be to assess quality of existing data, their historic and current relevance and to identify data gaps. Strategies will be designed to address the latter during the forthcoming years.

In addition to the work-package coordinator, four specialized vector experts have been identified to help with establishing the relevant VBORNET network components through their recognized links within the VBD community:

- **Mosquito focal point:** Francis Schaffner, PhD, is a medical and veterinary entomologist with more than 20 years experience, and one of the leading European experts on mosquito taxonomy and ecology. He is working half time at the Institute of Parasitology of the University of Zurich (Switzerland) where he is in charge of BVET-reference laboratory for arachno-entomology, and half time as an entomology expert with Avia-GIS, Zoersel (Belgium).
- **Tick focal point:** Laurence Vial, DVM, PhD, is a medical entomologist in the research unit "Control of emerging and exotic animal diseases", CIRAD, Montpellier (France). She has five year field-work experience, mostly in West and Central Africa, on ticks and tick-borne diseases with particular emphasis on *Ornithodoros* soft ticks and borreliosis. She is in charge of the CIRAD collection and database on tropical and Mediterranean ticks.
- **Phlebotomine focal point:** Bülent Alten, PhD, is full professor at the Ecological Science Research Laboratory (ESRL) and vice chairman of the Biology Department at the Faculty of Science, Hacettepe University, Ankara (Turkey). He is a zoologist and ecologist with more than 20 years of experience in vector ecology and biology, population ecology and genetics, sand fly and mosquito taxonomy, as well as in vector and VBD control methods.
- **Other vectors focal point:** Pierre-Edouard Fournier, PhD, with eight year working experience in the molecular detection of fastidious bacteria in human specimens and arthropods. He is co-manager of the diagnostic activities of the WHO-collaborative reference laboratory, Unite des Rickettsies et Maladies Tropicales Infectieuses Emergentes (URMITE), at the Faculté de Médecine, Université de la Méditerranée, Marseille (France).

VBORNET network members will be identified based on the available information and the VBORNET needs. The identification of the VBORNET network members will be finalized prior to the first annual meeting in May 2010.

## Work-package 4

### Strategic consultation group

Leader Joke Van der Giesen

Joke Van der Giesen, DVM, PhD, is a veterinary microbiologist with more than 15 years working experience. She is heading the Department of Animal and Vector related infections of the Laboratory of Zoonoses and Environmental Microbiology (LZO) at RIVM, Bilthoven (Netherlands). In VBORNET she will be in charge of developing the PH component of the VBORNET network and database.

The current link between vector networks and public health is often poorly established both at national level and in European networks. The main objective of this work-package therefore is to link vector and public health experts with the aims to:

- Define and develop priority strategic topics concerning the public health perspective of vector-borne diseases and vector surveillance in the EU.
- Develop a European strategy for the surveillance of the main human disease vectors with public health importance.
- Advise ECDC with technical strategic topics such as the clarification of current roles and responsibilities and the organizational framework in the EU for vector surveillance activities.
- Identify the current relevant public health issues and gaps for EU preparedness for vector-borne diseases.

During the first year the main aim will be to connect both vector and public health networks, disseminate a PH questionnaire on a country by country basis and write a first annual VBD related PH Strategy Document for ECDC. This WP will be organized by geographical regions based on the major European biomes: Northern Europe, Western Temperate Europe, Central Temperate Europe, the Mediterranean basin (includes North Africa), and Overseas (tropical) Europe. In addition to the WP leader who is in charge of Western Europe, four additional WP regional focal points have been identified:

- Northern EU focal point: Marika Hjertqvist is working as a public health epidemiologist at the epidemiology department of SMI, Stockholm (Sweden). She has more than five years working experience on the surveillance of VBD at the national level and is involved in several VBD related research projects with a focus on TBE and Lyme borreliosis.
- Central EU focal point: Zdenek Hubalek, Prof. RNDr. PhD. DSc., is principal researcher and laboratory head at the IVB, Brno (Czech Republic). He has over 40 years experience with research in the field of diseases with natural focality (arthropod-borne viruses and bacteria, tularaemia, mycoses, avian botulism) combined with studies on the ecology of vertebrate hosts and haematophagous vectors of these diseases.
- Mediterranean EU focal point: Renaud Lancelot, DVM, PhD is a chief officer in veterinary public health, French ministry of agriculture. He is working as the epidemiology team leader in the research unit "Control of emerging and exotic animal diseases", CIRAD, Montpellier (France). He has more than 20 years experience in the epidemiology of infectious animal diseases and zoonoses and is the coordinator of the European EDEN project on emerging, vector-borne diseases in a changing European environment.
- Overseas EU focal point: Didier Fontenille, PhD, is the leader of a team of 60 people working on Chagas' disease vectors, sandflies and mosquitoes at IRD, Montpellier (France). He is a medical entomologist with more than 25 years experience in the field of mosquito population biology, population genetics and control. He is coordinator or involved in several research programs on vector control in ultra peripheral territories of Europe, in the Caribbean and Indian Ocean.

Links with other ECDC led network will be implemented as VBORNET is setting up.

### VBORNET Consortium Address List

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|-------------------------|--|---------------------------------|--|
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EC = Executive Committee; SC = Steering Committee; FP = Focal Point; PH = Public Health.

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