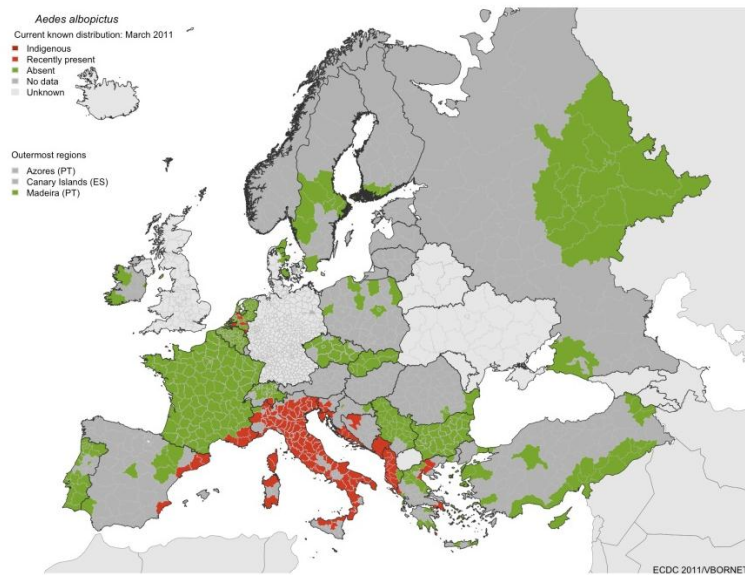


VBORNET

Annual General Meeting 2011

Project Progress, Member Comments and Discussion



Antwerp, 18-20 April 2010

1 Introduction

The VBORNET Project started in 2009 with the major objective to establish a European Network of entomological and public health specialists to assist ECDC in its preparedness activities on vector-borne diseases (VBD). The project is now in its second year, and continues to implement the following activities:

- Enlarging the VBORNET network and the VBORNET inventory;
- Compiling maps of vector distributions in Europe through collating data records provided by the network members;
- Establishing a *VBORNET expertise inventory* which aims at making an exhaustive catalogue of VBD and related public health (PH) activities (and expertise) in Europe.
- Producing regular science watch newsletters and technical papers for each group of vectors: mosquitoes, ticks and phlebotomines;
- Holding Annual General Meetings (AGM) of network members focussed on specific topics each year: Introduction of the network in 2010, and VBD related Public Health in 2011.

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

VBORNET consists of four Work Packages:

- *WP1 Information Management and Coordination*, focussing on establishing and coordinating the network, developing necessary software and web applications, maintaining the VBORNET expertise database, organizing network meetings.
- *WP2* comprises the *Science Watch*, providing regular electronic newsletters discussing recent publications and news as well as a series of special issues on each vector group; and *Ad Hoc Technical Advice* to ECDC on vector-borne diseases in Europe producing factsheets and risk analyses on VBD.
- *WP3 Vector Distribution and Surveillance*, which is establishing and maintaining databases on vector distributions and surveillance in Europe.
- *WP4 Strategic Consultation Group* which concentrates on public health aspects of vector surveillance and control in Europe.

The second VBORNET Annual General Meeting, attended by some 60 of the VBORNET members, was held in April 2011 at the Institute of Tropical Medicine (ITM) premises in Antwerp to report on core activities in the second year and to address issues relate to Public Health on Europe. The presentations are set out in the Agenda summarised in the annex ANNEXES

Table 3. These will be provided for general dissemination to network members via the project website currently at the VBORNET tab of <http://edendatasite.com>.

An overview of VBORNET activities and a summary of the discussions during the AGM are presented in the following pages. Work Packages 1 - 3 activities are summarised together in Section 2, whilst in view of the focus of the Meeting, WP4 is

treated in more detail in Section 3. Discussions and Member comments and conclusions for each work package follow the progress summaries.

2 Overview of VBORNET Activities Work Packages 1 - 3

2.1 Information Management and Coordination (WPI)

2.1.1 Coordination meetings

The year two Kick Off Meeting and Steering Committee (KOM) was held in Stockholm, in October 2010, along with a technical meeting focussing on IT issues. The Steering Committee, which also met at the 2011 AGM in Antwerp, and is due to meet again in Amsterdam in June 2011. In addition, regular (bi-monthly) teleconferences are held with all WP leaders and coordination and ECDC.

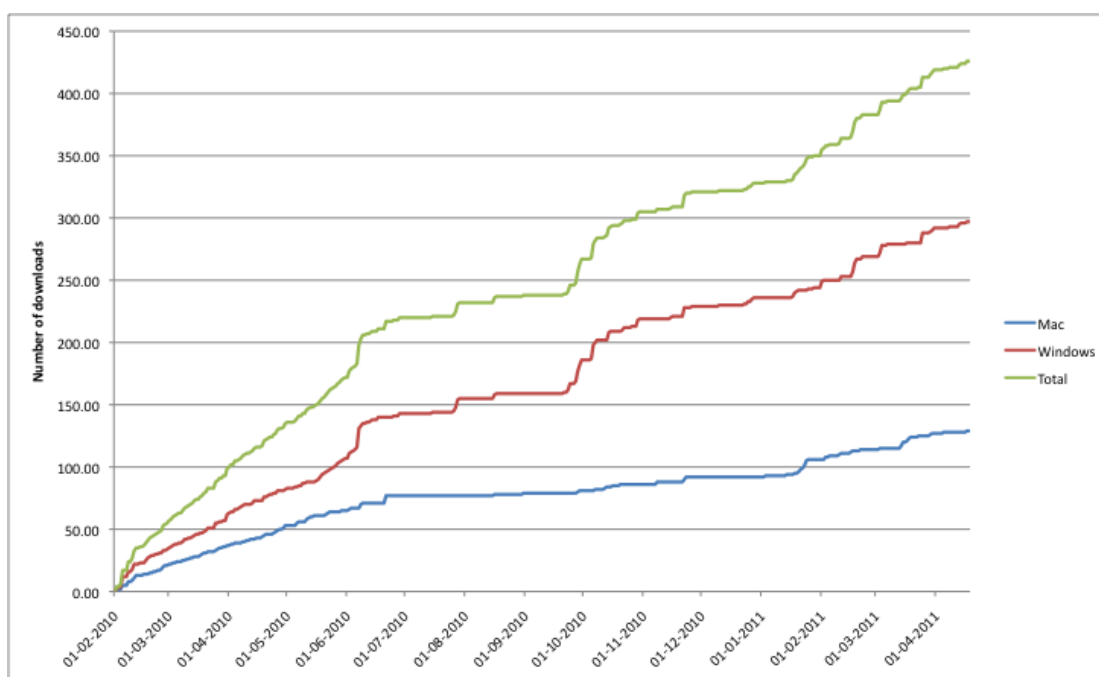
2.1.2 IT

A VBORNET webpage continues to be hosted by the EDEN Data Management Website, which provides access to the newsletters, AGM presentations and both Vector and Public Health Questionnaires (see Section 3).

The Vector Questionnaire Tool continues to be improved by upgrading the software, including additional species, and grouping the surveillance activity information for invasive mosquitoes (see Section 2.4). In addition it is now mandatory to login with an approved email address and provide permission for sharing email addresses within the Network, before downloading the tool.

Member demand for the Tool continues to increase (Figure 1), with step changes in downloads following the KOM in October 2010. Total downloads now exceed 400.

Figure 1: Vector Questionnaire Tool downloads (period 02/2010-04/2011)



Distribution map production has been fully automated and the outputs are now generated through a direct link with the database. The Shapefiles are currently available to network members on request. A prototype version (Figure 2) of a Web Map Service (WMS) has been set up. This will provide access to the Shapefiles and also provide interactive mapping. The features currently available include:

- Zoom in and out
- Pan
- Identify attributes
- Set layers invisible and visible

The detailed prototype design, in compliance with ECDC IT/GIS environment, will be submitted by the end of May.

Figure 2: Web Map Server Output



2.2 Science Watch (WP2.1)

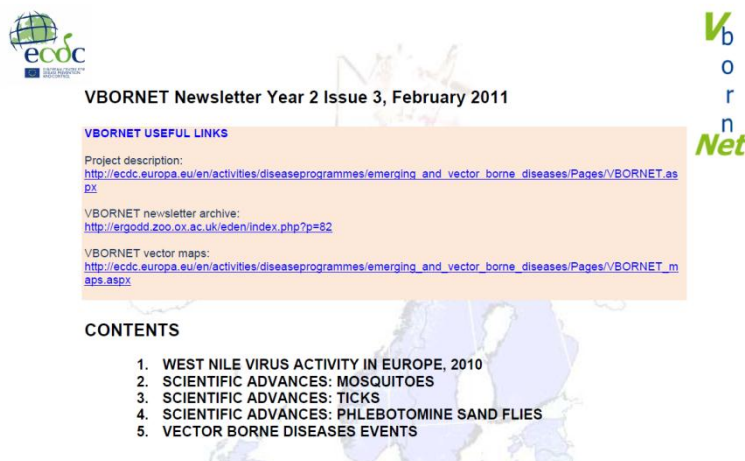
The Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" (IZS AM) has produced a bi-monthly scientific electronic newsletter (NL) gathering and organising relevant information deriving from scientific publications and other web resources in the fields covered by the VBORNET project with particular reference to the surveillance and modelling on geographical distribution and abundance of mosquitoes, ticks, phlebotomines and other vectors.

Relevant data are retrieved through the use of a web-search application (named "Newsdigger") for the automatic retrieval from the web of any information on specific topics. The "Newsdigger" application permits to search for web pages,

including references databases, containing specific keywords (inclusion and exclusion criteria may be defined in the search).

Each draft issue is sent to ECDC for final comments and approval. Once approved the final NL is published on the VBORNET web page. To date, three newsletters have been finalised during Project Year 2 (*e.g.* Figure 3) and a fourth is being finalised.

Figure 3: February 2011 Newsletter



2.3 Ad Hoc Technical Support (WP2.2)

Work package 2.2 has been developing risk assessments and factsheets on ticks. Specific focus has been given to driving forces for change in distribution of *Ixodes ricinus* in Europe, and an understanding of the ecology, habitats and biology of *Hyalomma marginatum* in Europe. During the first half of the year, work on *I. ricinus* has been progressed. All VBORNET tick experts were consulted and invited to take part in a review of the current consensus and evidence for changes in distribution of *I. ricinus* in Europe. Twenty four partners contributed, and along with a thorough literature review, produced more than 100 pieces of evidence or scientific opinion. Driving forces identified included:

- Climatic effects at altitude
 - Evidence, explanations
 - Effects on hosts and vegetation
 - Effects on abundance, effect of latitude, aspect
 - Lower altitude restrictions
- Climatic effects at latitude
 - Growing season, impacts on host, vegetation
- Habitat patchiness/ connectivity
- Expansion of tick hosts (deer, boar)
- Urban green corridors
- Anthropogenic factors
- Overcoming lack of historical data to assess change
- Expansion to new territories
- No evidence of change

Information or expert opinion has been provided for the majority of European countries. A summary of this work was presented at the AGM in Antwerp. This work is now being assimilated into a short report (risk assessment). A factsheet, detailing the biology, ecology and host preferences of *Ixodes ricinus* will accompany this work. The remaining part of year 2 will focus on *Hyalomma marginatum*, and much work has already been done in carrying out an extensive literature review.

2.4 Distributions and Surveillance (WP 3)

2.4.1 Mosquitoes

Maps are regularly updated for *Aedes albopictus*, *Aedes aegypti*, and *Aedes japonicus*. The January 2011 versions are online on http://ecdc.europa.eu/en/activities/diseaseprogrammes/emerging_and_vector_borne_diseases/Pages/VBORNET_maps.aspx

New maps were generated in April 2011. For all invasive species (only the case for *Ae. albopictus* so far) surveyed areas will be considered as 'absence'. Data on *Aedes atropalpus* and *Aedes koreicus* has been added to the database and maps have been constructed. All data on invasive mosquitoes are now validated.

Only one surveillance map for all exotic mosquitoes will be generated.

Data for *Anopheles plumbeus*, *Aedes vexans*, and *Culex modestus* has been reported and validated on country level. The April 2011 maps show country level (NUTS0) absence/presence and await more precise (NUTS 1 to 3) data to be reported by experts: data from Belgium and UK is now available and will be added soon. The Consortium will also assist with data preparation and entry if relevant publications/information is sent (see also discussion topics in Section 2.5).

2.4.2 Ticks

The validation of the larger datasets (such as the EFSA datasets) has required very substantial cleaning and gaps (such as authors, identification methods, collection dates, and full location details) remain in some records. Nevertheless, substantial progress has been made.

The historical distribution maps of *Dermacentor reticulatus*, *Rhipicephalus sanguineus*, *Hyalomma marginatum marginatum* and *Ornithodoros* ticks are under construction. A lot of information concerning *Ixodes ricinus* still needs to come from experts involved in the (completed) EDEN project.

The presence/absence of ticks within their distribution limits is confirmed; A preliminary prediction model of suitable habitats for *Hyalomma marginatum marginatum* in the Mediterranean Basin using historical presence data and corresponding climate variables is under construction (master student, so results are expected in September 2011)

Tick experts have been contacted and some have shown interest in contributing to the VBORNET network, though none have yet provided data. A lot of new information is expected from EDENext and ATP Emergence.

2.4.3 Phlebotomines

The (historical) database and distribution maps of Phlebotomines are continuously being updated and validated. Currently, the maps that are online are at Nuts1 level. For Nuts2 and Nuts3 level maps, substantial validation is required. Extensive data is expected from EDENext, though resources are needed to access literature resources in Serbian and Russian.

2.4.4 Other Arthropods

Frédéric Pages will now take the lead in this matter and the focus will change from pure entomology to more human health related issues.

2.5 Discussion on Core Activities, WP1 - 3

The utilities provided were universally stated to be very user friendly and easy to use. The period of data validity within the system was clarified to be a rolling 5 years.

It was emphasised that the collation of data on absences has been a particularly valuable result, in addition to the increasingly complete information about vector presence. There are, however, still gaps - partly due to processing (especially validation) bottlenecks for non-mosquito species - which may need additional resources to free. It was argued that details of the validation processes should be made available to the networks members as soon as possible.

A further possibility of screening non-English journals for distributions was considered providing more partners with specific skills within the network for appropriate translation could be involved.

There was some concern about data not being shared - in some cases because data holdings are too extensive for network members to process themselves. Consortium assistance was offered for such instances, and the possibility of specifying display levels to preserve confidentiality was also raised.

There were a number of requests for additional diseases and vector species linked to these diseases to be added to the VBORNET 'List' and for the coverage to be extended to EU neighbours, which argues for success of current activities. Resources are not yet, however, available.

3 Public Health Activities (WP4)

The Public Health Activities encompassed by WP4 have been the focus of the 2011 AGM, and as such are set out in the following sections: two specific topics are discussed: the Questionnaire sent out to Public Health bodies; and the first strategic Public Health paper on Monitoring and Surveillance.

3.1 Questionnaire

The objectives of the Public Health Questionnaire are to establish an inventory of surveillance of vector-borne diseases and related public health activities in Europe and to identify information gaps. The questionnaire, consisting of queries on human, animal and vector surveillance of 11 vector-borne diseases Table 1, was distributed among the EU Member states through the competent bodies of

Surveillance. In addition the questionnaire was sent to a surveillance expert in Switzerland.

Of the 43 invited countries, 21 countries responded (49%) to the questionnaire, which identified the national public health experts in vector borne diseases of the EU member states complying with ECDC requests for information. The regional focal points of WP4 will approach the competent bodies of the non-responders to obtain their questionnaires or names of the appropriate public health experts.

Table 1: The diseases that have been queried in the questionnaire:

Mosquito-borne diseases:
Chikungunya
Dengue
West Nile Fever
Rift Valley Fever
Tick-borne diseases:
Tick-borne encephalitis
Crimean-Congo haemorrhagic fever
Lyme borreliosis
Tularaemia
Rickettsiosis
Sandfly-borne diseases:
Leishmaniasis
Sandfly fevers

From the questionnaires received it is clear that there is a distinction between the surveillance activities performed and the priority of surveillance in humans, animals and vectors within and between countries in Europe. Some confusion existed in the terms used in the questionnaires which may have given rise to differential interpretation of and answers to the questions.

As soon as the remainder of the questionnaires are received the results will be reported in a second strategic paper.

3.1.1 Delegate discussion on Questionnaire

It was stressed that major objectives of the questionnaire were to raise institutional awareness, focus on geographical priorities, to inform the countries of the basic situation in relation to VBD. It is axiomatic therefore, that the results will be sent back to respondents. ECDC also intend to publish the results with country permission.

It was also suggested that the questionnaire might be sent to a wider community in due course - such as network members, and that a meeting of respondents (perhaps virtual) may produce useful insights.

As in the discussion on the other core activities delegates were keen to add other sometimes regional diseases for future work: dirofilariosis and Sindbis were mentioned most frequently. The organisation of the focal points by region was highlighted as facilitating the treatment of regional differences in disease

distributions. Some additional diseases could also be addressed by collaboration with other networks, though animal disease was not part of the current remit.

3.2 Strategic Paper

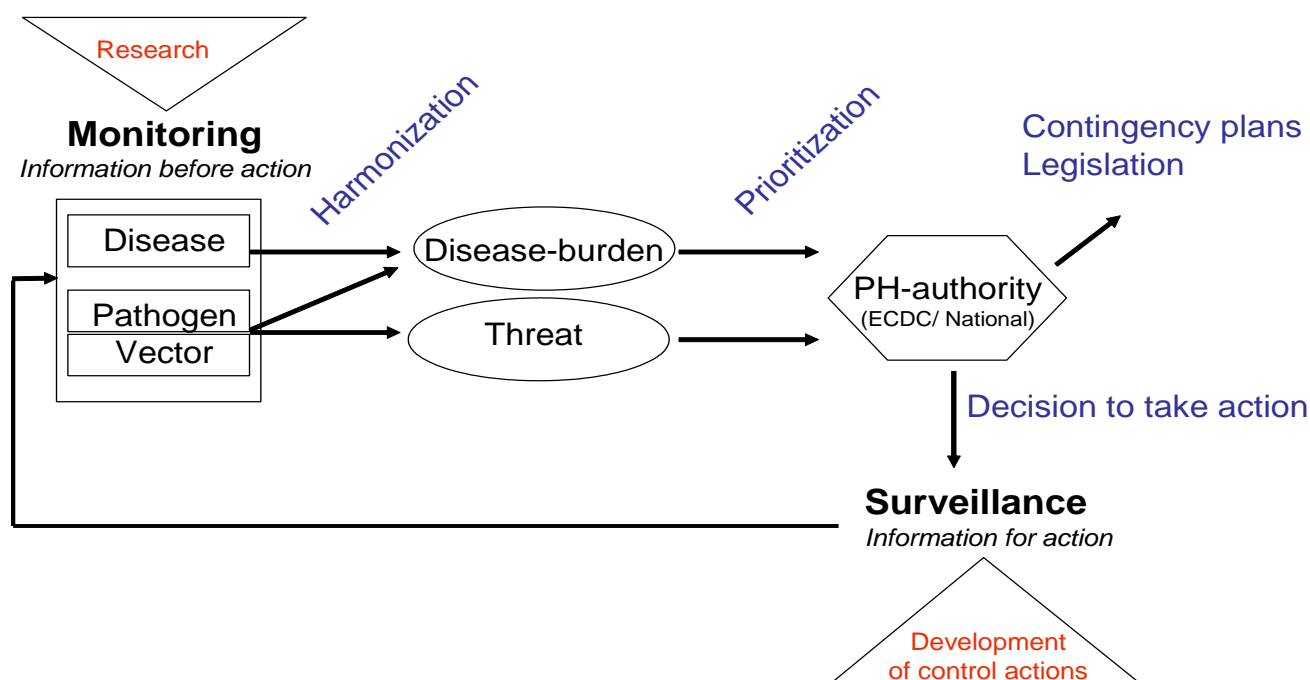
The objective of the first strategic paper of VBORNET is to explain the relevance of the different monitoring and surveillance elements for vector-borne diseases (VBDs) in Europe with emphasis on Lyme borreliosis.

VBD emergence is a complex and dynamic process. To fully appreciate the complexity, integrated knowledge about the human and the vector population are desirable. In the current paper, important parameters and terms of both public health and medical entomology are (re)defined in order to establish a common language that facilitates collaboration between the two disciplines. Special focus is put on the different VBD contexts with respect to the current presence or absence of the disease, the pathogen and the vector in a given location (Table 2).

Table 2: Different types of VBD in the Netherlands

<u>Current presence (✓) or absence (-) of disease (endemic human cases), pathogen or vector</u>				
Context	Indigenous disease	Pathogen	Vector	Examples of diseases holding for the Netherlands
1	✓	✓	✓	Lyme borreliosis
2	-	✓	✓	Dirofilariosis
3	-	-	✓	West Nile Fever Tick-borne encephalitis
4	-	✓	-	Leishmaniasis
5	-	-	-	Crimean Congo haemorrhagic fever

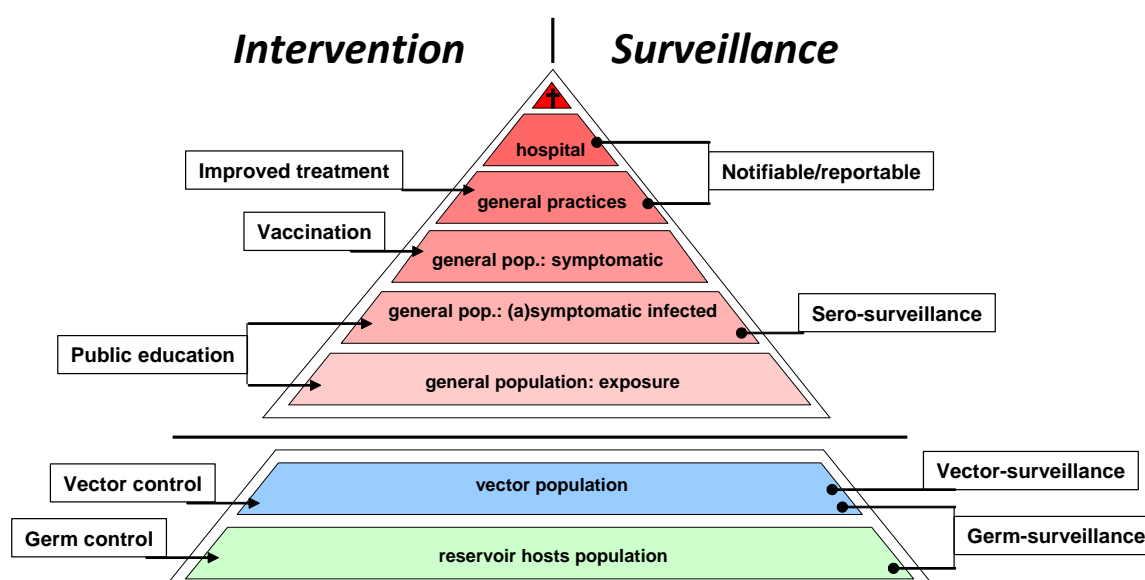
Figure 4: Simplified scheme for routing of monitoring and surveillance (MOS) data in a MOS system.



Depending on the context, whether a VBD is endemic or a threat, monitoring activities are required to assess disease burden or threat, respectively (Figure 4). The squares in indicate categories of qualitative data acquired to establish Table 2. Depending on endemic or emerging diseases, quantitative data on either disease or pathogen and vector are required for adequate risk assessment (ellipses). The diamonds point at the responsible health agency/decision makers and the triangles represent the input of research and developmental studies.

Following a decision for action, subsequent intervention and surveillance activities may be developed and implemented Figure 5.

Figure 5: Intervention and surveillance pyramid for vector-borne diseases.



3.2.1 Delegate Discussion and Future Activities

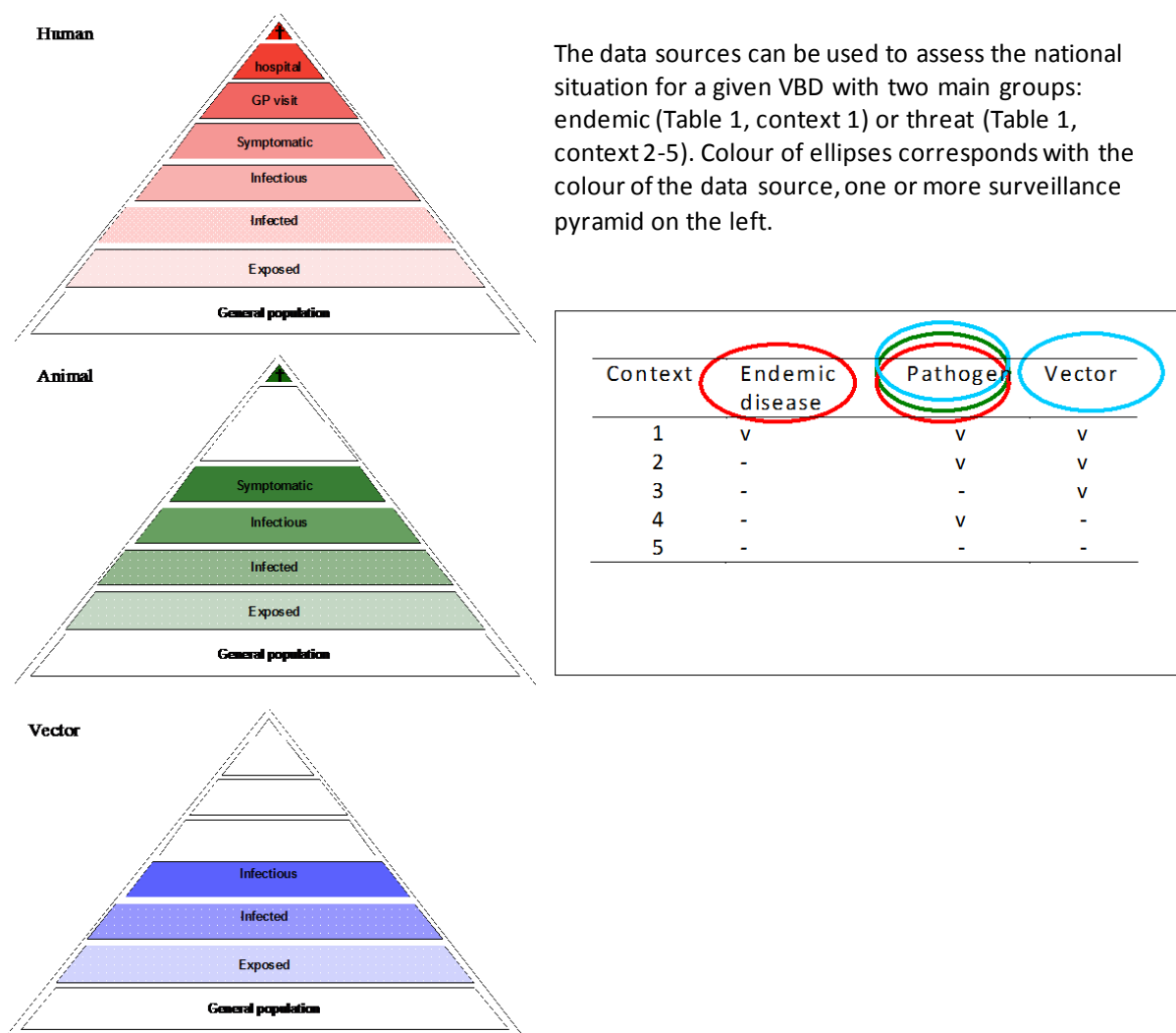
Following discussion during the 2011 AGM (see below), the terminology used in the current paper will be linked with those used in the International risk analysis schema used by WHO/OIE/FAO. The paper will be submitted for publication.

Considering the WP4 discussion during the AGM, national assessments of disease burden of VBD's are desirable for decision makers to set priorities. However, since such highly quantitative data is not available, VBORNET aims to provide qualitative information in the form of national fact sheets and European distribution maps of the 11 VBD's (Table 1), based on the scheme from the strategic paper (Figure 4).

The VBORNET consortium will therefore provide draft national fact sheets that will be sent to the identified national public health experts that are members of VBORNET for verification. On base of the national fact sheets, European distribution maps will be developed showing the status (context 1 -5, Table 2) of each country for a given VBD resulting in a total of 11 maps, one for each VBD. The data sources needed to assess the national and international situations are summarised in **Fout! Verwijzingsbron niet gevonden..**

A number of other issues were raised by the delegates. The authors emphasised that the paper is the first of a series - dealing with identification and decision making. Because ECDC provides advice, but does not implement surveillance or control activities, this series is designed to provide technical inputs to underpin advice and perhaps help with prioritisation, and not consider details of implementation (e.g. control and mitigation). The aim is thus to identify information and outputs needed, but not to prescribe the methods used to get the information. Topics of future papers might include decision making (involving stakeholder impact) and prioritising implementation of disease related activities.

Figure 6: Data sources (ellipse) for input for national and international (health) authorities.



The data sources can be used to assess the national situation for a given VBD with two main groups: endemic (Table 1, context 1) or threat (Table 1, context 2-5). Colour of ellipses corresponds with the colour of the data source, one or more surveillance pyramid on the left.

A number of suggestions were also made to modify the schemes identified by adding monitoring of non-human hosts, the mapping of disease reservoirs and differentiating between risk (exposure) and burden. It was also acknowledged that PH decision making affected by perception and resources, as well as measured risk. Risk perception should, however, be limited to perception by PH bodies not the public which will be dealt with by EDENext, and integrated with VBORNET activities, via a collaborative meeting in June. EDENext will focus on comparative analysis of

public risk perceptions (general public and stakeholders) in different countries and the risk communication needed, with HFRS and CCHF as targeted diseases.

4 Summary and Conclusions

All work packages are proceeding according to schedule. The IT outputs have been universally endorsed by the network members, website downloads continue to increase, and there is considerable interest in adding more species to the current list. Both the Science Watch and the Ad Hoc Technical Support activities continue to produce timely newsletters and comprehensive factsheets.

Distribution data continue to be acquired, validated and turned into mapped products. Data on absences are seen as a particularly valuable output. The maps of Mosquitoes are the most advanced and are now being expanded to include new species. Substantial progress has been made with several Tick species, and along with Phlebotomines, distribution maps are under current construction. Substantial new information is expected from EU FP7 projects in due course. It is clear that validation of new data may become a bottleneck without additional expert input. The Validation processes will be made available to network members.

Public Health related activities focus on the Questionnaire that has been sent to national competent bodies and a strategic paper on monitoring and surveillance in Europe. From the questionnaires received it is clear that there is a distinction between the surveillance activities performed and the priority of surveillance in humans, animals and vectors within and between countries in Europe. The results, validated at country level, will be presented in a second strategic paper, and sent to the respondents. It will focus on raising institutional awareness, geographical priorities, and informing the countries of the basic situation in relation to vector-borne diseases.

The strategic paper was designed to explain the relevance of the different monitoring and surveillance elements for vector-borne diseases (VBDs) in Europe and to identify information and outputs needed, rather than to prescribe the methods used to get the information. Special focus is put on the different VBD contexts with respect to the current presence or absence of the disease, the pathogen and the vector in a given location, and the monitoring activities required to assess disease burden or threat, respectively are identified.

As a result of discussions, country factsheets showing the status (context 1 -5, Table 2) of each country for a given VBD will be produced and the terminology used will be further harmonised with existing international schema. Efforts will also be made to integrate the assessment of risk perception with other initiatives such as EDENext.

The specific AGM presentations all underlined the facts that the known distributions of many vectors or pathogens were expanding: For example, in northern Italy, both leishmaniasis vectors and *Ae. albopictus* have spread in recent years, whilst contact rates between humans and ticks have also risen as a consequence of increasing tick populations. West Nile Virus is now an emerging disease in Europe as demonstrated by the recent rise in cases and the appearance of more potential virulent strains. This demonstrably dynamic situation underlines the need for improved monitoring and diagnosis, and for accommodating changes into long term studies.

ANNEXES

Table 3: AGM 2011 Agenda

April 18th – PM

VBORNET AGM introductory network session

13h00 – 14h00: Registration of participants

14h00 – 14h30: Presentation ECDC and how VBORNET fits in strategy

14h30 – 15h30: WP1 – VBORNET coordination: objectives, achievements and suggestions for future activities

15h30 – 16h00: WP2.1 – Science watch: objectives, achievements and suggestions for future activities

16h30 – 17h00: WP2.2 – Ad hoc technical support: objectives, achievements and suggestions for future activities

17h00 – 17h30: WP3 – Vector distributions: Objectives, achievements and suggestions for future activities

17h30 – 18h00: WP4 – Public Health: objectives, achievements and suggestions for future activities

April 19th – AM

VBORNET AGM public session: Public Health and Vector-borne diseases (1)

8h30 – 10h00: VBORNET PH questionnaire: Presentation by Agnetha Hofhuis and Florianne Bauer (RIVM, Netherlands)

10h30 – 12h00: VBORNET PH position paper: Presentation by Marieta Braks (RIVM, Netherlands)

April 19th – PM

VBORNET AGM public session: Public Health and Vector-borne diseases (2)

13h30 – 14h15: Disease mapping in PH: from theory to practice: Presentation by David Rogers

14h15 – 15h00: Burden of Disease assessments: the experience of BCoDE: Presentation by Cheryl Gibbons (University of Edinburgh, UK)

15h30 – 16h15: PH impact of WNV outbreaks in Europe in 2010: Presentation by Zdenek Hubalek (IVB, Czech Republic)

16h15 – 17h00: PH impact Lyme disease in Temperate Europe: Presentation by Kees van den Wijngaard (RIVM, the Netherlands)

1700 – 17h30: PH impact of leishmaniasis in Mediterranean Europe: Presentation by Luigi Gradoni (ISS, Italy)

April 20th – AM

VBORNET AGM concluding network session

08h30 – 10h00: VBORNET collaborations

10h30 – 12h30: VBORNET future activities

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