



## MEETING REPORT

# Assessing the risk of communicable diseases transmissible through substances of human origin

Stockholm, 20–21 September 2011

## Executive summary

This report summarises the discussion and outcomes of an expert consultation on priority setting for risk assessment of communicable diseases transmissible through substances of human origin (SoHO)<sup>1</sup> which took place at the European Centre for Disease Prevention and Control (ECDC) in Stockholm, Sweden, on 20 and 21 September 2011. The meeting was attended by 19 participants from eight European countries, nominated by competent authorities in the Member States, European professional organisations, the Directorate General for Health and Consumers, and ECDC.

To achieve its objectives, the meeting brought together experts in SoHO from different backgrounds who discussed a strategy for developing a priority list of infectious diseases transmissible through SoHO and subsequently developed a priority list of infectious diseases that present an urgent threat to the safety and sustainability of the supply with substances of human origin in the EU; the experts also determined the amount of essential knowledge necessary for the construction of a knowledge library on communicable disease transmission through SoHO for competent authorities.

In accordance with ECDC's plan of action on SoHO and the outcomes of this meeting, the next steps will include the preparation of a service contract tender for the risk assessment of diseases placed on the priority list of urgent threats, the continuation of activities on prioritisation of diseases transmissible through SoHO, and initial efforts towards the development of a knowledge library by selecting relevant documents. All participating experts agreed to continue with their work on this subject, which will be discussed at a second meeting planned for 2013.

<sup>1</sup> The term 'substances of human origin' (SoHO) was, for the purpose of the meeting, used as an umbrella term for blood and blood components, tissues and cells, and organs. This definition excludes other therapeutic substances of human origin (e.g. plasma products and advanced therapy medicinal products [ATMPs]) and diagnostic substances of human origin. However, since Directives 2002/98/EC and 2004/23/EC cover tissues and cells used as raw materials for tissue-derived ATMPs as well as the donation, procurement and testing of human plasma used for the manufacturing of plasma products, the studies/risk assessments for the Commission and national competent authorities will have to take this issue into account.

# Background

ECDC's supports Member States in the prevention and control of communicable diseases transmissible through SoHO by facilitating their decision-making process in outbreaks of relevant infections and by assisting their competent authorities in the use and interpretation of epidemiologic and risk assessment data in ways that are consistent with the legal provisions. To achieve this task, ECDC provides scientific advice on relevant SoHO issues upon request from the European Commission, the European Parliament, Member States, or at its own initiative. Additionally, ECDC was asked to develop a knowledge library to support competent authorities in their decision-making processes regarding recommendations and measures related to the prevention and control of infectious diseases transmissible through SoHO.

## Purpose

In order to achieve the tasks outlined above, ECDC organised an expert meeting with two clearly defined goals.

The first goal was to develop a list of infectious diseases transmissible through SoHO, sorted according to priority, for further risk assessment. This priority list would serve as a basis for the selection of infectious diseases, starting with the highest priority. Selected infectious diseases would then be assessed for potential SoHO transmission risks by applying comprehensive evidence- and review-based methods. Such risk assessments could facilitate the timely implementation of preparedness activities and other appropriate measures, and also speed up the decision-making process when responding to outbreaks and allocating resources.

The second goal was to discuss and define the essential knowledge necessary for national competent authorities to understand the risk posed by communicable disease transmission through SoHO and assess appropriate measures for disease prevention and control.

## Objectives

Developing a knowledge library and risk assessments of infection transmissions through SoHO is a continuous, long-term, methodological and systematic process, which does not immediately show tangible results. On the other hand, the current emergence of certain arthropod-borne diseases in Europe poses urgent infectious threats connected to the supply of SoHO and requires rapid action and prioritisation. Thus the meeting objectives, reflecting this situation, were to:

- discuss, and agree on, a strategy for developing a priority list of infectious diseases transmissible through SoHO;
- develop a priority list of infectious diseases that present an urgent threat for the supply of SoHO in the EU;
- discuss and identify critical knowledge in the epidemiology and in the risk management of infectious diseases transmissible through SoHO as relevant for competent authorities; and
- network with experts in the prevention and control of infectious disease transmission through SoHO.

## Expected outcomes

- Agreement on the prioritisation strategy.
- Priority list of urgent communicable diseases threats.
- Identification of critical points in knowledge on communicable disease transmission through SoHO relevant for competent authorities.
- Establishment of an informal network of experts.

## Prioritisation strategy

The risk of transmission of infectious diseases through transfusion or transplantation in the EU is minimal because effective preventive strategies have been implemented. Nevertheless, many microbial agents, including viruses, bacteria and parasites, can be transmitted through blood transfusion because donors cannot be tested/screened for all known or emerging infectious diseases, and not all SoHO can be sterilised or pathogen-inactivated.

Infectious complications of therapy with SoHO appear to have a low incidence, but, if transmission occurs, morbidity and mortality is significant. A response to an infectious threat entails assessing the risk, identifying the measures to manage and/or control each potential risk, and communicating this information to donors, recipients, physicians and the general public. The efficacy of applied measures must then be evaluated and modified if necessary.

As the epidemiology and transmission mechanisms of infections are complex, assessing the risk for transmission of infectious diseases to humans through SoHO is not a straightforward process. Risk assessments prepared in advance could facilitate the timely implementation of response activities and control measures, and expedite important decision-making processes with regard to outbreak response and resource allocation. Since various infectious diseases can be transmitted through SoHO, prioritisation is needed to suggest where to best spend resources for risk assessments. To accomplish this goal, those infectious agents that have an actual or potential risk for transmission through SoHO have to be identified, described and prioritised.

A summary of [prioritisation techniques](#) (simplex method, nominal group planning, criteria weighting, Hanlon method, 'quick and colourful approach') was presented during the meeting, along with an evaluation of the strengths and weaknesses of each approach. As different techniques match different types of decisions and data, a customisable technique should be selected (after consultation with the appropriate experts) in order to meet the intended prioritisation purposes.

As an example, the prioritisation method used in 2006 by the AABB Transfusion-Transmitted Diseases Committee (AABBTTD)<sup>2</sup> was presented. The Committee consulted experts on all aspects of transfusion- and transplantation-related diseases and involved donor management as well as laboratory testing. Emerging infectious diseases (EIDs) which posed demonstrated or potential risks to the safety of transfusion or transplant recipients were identified, and fact sheets were developed according to consensus categories, facilitating the review and prioritisation of each EID agent. Each agent was assigned a priority risk level in one of the following three categories:

- scientific/epidemiologic evidence regarding blood safety;
- public perception and/or regulatory concern regarding blood safety; and
- public concern regarding the disease agent.

The overall prioritisation of risk was a synthesis of the ratings in each category (based on consensus), with greater weight given to ratings in the first two categories: scientific/epidemiologic risk and public and/or regulatory concern regarding blood safety. It was mentioned that the list of identified EIDs developed by AABB could be used as a starting point.

Meeting participants agreed to the following three steps for 2013: first, they will review, update and adapt the AABBTTD list; once the list is updated, a prioritisation method and criteria will be selected; finally, diseases will be prioritised.

Prioritisation methods and criteria should be selected based on purpose/perspective, cost–benefit ratio, and the level (Member State or EU-wide) of the prioritisation process.

## Priority list of urgent communicable disease threats in the EU

The meeting participants considered arthropod-borne diseases as an urgent communicable disease threat in the EU and produced a list of nine arthropod-borne diseases (West Nile fever, dengue, chikungunya, tickborne encephalitis, Usutu virus fever, malaria, Chagas disease, leishmaniasis and babesiosis), taking into account recent, previous and potential outbreaks of indigenous or imported cases of these diseases *and* the presence of relevant arthropod vectors in the EU. An overview of selected arthropod-borne diseases was presented at the meeting in order to provide a basis for prioritisation. At a later stage, Crimean-Congo haemorrhagic fever and borreliosis were added to the list.

Diseases were prioritised in two stages: during the first stage, experts determined which of the selected arthropod-borne diseases posed the most urgent threat. This was done by using a matrix which focused on urgency (defined as the possibility of a disease outbreak in the EU) and significance (defined as the likelihood of transmission through SoHO). West Nile fever, dengue, chikungunya, malaria, Chagas disease and leishmaniasis were identified as 'urgent threats'. Usutu virus fever, tickborne encephalitis and babesiosis were not seen as urgent threats

because these diseases scored only 50% of the maximum number of points for urgency and significance. At the second stage, diseases identified as urgent threats were prioritised according to an impact score that was calculated by multiplying the points given to a particular arthropod-borne disease in relation to the probability of occurrence and the ensuing consequences to human health<sup>2</sup>.

**Table 1. Priority list of communicable diseases presenting an urgent threat for transmission through substances of human origin**

Disease	Urgency/significance in points (++/+-/-+/-)	Urgency/significance (rank)	Impact score	Final rank
West Nile fever	10/2/0/0	1	151	1
Dengue	4/1/4/3	2	127	2
Malaria	5/0/3/4	4	94	3
Chagas disease	5/1/3/4	3	91	4
Chikungunya	3/2/3/4	5	80	5
Leishmaniasis	1/1/5/5	6	57	6
Usutu virus fever	1/1/4/6	7	-	7
Tick-borne encephalitis	2/2/0/8	8	-	8
Babesiosis	0/0/1/11	9	-	9
Crimean–Congo haemorrhagic fever*	-	-	-	-
Borreliosis*	-	-	-	-

\* Diseases which were not prioritised; added at a later stage.

ECDC will use this priority list as a basis for developing comprehensive, review-based risk assessments through service contracts in 2013. The number of diseases selected for risk assessments will depend on the approved budget.

## Essential knowledge on communicable disease transmission through SoHO relevant for competent authorities

Basic information on rapid risk assessment methodology and the epidemiology of donor-derived infections was presented at the meeting. Meeting participants agreed that a better knowledge of certain aspects of SoHO transmission threats was crucial and should be documented in a knowledge library, e.g. information on donor evaluation or the epidemiological characteristics of infectious disease transmission through particular types of SoHO. ECDC should continue to explore the epidemiology of donor-derived infectious diseases and add related technical documents to the knowledge library.

It was noted that a clear understanding of ECDC risk assessments is of critical importance for competent authorities engaged in risk management activities during an outbreak of disease transmission through SoHO. Therefore, ECDC's technical documents dealing with the identification, assessment and prioritisation of risks should be included in the planned knowledge library.

The discussion showed that the knowledge library should be maintained and located at ECDC. Risk assessments of communicable diseases transmissible through SoHO, developed according to the priority list, should be included in the knowledge library. The library should also contain information on risk management strategies for the prevention and control of communicable disease transmission through SoHO, the epidemiology of donor-derived infectious disease transmission, laboratory screening and testing related to SoHO, and contact tracing as a useful approach for identifying the initial source of the infection in order to apply the most appropriate and comprehensive control measures.

Participants discussed whether ECDC should issue risk assessments of communicable disease transmission through SoHO for one type or all three types of SoHO (blood, cells, and tissues and organs). The representative of the Directorate General for Health and Consumers expressed her preference for the second approach which will give a complete picture of possible risks related to transmission of observed communicable disease through all types of SoHO.

<sup>2</sup> American Association of Blood Banks (AABB) Transfusion-Transmitted Diseases (TTD) Committee in liaison with the US Food and Drug Administration, the US Centers for Disease Control and Prevention, the US Department of Defence, the American Society of Haematology, and the Association of Public Health Laboratories.

## Establishment of an informal network of experts

All experts agreed to continue with work on prioritisation issues and expressed interest to join the informal network on communicable disease transmissions through SoHO.

## Next steps

In accordance with ECDC's plan of action on SoHO and the outcomes of this meeting, ECDC's next steps will include the preparation of a service contract tender for the risk assessment of diseases placed on the priority list of urgent threats.

ECDC will also continue its activities related to priority list development, taking into account all communicable diseases transmissible through SoHO, and initiate a knowledge library by selecting relevant documents.

It was agreed to convene a second meeting of the expert network in 2013 in order to continue the work and the exchange of knowledge in this field.

# Programme

## Day 1, Thursday, 20 September 2012

12:00 – 13:00 Registration and buffet lunch

13:00 – 13:15 Welcome and introductions

### ***Session I – Introduction***

13:15 – 13:45 Epidemiology of donor-derived infectious disease transmission (Dragoslav Domanović)

13:45 – 14:15 Surveillance of transmission of infectious diseases through SoHO in the EU – current status and reports (Silvia Villanueva)

14:15 – 14:45 Establishing criteria for the development of a priority list of infectious diseases transmissible through SoHO (Dragoslav Domanović)

14:45 - 15:15 Discussion

15:15 – 15:45 Coffee break

### ***Session II – Transmission of communicable diseases through SoHO***

15:00 – 15:30 Transmission of BBV in ART: myth or reality? (Edgar Mocanu)

15:30 - 16:00 Transmission of infectious diseases through tissues (Esteve Trias i Adroher)

16:00 – 16:30 Transmission of infectious diseases through cord blood transplantation (Primož Rožman)

16:30 – 17:00 Transmission of infectious diseases through ocular tissue transplantation (Stefan Ek)

17:00 – 17:30 Discussion

## Day 2, Friday, 21 September 2012

### ***Session III – Transmission of communicable diseases through SoHO***

09:00 – 09:30 Emerging arthropod-borne diseases in the EU (Wim Van Bortel)

09:30 – 09:45 Urgent threats to safety of SoHO in the EU (urgency/significance matrix)

09:45 – 10:15 Detection of HEV genotypes in human blood (Johannes Blümel)

10:15 – 10:30 Priority list of infectious diseases that pose urgent threats to SoHO safety in the EU (impact matrix scoring)

10:30 – 11:00 Coffee break

### ***Session IV – Risk assessment***

11:00 – 11:30 Rapid risk assessment process in public health (Katrín Leitmeyer)

11:30 – 11:45 Common knowledge on the risk and epidemiological profile of communicable diseases transmissible through SoHO essential for national competent authorities (panel discussion)

11:45 – 12:15 Molecular epidemiology of infectious diseases (Maria Alma Bracho)

12:00 – 12:30 Discussion

12:30 – 13:30 Lunch

### ***Session V – Priority list development***

13:30 – 15:00 Discussion on proposed priority list and next steps

15:00 Conclusion of the meeting

## List of participants

- 1 Franz Allerberger (Austria)
- 2 Esteve Trias i Adroher (EATB)
- 3 Jashari Ramadan (EATB)
- 4 Iván Miranda Alvarez-Pickman (EATB – observer)
- 5 Christof Jungbauer (EBA)
- 6 Stephan Ek (EEBA)
- 7 Edgar Mocanu (ESHRE)
- 8 Elodie Pouchol (France)
- 9 Johannes Blümel (PEI, Germany)
- 10 Primož Rožman (Slovenia)
- 11 Maria Alma Bracho (CSISP, Spain)
- 12 Anders Wallensten (Sweden)
- 13 Helena Ström (Sweden – observer)
- 14 Silvia Villanueva  
(Directorate General for Health and Consumers)
- 15 Johan Giesecke (ECDC)
- 16 Denis Coulombier (ECDC)
- 17 Katrin Leitmeyer (ECDC)
- 18 Wim Van Bortel (ECDC)
- 19 Dragoslav Domanovic (ECDC)

(EATB – European Association of tissue banks; EBA – European Blood Alliance; EEBA – European Eye Banks Association, PEI – Paul Ehrlich Institute)