Vector-borne diseases

- Caused by pathogens in human populations.
- Transmitted by vectors: living organisms that can transmit pathogens between human beings or from animals to humans.
- Transferring the pathogens received during a blood meal from an infected host into a new host during the next blood meal.
Key facts – global

• Vector-borne diseases account for 17% of the estimated global burden of all infectious diseases.

• Malaria caused an estimated 627,000 deaths in 2012: more than any other vector-borne disease.

• The fastest growing vector-borne disease is dengue fever, with a thirtyfold increase in disease incidence over the last 50 years.
Examples of vector-borne diseases in the WHO European Region

<table>
<thead>
<tr>
<th>Mosquito-borne</th>
<th>Sandfly-borne</th>
<th>Tick-borne</th>
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<tr>
<td>• Dengue fever</td>
<td>• Leishmaniasis</td>
<td>• Lyme disease</td>
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<td>• Chikungunya</td>
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<td>• Tick-borne encephalitis (TBE)</td>
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<td>• Malaria</td>
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<td>• Crimean–Congo haemorrhagic fever</td>
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<td>• West Nile fever (WNF)</td>
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Vector-borne diseases
Key facts – WHO European Region

- 77,000 Europeans on average fall sick from vector-borne diseases every year.
- Mosquito species, such as *Aedes aegypti*, are re-emerging, and *Ae. albopictus* is emerging.

Source: ECDC
Message from the Regional Director

“There is a clear warning signal to the European Region that diseases carried by vectors may spread and intensify in the years ahead. This is not the time to lower our guard.”

– Zsuzsanna Jakab
WHO Regional Director for Europe
Increasing and decreasing trends

Number of cases: 1990, 2000, 2010

Source: WHO centralized information system for infectious diseases (CISID) (http://data.euro.who.int/cisid).
Growing public health concern

A combination of factors increases the threat of vector-borne diseases in the WHO European Region:

- changing social and economic conditions;
- globalized travel and trade;
- increased urbanization;
- climate change;
- environmental and ecosystem changes.
Malaria in Europe

- Dramatic fall in locally acquired cases
- 3 countries reporting locally acquired cases in 2013: Greece, Tajikistan and Turkey
- Imported cases in Europe in 2013: 5000

Source: WHO centralized information system for infectious diseases (CISID) (http://data.euro.who.int/cisid).
Dengue in Europe

- Viral infection transmitted by *Aedes* mosquitoes
- In Europe, second only to malaria in causing hospitalizations after travellers return from abroad
- More than 3000 cases reported in the last three years
Lyme disease in Europe

• Bacterial disease transmitted to human beings through bites from infected ticks
• Most common vector-borne disease in the WHO European Region, with the highest incidence reported in central Europe
• Over 360,000 cases in Europe in the last two decades
Tick-borne encephalitis (TBE)

- Viral infectious disease transmitted by the bites of infected ticks
- 5000–12 000 cases reported in Europe each year
- Safe and effective vaccine against the TBE virus
Leishmaniasis is neglected and poorly reported.

- **Leishmania** is a parasitic protozoan transmitted through the bite of infected female sandflies.
- It causes three main forms of disease.
- Leishmaniasis is neglected and poorly reported.
Public health action

3 phases of vector and disease prevention and control

• Control the vector
• Prevent the disease
• Limit the spread
Phase 1. Control the vector (1)

• Integrated vector control to prevent the introduction, establishment and spread of the vector
• Measures for early detection and containment
• Robust methods for monitoring and evaluation
• Social mobilization for vector control
• Information for the public on how to reduce vectors in the environment through risk communication and community mobilization
• Increased capacity for vector control
Advice on:
• long-lasting insecticide-treated bed nets (where necessary);
• indoor residual spraying;
• outdoor spraying;
• environmental management (reduction of breeding habitats, biological control, genetic control and waste management)
• housing modifications
Phase 2. Prevent the disease

Action needed where the introduction of vectors could not be avoided

• Coordination of disease surveillance in the population at risk is with vector surveillance, to prevent outbreaks
• Advice on personal protection measures (clothing, insect repellents, etc.), prevention, and vaccines (e.g. for TBE).
• Blood and body fluid safety
• Food safety.
Phase 3. Limit the spread

Measures to avoid large outbreaks, particularly in newly affected areas

• Inform and educate the public
• Raise awareness among health professionals
• Ensure laboratories are equipped for early diagnosis
• Ensure early detection and case management
Individuals and families can contribute

• Know which vectors carry disease
• Use proven vector-control tools
• Be informed about vaccination and disease prevention
• Cooperate with local authorities in vector control
• Take part in health education in the community
• Ensure environmental management around and in homes
Current challenges

• Emerging insecticide resistance
• Lack of expertise in vector control
• Integrated surveillance
• Sanitation
• Pesticide safety
• Environmental change
WHO response

European and global commitments

• Regional framework for surveillance and control of invasive mosquito vectors and re-emerging vector-borne diseases, 2014–2020
• World Health Assembly resolution WHA60.13 on control of leishmaniasis
• Regional strategy: from malaria control to elimination in the WHO European Region 2006–2015.
WHO Regional Office for Europe response

- Working with partners including the European Commission, the European Centre for Disease Prevention and Control (ECDC) and the European Mosquito Control Association (EMCA)

- Assisting countries in disease surveillance, prevention and control, following the International Health Regulations

- Providing training and guidelines on case management and vector control
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Protect yourself from diseases carried by vectors

Hashtag: #Just1Bite

Website:
www.euro.who.int/WHD2014