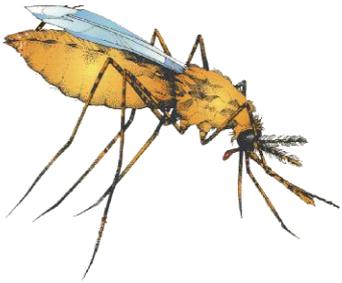


# VECTOR CONTROL



Ms MA Groepe



# OUTLINE

- Introduction
- What is a vector?
- Type of vectors
- Vector borne diseases
- Vector control strategies
- Surveillance, monitoring vectors
- Role of the entomologist
- Integrated vector management

# INTRODUCTION

- Vector-borne infections, diseases caused by pathogens transmitted by insects and ticks, have long impacted human affairs
- The Black Death, killer of tens of millions worldwide is the work of a tiny flea vectoring the bacilli that cause bubonic plague from rats to people.
- Vector-borne infections today is responsible for filling the hospitals of sub-Saharan Africa with malaria victims,

# INTRODUCTION

- Suppressing the economies of nations and interrupting industrial operations where it remains endemic.
- Can reach epidemic form very quickly
- When vector control is not in place then you need to improve, awareness, diagnostic facilities and treatment

# What is a vector

- Is an insect or any animal that transmits a disease to other animals or humans. Eg. Mosquitoes, tsetse, ticks, lice, fleas, etc.

# Types of vectors

- Mechanical vectors
  - Transmit pathogens by transporting them on their feet or mouthparts. Eg. Housefly
- Biological vectors
  - These vectors are involved in the life-cycle of parasite / arbovirus which must pass through the vector in order to mature to an effective stage capable of being transmitted to human or animal host when a vector takes a blood meal.

# Vector, disease, control

Vector	Disease	Control
Mosquito (Anopheles, Culex, Aedes)	<ul style="list-style-type: none"> <li>● Malaria,</li> <li>● Yellow fever</li> <li>● Dengue fever</li> <li>● Filariasis</li> </ul>	<ul style="list-style-type: none"> <li>● Chemical, personal protection</li> <li>● Vaccination</li> <li>● Vector control</li> <li>● Vector control, drug therapy</li> </ul>
Mosquito - Culex	<ul style="list-style-type: none"> <li>● West Nile virus</li> </ul>	<ul style="list-style-type: none"> <li>● No Curative drug treatment available – vector control</li> </ul>
Tsetse fly (Glossina)	Sleeping sickness	Vector control, drug therapy
Sandfly (Phlebotomus)	Leishmaniasis	Drug therapy, vector control
Black flies (Simulium)	River blindness (onchocerciasis)	Drug therapy, vector control
Fleas (Xenopsylla)	Plague	Antibiotics, vector control

# Vector, disease, control

<b>Vector</b>	<b>Disease</b>	<b>Control</b>
Lice	Relapsing fever	Antibiotics, delousing
Ticks	Crimean Congo	No specific treatment
Mites	Typhus	Antibiotics, repellents
Reduvid bug	Chaga's	Indoor residual spraying or housing improvements

# Vector control strategies

- Chemical control (Adults)
- Space spraying
- Larval control
- Biological control
- Environmental control
- Personal protection

# Biological information required for vector control

- Investigate or know the following before deciding on control intervention:
  - Breeding sites
  - Resting sites
  - Transmission
  - Blood source
  - Dispersal range
  - Population dynamics

# Larval activity – breeding sites for mosquitoes

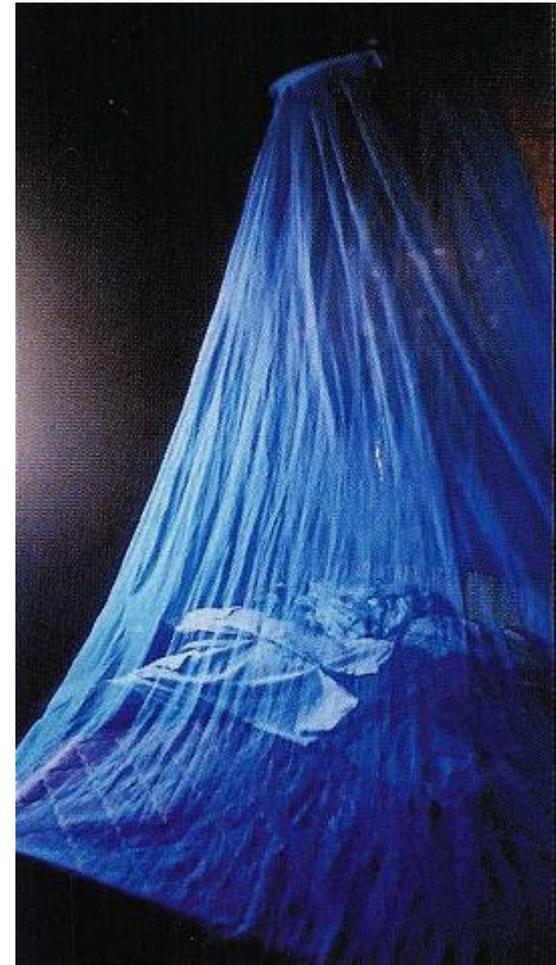




# Adult mosquito control – dengue fever (Fogging)



# Adult mosquito control – Indoor residual spraying, Long Lasting Insecticide treated nets



# Surveillance, monitoring of vectors

- Routine surveillance required to understand dynamics of vectors
- Vector mapping – important for vector distribution
- Surveys – to find solutions to specific questions
- Set up indicators – to monitor vectors
- Data management – to do analysis to inform strategies.

# Role of the entomologist

- To predict the likely vector problems
- To identify the vector
- To locate the breeding sites of the vector
- To test insecticide susceptibility
- To assist in designing a control programme

# Integrated vector management (IVM)

## Characteristics

- Factors influencing local vector biology, disease transmission and morbidity
- Use of a range of interventions, often combination and synergistically
- Collaboration within the health sector and other public private sectors that impact on vectors
- Engaging with local communities and other stakeholders
- Public health regulatory and legislative framework

# References

- <http://www.slideshare.net/bayenMD/vectorborne-diseases>

\* WHO neglected tropical disease Hill et al., 2005

THANK YOU