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FROM THE AMERICAN PEOPLE



U.S. President's Malaria Initiative



Session 22:

RESISTANCE MONITORING AND PRACTICAL



Session Objectives

By the end of this session, you will be able to:

- Describe insecticide resistance and why it occurs
- Explain how WHO susceptibility bioassays are conducted.



Insecticide resistance

- Reduction in the ability of an insecticide product to kill mosquitoes
- Three primary mechanisms:
 - Metabolic resistance
 - Target-site resistance
 - Behavioral resistance



Using WHO tube tests for examining resistance

- To detect presence of insecticide resistant individuals in a mosquito population
- To assess the level of the resistance
- To gain insight into possible metabolic resistance mechanisms



Definitions

- **Bioassay** – testing of the biological effectiveness of a treatment by deliberately exposing insects to the treatment
- **Synergist** – chemical that enhances effectiveness of an active agent
- **PBO** – piperonyl butoxide, man-made pesticide synergist, inhibits oxidases



Definitions (continued)

- **Knockdown (KD):** # of mosquitoes not able to stand and/or rest, fly in a coordinated manner, or take off but falls down immediately at 1 hour following exposure to the insecticide impregnated paper
- **Mortality:** Percentage of mosquitoes that show no signs of life, are immobile or cannot stand at the end of the 24 hour holding period
- **Exposure time:** Time mosquitoes are exposed to the impregnated paper. Typically, the exposure time is equal to 1 hour.