CDC-Supported Operational Research Within the Amazon Malaria Initiative

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Agenda

- Discuss concepts around research and operational research (OR)
- Comment some of the current projects with CDC involvement
- Present some possible future projects

Guidelines

- Antimalarial resistance monitoring
  - Strategic document
    - Final translation process to English and Portuguese
  - Use of molecular markers in antimalarial resistance monitoring
    - Available in English
- Entomology
  - Bottle bioassay
    - Available in 3 languages

Guidelines

- Entomology
  - Bednet coverage survey
    - Available in 3 languages
  - Durability evaluation
    - Available in 3 languages
  - Colorimetric method
    - Final stages of production
    - ‘Testing’ with our visitors

My Personal Definitions

- Evaluation
  - Survey or study to evaluate (understand) a particular situation
  - No generalization purpose
  - Ex. in vivo study, long-lasting insecticide-treated nets (LLINs) evaluation in Nicaragua
- Operational research (OR)
  - Survey or study to collect information to better inform a public health program
  - Generalization possible
  - Ex. definition of LLIN failure, comparison of different healthcare worker training strategies

My Personal Definitions

- Research
  - Survey or study to make new discoveries on a particular subject
  - Generalization present
  - Ex. Discovery of new drugs, development of new types of LLINs
- Discrimination among the three not always easy (gray area)

Entomology

- Evaluation
  - Prospective monitoring of durability of LLINs in Waspam, Nicaragua
    - Analyses of bioefficacy, chemical content, physical integrity
    - Inform replacement periodicity
  - Characterization of insecticide resistance in *An. albimanus* in Tumbes
    - Biochemical and molecular characterization of resistance mechanisms
    - Allow for selection of insecticides for vector control and resistance management

Entomology

- Evaluation
  - Assessing the protective efficacy of aged LLINs in Peru
    - Experimental hut studies using LLINs in use for 2–4 years
    - Determine duration of protection against mosquitoes
  - Prospective monitoring of durability of LLINs in Guatemala (2012)
    - Analyses of bioefficacy, chemical content, and physical integrity
    - Inform replacement timing

Entomology

- Evaluation
  - Retrospective monitoring of durability of LLINs in Acre, Brazil
    - Analyses of bioefficacy, chemical content, and physical integrity
    - Provide feedback to the program

Entomology

- Operational research
  - Development of tool to define LLIN failure
    - Determine what combination of holes and loss of chemical content constitute LLIN failure
    - 2 components
      - Laboratory work in Atlanta
      - Field experiments in Guatemala to assess impact on wild *An. albimanus* (June 2012)

Molecular Epidemiology

- Evaluation
  - HRP2 evaluation in South America and Central America
    - Inform countries about use of rapid diagnostic tests (RDTs)
    - Challenges: still no clear cut off for data interpretation
  - Monitoring of antimalarial resistance markers
    - Complement information from in vivo trials

Future Possibilities

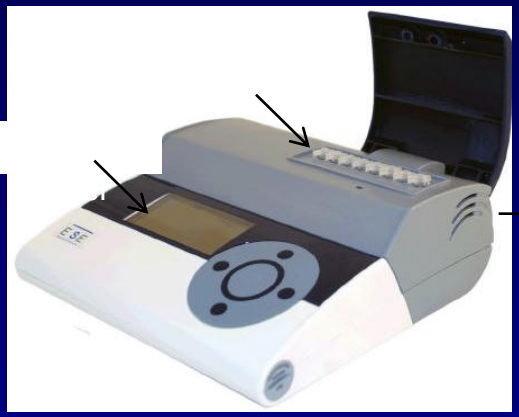
- Evaluation and OR
  - Malaria surveys
    - Estimate malaria burden in different settings
    - Comparison of different methods (serology, microscopy, PCR)

Future Possibilities

- Molecular-based diagnostic methods
  - Need to balance different diagnostic tools (microscopy vs rapid tests vs PCR)
  - Some situations require exceptional certainty on malaria diagnosis (epidemics)
  - Available simpler PCR-based methods with good attributes for use in the field
    - Those are RealAmp PCR and photo-induced electron transfer PCR
    - Need for field validation

Future Possibilities

A



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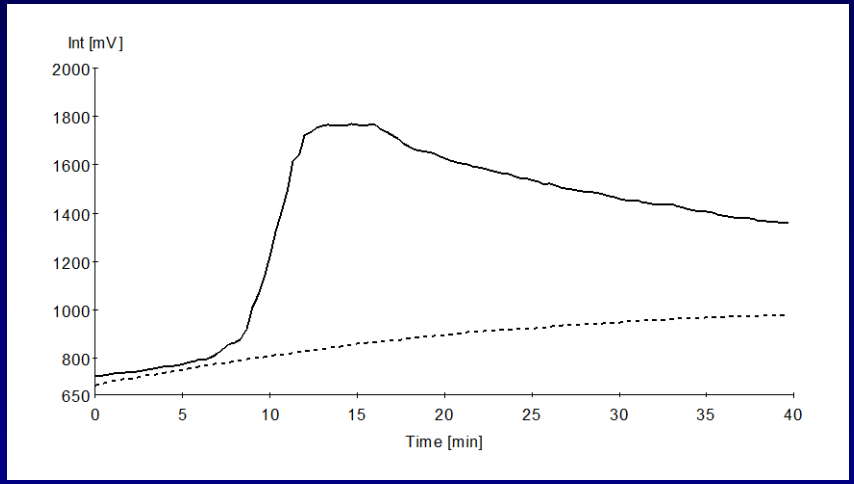

- This is a portable and simple to use equipment
- Equipped with temperature settings and spectral devices (fluorescence)
- Can be battery-operated, blue-tooth capability

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Universidad del Valle Guatemala

- Norma Padilla

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