Textile Testing Methods for Nets
VCWG Work Stream: Durability of LLIN in the Field

Summary of Day 1
What we considered

• Methods of assessing useful life / durability in the field and available data to date
• Current specifications and proposal (concept) to obtain location specific data for cost/net year
• Textile testing methods and results
  - Established and potential new tests to
  - Identify magnitude of “cause of initial damage” from microscopic analysis
  - Differentiate reliably performance of new and old nets
  - Simulate aging of the nets in the lab
Field methods and data

- Causes and dynamic of deterioration/loss of nets are complex with considerable variation and non-product related factors
  - Behaviour
  - Presence of rodents or other animals
  - >> useful life vs. durability (?)
Field methods and data (2)

- Significant progress in clarifying and standardizing methodology
  - Attrition and net integrity
  - Cross-sectional and prospective data
  - For integrity:
    - Use proportionate Hole Index based on 4 hole sizes
    - Weight proportionate to total hole surface on net
  - Proposal to evaluate outcome as % of nets “good”, “too torn”, “serviceable” based on preliminary cut-off
    - < 100cm² holes (pHI equivalent)= good
    - > 0.1m² holes (pHI equivalent)= too torn
    - Serviceable= not too torn
How to include quality in procurement

• Prospective, procurement-linked data collections to calculate cost/year may
  - Exclude newer, less established brands
  - Take too long
  - Have high levels of uncertainty

• Potential alternative:
  - “potential performance” categories based on a panel of (weighted?) lab test that have been shown to correlate with field performance
Textile methods and data

- Variation in results can come from test inherent problems and/or variation in specific materials
- Bursting strength still seems to be a good tool to differentiate vulnerability of “intact” nets as long as other factors kept constant
  - Denier more predictive of performance than weight/surface
- Tensile test + hook(s) can be useful to differentiate width vs. length
- Tests for fire/burn performance seem performing well
Textile methods and data (2)

- Methods to simulate aging in the lab
  - Weather-o-mat (wet-dry-heat-UV)… but relevant?
  - Stone washing… but easy to standardize?
  - Abrasion + tensile test … promising to show vulnerability to damage in a “stressed net”

- Microscopic analysis of representative samples of nets not too old could give a picture of proportionate distribution of initial damage (complement field data)
What next?

• Look for lab test to simulate increased vulnerability through close heat source? After first hole?
• Try to establish representative “test communities”?
• Establish test combo for “performance prediction”
  - Burn hole vulnerability
  - Heat vulnerability?
  - Tear vulnerability (new and pre-stressed)
• Find cut-off level that represent
  - Minimal-optimal-excellent expected performance
What next? (2)

• What can we do about rodents?

• To which extent do we push improvement to the engineering of more durable nets?
  - Reverse width-length
  - Hexagonal mesh

• How can we support or accelerate collection of field and lab data?
  - From prospective procurement surveys
  - From cross-sectional field/lab studies