



THE UNIVERSITY OF ARIZONA

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College of Public Health

# Behavior, Beliefs, and Bugs: Protecting Communities from Arboviral Diseases

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# Social Science Methods Across the Mosquito-Borne Disease Intervention Pathway

Risk	Behavioral Decision-Making	Exposure & Contact Patterns	Intervention Impact and Uptake	Sustainability & Policy Impact
<b>Perception &amp; Awareness</b> <ul style="list-style-type: none"><li>• Surveys &amp; KAP</li><li>• Key informant interviews</li><li>• Focus group discussions</li></ul> <b>Outputs:</b> <ul style="list-style-type: none"><li>• Knowledge gaps</li><li>• Trust</li></ul>	<b>Behavioral Decision-Making</b> <ul style="list-style-type: none"><li>• Behavioral experiments</li><li>• Discrete choice</li><li>• Ethnography</li></ul> <b>Outputs:</b> <ul style="list-style-type: none"><li>• Barriers</li><li>• Tradeoffs</li></ul>	<b>Exposure &amp; Contact Patterns</b> <ul style="list-style-type: none"><li>• Time–activity studies</li><li>• Household observation</li><li>• Social Disparities mapping</li><li>• Community-based participatory surveillance</li></ul> <b>Outputs:</b> <ul style="list-style-type: none"><li>• Exposure and disease burden</li></ul>	<b>Intervention Impact and Uptake</b> <ul style="list-style-type: none"><li>• Behavioral intervention trials</li><li>• Social network analysis</li><li>• Process evaluation</li></ul> <b>Outputs:</b> <ul style="list-style-type: none"><li>• Impact</li><li>• Adoption</li></ul>	<b>Sustainability &amp; Policy Impact</b> <ul style="list-style-type: none"><li>• Policy analysis</li><li>• Implementation science</li><li>• Mixed methods</li></ul> <b>Outputs:</b> <ul style="list-style-type: none"><li>• Durability</li><li>• Equity</li></ul>



# Stepwise Framework for Assessing Current and Future Messaging

Understanding how the community engages in public health messaging and its impacts is a critical component of reducing arboviral disease risk

## Existence

- Is there any vector messaging?
- Why is there no vector messaging?

## Categorization

- What type of message is being conveyed?
- Bite prevention, source reduction, disease awareness etc.

## Dissemination

- How is the message being delivered? What media are being used?

## Reach

- How many people is the message reaching?
- How accessible is the messaging?

## Understanding

- Do people understand the messaging? Why or why not?

## Impact

- Does recipient knowledge, attitude or practices change after education?

## Effects

- Is there a reduction in vector/disease indices?

# Community Assessment Tool Development

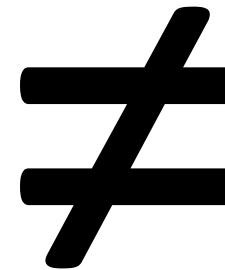
- Standardized tools to assess community-level knowledge, attitudes and practices are lacking
- Widely used but inconsistent



Main vectors of dengue are *Aedes aegypti* and *Aedes albopictus*

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat Agree
- Agree
- Strongly Agree

Chung et. al. 2022



What type of mosquito is carrier of dengue fever?

- Aedes
- Anopheles
- All types of mosquitoes
- Don't know

Hossain et. al. 2021

# Example Knowledge Questions

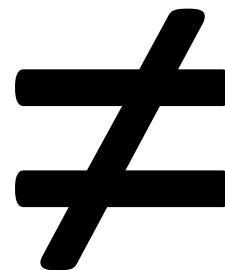
How often do you do the following to keep mosquitoes from biting or reduce their numbers? (Often = **most times you go outside during mosquito season**)

- often
- sometimes
- never

Wear long sleeves/pants outside

- Often
- Sometimes
- Never

Pogrebra Brown et. al. 2019



How often do you practice the following measures to prevent mosquitoes **in your home/neighborhood**?

Wearing long-sleeved shirts and pants **when working outside**?

- Never
- Daily
- Weekly
- Biweekly
- Monthly
- Annually

Desjardin et. al. 2020

# Example Practice Questions

# Developing validated survey items

## Domain Identification

Health department and vector control – most important messages

- Online contribution
- Aggregation into domains (5 mosquito and 6 tick)
- Review and prioritization of messages

## Item Identification

Literature review, partner surveys

- 316 papers identified with KAP/ KAPP/ KAB surveys
- Additional 4 surveys from partners (CDC)
- Pull each survey item, categorize by knowledge, attitude, practice; disease; region; domain
- Develop based on frameworks of Health Belief Model and Risk Attitudes, Norms, Abilities, and Self-Regulation

## Validation

Draft tool tested through series of steps

- Phase 2 Content Validity: Delphi method 20 experts will provide feedback on modules in 2 rounds, content validity ratio will be calculated
- Phase 3 Face Validity: 40 Cognitive Interviews, computer assisted survey interviewing with groups having different knowledge levels

# Delphi Method

- Survey questions presented
- Feedback solicited on each item
- General overall thoughts on themes included and feedback on missing items

## Please answer this question

2. Which season(s) are mosquitoes in your community most active? Select all that apply.

- Spring
- Summer
- Fall
- Winter
- Unsure/don't know

Highly relevant

Highly relevant but needs rewording

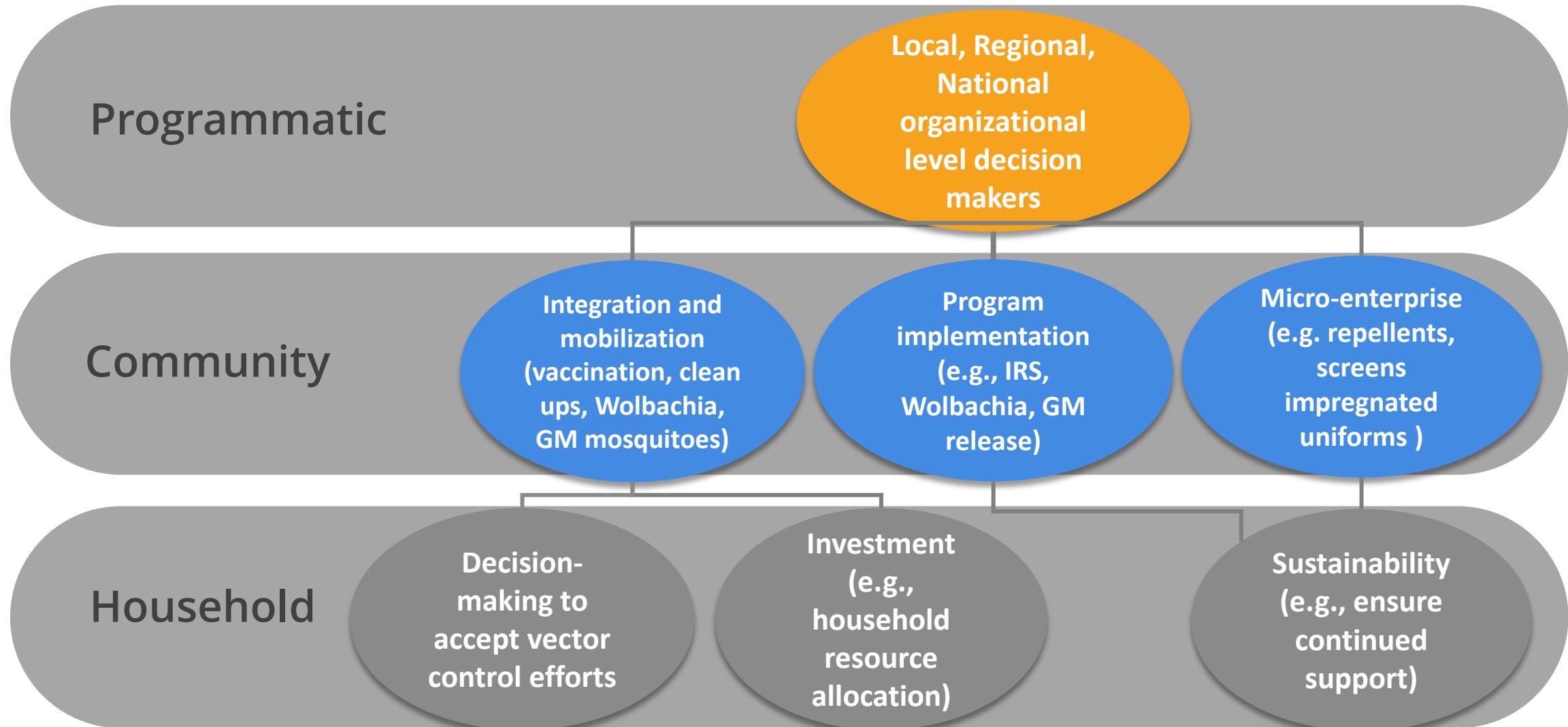
Somewhat relevant

Not relevant

**Current status:** ready for Round 2 – after responding 27 reviewers and approximately 975 comments

Finucane S, Renault A, Hayden MH, Ernst K, Yeo S (2025) Developing and validating modular surveys for vector-borne diseases: A study protocol. PLoS One 20(8):

# Raising women's voices in decision-making



# Collaborative processes – Consensus Workshop

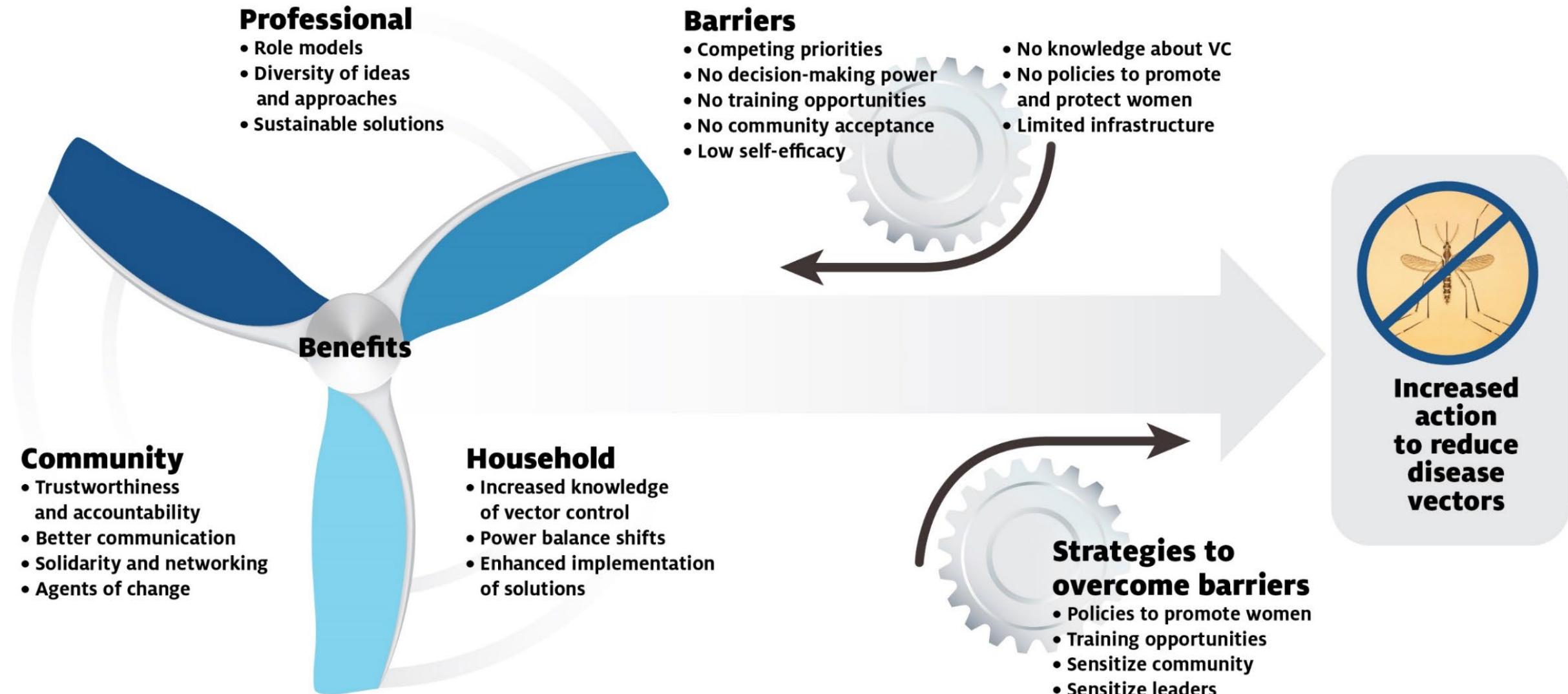


**Stage 1: Individual brainstorm**  
**Stage 2: Best ideas in pairs**  
**Stage 3: One idea per sticky**  
**Stage 4: Whole group clustering**  
**Stage 5: Naming the theme**

**Technology of Participation** by the  
Institute of Cultural Affairs (ICA) –  
developed to promote genuine  
collaboration



# Women in vector control: Propelling communities to action

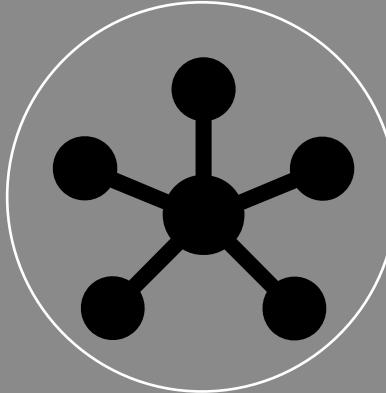


# Strategies to normalize women's roles in vector control



**Advocate for more women in decision-making through access to information**

- Conduct a needs assessment on existing knowledge gaps
- Develop curriculum geared towards information access at the household level



**Develop sensitization and advocacy materials**

- Promote job ads
- School-based curriculum
- Community theater programs
- Use social and mainstream media platforms to disseminate messaging



**Identify key community influencers and champions of women in vector control**

- Sensitization workshops with key employers
- Commitment by govt. officials and private industry to enact gender equity policies
- Identify female leaders who can act as mentors and role models



**Prioritize women's employment in vector control**

- Develop key metrics
- Review and identify gaps in gender equity
- Develop female-centered training opportunities
- Require reporting of ratio of men and women who are employed in VC programs to funders

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# Questions?

Thank you!

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