

July 13, 2023 / 13 juillet 2023 / 13 de Julho de 2023

General Call / Appel Général / Chamada Geral

Welcome!
Bienvenue !
Bem-vindo!



**Mariam Wamala
Nabukenya,
Co-Chair**

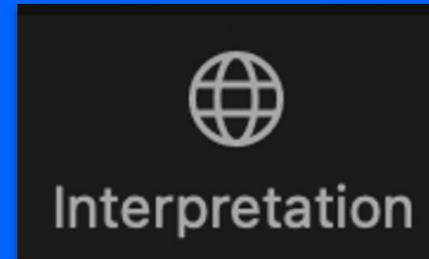


**Gabrielle
Hunter,
Co-Chair**

Select your language
Sélectionnez votre langue
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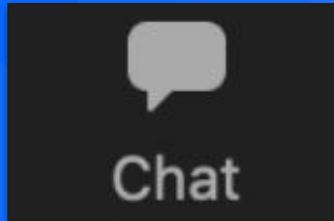
English Français
Português



Slides are available in English, French, and Portuguese.
Les diapositives sont disponibles en anglais, français et portugais.
Os slides estão disponíveis em inglês, francês e português.



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Let's Hear from You
**Donnez nous vos
nouvelles**
Vamos ouvir de você

Welcoming	Mariam Nabukenya Wamala <i>SBC Working Group Co-Chair</i>
Overview of <i>An. stephensi</i> threat	Sarah Zohdy <i>PMI & Vector Control Working Group</i>
Global Vector Control Response	Anne Wilson <i>Vector Control and Multi-Sectoral Working Group</i>
SBC Guidance for <i>An. stephensi</i> in Africa	April Monroe <i>Johns Hopkins Center for Communication Programs - Breakthrough ACTION</i>
Q&A	Sarah, Anne, April, and Gabrielle Moderated by: Shelby Cash <i>SBC Working Group Steering Committee</i>
Closing	Gabrielle Hunter <i>SBC Working Group Co-Chair</i>

Overview of *An. stephensi* threat

Aperçu de la menace
que représente *An.
stephensi*

Visão geral da
ameaça do *An.
stephensi*



Dr. Sarah Zohdy
*Vector Control
Working Group*

Invasive malaria vector: *Anopheles stephensi*



PMI

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INTERVENTIONS FOR RURAL MOSQUITO CONTROL

Mosquito Nets



500M Nets
Delivered

Indoor
Spraying



310M People
Protected

**RESPONSIBLE FOR
~78% OF MALARIA
CASES AVERTED**

OUTLINE

- *Anopheles stephensi*: a unique mosquito
- What is the threat?
- How is this different?
- Opportunities



A UNIQUE MOSQUITO

- Urban adapted
- Thrives in artificial habitats
 - Shared with dengue mosquito, *Aedes aegypti*
- Persistent through dry periods
- Transmits human malaria parasites (*Plasmodium falciparum* and *P. vivax*)



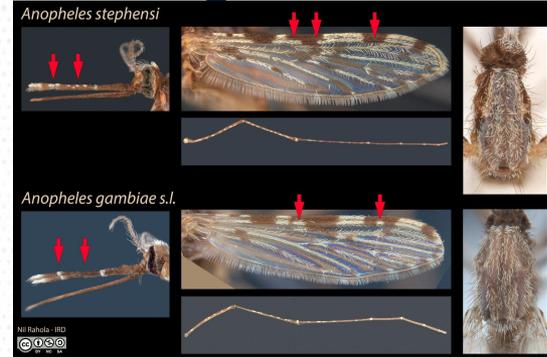
Typical rural larval habitat



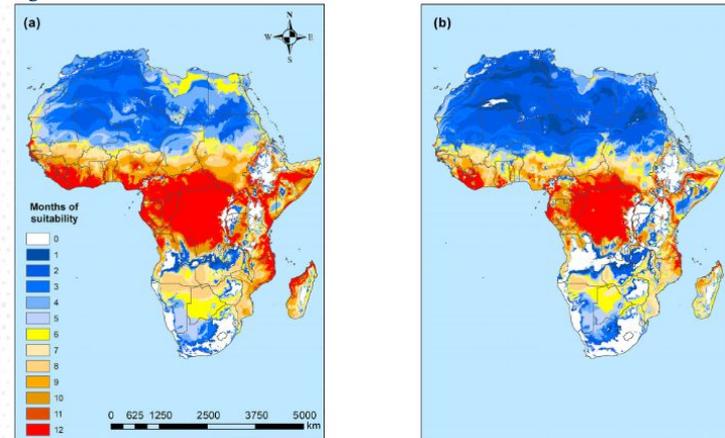
An. stephensi larval habitats

HOW IS THIS DIFFERENT FROM *An. gambiae*?

- May be misidentified as *An. gambiae* s.l.
- Adult collection difficult, larval surveys needed
- No indication of indoor biting and resting (ITN and IRS targets)
- Can transmit *P. falciparum* across larger geographical and thermal range for more months of the year
- Resistant to most adult targeting insecticides tested in invasive range



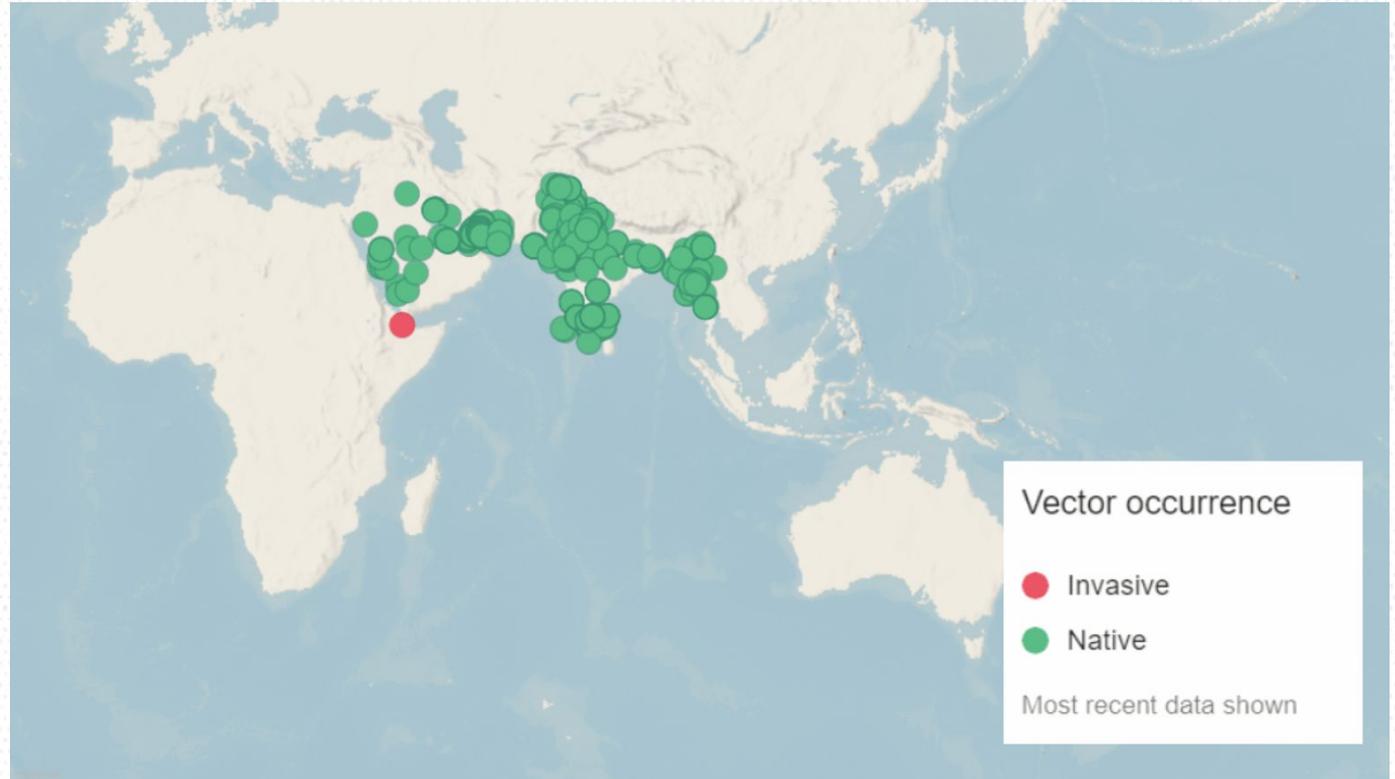
Morphological differences between *An. stephensi* and *An. gambiae* s.l.



Months per year suitable for the transmission of *P. falciparum* by *An. stephensi* (left) and *An. gambiae* (right) (Villena et al. 2022)

An. stephensi IS SPREADING IN AFRICA

- Djibouti (2012)
- Ethiopia (2016)
- Sudan (2016)
- Somalia (2019)
- Nigeria (2020)
- Kenya (2022)
- Eritrea (2023)
- Ghana (2023)



EVIDENCE OF THE THREAT

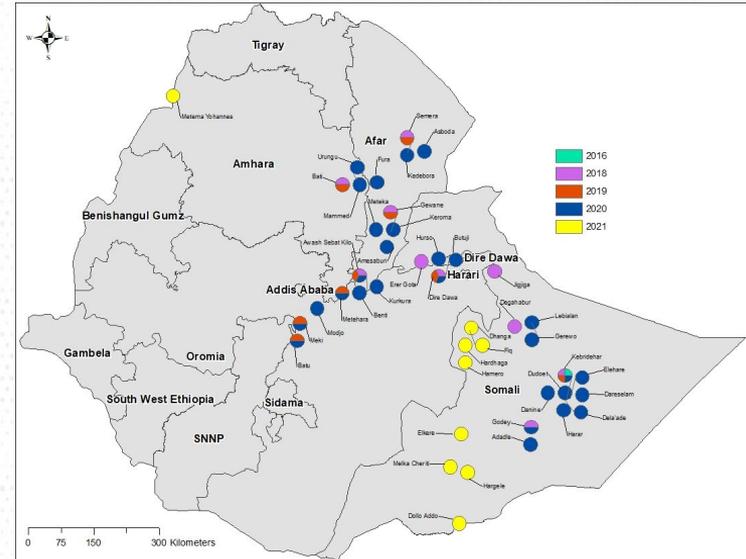
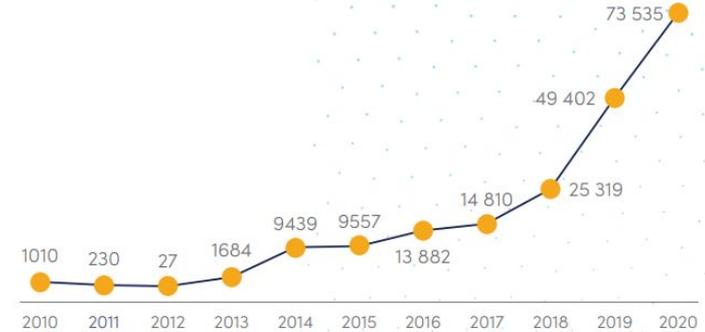
DJIBOUTI

- Malaria pre-elimination status in 2011
- 36-fold increase in malaria since detection in 2012

ETHIOPIA

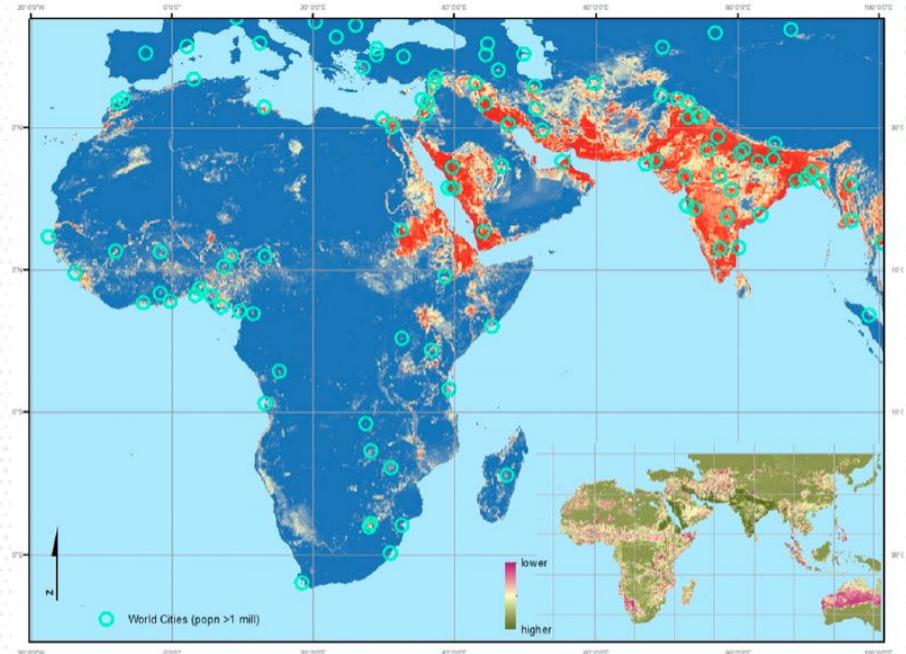
- Widespread – 48 sites currently
- Dry season urban malaria outbreak in 2022
- Resistant to insecticides used in malaria control
- Models show potential **50% increase** in cases and additional **\$72 million annually** for control

Number of reported malaria cases in Djibouti, 2010–2020



WORLDWIDE ANTICIPATED EFFECTS

- **Additional 126 million people** at risk of malaria in **urban** areas
- Limited resources threatening existing investments in global malaria
- Reversal of progress towards elimination
- Shifting focus away from reaching unreached populations



HOW IS THIS DIFFERENT?

- Surveillance challenge
 - Most commonly used surveillance methods for adult *Anopheles* do not work well for *An. stephensi*
- Control challenge
 - Insecticide resistance to pyrethroids, carbamates, organophosphates used in existing ITNs and IRS
 - Resting and biting behavior seems unlike typical vectors



WHO INITIATIVE LAUNCHED (SEP 2022)



1. Increasing collaboration



2. Strengthening surveillance



3. Improving information exchange



4. Developing guidance



5. Prioritizing research

WHO initiative to stop the spread of *Anopheles stephensi* in Africa



[WHO initiative](#)

CHALLENGES

- Additional resources (financial or human capital)
 - Unclear how to weigh extent of threat with competing priorities
- Limited specific guidance available to for country teams (improving)
- Cross-border collaboration and coordination more challenging
- Limited understanding of epidemiological impacts makes cross-technical approaches challenging
- Learning curve with initial implementation of new approaches (LSM)
 - Tools often not available for immediate large-scale use
- Heterogeneity in contexts - no one size fits all control approach
- SBC to populations at risk in urban settings
- Time lag to initiate activities
 - Detecting outbreaks time to control implementation



OPPORTUNITIES

Funding

- Public-private partnerships to support efforts
- Opportunities to prioritize integrated vector management strategies
- Support for cross-country training and learning opportunities
- Coordination with WASH, arboviral disease, veterinary services, One Health programs
- SBC to support multiple disease systems



THANK YOU!

SCHEME: OYO STATE GOVERNMENT (WING 2008 CBS)
CLIENT: OYO STATE GOVERNMENT
CONSULTANTS: MUSMA ASSOCIATES
CONTRACTOR:



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**Global Vector
Control Response**
**Réponse à la lutte
antivectorielle à
l'échelle mondiale**
**Resposta global ao
controle de vectores**

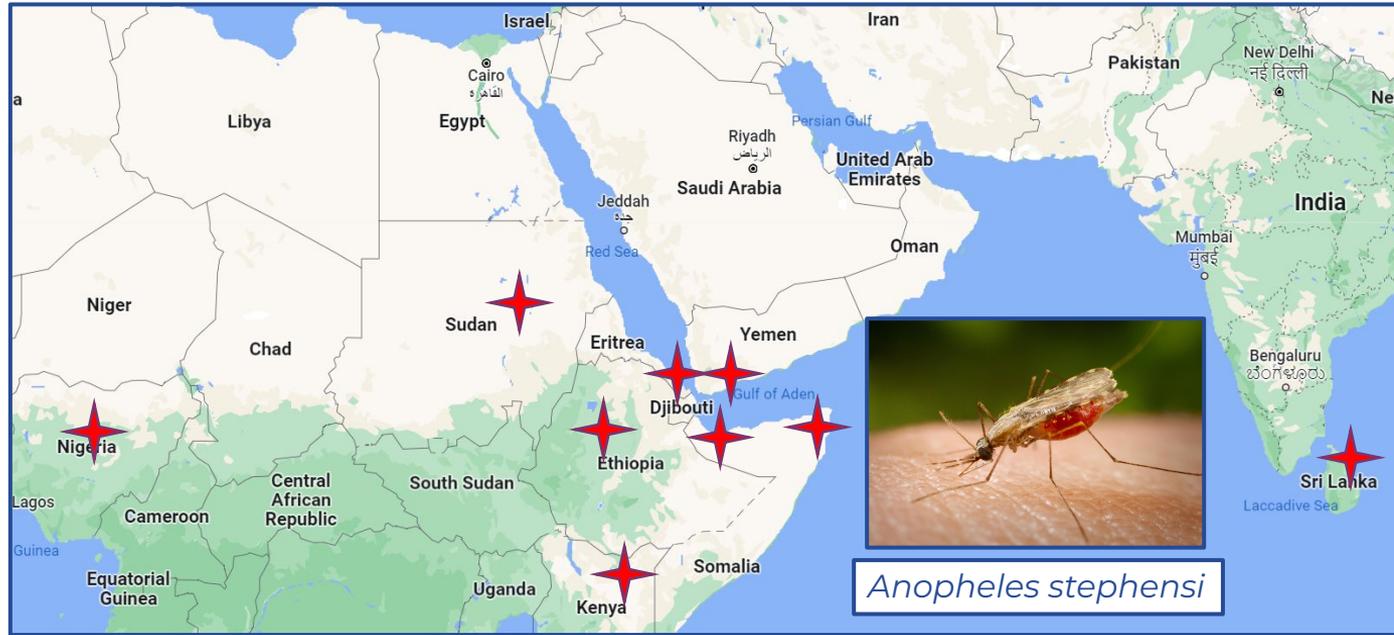


Dr. Anne Wilson
*Vector Control and
Multi-Sectoral
Working Group*

13th July 2023

Joint VCWG/MSWG consensus statement: Global Vector Control Response to invasive *Anopheles stephensi*

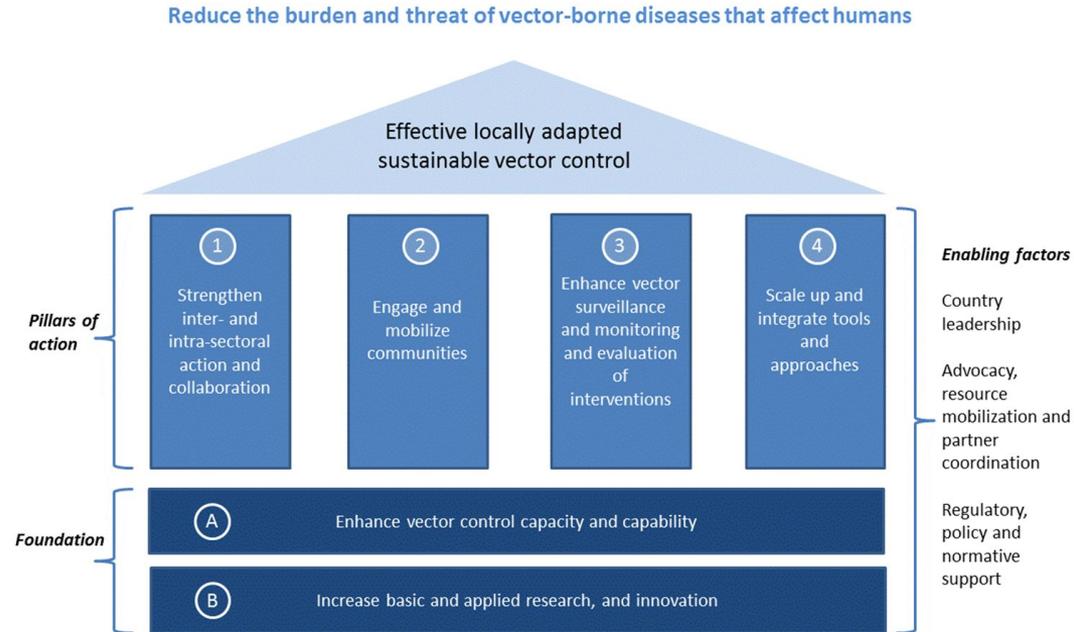
Anopheles stephensi: A growing threat



**Detected in: Djibouti (2011), Ethiopia (2016), Sri Lanka (2017),
Republic of Sudan (2019), Puntland (2019), Nigeria (2020),
Somaliland (2020), Yemen (2021), Kenya (2022)**

Consensus Statement

- Joint initiative of RBM VCWG and MSWG recognizing the urgency of the need to respond to *An. stephensi*
- Calls on RBM partners and others to support the fight against *An. stephensi*
- Aims to support work of WHO, UN-Habitat and others by facilitating sharing of knowledge and best practices



How can VCWG/MSWG support the response to *An. stephensi*: Global Vector Control Response pillars of action

1. Strengthening inter- and intra-sectoral action and collaboration

- Support multisectoral collaboration through sharing guidelines and best practices, and supporting project formulation and access to financing

2. Enhancing vector surveillance and monitoring and evaluation of interventions

- Facilitate networking between universities/research institutes and national programs
- Share guidelines on vector identification

How can VCWG/MSWG support the response to *An. stephensi*: Global Vector Control Response pillars of action

3. Scaling up and integrating tools and approaches

- Support information sharing on new and existing products, delivery approaches, and monitoring and evaluation

4. Engaging and mobilising communities

- Share information on SBCC for *An. stephensi* control
- Advocate for the importance of human behaviour for effective control
- Collate information on social science experts to support research and programs
- Share best practices from community-based source reduction programs for *Ae. aegypti*

How can VCWG/MSWG support the response to *An. stephensi*: Global Vector Control Response foundations/enabling factors

Enhance vector control capacity and capability

- Facilitate networking between centers of excellence, training and research institutions to build human and laboratory capacities for *An. stephensi* surveillance and control

Increase basic and applied research

- Facilitate identification of research gaps

- Country leadership
- Advocacy, resource mobilisation, partner coordination
- Regulatory, policy, normative support

What next?

- Please share the Consensus Statement widely
- Comments and thoughts welcome on how we can make the Consensus Statement **actionable**
- Join the Task Team



Thank you!

Author team: Mike Macdonald, Anne Wilson,
Justin McBeath, Corine Ngufor, Chadwick Sikaala
On behalf of Task Team on *An. stephensi*, WS3 VCWG

SBC Guidance for *An. Stephensi* in Africa

**Orientations du CSC
pour *An. Stephensi* en
Afrique**

**Orientação da SBC
para *An. Stephensi* em
África**



Dr. April Monroe
*Johns Hopkins
Center for Communication
Programs -
Breakthrough ACTION*



SBC Guidance for *Anopheles stephensi* in Africa

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Overview

- Background and overview of SBC guidance document
- Cross-cutting considerations
- Intervention-specific SBC guidance
 - Core malaria interventions
 - Larval source management interventions
- Conclusions

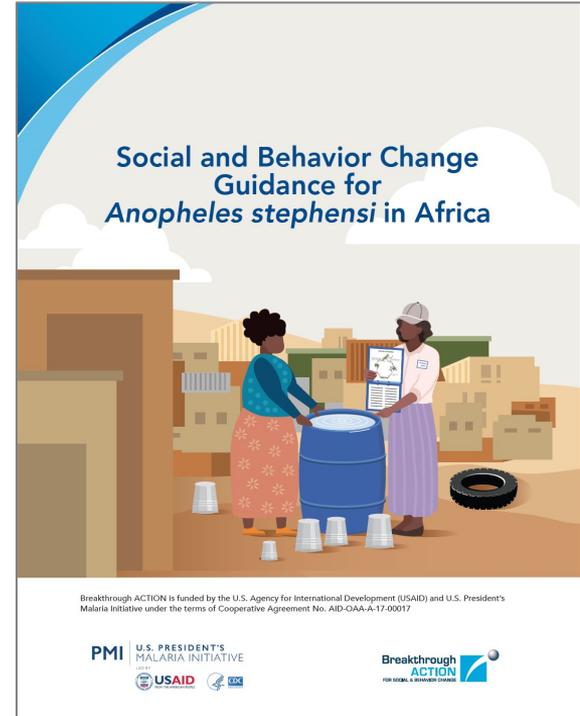
Background and Overview of SBC Guidance

Why is SBC important in the *An. stephensi* response?

- *Anopheles stephensi* is migrating to new areas and has been identified in several African countries recently
- It behaves differently than common malaria mosquitoes in Africa
- Areas with *An. stephensi*, particularly urban areas, may experience greater malaria risk than in the past and could experience malaria outbreaks in dry seasons
- *An. stephensi* may affect different population groups and may require different or new vector control measures
- SBC will be critical to communicate new information and mobilize communities to take up new behaviors

SBC Guidance for *Anopheles stephensi* in Africa

- Country-level response to the invasive *An. stephensi* should include a corresponding SBC strategy for the new threat
- The SBC Guidance focuses on individual, household, and community level behaviors to mitigate this vector in Africa
- Developed by a team of vector control and SBC professionals from PMI and Breakthrough ACTION



Core Interventions

- Insecticide-treated nets (ITN)
- Indoor residual spraying (IRS)
- Care-seeking for fever*

**Note opportunity for integration with *Aedes aegypti* programs!*

Larval Source Mitigation

- Community larviciding
- Household larviciding*
- Finding and removing standing water*
- Covering water storage containers*

Literature review for each intervention on specific individual, household, and community behaviors involved, and lessons learned from SBC programs and research, including from South Asia and *Ae. aegypti*.

Cross-Cutting Considerations

Cross-Cutting Considerations

- **Act early** to address the threat of *An. stephensi*
 - Raise awareness of the threat and ensure people have the information and resources necessary to act
 - Keep communities informed about emerging threats to build and maintain trust in the malaria response; this creates a solid foundation for mitigating potential rumors
- Identify opportunities for **integrated SBC** approaches
 - Identify and engage contextually relevant community leaders and community-based civil society organizations early in the process
 - Promote inter-sectoral collaborations such as municipal, transportation/commerce, education, and employer-based programs to increase engagement and promote target behaviors
 - Promote collaborations across malaria partners for a comprehensive malaria response

Cross-Cutting Considerations

- **Consider levels of risk and current malaria behaviors** to tailor approach
 - Where malaria transmission has been historically low, important to increase risk perception
- In areas where *An. stephensi* has already been identified
 - Interventions that have not been as widely implemented may be utilized e.g., LSM interventions
 - Where an intervention is new or less familiar, let people know why it is being implemented
 - Emphasize the importance of maintaining current malaria-related behaviors where they are already high and increase them in areas where they are below target levels
- In areas at elevated risk of invasion
 - Promote and increase core malaria-related behaviors
 - Prompt care seeking for fever is important to identify potential spikes in cases

Core Malaria Interventions

SBC for Insecticide-treated Nets (ITN)

Behavior: Use ITNs every night, care properly for ITNs and replace them when no longer effective.

Considerations for *An. stephensi* and urban populations

- Raise awareness that *An. stephensi* can persist in the dry season, and therefore, ITNs should be used all year long, regardless of season.
- When distributing new types of nets, communicate that people are receiving the best type of net for their area and anticipate any rumor mitigation.
- In areas of lower malaria transmission, identify higher risk groups (e.g., construction workers, travelers, mobile populations) to target SBC for ITN use and care.
- Lower immunity to malaria and lower use of ITN among urban populations will require tailored SBC, including increased outreach to pregnant women in urban areas.
- Given limitations for ITN distribution in urban areas, build demand for ITNs for urban populations to acquire nets, including through private sector and ANC/EPI channels.

SBC for Indoor Residual Spraying (IRS)

Behavior: Accept application of IRS, make structures eligible for spray, remove household belongings, and avoid post-spray wall modification.

Considerations for *An. stephensi* and urban populations

- IRS has predominantly been implemented in rural areas with lower acceptability in urban areas; introducing IRS in urban areas may require special considerations and build on learnings from IRS in rural areas.
- Understand barriers to IRS acceptance in urban groups.
- Use effective strategies to engage urban communities and their leaders, with information sessions and active participation of community leaders to help overcome those barriers.
- Inform that lower malaria immunity in urban groups makes them vulnerable.
- Provide ample opportunity for questions and address concerns about IRS.
- Work with community members to select respected spray operators that will have the trust of urban communities.

SBC for Care-seeking for Fever

Behavior: Seeking care within the same day or the next day (24 - 48 hours) of fever onset.

Considerations for *An. stephensi* and urban populations

- Because of the lower prevalence of malaria in urban areas, it is important to **raise awareness about the threat** of *An. stephensi*, increase recognition of danger signs, and promote prompt care-seeking.
- Malaria SBC strategies should focus on context-specific **higher risk groups** living in, working in, or traveling to and from urban areas.
- Focus on the importance of seeking care early and awareness of danger signs.

Larval Source Management Interventions

SBC for Household Larviciding

Behavior: Apply and monitor larvicide in household water containers or other larval sources and follow instructions of vector control technicians.

Considerations for *An. stephensi* and urban populations

- Access to water storage containers within households and private compounds is crucial to the success of this intervention, which applies a larvicide to stored water, but can be difficult in urban settings.
- Benefit from lessons learned on engaging communities in IRS.
- Early and meaningful engagement with communities and the use of technicians that are trusted by the community can help to overcome barriers and reach household water containers.
- Provide clear messaging about the **specific steps** for household members to follow and how to manage water containers between larvicide applications.

SBC for Community Larviciding

Behavior: Support efforts to identify all community breeding sites and accept the application of larvicide in identified breeding sites

Considerations for *An. stephensi* and urban populations

- Building trust and utilizing community-based systems have been shown to increase acceptance and impact for community larviciding.
- Clearly explain the rationale behind the seasonal schedule for larviciding.
- Emphasizing safety, and both personal and community benefits can help increase acceptance.
- Thorough training in habitat and larval identification is important for the success of these programs.
- Employ iterative cycles of research, feedback, and discussion to inform and improve SBC in this area.

SBC for Finding and Removing Standing Water

Behavior: Identify mosquito breeding sites in and around both the home and community and remove them according to recommendations

Considerations for *An. stephensi* and urban populations

- General clean-up campaigns in which communities are informed they should clean their yards and communal areas without **clearly specifying WHICH containers or areas** need to be removed have little effectiveness.
- Caregivers have been found to be an appropriate focal point for this intervention given their responsibilities related to household water collection and storage.
- Removing standing water should focus on where specific breeding sites are located, as identified by vector control. Otherwise, community efforts will be diluted.
- Use community maps to map breeding sites and focus the search on areas where stagnant water or rainwater tend to accumulate.

SBC for Covering Water Storage Containers

Behavior: Cover infrequently accessed water storage containers in and around the home with a lid that prevents mosquitoes from entering

Considerations for *An. stephensi* and urban populations

- There is mixed evidence on the effectiveness of covering water storage containers to reduce mosquito breeding.
- Household members and communities may not always be aware of the characteristics that make a cover effective, so a strong SBC component is key.
- The lid should make a very tight seal, should not touch the water inside, and be made of a material that does not accumulate water, and does not crack or warp in the heat or sun
- Covers must be kept in excellent condition and replaced as needed.
- Covering short-term water storage containers has less potential efficacy, as frequent lid use can result in wear and tear and render the lids ineffective or counterproductive.
- Collaboration with WASH programs, housing modification initiatives, integrated vector management programs, and professionals who can cover large water tanks is recommended.

Take Home Messages

Take Home Messages: SBC for *An. stephensi*

- Individuals, households, and communities are critical to the response
- Act quickly to build trust
- Tailor SBC to level of threat and current levels of target behaviors
- Reinforce existing malaria behaviors when introducing new interventions
- Be as specific as possible when promoting new behaviors
- Identify and reach higher-risk and mobile groups in affected areas
- Embrace opportunities for integrated approaches to SBC

Thank you

For more information, please contact

April Monroe, PhD, MSPH

amonro10@jhu.edu



www.breakthroughactionandresearch.org



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Questions | Questions | Perguntas

Moderator



Shelby Cash
*SBC WG
Steering Committee*

Panelists



Gabrielle Hunter
*SBC Guidance for
An. stephensi*



April Monroe

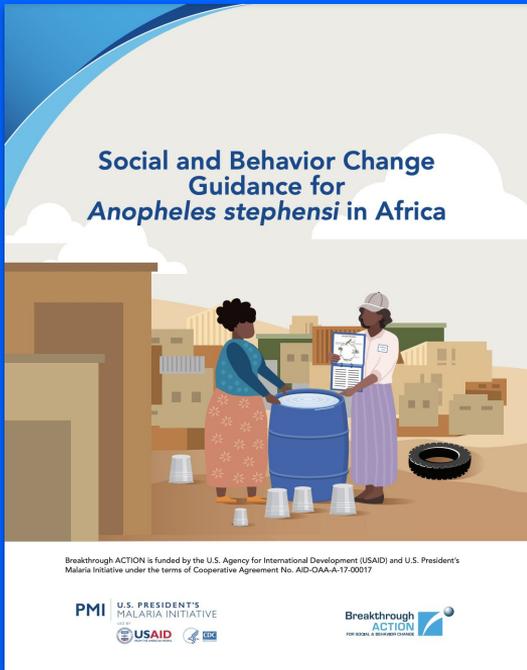


Anne Wilson
*Global Vector
Control Response*



Sarah Zohdy
*Overview of
An. stephensi*

An. Stephensi Resources

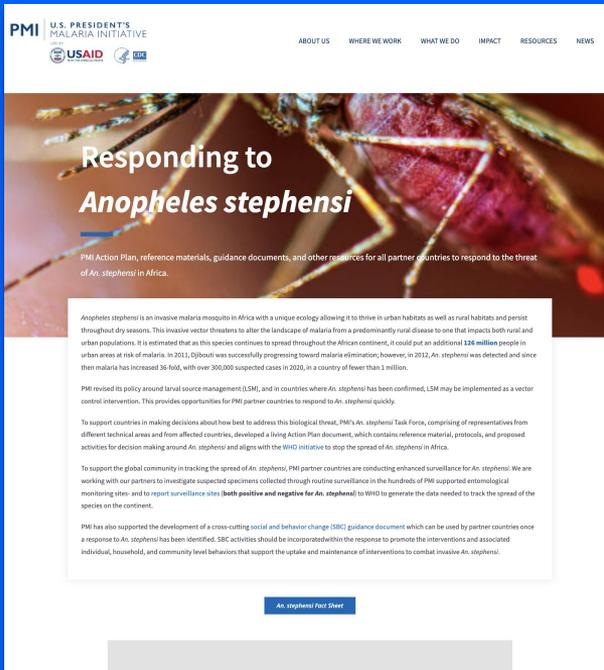


Social and Behavior Change Guidance for *Anopheles stephensi* in Africa

Breakthrough ACTION is funded by the U.S. Agency for International Development (USAID) and U.S. President's Malaria Initiative under the terms of Cooperative Agreement No. AID-OAA-A-17-00017

PMI U.S. PRESIDENT'S MALARIA INITIATIVE USAID CDC Breakthrough ACTION FOR SOCIAL & BEHAVIOR CHANGE

Social and Behavior Change Guidance for *An. stephensi* in Africa



PMI U.S. PRESIDENT'S MALARIA INITIATIVE USAID CDC

ABOUT US WHERE WE WORK WHAT WE DO IMPACT RESOURCES NEWS

Responding to *Anopheles stephensi*

PMI Action Plan, reference materials, guidance documents, and other resources for all partner countries to respond to the threat of *An. stephensi* in Africa.

Anopheles stephensi is an invasive malaria mosquito in Africa with a unique ecology allowing it to thrive in urban habitats as well as rural habitats and persist throughout dry seasons. This invasive vector threatens to alter the landscape of malaria from a predominantly rural disease to one that impacts both rural and urban populations. It is estimated that as this species continues to spread throughout the African continent, it could put an additional 126 million people in urban areas at risk of malaria. In 2012, Djibouti was successfully progressing toward malaria elimination, however, in 2012, *An. stephensi* was detected and since then malaria has increased 36-fold, with over 300,000 suspected cases in 2020, in a country of fewer than 1 million.

PMI revised its policy around larval source management (LSM), and in countries where *An. stephensi* has been confirmed, LSM may be implemented as a vector control intervention. This provides opportunities for PMI partner countries to respond to *An. stephensi* quickly.

To support countries in making decisions about how best to address this biological threat, PMI's *An. stephensi* Task Force, comprising of representatives from different technical areas and from affected countries, developed a Living Action Plan document, which contains reference material, protocols, and proposed activities for decision making around *An. stephensi* and aligns with the WHO initiative to stop the spread of *An. stephensi* in Africa.

To support the global community in tracking the spread of *An. stephensi*, PMI partner countries are conducting enhanced surveillance for *An. stephensi*. We are working with our partners to investigate suspected specimens collected through routine surveillance on the hundreds of PMI supported entomological monitoring sites- and to report surveillance sites **both positive and negative for *An. stephensi*** to WHO to generate the data needed to track the spread of the species on the continent.

PMI has also supported the development of a cross-cutting social and behavior change (SBC) guidance document which can be used by partner countries once a response to *An. stephensi* has been identified. SBC activities should be incorporated within the responses to promote the interventions and associated individual, household, and community level behaviors that support the uptake and maintenance of interventions to combat invasive *An. stephensi*.

An. stephensi Fact Sheet

President's Malaria Initiative Resources for Responding to *An. stephensi*



RBM Partnership To End Malaria Vector Control Working Group RBM Partnership To End Malaria Multi-Sectoral Action Working Group

Global Vector Control Response to invasive *Anopheles stephensi*: Consensus Statement

Background

The RBM Partnership to End Malaria (RBM) Vector Control Working Group (VCGW) and Multi-Sectoral Working Group (MSWG) aim to raise awareness and catalyze action amongst its partners to prevent the spread and impact of the invasion of *Anopheles stephensi*. The work of these RBM Working Groups is designed to support the World Health Organization (WHO) in its role to coordinate an effective response to prevent further spread of the vector and reduce potential impact where it now exists. In the last decade, the urban malaria vector *An. stephensi* has invaded Africa and Sri Lanka and seems to be spreading, given new reports of its detection. The area already invaded by *An. stephensi* has not been clearly delineated to date, as surveillance efforts targeted at this vector are only starting to be scaled up. *Anopheles stephensi*-mediated malaria transmission in urban and peri-urban areas may undermine significant progress made against malaria in the past two decades. Various initiatives are being coordinated by WHO, UN-Habitat and others to better understand the extent and origin of the *An. stephensi* invasion and explore optimal approaches for surveillance and control. For example, a regional initiative against *An. stephensi* in Africa was launched by WHO in September 2022 with the aims of i) increasing collaboration, ii) strengthening surveillance, iii) improving information exchange, iv) developing guidance, and v) prioritizing research. The WHO also coordinated development of the Global Framework for the Response to Malaria in Urban Areas that emphasizes the role of city leaders, health programmes and urban planners in responding to urban malaria, including the threat posed by *An. stephensi* [1].

The RBM VCGW and MSWG seek to complement the work of WHO, UN-Habitat and others by facilitating the exchange of knowledge and best practices to address this invasive species to build a common understanding and identify gaps in our collective response. The RBM Working Groups are uniquely positioned to support this objective via their diverse membership, including malaria control programmes, representatives of other ministries, the private sector, implementing partners, and research and academic organisations. Following the initial WHO Vector Alert [2], the RBM VCGW convened online meetings to build a common understanding and identify where there may be gaps in a collective response [3] It is recognised that a response to *An. stephensi* is not a stand-alone initiative and must be developed and implemented within Africa's broader public health and vector control context. There are unique aspects to this challenge that require new approaches, including enhanced surveillance, deployment of additional vector control approaches to what are currently deployed for typical Africa malaria vectors, and consideration of the roles of different partners and funding sources. Each RBM partner can make an important contribution towards the response against invasive *An. stephensi* drawing on principles of the WHO Global Vector Control Response 2017-2030 (GVCRC) [4].

First detected in Djibouti in 2012 and Sri Lanka in 2017, *An. stephensi* has been detected in Ethiopia, Kenya, Nigeria, Puntland, Somalia, Sudan and Yemen [updated detections can be found on the WHO Malaria Threat App [5]]. The epidemiological impact has not been defined but, based on experiences from the native range of the vector and from some sites in Africa, could be significant. Malaria in Djibouti was nearing elimination before *An. stephensi* was detected in 2012. By 2018 there were more than 100,000 suspected malaria cases

1

Global Vector Control Response to invasive *An. stephensi*

Closing Fermeture Encerramiento



**Mariam Wamala
Nabukenya,
Co-Chair**



**Gabrielle
Hunter,
Co-Chair**

SBC WG 10th Annual Meeting

When: November 7, 8, 9, 2023

Where: Abidjan, Côte d'Ivoire

Why: Convene malaria SBC professionals to...

- Share experiences in malaria SBC
- Participate in skills-building sessions
- Discuss emerging issues
- Set priorities for the next year

Interpretation: English | français | português

Registration: \$250 USD - Date to be announced

Website: <https://sbcwg.dryfta.com/>



Upcoming Events



Malaria in Pregnancy WG Annual Meeting
Geneva, September 12-13



SBC WG Webinar
October 5
Topic: To be announced



In-Person SBC WG Annual Meeting
Abidjan, November 7-9

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**Thank you! / Merci! /
Obrigado!**
