COMMITTEE ON ETHICS

EMPLOYEE POST-TRAVEL DISCLOSURE FORM

☒ *Original* ☐ *Amendment*

This form is for disclosing the receipt of travel expenses from private sources for travel taken in connection with official duties. This form does not eliminate the need to report privately-funded travel on the annual *Financial Disclosure Statements* of those employees required to file them. In accordance with House Rule 25, clause 5, **you must complete this form and *file it with the Clerk of the House by email at* gifttravelreports@mail.house.gov, within 15 days after travel is completed.** Please ***do not*** file this form with the Committee on Ethics.

NOTE: Willful or knowing misrepresentations on this form may be subject to criminal prosecution pursuant to 18 U.S.C. § 1001.

1. Name of Traveler: Grace Hayden

2. a. Name of Accompanying Relative: _____ ***OR*** ☒ None
   b. Relationship to Traveler: ☐ Spouse ☐ Child ☐ Other (specify): _____

3. a. Dates: Departure: 08/24/2026 Return: 08/25/2026
   b. Dates at Personal Expense, if any: _____ ***OR*** ☒ None

4. Departure City: Washington, DC Destination: Atlanta, GA Return City: Washington, DC

5. Sponsor(s), Who Paid for the Trip: Malaria No More

6. Describe Meetings and Events Attended: CDC Parasitic and Malaria Lab Visit

7. Attached to this form are ***each*** of the following, *signify that each item is attached by checking the corresponding box*:
   a. ☒ a completed *Sponsor Post-Travel Disclosure Form*;
   b. ☒ the *Primary Trip Sponsor Form* completed by the trip sponsor ***prior*** to the trip, ***including all*** attachments ***and*** the *Additional Sponsor Form(s)*;
   c. ☒ page 2 of the completed *Traveler Form* submitted by the employee; ***and***
   d. ☒ the letter from the Committee on Ethics approving my participation on this trip.

8. a. ☒ I represent that I participated in each of the activities reflected in the attached sponsor's agenda. *Signify statement is true by checking the box.*
   b. If not, explain: _____

I certify that the information contained on this form is true, complete, and correct to the best of my knowledge.

Signature of Traveler: _____ **Date:** 09/02/2026

I authorized this travel in advance. I have determined that all of the expenses listed on the attached *Sponsor Post-Travel Disclosure Form* were necessary and that the travel was in connection with the employee's official duties and would not create the appearance that the employee is using public office for private gain.

Name of Supervising Member: Rep. Johnny Olszewski **Date:** 09/02/2026

Signature of Supervising Member: _____

last updated 7/2023

COMMITTEE ON ETHICS

SPONSOR POST-TRAVEL DISCLOSURE FORM

■ *Original* ☐ *Amendment*

This form must be completed by an officer of any organization that served as the primary trip sponsor in providing travel expenses or reimbursement for travel expenses to House Members, officers, or employees under House Rule 25, clause 5. **A completed copy of the form must be provided to each House Member, officer, or employee who participated in the trip *within 10 days of their return.*** You must answer all questions, and check all boxes, on this form for your submission to comply with House Rules and the Committee's Travel Regulations. Failure to comply with this requirement may result in the denial of future requests to sponsor trips and/or subject the current traveler to disciplinary action or a requirement to repay the trip expenses.

NOTE: Willful or knowing misrepresentations on this form may be subject to criminal prosecution pursuant to 18 U.S.C. § 1001.

1. Sponsor(s) who paid or provided in-kind support for the trip: Malaria No More
2. Travel Destination(s): Atlanta, Georgia: Centers for Disease Control and Prevention Headquarters
3. Date of Departure: August 24, 2026 Date of Return: August 25, 2026
4. Name(s) of Traveler(s):), Grace Hayden

   Note: You may list more than one traveler on a form only if ***all*** information is ***identical*** for each person listed.
5. **Actual amount** of expenses paid on behalf of, or reimbursed to, each individual named in Question 4:

	Total **Transportation** Expenses	Total **Lodging** Expenses	Total **Meal** Expenses	Total **Other** Expenses (dollar amount per item and description)
Traveler	$567.22	$215	$97.06	
Accompanying Family Member				

6. ☒ All expenses connected to the trip were for actual costs incurred and not a *per diem* or lump sum payment. *Signify statement is true by checking box.*

I certify that the information contained in this form is true, complete, and correct to the best of my knowledge.

Signature: Vishni Samaraweera **Date:** Sept 2, 2026

Name: Vishni Samaraweera **Title:** Associate, US Policy & Advo

Organization: Malaria No More

■ ***I am an officer of the above-named organization. Signify statement is true by checking box.***

Address: 1301 Connecticut Ave, NW, Suite 502, Washington, DC 20036

Telephone: 617-721-6158 **Email:** vishni.samaraweera@malarianon

Committee staff may contact the above-named individual if additional information is required.

If you have questions regarding your completion of this form, please contact the Committee on Ethics at 202-225-7103.

last updated 7/2023

COMMITTEE ON ETHICS

TRAVELER FORM

. Name of Traveler: Grace Hayden

. Sponsor(s) who will be paying or providing in-kind support for the trip: Malana Nomare

3. City and State **OR** Foreign Country of Travel: Atlanta, GA

4. a. Date of Departure: 8/24/26 Date of Return: 8/25/26

b. Yes ☐ No ☒ Will you be extending the trip at your personal expense?

If yes, list dates at personal expense:

5. a. Yes ☐ No ☒ Will you be accompanied by a family member at the sponsor's expense? **If yes:**

(1) Name of Accompanying Family Member:

(2) Relationship to Traveler: ☐ Spouse ☐ Child ☐ Other (specify):

(3) Yes ☐ No ☐ Accompanying Family Member is at least 18 years of age?

6. a. Yes ☒ No ☐ Did the trip sponsor answer "Yes" to Question 8(c) on the *Primary Trip Sponsor Form* (i.e., travel is sponsored by an entity that employs a registered federal lobbyist or a foreign agent)?

b. **If yes**, and you are requesting lodging for two nights, explain why the second night is warranted:

7. Yes ☒ No ☐ *Primary Trip Sponsor Form* is attached, including agenda, invitation, invitee list, and any other attachments and Additional Sponsor Forms.

NOTE: The agenda should show the traveler's individual schedule, including departure and arrival times and identify the specific events in which the traveler will be participating.

8. Explain why participation in the trip is connected to the traveler's individual official or representational duties. **Staff should include their job title and how the activities on the itinerary relate to their duties.**

As a Legislative Assistant handling healthcare for the Congressman, engaging in meeting staff at CDC and touring the Parasitic Diseases Lab will better equip me to handle this portfolio for the congressman.

9. **Yes ☐ No ☒ Is the traveler aware of any registered federal lobbyists or foreign agents involved in planning, organizing, requesting, or arranging the trip?**

10. For staff travelers, to be completed by your employing Member:

ADVANCED AUTHORIZATION OF EMPLOYEE TRAVEL

I hereby authorize the individual named above, an employee of the U.S. House of Representatives who works under my direct supervision, to accept expenses for the trip described in this request. I have determined that the above-described travel is in connection with my employee's official duties and that acceptance of these expenses will not create the appearance that the employee is using public office for private gain.

Signature of Employing Member: [signature] **Date:** 7/16/26

COMMITTEE ON ETHICS

PRIMARY TRIP SPONSOR FORM

This form should be completed by private entities offering to provide travel or reimbursement for travel to House Members, officers, or employees under House Rule 25, clause 5. A completed copy of the form (and any attachments) should be provided to each invited House Member, officer, or employee, who will then forward it to the Committee together with a *Traveler Form* **at least 30 days before the start date of the trip**. The trip sponsor should *NOT* submit the form directly to the Committee. The Committee's website (ethics.house.gov) provides detailed instructions for filling out the form. The Committee will notify the House invitees directly of its decision and will not notify the trip sponsors.

NOTE: Willful or knowing misrepresentations on this form may be subject to criminal prosecution pursuant to 18 U.S.C. § 1001. Failure to comply with the Committee's Travel Regulations may also lead to the denial of permission to sponsor future trips. Signatures must comply with section 104(bb) of the Travel Regulations.

1. Sponsor who will be paying for the trip:

   Malaria No More

2. ☒ I represent that the trip will not be financed, in whole or in part, by a registered federal lobbyist or foreign agent. *Signify that the statement is true by checking box.*

3. ***Check only one.*** I represent that:
   a. ☒ The primary trip sponsor has not accepted from any other source, funds intended directly or indirectly to finance any aspect of the trip; **OR**
   b. ☐ The trip is arranged without regard to congressional participation and the primary trip sponsor has accepted funds only from entities that will receive a tangible benefit in exchange for those funds; **OR**
   c. ☐ The primary trip sponsor has accepted funds, services, or in-kind assistance from other source(s) intended directly or indirectly to finance all or part of this trip and has enclosed disclosure forms from each of those entities.

   If "c" is checked, list the names of the additional sponsors: _____

4. Provide names and titles of **ALL** House Members *and* employees you are inviting. **For each House invitee, provide an explanation of why the individual was invited** (include additional pages if necessary): Please refer to attach page.

5. Yes ☐ No ☒ Is travel being offered to an accompanying family member of the House invitee(s)?
6. Date of Departure: August 24, 2026 Date of Return: August 25, 2026
7. a. City of departure: Washington D.C.
   b. Destination(s): Atlanta, Georgia
   c. City of return: Washington D.C.
8. ***Check only one.*** I represent that
   a. ☐ The sponsor of the trip is an institution of higher education within the meaning of section 101 of the Higher Education Act of 1965; **OR**
   b. ☐ The sponsor of the trip does not retain or employ a registered federal lobbyist or foreign agent; **OR**
   c. ☒ The sponsor employs or retains a registered federal lobbyist or foreign agent, but the trip is for attendance at a one-day event *and* lobbyist / foreign agent involvement in planning, organizing, requesting, or arranging the trip was *de minimis* under the Committee's travel regulations.

9. ***Check only one of the following.***
   a. ☐ I checked 8(a) or (b) above; **OR**
   b. ☐ I checked 8(c) above but am not offering any lodging; **OR**
   c. ■ I checked 8(c) above and am offering lodging and meals for one night; **OR**
   d. ☐ I checked 8(c) above and am offering lodging and meals for two nights. If you checked this box, explain why the second night of lodging is warranted. _____

10. ■ Attached is a detailed agenda of the activities House invitees will be participating in during the travel (i.e., an hourly description of planned activities for trip invitees). *Indicate agenda is attached by checking box.*

11. ***Check only one of the following.***
   a. ■ I represent that a registered federal lobbyist or foreign agent will not accompany House Members or employees on any segment of the trip. *Signify the statement is true by clicking the box;* **OR**
   b. ☐ *Not Applicable.* Trip sponsor is a U.S. institution of higher education.

12. For ***each*** sponsor required to submit a sponsor form, describe the sponsor's interest in the subject matter of the trip ***and*** its role in organizing and/or conducting the trip:
   Malaria No More is an organization committed to ending deaths from malaria. The purpose of this trip is to demonstrate how the Centers for Disease Control and Prevention is playing a leading role in helping to end deaths from the disease.

13. ***Answer parts a and b. Answer part c if necessary***:
   a. Mode of travel: Air ■ Rail ☐ Bus ☐ Car ■ Other ☐ (specify:_____)
   b. Class of travel: Coach ■ Business ☐ First ☐ Charter ☐ Other ☐ (specify:_____)
   c. If travel will be first class, or by chartered or private aircraft, explain why such travel is warranted:

14. ■ I represent that the expenditures related to local area travel during the trip will be unrelated to personal or recreational activities of the invitee(s). *Signify that the statement is true by checking box.*

15. ***Check only one.*** I represent that either:
   a. ☐ The trip involves an event that is arranged or organized *without regard* to congressional participation and that meals provided to congressional participants are similar to those provided to or purchased by other event attendees; **OR**
   b. ■ The trip involves events that are arranged specifically *with regard* to congressional participation. If "b" is checked:
      1) Detail the cost *per day* of meals (approximate cost may be provided): Monday will cost $35 and Tuesday will cost $79
      2) Provide the reason for selecting the location of the event or trip: Atlanta is the location of the Centers for Disease Prevention Headquarters.

16. Name, nightly cost, and reasons for selecting each hotel or other lodging facility:
   Hotel Name: Emory Conference Center City: Atlanta, GA Cost Per Night: $256.34
   Reason(s) for Selecting: Proximity to site visit
   Hotel Name: _____ City: _____ Cost Per Night: _____
   Reason(s) for Selecting: _____
   Hotel Name: _____ City: _____ Cost Per Night: _____
   Reason(s) for Selecting: _____

17. ☒ I represent that all expenses connected to the trip will be for actual costs incurred and not a per diem or lump sum payment. *Signify that the statement is true by checking the box.*

18. **Total Expenses for each Participant:**

☐ Actual Amounts ☒ Good Faith Estimates	Total **Transportation** Expenses per Participant	Total **Lodging** Expenses per Participant	Total **Meal** Expenses per Participant
For each Member, Officer, or Employee	$580	$256.34	$114
For each Accompanying Family Member			

	Other Expenses (dollar amount per item)	Identify Specific Nature of "Other" Expenses (e.g., taxi, parking, registration fee, etc.)
For each Member, Officer, or Employee	N/A	N/A
For each Accompanying Family Member		

19. ***Check only one:***
    a. ☒ I certify that I am an officer of the organization listed below; **OR**
    b. ☐ *Not Applicable.* Trip sponsor is an individual or a U.S. institution of higher education.

20. **I certify by my signature that**
    a. **I read and understand the Committee's Travel Regulations;**
    b. **I am not a registered federal lobbyist or registered foreign agent; and**
    c. **The information on this form is true, complete, and correct to the best of my knowledge.**

Signature: _____ Date: 7/15/2026

Name: Vishni Samaraweera Title: Associate, US Policy & Adv

Organization: Malaria No More

Address: 1301 Connecticut Ave, NW, Suite 502 Washington DC 20036

Email: vishni.samaraweera@malarianomore.org Telephone: 617-721-6158

If there are questions regarding this form, please contact the Committee on Ethics at 202-225-7103 or travel.requests@mail.house.gov.

ONE HUNDRED NINETEENTH CONGRESS

U.S. House of Representatives

COMMITTEE ON ETHICS

1015 Longworth House Office Building
Washington, D.C. 20515–6328
Telephone: (202) 225–7103
https://Ethics.House.gov

August 21, 2026

Ms. Grace Hayden
Office of the Honorable Johnny Olszewski, Jr.
1339 Longworth House Office Building
Washington, DC 20515

Dear Ms. Hayden:

Pursuant to House Rule 25, clause 5(d)(2), the Committee on Ethics hereby approves your proposed trip to Atlanta, Georgia, scheduled for August 24 to 25, 2026, sponsored by Malaria No More and the Gates Foundation. We remind you that, because the trip sponsor employs a federal lobbyist, you may participate in officially-connected activity on one calendar day only.

You must complete an Employee Post-Travel Disclosure Form (which your employing Member must also sign) and file it, together with a Sponsor Post-Travel Disclosure Form completed by the trip sponsor, with the Clerk of the House within 15 days after your return from travel. As part of that filing, you are also required to attach a copy of this letter and both the Traveler and Primary Trip Sponsor Forms (including attachments) you previously submitted to the Committee in seeking pre-approval for this trip. If you are required to file an annual Financial Disclosure Statement, you must also report all travel expenses totaling more than $525 from a single source on the "Travel" schedule of your annual Financial Disclosure Statement covering this calendar year. Finally, Travel Regulation § 404(d) also requires you to keep a copy of all request forms and supporting information provided to the Committee for three subsequent Congresses from the date of travel.

If you have any further questions, please contact the Committee's Office of Advice and Education at extension 5-7103.

Sincerely,

Michael Guest
Chairman

Mark DeSaulnier
Ranking Member

MG/MD:eme

10.) Attached is a detailed agenda of the activities House invitees will be participating in during the travel (i.e., an hourly description of planned activities for trip invitees).

Monday, August 24, 2026 *Travel day*		
2:30PM - 4:00PM	Check in Washington Ronald Reagan National Terminal 2	*Location: Ronald Reagan Washington National Airport (DCA), Washington, D.C.* *Group will meet at plane gate after security check-in* *POC: Vishni Samaraweera, Policy and Advocacy Associate, Malaria No More*
4:00PM - 6:05PM	Depart Washington Ronald Regan National Delta Flight DL0360	
6:05PM - 7:00PM	Arrive Atlanta Hartsfield-Jackson International and depart for Emory Conference Center Hotel	*Location: Atlanta Hartsfield-Jackson International, Atlanta, Georgia* *POC: Vishni Samaraweera, Policy and Advocacy Associate, Malaria No More*
7:00PM - 7:30PM	Check in at Emory Conference Center Hotel	*Location: Emory Conference Center Hotel* *1615 Clifton Road,NE* *Atlanta, Georgia 30329* *Phone: 404-712-6000* *POC: Johanna Simon, Senior Policy Advisor Malaria No More*
7:30PM - 9:00PM	Dinner briefing with Centers for Disease Control and Prevention (CDC) leadership and Malaria No More team:	*Location: Emory Conference Center Hotel, The Dining Room*

	- Chris Braden, Director (Acting), National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) - Lyle Petersen, Director, Division of Vector-Borne Diseases (DVBD), NCEZID - Monica Parise, Director (acting), Division of Parasitic Diseases and Malaria (DPDM), NCEZID - Sue Visser, Deputy Director of Policy and Extramural Program, DVBD, NCEZID - Paige Armstrong, Director, Global Health Center (GHC) - Matt Buzzelli, Chief of Staff, CDC - John Vertefeuille, Director, Global Immunization Division, CDC - Spencer Knoll, Director of Policy and Advocacy, Malaria No More - Vishni Samaraweera, Policy and Advocacy Associate, Malaria No More - Johanna Simon, Senior Policy Advisor, Malaria No More *Welcome, introductions, and discussion of CDC's congressionally directed malaria program and the cross-department transition into the next phase of the President's Malaria Initiative (PMI).*	*Dress business casual* *POC: Johanna Simon, Senior Policy Advisor Malaria No More*
Tuesday, August 25, 2026 *Meetings and site visits at the Centers for Disease Control and Prevention to discuss efforts to combat malaria globally*		
7:00AM - 7:45AM	Optional breakfast at Emory Conference Center Hotel with the Malaria No More team including, Spencer Knoll, Director of Policy and Advocacy, Malaria No More, Vishni Samaraweera, Policy and Advocacy Associate, Malaria No More and Johanna Simon, Senior Policy Advisor, Malaria No More	*Location: Emory Conference Center Hotel* *1615 Clifton Road NE* *Atlanta, Georgia 30329* *Phone: 404-712-6000* *Please bring your luggage to breakfast; we will be checking out of the hotel. Please bring valid REAL Identification for entrance into the CDC.*

		Dress business formal; We will be walking a short distance to the CDC so please wear comfortable shoes.
7:45AM - 8:00AM	Depart for Centers for Disease Control and Prevention	*Location: Centers for Disease Control and Prevention* *1600 Clifton Road NE* *Atlanta, GA 30329* *Building 19* *POC: Johanna Simon, Senior Policy Advisor Malaria No More*
8:00AM – 8:10AM	Arrival at curbside adjacent to Building 19 for drop-off: Security check-in and meet and greet with *Sue Visser, Deputy Director of Policy and Extramural Program, DVBD, NCEZID*	*Location: Building 19, Visitors Center, Centers for Disease Control and Prevention* *1600 Clifton Road NE* *Atlanta, GA 30329* *Please bring valid REAL Identification* *POC: Sue Visser, Deputy Director of Policy and Extramural Program, DVBD, NCEZID*
8:10AM – 8:15AM	Walk to Building 19, Second Floor	*POC: Sue Visser, Deputy Director of Policy and Extramural Program, DVBD, NCEZID*

8:30AM - 9:30AM	Leadership welcome session with the CDC Team including: • Chris Braden, Director (Acting), NCEZID • Paige Armstrong, Director, GHC • Marita Eibl, Associate Director for Policy, GHC • Wendi Kuhnert, Deputy Director of Laboratory, Readiness, and Response, NCEZID • Lyle Petersen, Director, Division of Vector-borne Diseases (DVBD) • Sue Visser, Deputy Director, Division of Vector-borne Diseases (DVBD) • Monica Parise, Director (acting), Division of Parasitic Diseases and Malaria (DPDM), NCEZID • Melissa Kadzik, Associate Director for Global Health (acting), NCEZID *Welcome, introductions, and discussion of the cross-department transition into the next phase of the President's Malaria Initiative (PMI).*	Location: TBD, Building 21 *POC: Sue Visser, Deputy Director of Policy and Extramural Program, DVBD, NCEZID*
9:30AM - 9:45AM	Walk to Building 23	*POC: Sue Visser, Deputy Director of Policy and Extramural Program, DVBD, NCEZID*
9:45AM - 10:30AM	Tour of Parasitic Diseases Lab with Dr. Brian Raphael, Chief of the Laboratory Branch, DPDM. *Hear a presentation on the procedures for malaria and other parasitic disease diagnostics, including advanced molecular methods and the use of rapid telediagnosis of microscopic images to support laboratories across the United States.* *CDC's diagnostic parasitology laboratory maintains an extensive collection of reference specimens used to advance diagnostics, build testing capacity, and provide technical assistance to state and local public health laboratories on parasitic diseases.*	*Note: Group of 8-10 people* *POC: Sue Visser, Deputy Director of Policy and Extramural Program, DVBD, NCEZID*
10:45AM - 11:45AM	Tour of Insectary with Dr. Audrey Lenhart, Chief of the Entomology Branch, DPDM *See a demonstration of the capacity of CDC's world-class insectary, including rearing over 50 reference colonies mosquitoes and triatomine bugs, developing tests to detect*	*Note: Group of 8 people*

	emerging threats including insecticide resistance and invasive malaria mosquitoes, evaluating insecticide-treated military uniforms in collaboration with Department of War, and conducting research to optimize new tools to prevent vector-borne diseases.	*POC: Sue Visser, Deputy Director of Policy and Extramural Program, DVBD, NCEZID*
11:45AM - 12:00PM	Walk to Building 21	
12:00PM - 1:00PM	Working lunch with Sue Visser, Deputy Director of Policy and Extramural Program, DVBD, NCEZID *Discussion on the current state of inter-agency coordination to combat malaria globally.*	*Location: Building 21* *Note: Pre-ordered buffet* *POC: Sue Visser, Deputy Director of Policy and Extramural Program, DVBD, NCEZID*
1:00PM - 1:15PM	Walk to Building 21, 3rd Floor, Emergency Operations Center (EOC)	
1:15PM - 2:00PM	Emergency Operations Center Tour and briefing with CDC's Incident Managers, Satish Pillai, Ebola Incident Manager, NCEZID and Paul Cantey, New World Screwworm Incident Manager, NCEZID *A tour of the EOC will include a history of the Center, an overview of EOC capacity, and a summary of current activations, including the level 1 Ebola and the level 3 New World Screwworm activations.*	Location: Building 21, 3rd Floor, EOC *POC: Sue Visser, Deputy Director of Policy and Extramural Program, DVBD, NCEZID*
2:00PM - 2:30PM	Wrap-up and adjourn; end of formal program	
2:30PM - 5:45PM	Depart for airport and check-in for flight Atlanta Hartsfield-Jackson Intl, Atlanta, GA – South Terminal	Location: Atlanta Hartsfield-Jackson Intl, Atlanta, Georgia *POC: Vishni Samaraweera, Policy and Advocacy Associate, Malaria No More*

5:45PM - 7:34PM	Depart Atlanta Hartsfield- Jackson International Delta Flight DL0832	*POC: Vishni Samaraweera, Policy and Advocacy Associate, Malaria No More*
7:34PM	Arrive Washington Ronald Reagan National, Washington, VA - Terminal 2	

4.) Provide names and titles of **ALL** House Members *and* employees you are inviting. **For each House invitee, provide an explanation of why the individual was invited** (include additional pages if necessary):

Explanation for all individuals invited: Each of the following House employees was invited based on their oversight of global health, malaria, and the Centers for Disease Control and Prevention.

All House Employees Invited:

Malka Berro
Office of Representative Mark Pocan
Senior Policy Advisor, Health and Labor
malka.berro@mail.house.gov

Isrrael Garcia
Office of Representative Pete Aguilar
Senior Legislative Assistant
isrrael.garcia@mail.house.gov

Jack Berson
Office of Representative Johnny Olszewski
Foreign Policy Legislative Assistant
jack.berson@mail.house.gov

Grace Hayden
Office of Representative Johnny Olszewski
Legislative Assistant
Grace.Hayden@mail.house.gov

Jennifer Miller
Office of Representative Lois Frankel
Foreign Policy Advisor
jennifer.miller1@mail.house.gov

Emma Bruce
Office of Representative Ami Bera
Staff Director for the Indo-Pacific
emma.bruce@mail.house.gov

Lilah Pomerance
Office of Representative Pramila Jayapal
Chief of Staff
lilah.pomerance@mail.house.gov

Cesar Gonzalez
Office of Representative Mario Diaz-Balart

Chief of Staff
cesar.gonzalez@mail.house.gov

Grace White
Office of Representative Bryan Steil
Chief of Staff
grace.white@mail.house.gov

Daniel Hess
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Legislative Director/Senior Legislative Assistant
daniel.hess@mail.house.gov

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katie.heller@mail.house.gov

Heba Mohiuddin
Office of Representative Sara Jacobs
Legislative Correspondent/Staff Assistant
heba.mohiuddin@mail.house.gov

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Office of Representative Chris Smith
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mary.mcdnoonan@mail.house.gov

McKayla Mulhern
Office of Representative Tim Kennedy
Chief of Staff
mckayla.mulhern@mail.house.gov

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Ryan.Klein1@mail.house.gov

Frank Debrosse
Office of Representative Mike Turner
Chief of Staff
frank.debrosse@mail.house.gov

Clay Schroers
Office of Representative Laura Friedman
Chief of Staff
clay.schroers@mail.house.gov

Jeremy Tittle
Office of Representative Salud Carbajal
Chief of Staff
jeremy.tittle@mail.house.gov

Jesse Ebadi
Office of Representative Salud Carbajal
Legislative Assistant
Jesse.Ebadi@mail.house.gov

John McDonough
Office of Representative Chris Smith
Legislative Director
john.mcdonough@mail.house.gov

Allison Cantrell
Professional Staff Member
House Committee on Foreign Affairs
Chairman Brian Mast
Allison.Cantrell@mail.house.gov

2026 Staff Delegation to the

U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION

malaria NO MORE

BRIEFING BOOK

AUGUST 24–25, 2026

Atlanta, Georgia

TABLE OF CONTENTS

CONTACT INFORMATION

Malaria No More Staff

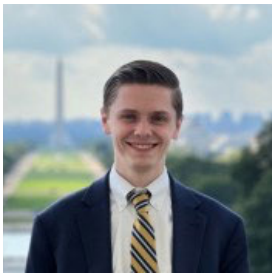
Spencer Knoll
(240) 626-5525
Spencer.knoll@malarianomore.org

Johanna Simon
(917) 584-1388
Johanna.simon@malarianomore.org

Vishni Samaraweera
(617) 721-6158
Vishni.samaraweera@malarianomore.org

BIOS

Jesse Ebadi is a Legislative Assistant for Congressman Salud Carbajal. His issue portfolio includes health, agriculture, housing, animal welfare, telecommunications, and postal. Prior to working in DC, Jesse was a District Representative in Congressman Carbajal's Santa Barbara district office. Before working in Congress, Jesse graduated from UCSB with a bachelor's in political science and Howard University School of Law with a Juris Doctor.



Danny Hess is the Legislative Director for Rep. Bryan Steil (WI-1). He has worked for Rep. Steil since 2021 and previously worked for former Rep. Jim Sensenbrenner (WI-5).

Ryan Klein currently serves as Legislative Correspondent in the Office of Congressman Glenn "GT" Thompson (PA-15) where he handles the Congressman's Health, Retirement, Housing, and Science, Space, and Technology portfolio.

Malka Berro is a Senior Health Policy Advisor for Congressman Mark Pocan, supporting his work as a senior member of the House Appropriations Committee, including the Subcommittee on Labor, Health and Human Services, Education, and Related Agencies. She leads policy and stakeholder engagement for the Congressional HIV/AIDS Caucus, chaired by Rep. Pocan, and works on a range of public health and health policy priorities, including strengthening access to care and advancing domestic and global health initiatives.

Heba Mohiuddin is the legislative correspondent and health policy lead for Congresswoman Sara Jacobs. Before joining Congresswoman Jacobs' team, she interned with Whip Clark's office and the Democratic Appropriations Committee.

Grace Hayden serves as a Legislative Assistant for Congressman Johnny Olszewski, where she handles a diverse portfolio of issues including the Small Business Committee, Education, Financial Services, Housing, Labor, T&I, Healthcare, and other issues. In this role, she is committed to advancing policies that promote equity, justice, and sustainable development. She attended the University of Maryland and received a BA in Government and Politics and a Minor in International Development and Conflict Management. She will begin her Master's of Business Administration (MBA) in the fall at Georgetown University.

Aria Campos has covered health as a Legislative Assistant for Sen. Martin Heinrich for nearly two years. Prior to Congressional service, she worked as a clinical social worker in California.

Isrrael Garcia is Senior Legislative Assistant to Rep. Pete Aguilar (CA-33), Chair of the House Democratic Caucus. In this role, Isrrael manages the health, labor, and crime/judiciary portfolios, advances appropriations requests, engages with stakeholders, and provides strategic advice to the member. Before joining Capitol Hill, he launched his career in healthcare administration, managing a health program for two health systems in Omaha. He later worked on the Hill with former Congresswoman Roybal-Allard, who served as Vice Chair of LHHS and Chair of the Homeland Security Appropriations Subcommittees. Isrrael received his bachelor's from Creighton University and an MPH from the University of Nebraska Medical Center.

Malaria No More

Dr. Bill Steiger, CEO, most recently was Chief of Staff at the U.S. Agency for International Development under Administrator Mark Green in the first Trump Administration. Previously, he was Managing Director of Pink Ribbon Red Ribbon, a public-private consortium of companies, foundations, and non-governmental organizations hosted at the Bush Institute dedicated to the fight against cervical and breast cancer in the developing world. From 2001 to 2009, Dr. Steiger was Director of the Office of Global Health Affairs at the U.S. Department of Health and Human Services (HHS) and Special Assistant for International Affairs to the Secretary of HHS. During this time, he served as a member of the Executive Board of the World Health Organization; the Executive Committee of the Pan American Health Organization; and the Board of Directors of the Global Fund to Fight AIDS, Tuberculosis, and Malaria.Earlier in his career, he was chief Education-Policy Advisor to the Governor of Wisconsin. Bill earned his Ph.D. in Latin American History at the University of California, Los Angeles, and graduated summa cum laude from Yale University with a Bachelor's degree in History.

Spencer Knoll is the Director of U.S. Policy and Advocacy at Malaria No More. Prior to joining the organization, he worked for six years as an aide to Senator Chris Van Hollen (D-Md.), a member of the Senate Foreign Relations Committee and the Appropriations Subcommittee that funds the State Department and USAID. He brings nearly a decade of Congressional and appropriations experience to MNM. While on Capitol Hill, Spencer authored major legislation to address the retention crisis in the Foreign Service that was signed into law by President Biden. He is active in his community, where he serves on the Cultural Arts Commission for the City of Rockville, Maryland and chairs the Board of Directors of an Annapolis-based nonprofit that prepares college students for lives of public service. Spencer is a graduate of Hood College and the Georgetown University Walsh School of Foreign Service.

Vishni Samaraweera serves as an Associate for Policy and Advocacy at Malaria No More. She brings experience across policy, advocacy, and research, with prior roles at the White House Gender Policy Council under the Biden-Harris Administration and on Capitol Hill in the office of Representative Madeleine Dean (D-PA), where she worked with policymakers on issues related to global women's health and equity. Her graduate thesis research in Chiapas, Mexico, analyzed the relationship between socioeconomic factors and cervical cancer mortality in Indigenous communities, combining statistical analysis with interviews of reproductive health workers. She holds a Master's in Global Health from Georgetown University and a Bachelor's in Public Health from Brandeis University.

Johanna Simon serves as Malaria No More's Senior Policy Advisor. She manages policy-related partner projects, D.C. events, as well as U.S. Senate Staff Delegation trips. Recent fieldwork included visits with U.S. Senate Staffers to Haiti, Rwanda, Senegal, Cambodia, Thailand and Zambia to discuss malaria elimination. Prior to joining MNM, Johanna worked in the private sector at Ogilvy PR Worldwide, helping global pharmaceutical companies launch health products and navigate crisis communications. Additionally, Johanna has consulted for a variety of global NGOs, including ORBIS International, conducting fieldwork work in Mongolia, Cuba, Syria, Rwanda, and India. Johanna received her B.A. in Communications from the Annenberg School at the University of Pennsylvania and her Masters in International Health Policy and Management from NYU's Wagner Graduate School.

CDC Staff

Sean Slovenski, Principal Deputy Director and Chief Operating Officer, CDC Sean Slovenski is principal deputy director and chief operating officer (COO) for CDC. As principal deputy director and COO, Slovenski is responsible for executing the Director's vision. In this capacity, he oversees the Office of the Director as well as the day-to-day operations, strategic planning, and workflows of CDC's Centers and Institutes. Slovenski also provides executive oversight of CDC's financial management and budget execution; facilities, safety and security; acquisitions and grants; and information technology and cybersecurity.

Slovenski is recognized as a healthcare industry innovator and thought leader with more than 30 years of experience spanning healthcare technology, wellness, behavioral health, retail healthcare, diagnostics, and patient education and engagement. Throughout his career, he has led organizations across nearly every sector of healthcare, including health systems, Fortune 500 companies, startups, and joint ventures.

Previously, Slovenski served as senior vice president of Walmart Health & Wellness, overseeing the company's healthcare strategy across pharmacy, optical, and clinical services. Under his leadership, Walmart Health & Wellness served millions of Americans annually through thousands of pharmacies, optical centers, and multidisciplinary healthcare clinics nationwide. Most recently, Slovenski served as chief executive officer of BioIQ, a leading at-home diagnostics company, and president and later chief executive officer of PatientPoint, one of the nation's largest point-of-care patient engagement companies.

Jennifer Shuford, Deputy Director and Chief Medical Officer, CDC Jennifer Shuford is deputy director and chief medical officer of the Centers for Disease Control and Prevention (CDC). As CDC's deputy director and chief medical officer, Dr. Shuford provides vital clinical, scientific, and public health leadership for the agency. In this role, she offers expert guidance on a broad portfolio of domestic and global health issues and advises the CDC Director on clinical and scientific priorities. Dr. Shuford helps lead strategic public health efforts across CDC's Centers, Institute, and Offices, shaping initiatives that support the agency's mission.

Before joining CDC, Dr. Shuford served as the commissioner of the Texas Department of State Health Services (DSHS). In this role, Dr. Shuford oversaw statewide public health programs, including infectious disease response, health promotion, epidemiology, and emergency preparedness. Prior to becoming commissioner, Dr. Shuford served as Texas' chief state epidemiologist after practicing as an infectious disease physician in Austin, Texas. Dr. Shuford joined DSHS in 2017 and contributed significantly to major public health responses, including measles and COVID-19.

Chris Braden, Director (Acting), National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)
Christopher Braden is the acting director for NCEZID. Dr. Braden previously served as acting director of NCEZID's Division of Parasitic Diseases and Malaria; director of NCEZID's Division of Foodborne, Waterborne, and Environmental Diseases; associate director for science in the Division of Parasitic Diseases and Malaria; and chief of outbreak response and surveillance within the Enteric Diseases Epidemiology Branch, Division of Foodborne, Bacterial, and Mycotic Diseases at the National Center for Zoonotic, Vector-Borne, and Enteric Diseases. Dr. Braden also served as a medical epidemiologist in CDC's Division of Tuberculosis Elimination. He became an Epidemic Intelligence Service officer at CDC in 1993.

Dr. Braden is an author of more than 70 peer-reviewed publications and textbook chapters, with his major areas of interest including molecular epidemiology of infectious diseases, infectious diseases surveillance and outbreak investigation, and national programs on food safety. He served as a commissioned officer in the US Public Health Service, he is a member of the Infectious Diseases Society of America and the American Epidemiological Society and is an associate editor for the Emerging Infectious Diseases journal.

Wendi Kuhnert, Deputy Director of Laboratory, Readiness, and Response, NCEZID
Wendi Kuhnert is deputy director for laboratory readiness and response at the National Center for Emerging and Zoonotic Infectious Diseases (NCEZID). In this role she provides leadership in planning, managing, directing, and coordinating the activities for the associate director for laboratory science office. This includes laboratory safety and quality support for NCEZID as well as to the Laboratory Assay Readiness Office (LASR), which includes center support for laboratory response and assay design, quality control, and validation.

Melissa Kadzik, Associate Director for Global Health (Acting), NCEZID Melissa Kadzik is acting associate director for global health at the National Center for Emerging and Zoonotic Infectious Diseases (NCEZID). In this role, she provides strategic direction to the center's global work. She previously worked in the Bacterial Special Pathogens Branch in NCEZID where she managed their international portfolio and training and in the Global Health Center's Global Disease Detection Branch. Prior to joining CDC, Ms. Kadzik served as a Peace Corps volunteer in Benin, West Africa where she organized malaria programs, HIV/AIDS testing, and education and nutrition activities.

Lyle Petersen, Director, Division of Vector-Borne Diseases (DVBD), NCEZID
Lyle Petersen is Director of NCEZID's Division of Vector-Borne Diseases (DVBD). Dr. Petersen's career at CDC began in the Epidemic Intelligence Service (EIS) in 1985. After his EIS training, he joined CDC's Division of HIV/AIDS where he worked until 1995, serving in several posts, including the Chief of the HIV Seroepidemiology Branch. Dr. Petersen served as Deputy Director for Science of DVBD starting in 2000 until he became the division's director in 2004. He also has experience in infectious disease outbreak investigations, having served on the National Security Staff at the White House during the 2014 Ebola Response and as Incident Manager of CDC's Zika Response in 2016.

Monica Parise, Director (Acting), Division of Parasitic Diseases and Malaria (DPDM), NCEZID
Monica Parise is the acting Director of the Division of Parasitic Diseases and Malaria (DPDM) in NCEZID. The Division's work focuses on ensuring the prevention, diagnosis and treatment of parasitic diseases in the United States and on reducing the global burden of malaria and priority Neglected Tropical Diseases.

Dr. Parise joined CDC in 1993 as a member of the Epidemic Intelligence Service (EIS) in the Malaria Branch. After a two-year EIS rotation, she completed a CDC preventive medicine residency at the Puerto Rico Department of Health—before returning to the Malaria Branch as a Medical Officer at CDC headquarters in Atlanta. While in the Malaria Branch, she served as Team Lead of both the Domestic Response Team and the Malaria in Pregnancy Team. Dr. Parise served as Chief of the Parasitic Diseases Branch from 2005–2014. She served as DPDM's Associate Director of Science and Program from 2014–2016.

Sue Visser, Deputy Director of Policy and Extramural Program, DVBD, NCEZID
Sue Visser serves as the Deputy Director for Policy and Extramural Program in the Division of Vector-Borne Diseases (DVBD) for CDC's National Center on Emerging and Zoonotic Infectious Diseases.

In her role, Dr. Visser leads DVBD's budget initiatives, directs public and private partnership activities, coordinates and conducts partner and congressional briefings, and coordinates the execution of extramural activities. Dr. Visser led the development of a cross-Departmental national strategy for vector-borne disease prevention and control that

supports coordinated federal efforts and brings awareness to the work that must be done to decrease vector-borne disease-related morbidity and mortality.

Paige Armstrong, Director, Global Health Center (GHC)
Paige Armstrong serves as the director for the Global Health Center, which leads CDC's global efforts to protect and improve health for the American people and others around the world through science and public health action.

Dr. Armstrong has held a variety of leadership roles during her CDC career, most recently serving as associate director for Global Health in the National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), where she oversaw the global portfolios of seven divisions and three cross-cutting offices. Prior to re-joining NCEZID, Dr. Armstrong served as the associate director for global health in the Division of Viral Hepatitis in CDC's National Center for HIV, Viral Hepatitis, STD, and TB Prevention (NCHHSTP). She also served as epidemiology team lead and a medical officer for the Rickettsial Zoonoses Branch in NCEZID's Division of Vector-borne Diseases. She joined CDC as an Epidemic Intelligence Service officer in the Division of Foodborne, Waterborne, and Environmental Diseases.

John Vertefeuille, Director, Global Immunization Division, Global Health Center (GHC)
John Vertefeuille leads the programmatic direction of CDC's global immunization portfolio. Dr. Vertefeuille is the CDC representative on the Strategy Committee within the interagency Global Polio Eradication Initiative.

Dr. Vertefeuille served as the Global Immunization Division's Polio Eradication Branch Chief and the CDC Polio Emergency Response Incident Manager between 2015 and 2022. From 2011 to 2013, he served as CDC's Haiti Country Director. In this role, he focused on expanding access to HIV services and rebuilding the public health infrastructure following the 2010 earthquake and subsequent cholera outbreak.

He served as the CDC Nigeria country director and CDC Tanzania country director from 2004 to 2011. In those roles, he managed portfolios which included HIV, tuberculosis, and malaria. He oversaw the establishment of Field Epidemiology Training Programs and expanded national public health laboratory capacity. Dr. Vertefeuille has led and participated in many CDC outbreak responses, including Ebola, cholera, H5N1 and H1N1 influenza, and polio amongst others.

Martin Klingbeil, Public Health Analyst, Washington Office
Martin serves a senior advisor and Congressional liaison supporting the National Center for Emerging and Zoonotic Infectious Diseases and Global Health Center at the CDC Washington Office. In this role, he develops and executes legislative and DC partnership strategy to sustain robust, responsible domestic and global infectious disease programs that protect U.S. health and security. Martin joined CDC Washington in 2016 and previously covered the National Center for Health Statistics and the National Center on Birth Defects and Developmental Disabilities.

MALARIA GLOSSARY

For Congressional Staff and First-Time Delegation Visitors

PURPOSE OF THIS GUIDE

This glossary is designed to help delegation participants quickly understand the key terms, institutions, interventions, and metrics related to malaria they will encounter during field visits, government meetings, site visits, and more.

A

ACT (Artemisinin-Based Combination Therapy)

The frontline treatment for uncomplicated malaria caused by the *Plasmodium falciparum* parasite. Combines artemisinin (derived originally from the Chinese herb *Artemisia annua*, or sweet wormwood) with a partner drug to reduce the risk of resistance and improve effectiveness. ACTs are the standard of care recommended by the World Health Organization (WHO).

Anemia

A condition in which the body lacks enough healthy red blood cells to carry oxygen. Severe malaria frequently causes anemia, especially in pregnant women and children under five, and can be life-threatening if untreated.

Anopheles

The mosquito genus that transmits malaria to humans. Only female *Anopheles* mosquitoes bite (they need blood to produce eggs). Female *Anopheles mosquitoes* spread the malaria parasite (Plasmodium) by biting an infected person and then transmitting it to another person during a subsequent blood meal. Not all *Anopheles* species transmit malaria, but they are the only mosquitoes that can do so.

Antimicrobial Resistance (AMR)

The ability of disease-causing organisms to resist the effects of medicines. In the context of malaria, AMR refers to antimalarial drug resistance, where Plasmodium parasites evolve resistance to antimalarial drugs, reducing the effectiveness of treatment and increasing the risk of illness and continued transmission.

Antimalarial Resistance

When malaria parasites evolve so that medicines become less effective. Drug resistance is one of the most serious long-term threats to malaria control globally.

Artemisinin Resistance

A specific form of drug resistance in which *Plasmodium falciparum* parasites become less responsive to artemisinin-based medicines. Resistance to artemisinin is particularly concerning in parts of Southeast Asia and emerging in parts of Africa.

B

Bed Nets / Insecticide-Treated Nets (ITNs) / Long-Lasting Insecticide-Treated Nets (LLINs)

Insecticide-treated mosquito nets used while sleeping to prevent mosquito bites — one of the most cost-effective malaria-prevention tools available. LLINs are effective for 3 or more years without re-treatment.

Burden

The overall scale of malaria's impact in a country or region as measured through cases, deaths, hospitalizations, and economic costs. High-burden countries, most of which are in sub-Saharan Africa, account for the largest share of the world's malaria cases.

C

Case Fatality Rate

The proportion of people diagnosed with malaria who die from the disease. A key indicator of healthcare quality and access to treatment.

Case-Management

The full process of diagnosing malaria with a test and treating confirmed cases with appropriate medicine. Effective case-management prevents hospitalizations and deaths and reduces transmission of the disease.

Community Health Worker (CHW)

Locally based health workers who provide frontline services in rural and hard-to-reach communities, including testing, treatment, and referrals for malaria. CHWs are often the first — and sometimes only — point of contact for health care in many developing countries.

Cross-Border Transmission

Malaria transmission that occurs across neighboring countries, often because of population movement. A major complication for eliminating malaria, since a country cannot eradicate the disease if it continues to be re-imported from neighbors.

D

Diagnostics

Tools used to confirm malaria infection before treatment. The two main types are Rapid Diagnostic Tests (RDTs) and microscopy. Confirming diagnosis before treatment is critical to avoid the overuse of medicines and reduce resistance.

Domestic Resource-Mobilization (DRM)

The appropriation of funds by a country's own government, and/or donations by the local private sector and philanthropy, to support health programs, including against malaria. Increasing domestic investment is a key indicator of country-level financial and managerial ownership and programmatic sustainability.

E

Elimination

Interrupting local malaria transmission in a defined geographic area, such that no new cases occur without being imported from outside. Distinct from "eradication," which is worldwide. Since 1955, the WHO has certified 46 countries and one territory as having eliminated malaria from within their borders.

Endemic

Describes areas in which malaria transmission occurs regularly. Endemic regions are where malaria is a persistent, ongoing public health problem — not just an occasional outbreak.

Entomology

The scientific study of insects. For malaria, entomologists study mosquito species, behavior, breeding sites, and insecticide resistance to inform strategies to control and/or eliminate them. (See "Vector Control" below.)

F

Falciparum Malaria

Malaria caused by *Plasmodium falciparum* — the deadliest malaria parasite species and the most common in sub-Saharan Africa. Also present in some parts of Latin America. *Falciparum* can progress rapidly to severe disease and death if untreated.

Fever

One of the most common symptoms of malaria — often the first sign of infection. Because many illnesses cause fever, testing before treating is essential.

G

Gavi, the Vaccine Alliance

A global public-private partnership founded in 1999 that helps expand access to life-saving vaccines in lower-income countries by funding the procurement and delivery of vaccines and health-system strengthening. Gavi enforces a co-financing requirement, reduces its support as countries' Gross National Income increases, and eventually graduates countries from assistance entirely. The alliance plays a central role in the rollout of the two licensed malaria vaccines (see below) by helping the governments of eligible countries introduce and scale immunization programs to protect children in areas with high transmission of the disease. As of 2026, 25 African countries have introduced a WHO-recommended malaria vaccine into their routine immunization programs with Gavi financial support, which marks a major milestone in global malaria prevention.

Gene Drive

A cutting-edge genetic technology being researched as a potential tool to reduce mosquito populations or prevent mosquitoes from transmitting malaria. Still in experimental stages; not yet deployed at scale.

Global Fund

The Global Fund to Fight AIDS, Tuberculosis (TB), and Malaria — a major international financing institution founded with an initial donation from the U.S. Government announced by President George W. Bush in 2001 that pools public and private donor contributions to fund programs against malaria, HIV, and TB in high-burden countries. The largest funder of malaria programs globally; the U.S. Government's President's Malaria Initiative is the next-largest financier.

I

Incidence

The number of new malaria cases that occur during a specific time period, usually expressed in increments of 1,000 people at risk per year. Falling incidence rates are the primary measure of programmatic success against malaria.

Indoor Residual Spraying (IRS)

A method of controlling mosquitoes that involves spraying insecticide on the interior walls of homes and structures. Mosquitoes that land on treated walls die. The spraying must be repeated annually or biannually and requires high household coverage to be effective.

Insecticide Resistance

The ability of mosquitoes to survive exposure to insecticides that would normally kill them. In malaria, insecticide resistance in *Anopheles* mosquitoes can reduce the effectiveness of key prevention tools such as insecticide-treated bed nets (ITNs) and indoor residual spraying (IRS). Monitoring resistance and developing new insecticides and vector-control tools are critical to sustaining progress against malaria.

Insectary

A specialized laboratory facility that raises and studies mosquitoes and other insects under controlled conditions. In malaria research, insectaries study *Anopheles* mosquitoes, evaluate the effectiveness of insecticides and bed nets, and test new vector-control tools before they are deployed in the field.

Intermittent Preventive Treatment in Pregnancy (IPTp)

A course of preventive antimalarial treatment given to pregnant women at routine antenatal care visits, regardless of whether they have symptoms. Malaria during pregnancy increases the risks of miscarriage and spontaneous abortion, maternal anemia, death during childbirth, sterility, low birthweight, and infant mortality.

IRS Coverage

The percentage of homes in a target area sprayed during an IRS campaign. High coverage (typically more than 85 percent) is required to have a meaningful impact on mosquito populations.

M

Malaria

A mosquito-borne disease caused by *Plasmodium* parasites, transmitted through the bite of infected female *Anopheles* mosquitoes. Symptoms include fever, chills, and flu-like illness. Severe malaria can cause coma, organ failure, and death — particularly in children under five and pregnant women. Ancestors of the current parasites appear in fossils that are millions of years old. The oldest confirmed human case comes from a 5,600-year-old skeleton found in Germany.

Malaria Elimination

The reduction of local malaria transmission to zero in a country or region. Requires sustained investment, strong surveillance, and often coordination with neighboring countries.

Malaria Eradication

The permanent worldwide reduction of malaria cases to zero. The long-term global goal, though most current programs focus on control and elimination as intermediate steps.

Malaria Vaccines

Vaccines designed to reduce malaria infections and severe disease, particularly in young children. Two vaccines have received regulatory approval, and Gavi, the Vaccine Alliance, is financing their roll-out across sub-Saharan Africa:

- RTS,S/AS01 (Mosquirix) — the first approved malaria vaccine; and
- R21/Matrix-M (Oxford University and the Serum Institute of India)— a newer vaccine.

Maternal Mortality

Deaths related to pregnancy or childbirth. Malaria during pregnancy significantly increases the risk of maternal mortality, which makes preventing the disease during pregnancy a priority.

Morbidity

Illness or disease burden caused by malaria — including hospitalizations, missed school and work, and economic losses — distinct from mortality (deaths).

Mortality

Deaths caused by malaria. The WHO estimates malaria causes approximately 600,000 deaths per year around the world, 85 percent of which are pregnant women and children under five in sub-Saharan Africa.

P

Parasite

The organism that causes malaria. Five *Plasmodium* species infect humans; *Plasmodium falciparum* is the deadliest and most prevalent in Africa.

Polymerase Chain Reaction (PCR))

A highly sensitive laboratory test that detects malaria parasites by amplifying the parasites' DNA. More accurate than RDTs for low-level infections; used primarily for surveillance and research rather than routine clinical care.

President's Malaria Initiative (PMI)

The U.S. President's Malaria Initiative — the U.S. Government's flagship bilateral malaria program, launched by President George W. Bush in 2005. Formerly led by the U.S. Agency for International Development (USAID) with technical support from the Centers for Disease Control and Prevention (CDC) within the U.S. Department of Health and Human Services (HHS), PMI is now part of the State Department's Bureau of Global Health Security and Diplomacy. PMI operates across sub-Saharan Africa and Asia, and it is one of the largest bilateral health investments in the world.

Prevalence

The proportion of a population currently infected with malaria at a given point in time, as measured through household surveys such as the Malaria Indicator Survey (MIS).

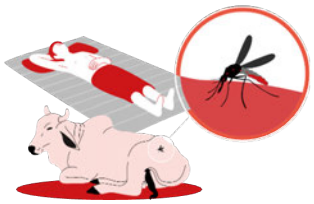
R

Rapid Diagnostic Test (RDT)

A quick, simple, finger-prick blood test used to diagnose malaria without a laboratory. Results are available in 15–20 minutes. RDTs have transformed malaria diagnosis in remote settings and are a cornerstone of the "test-and-treat" approach.

Residual Transmission

Ongoing malaria transmission that persists even with high coverage of bed nets and IRS, often caused by mosquitoes that bite outdoors or during the day, when nets offer no protection, and in areas where mosquitoes feed on both livestock and people. Driven by asymptomatic infections in adults. Addressing residual transmission requires new tools and approaches.



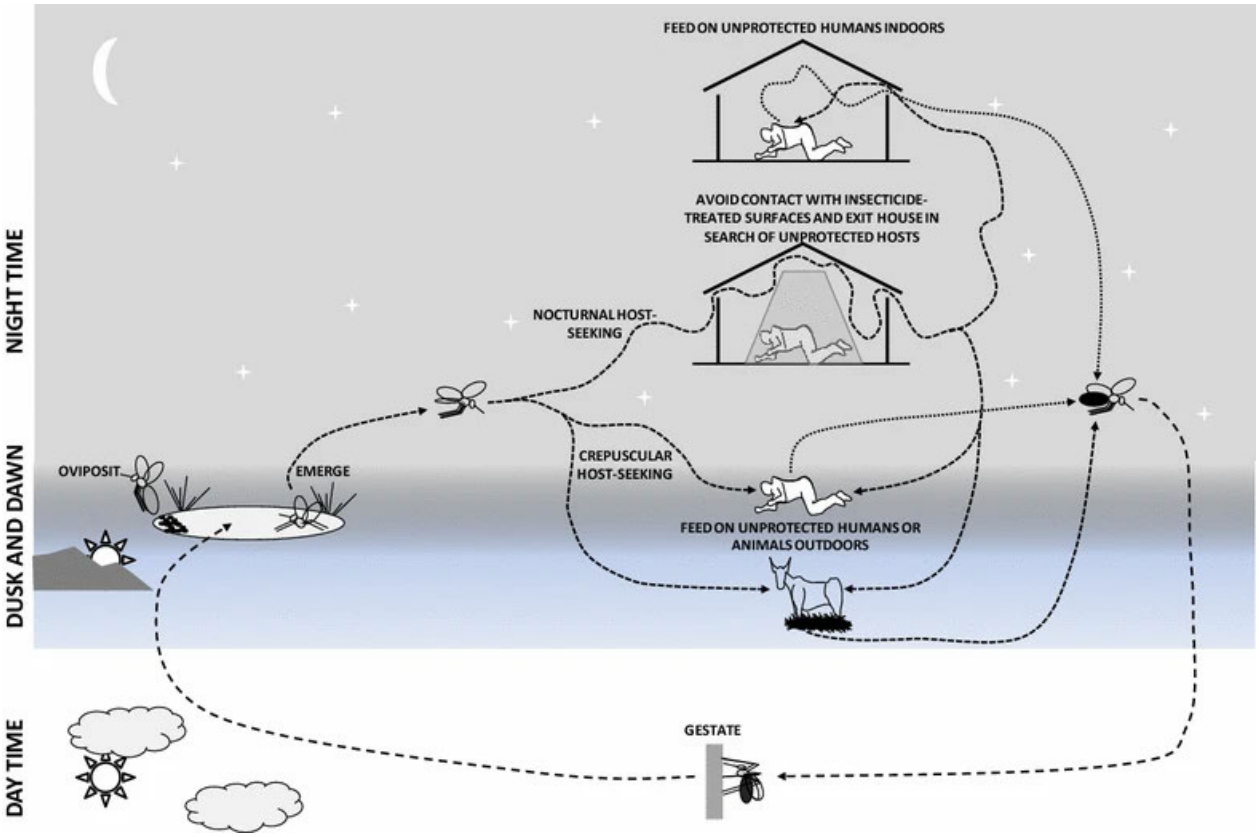


Image Source: Malaria Journal

S

Seasonal Malaria Chemoprevention or Chemoprophylaxis (SMC)

A preventive strategy in which antimalarial medicines are given monthly to children under five during peak malaria season. SMC has shown dramatic reductions in malaria cases in places where infections surge during defined rainy seasons, such as the Sahel region of West Africa.

Severe Malaria

Life-threatening malaria that requires urgent medical treatment, often including injectable artesunate. Complications include cerebral malaria (which affects the brain), severe anemia, and respiratory distress. Without prompt treatment, severe malaria has a high fatality rate. Children who survive repeated bouts of severe malaria can have long-term physical and cognitive problems.

Stephensi

Anopheles stephensi is a malaria-carrying mosquito species, originally from South Asia and the Arabian Peninsula, that is spreading rapidly across East Africa. Because *stephensi* mosquitoes bite during the day, tolerates higher altitudes than other species, and can breed in small amounts of dirty water in urban areas (such as in discarded tires), the species evades many traditional control methods like bed nets. Malaria incidence in Ethiopia increased by 26.8 percent in 2024, in part because of the spread of *Anopheles stephensi.*

Surveillance

The continuous collection, analysis, and use of malaria data to guide decision-making. Strong surveillance systems allow governments and their partners to target interventions effectively and detect outbreaks early.

Supply Chain

The system used to procure, store, transport, and distribute malaria drugs and commodities — including medicines, bed nets, diagnostic tests, and spray materials. Supply-chain failures, including poor forecasting and ordering, can paralyze programs even when funding is available.

T

Tafenoquine

An anti-malarial medicine developed through research at the Walter Reed Army Institute of Research (WRAIR) within the U.S. Department of War. It prevents people from contracting malaria and eliminates dormant *Plasmodium vivax* parasites in the human liver that can cause relapses of the disease. Because tafenoquine can cause serious side effects in people with a genetic disorder that causes red blood cells to become vulnerable to oxidative stress because of a deficiency of the enzyme glucose-6-phosphate dehydrogenase (G6PD), patients must be tested for G6PD before receiving the medicine.

Test-and-Treat

The WHO-recommended policy of confirming malaria infection with a diagnostic test before administering treatment. This reduces the overuse of antimalarials, helps preserve the efficacy of drugs, and ensures the correct identification of febrile patients who have other illnesses.

Transmission

The spread of malaria parasites from mosquitoes to humans and animals (and back). Understanding transmission patterns — including seasonality, mosquito species, and human behavior — is essential for targeting interventions.

Transmission Season

The period of the year in which malaria cases peak, which typically coincides with rainy seasons when mosquito breeding is most active. Many interventions, such as SMC and the distribution of bed nets, should be timed to the transmission season.

V

Vector

An organism that transmits a disease from one host to another. In malaria, the vector is the female *Anopheles* mosquito. Understanding which *Anopheles* species are present in a given area determines which control measures are most appropriate.

Vector Control

Strategies to reduce mosquito populations or prevent mosquito bites, thereby reducing transmission. The primary tools are insecticide-treated bed nets (LLINs), indoor residual spraying (IRS), and larvicide to kill juvenile mosquitoes that live in water. Emerging tools include attractive targeted sugar baits (ATSB) and spatial repellents.

Vivax Malaria

Malaria caused by *Plasmodium vivax* — a less-deadly form of malaria parasite species and the most common in Southeast Asia and Latin America. Historically difficult to eliminate because the parasite can lie dormant and reproduce in the human liver even after treating the symptoms of malaria, causing relapses. Tafenoquine (see above) is the new "radical cure" that can kill the liver-stage of *vivax* infection and stop relapses and the transmission of the parasite.

W

World Health Organization (WHO)

Founded in 1948 as a specialized technical part of the United Nations, the leading international public health agency, responsible for setting global malaria guidelines, tracking and publishing global malaria data (via the annual *World Malaria Report*), and supporting country-level programs. The WHO malaria unit works closely with PMI, the Global Fund, and national governments.

Quick Reference for Common Acronyms

	Meaning
ACT	Artemisinin-Based Combination Therapy — the frontline malaria treatment
CHW	Community Health Worker — frontline health providers in rural communities
DRM	Domestic Resource-Mobilization — national health spending
IRS	Indoor Residual Spraying — spraying insecticide on interior walls
IPTp	Intermittent Preventive Treatment in Pregnancy — preventive treatment for pregnant women
ITN	Insecticide-Treated Net — mosquito net with insecticide protection
LLIN	Long-Lasting Insecticidal Net — ITN effective for more than three years
MIS	Malaria Indicator Survey — household survey that measures malaria prevalence
PCR	Polymerase Chain Reaction — sensitive lab test for detecting malaria
PMI	President's Malaria Initiative — U.S. Government's flagship anti-malaria program
RDT	Rapid Diagnostic Test — fast, finger-prick blood test for diagnosing malaria
SMC	Seasonal Malaria Chemoprevention or Chemoprophylaxis — monthly preventive medicine for children
WHO	World Health Organization — global public health agency

MALARIA IS A SERIOUS DISEASE

Malaria Basics

Malaria is a serious disease caused by a parasite that infects a certain type of mosquito.

Usually, people get malaria by being bitten by an infective mosquito. Malaria is not spread from person-to-person like a cold or the flu, and it cannot be sexually transmitted.

The U.S. reports about 2,000 cases of malaria each year. Most of these cases are in people traveling to or from areas where malaria transmission occurs.

Overall, the risk of malaria in the U.S. is very low.

Signs and Symptoms of Malaria

Symptoms of malaria include fever and flu-like illness, such as chills, headache, muscle aches, and tiredness. Nausea, vomiting, and diarrhea may also occur. If not treated quickly, the infection can become severe.

If you are experiencing any of these symptoms, please see your healthcare provider immediately.

Testing and Treatment

A healthcare provider can evaluate you and test for malaria if they are concerned.

Malaria can be cured with prescription drugs available in the U.S.

If left untreated or treatment is significantly delayed, malaria can be deadly.

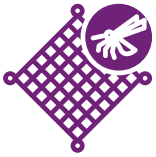
Prevention

Avoid areas with high mosquito activity, especially during the late evening and at night when the mosquitoes that spread malaria are more likely to bite.

Use Environmental Protection Agency (EPA)-registered insect repellents.

Wear loose-fitting, long-sleeved shirts and pants.

Keep windows and doors closed or covered with screens to keep mosquitoes out of your house.



Repair broken screening on windows, doors, porches, and patios.

Empty standing water at least once a week to prevent mosquitos from laying eggs.

If you are traveling to an area outside of the US where malaria occurs, talk to your healthcare provider about malaria prevention medication.

There are two vaccines available to prevent malaria in children at risk in Africa— where the burden of malaria is greatest. However, the vaccines are not available for use in the U.S.

FOR MORE INFORMATION

Learn more about malaria: www.cdc.gov/parasites/malaria/index.html
Learn more about how to prevent mosquito bites: www.cdc.gov/mosquitoes/mosquito-bites/prevent-mosquito-bites.html
Learn more about how to control mosquitos inside and outside your home: www.cdc.gov/mosquitoes/mosquito-control/athome/index.html

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Morbidity and Mortality Weekly Report (*MMWR*)

CDC Operational Guidance for Investigating Locally Acquired Mosquito-Transmitted Malaria — United States, 2026

Recommendations and Reports / May 21, 2026 / 75(1);1–14

Abstract

During 2023, 10 cases of locally acquired mosquito-transmitted (autochthonous) malaria were reported to CDC from four U.S. states after a 20-year period with no autochthonous cases. These cases highlight that although the United States eliminated malaria transmission in the early 1950s, the country remains susceptible to malaria reintroduction:

This report provides operational guidance to local, state, tribal, territorial, and Federal public health responders on public health investigation and response to a suspected autochthonous malaria case in the United States. The guidance in this report updates the 2006 guidance (CDC. Locally acquired mosquito-transmitted malaria: a guide for investigations in the United States. Atlanta, GA: US Department of Health and Human Services, CDC; 2006) *and is based on CDC subject-matter expertise, outbreak response experience from 2023, and targeted literature review:*

Investigations of suspected autochthonous malaria cases often raise public concern and can require substantial public health resources. Public health investigations of these cases should include epidemiologic, entomologic, and laboratory components and frequently require coordination among local, state, and Federal jurisdictions. This report provides an outline of the essential actions for such investigations conducted by describing the components of the investigation and providing resources and tools to assist public health personnel at the local, state, and Federal level:

Related Materials

Article PDF

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View suggested citation

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Introduction

Malaria is a mosquito-transmitted disease that causes substantial global morbidity and mortality. Despite having eliminated malaria from the United States in the early 1950s (*1*), the country remains susceptible to reintroduction because local mosquitos capable of transmission could bite someone who acquired malaria parasites outside of the United States and

spread it to persons who have not traveled. The risk varies by geography, vector ecology, climate, travel pattern, and public health capacity. Approximately 2,000 cases of malaria and an average of seven malaria-related deaths are reported annually to CDC, nearly all of which are diagnosed among travelers returning from countries where malaria is endemic (*2*,*3*). Since 1972, the annual number of cases reported among U.S. civilians has increased (*2*,*3*), and conditions in much of the country remain suitable for local transmission, particularly in areas where *Anopheles* mosquitoes are indigenous (*4*–*7*). After elimination (interruption of local transmission), numerous small outbreaks of geographically limited locally acquired mosquito-transmitted (autochthonous) malaria have occurred, with 30 reported outbreaks during 1980–2003 (*8*). This period was followed by 2 decades without any reported autochthonous malaria cases (*9*). However, in 2023, local malaria transmission was again observed, with 10 cases of autochthonous malaria reported across four states (*9*–*12*), during a year that had the highest number of imported malaria cases (n = 2627) since elimination (*13*).

Local transmission of malaria in the United States is a significant public health concern because the majority of U.S. residents lack protective immunity against malaria, rendering persons susceptible to severe illness and death if infected. Mosquitoes capable of transmitting malaria are present across most of the United States. Human malaria is primarily caused by four protozoan species*: Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium ovale*, and *Plasmodium malariae* and is transmitted through bites from infective female mosquitoes of the genus *Anopheles*. *Plasmodium* infection in humans can result in a spectrum of disease, ranging from asymptomatic parasitemia (typically among persons with naturally acquired immunity who live in endemic settings) to severe illness and death. Although any *Plasmodium* species can cause severe malaria, it is most associated with *P. falciparum*. Patients with malaria infections might first experience nonspecific signs and symptoms (e.g., fever, chills, headache, generalized weakness, myalgia, vomiting, and diarrhea) (*14*). Progression to severe malaria can manifest with altered mental status, circulatory failure, shock, multisystem organ failure, and death (*14*). Although *P. falciparum* is the most common species of malaria globally and has caused autochthonous cases in the United States, most U.S. outbreaks were due to infection by *P. vivax* (*8*). One factor that possibly favors *P. vivax* transmission in the United States is that *P. vivax* gametocytes (the form of the parasite that is infectious to mosquitoes) develop in the peripheral blood earlier in the disease process (often even before symptom onset) than *P. falciparum* gametocytes (*15*,*16*). In addition, *P. falciparum* infection has a shorter incubation period and typically progresses to illness more quickly, prompting earlier health care–seeking, diagnosis, and treatment. In contrast, *P. vivax* symptoms are generally less severe, and infectious persons can go undetected for longer periods before diagnosis and treatment, thereby extending the person's period of potential transmission to local *Anopheles* spp.

The CDC's National Malaria Surveillance System (NMSS) (*2*) was established in the 1940s to monitor and evaluate progress toward malaria elimination in the United States. NMSS is designed to detect cases of malaria diagnosed in the United States and classify each case as having been acquired from domestic or international exposures. In addition, surveillance is used to identify and characterize unusual cases of public health importance. These cases include those acquired within the United States from blood (e.g., transfusion- or transplant-transmitted infections) or local mosquito exposures, malaria-infected patients with poor clinical outcomes, and antimalarial treatment failures. Malaria surveillance data guide public health response activities that attempt to detect and interrupt local transmission and prevent reintroduction. This report updates the 2006 CDC guidance for public health officials responding to possible cases of locally acquired mosquito-transmitted malaria in the United States based on experience from the 2023 outbreak investigations and new methodologies and tools developed during the responses.

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Methods

Updated guidance and tools for investigating autochthonous malaria in the United States were based on the authors' (staff members in the Malaria Branch, Entomology Branch, and Laboratory Sciences and Diagnostics Branch, all within CDC's Division of Parasitic Diseases and Malaria) expert knowledge of the subject matter, published literature, and experience assisting health departments responding to locally transmitted malaria during the 2023 outbreaks. An informal literature review was conducted in PubMed and Google Scholar for documents including dates during 2006–2025; the search terms included "local transmission", "autochthonous", "malaria", "elimination", and "pre-elimination". Guidance documents and grey literature from European CDC, Australia, and World Health Organization (WHO) were also assessed. All articles and guidance documents were reviewed by authors for additional methods or interventions that could be applicable to the U.S. setting. Stakeholder engagements were conducted with public health department staff members who responded to locally transmitted cases during 2023 (in Arkansas, Florida, Maryland, and Texas) to ensure completeness and accuracy of these public health activities. Consultations were also conducted with staff members from health departments who had not had recent experience investigating a potential locally acquired malaria case to ensure feasibility. These public health strategies

were presented during the 2024 Council for State and Territorial Epidemiologists and American Society of Tropical Medicine and Hygiene annual conferences for additional input and feedback. Differences across jurisdictions related to resources, infrastructure, and mosquito ecology were factored into developing the guidance. This guidance will be updated as new evidence, methodology, or interventions become available.

Guidance for Routine Malaria Surveillance and Case Investigations

All patients with clinically suspected malaria should be tested for *Plasmodium* infection as soon as possible to ensure correct diagnosis, guide treatment (*17*), and prevent onward transmission. Because malaria is a notifiable disease, laboratory tests in which *Plasmodium* is detected are reported to state, territorial, local, or tribal health departments according to jurisdictional reporting requirements, often electronically. CDC and the Council for State and Territorial Epidemiologists define a confirmed malaria case as the detection of any *Plasmodium* spp. in any person by microscopy or polymerase chain reaction (PCR) (*18*). Cases are investigated by health departments using standardized case report forms (*19*) submitted to NMSS (*2*). Malaria case investigations explore risk factors for acquiring malaria, such as a history of travel to endemic settings, previous malaria infections, and a history of blood transfusions or organ transplants. Detailed processes for routine malaria surveillance and case investigations, including eliciting this information through patient interviews, medical record reviews, and completion of malaria case report forms have been described previously (*20*).

CDC classifies malaria cases as imported (travel-associated), induced (from bloodborne exposure), introduced (from local mosquitoes in an area where malaria is not a regular occurrence), or cryptic (an isolated case that cannot be epidemiologically linked to additional cases and for which an epidemiologic investigation does not identify the mode of acquisition) (*2*,*18*). Nearly all malaria cases in the United States are classified as imported after a routine case investigation (*2*).

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Guidance for Enhanced Investigation for Suspected Autochthonous Malaria Transmission

Malaria cases with no recent travel to an endemic area (*21*,*22*) typically require an enhanced investigation. Enhanced investigation refers to public health surveillance activities beyond routine case investigation. This updated guidance focuses specifically on enhanced investigations for suspected autochthonous cases of malaria. Guidance for investigations in which malaria transmission is suspected from blood transfusion or other bloodborne exposures has been described previously (*23*,*24*).

An enhanced investigation of a suspected autochthonous malaria case typically involves collaboration with epidemiology, entomology, and laboratory staff members at the local, state, and Federal level; and detailed epidemiologic interviews, entomologic assessments, and advanced laboratory testing, as indicated, to assess potential local transmission. An overview of activities that might be included in an enhanced investigation is provided (Box 1). Although these steps are listed sequentially, in practice, many are performed in parallel. Each investigation is unique, might vary by resources available at the jurisdiction, and might be closed without implementing all the activities described. In addition, investigation and response activities and duration might need to be adapted by *Plasmodium* species, temperature, vector ecology, uncertainty in exposure site, and human mobility. CDC subject matter experts are available to assist health departments with epidemiologic investigations, vector surveillance and control activities, laboratory testing including molecular surveillance, and outreach activities. The CDC Malaria Hotline, a clinical service that is always available, can be consulted to discuss any case, especially those which might be the result of local mosquito transmission or from bloodborne or unknown exposure (Box 2).

Enhanced Investigation Task A: Implement Epidemiologic Investigation

The purpose of an epidemiologic investigation for a malaria case possibly acquired from local transmission is to ascertain 1) when and where the person was likely infected by local mosquitoes, 2) when and where the person with malaria could have been infectious to local mosquitoes, and 3) whether transmission is ongoing. This process involves verifying the diagnosis, conducting an in-depth patient interview, reviewing surveillance data, and undertaking case-finding activities.

Verify the Diagnosis in a Reference Laboratory

Although cases of malaria suspected of being autochthonous are typically already laboratory confirmed at a clinical laboratory, it is important to verify the diagnosis of *Plasmodium* infection at a public health reference laboratory. Diagnosis can be verified at a public health laboratory via microscopy, although for cases of epidemiologic concern, acquiring whole blood specimens for PCR confirmatory testing is advised. PCR is more sensitive than microscopy and can help confirm the *Plasmodium* species when morphological characterization is inadequate (*25*). In addition, PCR can differentiate *Plasmodium* spp. from *Babesia* spp., which cause the disease babesiosis. Endemic to the United States, babesiosis can resemble malaria clinically and microscopically (*26*). The timelines for exposure (mosquito bite), incubation (time from infectious bite to symptom onset), and infectivity (when gametocytes are present in peripheral blood) can be estimated from the *Plasmodium* species detected. Although most public health laboratories provide reference laboratory services for malaria, CDC is available to assist jurisdictions that lack that capacity by providing malaria diagnostic services to assist with both microscopic examination of blood smears and PCR testing (Box 2).

Conduct In-Depth Patient Interviews

In addition to the standard malaria investigation, patients without a recent history of travel to a setting where malaria is endemic require a more detailed interview. Their travel history might need to be revisited, because previously undisclosed travel often is revealed through additional patient or family interviews or, when legally authorized and feasible, review of official travel records such as passports. Questions pertaining to additional risk factors for malaria, such as occupation, bloodborne exposures, outdoor activities, and proximity to other sick persons (e.g., household members or household guests) (*20*) might help determine how the patient acquired malaria (Box 3). After other exposure routes of malaria (travel-associated or bloodborne) have been ruled out, detailed questions about time spent outside, participation in outdoor activities (particularly in the evenings, when *Anopheles* mosquitoes bite), housing instability or homelessness, and any other possible exposures to mosquitoes might be asked (Box 4). Patients should be assessed for exposure risks covering the 2–4 weeks before symptom onset, depending on the incubation period of the *Plasmodium* species, and about mosquito exposures and outdoor activity up until the time of malaria treatment initiation to determine the possibility of ongoing transmission.

Review Malaria Surveillance Data to Identify Epidemiologic Links

Health departments should consider conducting a review of malaria case surveillance data to search for other cases in geographic or temporal proximity to the patient to ascertain if potential epidemiological links exist. This process typically involves evaluating cases in persons infected with an unknown or the same *Plasmodium* species who were diagnosed within approximately 1–2 months before the patient's symptom onset and who were located ≤5 miles (≤8 km) from the patient's likely place of exposure. This time frame accounts for the mosquito lifecycle, the human incubation period, and potential delays in diagnosis (Figure) (Table). Health departments should then determine if any of these cases have a relevant link to the patient, or if any patients have unclear travel histories requiring reinvestigation. Health departments should consider confirming the travel histories of patients for any open malaria cases as soon as possible. Obtaining any remaining whole blood specimens collected at the time of malaria diagnosis from patients identified in geographic and temporal proximity to the case of concern is ideal for facilitating further molecular investigation (see Enhanced Investigation Task C: Perform Molecular Surveillance of *Plasmodium* Parasites).

Perform Retrospective and Prospective Malaria Case–Finding Activities

In collaboration with health care providers and facilities, health department staff members should consider starting case-finding activities as soon as possible to identify if other persons were infected with malaria locally. Case-finding activities should aim to identify patients who might have already interacted with the health care system but were misdiagnosed because of a lack of relevant travel history, as well as those who become ill after identification of the initial case, to ensure that all receive a correct diagnosis and treatment. The specific activities employed, and the geographic range of their application might be based on epidemiologic investigation findings, feasibility, population density, local ecological factors, and the flight range of local vectors.

Retrospective and prospective case-finding most often starts at surrounding hospitals and clinics (particularly facilities that serve high-risk populations, such as persons experiencing housing instability or homelessness). Syndromic surveillance, using the Electronic Surveillance System for the Early Notification of Community-Based Epidemics (ESSENCE) platform, has proved to be helpful in certain jurisdictions for malaria case–finding as well as for other vectorborne disease outbreak responses (*27*,*28*). Example ESSENCE code for malaria case–finding, to identify patients with potentially compatible signs or symptoms of clinical malaria (fever plus thrombocytopenia or anemia) for whom diagnostic testing can be considered, is

available from CDC upon request. Retrospective case-finding should focus on patients examined at health care facilities with unexplained fever during the 1–2 months before the initial or index patient's symptom onset (*8*,*20*). The health care providers of patients identified through this process can be contacted to assess their patients for ongoing symptoms, alternative diagnoses, and to determine if malaria testing is needed.

Prospectively, household members of the index case, as well as others with the same outdoor exposures as the index case, with a current history of fever or chills should be referred for prompt evaluation. Public health authorities should notify health care facilities in the area regarding the need for heightened clinical suspicion for malaria, beginning with facilities in closest proximity to the patient's residence or likely area of exposure. Patients arriving at local health care facilities with signs and symptoms and laboratory findings consistent with malaria should be evaluated for malaria. Health departments might engage health care facilities and providers to assist with testing, treatment, and reporting additional suspected cases. Depending on local capacity, assistance from state public health laboratories or CDC might be necessary to ensure that prompt malaria diagnostic testing is available.

A period of public health vigilance for additional human cases should continue from the date of diagnosis or treatment for the patient with the last known local case and continue for at least 8 weeks. This 8-week threshold reflects an average period for the parasite lifecycle in the mosquito (extrinsic incubation), adult mosquito lifespan, and the human incubation period (Table) (Figure). Depending on the temperature, vector species and abundance, and delays for care-seeking and diagnosis, this period might be extended beyond 8 weeks, or the vigilance period could be decreased. If a new human case is identified, the case vigilance period would start over.

Enhanced Investigation Task B: Undertake Vector Surveillance and Control Activities

Initiate Vector Surveillance Activities

Detection of locally acquired malaria could require initiating vector surveillance for *Anopheles* mosquitoes, particularly in settings where no routine surveillance exists. The goal of vector surveillance is to identify the species involved in transmission and to assess the impact of implemented control measures. These vector assessment activities are typically conducted by local or state mosquito control programs, but this will vary depending on the capacity of local jurisdictions.

Activities for vector surveillance include trapping and collecting mosquitoes, identifying mosquito species, locating vector larval habitats, assessing for insecticide resistance, and measuring vector control activity effectiveness on mosquito abundance. Vector activities should be conducted around the suspected site of transmission of an autochthonous case beginning within at least a 1-mile (1.6 km) radius as an initial operational perimeter, a typical *Anopheles* flight range, with expansion based on species, ecology, and uncertainty in exposure location.

Evidence for how to best implement vector surveillance and control is limited; local and state mosquito control programs could customize strategies to the specific geography and species of malaria-competent *Anopheles* mosquitoes inhabiting their area (*29*). Methods for mosquito trapping and collection include overnight collections with CDC light traps (with or without carbon dioxide as lure) and aspirating from resting sites such as resting boxes (prefabricated simulated resting sites), trash bins, or sheds; mosquito yields from these trapping methods will vary by species (*30*). Potential larval sites can be assessed by dipping (sampling aquatic habitats) to detect the presence of *Anopheles* larvae. Vector larval habitats, particularly areas of standing water, can also be identified using aerial photo analysis and remote sensing techniques (*31*). Mosquito insecticide resistance levels can be measured using in vivo methods such as the CDC bottle bioassay or WHO tube test (*32*) in addition to molecular, sequencing, and biochemical methods. Vector control experts should identify *Anopheles* species either morphologically or by using molecular methods (as described in Enhanced Investigation Task C: Perform Molecular Surveillance of *Plasmodium* Parasites). Control activity effectiveness can be measured via the effects on various entomological parameters that include vector density, presence of *Plasmodium* DNA in the abdomen of trapped mosquitoes, and the presence of *Plasmodium* sporozoites in mosquito salivary glands (see Perform Vector Laboratory Analyses).

The period of public health vigilance for mosquitoes (the duration of vector surveillance and control activities) should typically be at least 6 weeks after diagnosis or treatment of the person with the most recent malaria case (Table). This period accounts for the extrinsic incubation period and the lifespan of the mosquito but can vary depending on temperature

and humidity conditions. If a new case is identified in a human, the mosquito vigilance period would start over.

Initiate Vector Control Activities

Vector control* should typically be implemented over a radius of at least 1 mile (1.6 km) around the site of suspected transmission as soon as possible to prevent ongoing malaria transmission by *Anopheles* mosquitoes. Strategies include actions that target adult mosquitoes and larvae (*33*). During outbreaks of mosquitoborne diseases such as malaria, the primary target of vector control should typically be adult female *Anopheles* mosquitoes that are potentially infective to humans, with the aim of reducing mosquito populations as quickly as possible (*34*). Adulticiding (i.e., vector control efforts aimed at killing adult mosquitoes) includes aerosol sprays (fogging) and residual sprays using chemical insecticides tailored to local mosquito populations. Aerosol spraying techniques can treat large areas with small amounts of pesticide and have been used safely for approximately 50 years. These aerosol sprays have been fully evaluated by the Environmental Protection Agency and pose minimal risks for humans or the environment when used according to the directions on the label (*35*). Aerosols are suspended droplets of insecticide that are effective only when the droplets come in direct contact with a mosquito during the short period (minutes) before the aerosol reaches the ground. Aerosols can be dispersed across wide areas after delivery from aircraft, trucks, or backpack sprayers. Aerosols are generally short-lived with droplets remaining in the air for ≤30 minutes depending on droplet size and wind conditions. Therefore, spraying should be timed to target adult female *Anopheles* mosquitoes when they are most active (generally at night), because the droplets have limited ability to penetrate vegetation and ensure insecticide exposure to resting mosquitoes. Aerosol sprays have no residual activity and can require several applications to achieve reductions in mosquito populations (*36*).

Residual sprays target potential resting sites of adult mosquitoes. This approach requires knowledge of the types of locations where mosquitoes are most likely to rest. Outside of the United States, the use of indoor residual spraying is commonly used to target malaria vectors which frequently enter houses and rest indoors. However, malaria vectors in the United States are generally less likely to enter and rest inside houses (*37*), particularly those of modern construction with screened windows and air conditioning which limit the entry of mosquitoes, making indoor residual spraying less effective and not routinely recommended in most U.S. settings. Outdoor residual spraying has been proposed to address malaria transmission in settings where malaria vectors feed and rest outdoors. Although intended to provide longer durations of efficacy compared with aerosol sprays, outdoor residual spraying can be logistically challenging to implement because outdoor resting sites of mosquitoes might not be known and insecticides sprayed outdoors can be degraded by sunlight or washed away by rain.

Adult control measures can be supplemented by larval source management (LSM), which targets the immature aquatic stages (eggs and larvae) of the mosquito life cycle. LSM includes habitat reduction through removal, treatment, or reduction of water bodies where adult mosquitoes lay eggs that develop into larvae that mature to a new brood of adult mosquitoes. However, although LSM eventually reduces the overall abundance of adult mosquitoes, it does not have an immediate effect on adult mosquito populations or disease transmission and should typically be considered as a supplementary intervention in response to outbreaks of vectorborne diseases. A wide range of larvicides and application methods are available for deployment. Similar to vector surveillance, the public health vigilance period for vector control efforts should typically continue for at least 6 weeks after the diagnosis or treatment of the patient with the most recent malaria case (Table).

Perform Vector Laboratory Analyses

The malaria outbreak investigation can be facilitated by knowing whether captured *Anopheles* demonstrate evidence of a recent blood meal from a malaria patient or if infective mosquitoes are present in the community. The former can be determined through detection of *Plasmodium* DNA in the abdomen of a captured mosquito, and the latter through detection of sporozoites in a mosquito's salivary gland. *Anopheles* mosquitoes collected as part of the surveillance efforts described in this report could thus be tested by CDC to 1) determine whether mosquitoes have recently fed on an infected human host and 2) assess for infective stages (sporozoites) of the *Plasmodium* parasite (*38*). Assessing for mosquito infection might help characterize transmission potential in areas under surveillance. Microscopic examination of mosquito salivary glands is considered the gold standard for identifying sporozoites (i.e., the infective stage of the parasite), but this method is labor-intensive and time-consuming (*39*). Sporozoite stage–specific proteins can be identified using enzyme-linked immunosorbent assay (ELISA), but sensitivity might be limited, and this method is typically better suited for estimating sporozoite rates in malaria-endemic settings (*40*). Molecular methods such as PCR can also be used but are limited in capacity for differentiating infective (i.e., capable of transmitting the parasite) from infected (i.e., any stage of parasite

present) mosquitoes (*41*). In a nonendemic outbreak context, this might not represent a limitation, because understanding whether a mosquito has fed on an infected human can aid in directing further vector and human case surveillance and control activities. Mosquito testing cannot exclude transmission because every mosquito in a given area cannot be captured. Because it often is not clear during the outbreak whether ongoing transmission is occurring, the number of mosquitoes needed to adequately detect transmission cannot be determined. CDC can assist with detection of *Plasmodium* DNA using molecular testing and sporozoite protein identification using a novel bead-based immunoassay demonstrated to have increased specificity over the traditional ELISA approach (Box 2) (*38*). Additional molecular analyses that might provide useful information, particularly if *Plasmodium* is detected in a mosquito, are blood meal source identification and *Anopheles* species identification (*42*–*44*).

Enhanced Investigation Task C: Perform Molecular Surveillance of *Plasmodium* Parasites

After initial case confirmation, *Plasmodium* obtained from all locally acquired malaria cases should undergo molecular genotyping analysis to characterize strain relatedness and to interrogate sequence databases of well-characterized isolates from different global regions to infer probable geographic origin of the parasite. In addition, the genotypic data should be shared in public sequencing databases, allowing broader capability to identify other potentially related cases or clusters. Geographic-origin inference depends on the completeness and representativeness of the reference sequence database. Adequate pre-treatment whole blood might not always be available, some specimens might fail or yield partial data, and public database sharing should occur only after de-identification and in accordance with jurisdictional policy and data-sharing approvals. A shared genetic relationship between *Plasmodium* strains from malaria cases strengthens evidence regarding whether epidemiologic clusters (i.e., incident cases in time and space) are true outbreaks. Alternatively, the lack of a genetic relationship might refute an epidemiologic linkage; a temporospatial relationship might exist, although genotyping might implicate multiple genetically distinct strains. These data might indicate the presence of multiple unrelated clusters occurring at the same time and place, supporting that multiple separate malaria introduction events have occurred. Genotyping data should be interpreted alongside epidemiologic data and the laboratory context.

Although molecular genotyping for surveillance is indicated for all cases of autochthonous malaria, the best genotyping method employed for an investigation will vary depending on context. Factors such as the result of the initial PCR test (*45*), the type of specimen being tested (e.g., whole blood versus dried blood spot), the parasite density of the specimen, and the need for drug resistance testing can guide which assay should be selected. To address these factors, CDC employs various next generation sequencing (NGS) methodologies, including whole genome sequencing (*24*) and highly multiplexed NGS-based amplicon sequencing (*46*). Previously, health departments have engaged academic collaborators to assist with performing similar assays for locally acquired malaria. Fostering partnerships with state and Federal public health agencies in investigations is important because rapidly sharing sequencing findings might help link cases across jurisdictions. Health departments seeking molecular surveillance services from CDC can reach out directly (Box 2) for instructions on how to submit specimens and for other related inquiries. In contrast to CDC's malaria diagnostics laboratory, molecular surveillance services offered by CDC can only be used for public health planning and decision-making because these tools have not been validated for use in direct patient care.

Enhanced Investigation Task D: Conduct Community and Partner Outreach and Engagement

In the United States, mitigating the impact and potential poor outcomes from local malaria transmission requires outreach to 1) inform persons in the focal area of potential exposures and risks for illness; 2) provide awareness to the community on malaria symptoms, transmission, and when to seek care; and 3) educate and support local health care providers so that their patients can be promptly evaluated and treated for malaria. Health alerts (*47*,*48*) distributed to health care organizations in the days immediately after detection of an autochthonous case serve to educate health care providers on the diagnosis, treatment, and prevention of malaria. These alerts could also provide clinical resources for clinicians to obtain more information and training on malaria, such as CDC's malaria clinical diagnosis and treatment guidance, CDC's Malaria Hotline, and webinars (*17*). Clinicians could also be encouraged to report suspected and confirmed cases to health departments.

The public should also be engaged to help ensure awareness of the outbreak, the range of personal actions available to prevent mosquito bites (use EPA-registered insect repellent, wear loose-fitting long-sleeved shirts and pants, wear clothing and gear treated with permethrin, and control mosquitoes indoors and outdoors), and what to do if malaria symptoms develop. Public engagement can occur via spaces where persons congregate in large groups (e.g., community centers, schools, or places of worship), door-to-door canvassing, partnerships with community-based organizations, social media, or by reaching persons directly through reverse 911 calling (*49*). Persons could be encouraged to seek care if symptomatic and could be provided with resources on how to avoid malaria infection. Outreach materials should use plain language, be translated into languages appropriate to the local community, and be provided in accessible formats. Health departments should consider distributing topical repellent and other prevention materials (e.g., mosquito nets) to high-risk populations, such as persons experiencing housing instability or homelessness.

Public health officials could similarly engage local media outlets (television, radio, and newspapers) and social media to help broadcast public health messaging and education regarding malaria transmission, strategies for personal protection, and when and where to seek medical attention for malaria symptoms. In addition to providing public health guidance, public health officials could prepare responses for possible media inquiries during an outbreak. A list of possible media-related questions, examples of public health messaging, and resources are available (Appendix).

Enhanced Investigation Task E: Determine if the Outbreak Has Ended

Health departments should consider when to officially declare the end of a malaria outbreak. For other infectious diseases, an outbreak is commonly declared to be over after two incubation periods without any cases; however, for malaria, the parasite life cycle needs to be considered (*8*,*50*). If no new locally acquired cases are identified during the 8 weeks after the diagnosis or treatment of the most recent local case, the likelihood of ongoing transmission is low. Malaria is not transmitted from female mosquitoes to their offspring (*51*). However, additional factors can dictate the end of the outbreak. These factors can include concern for delayed care-seeking or delayed diagnosis (which would extend the investigation period) and cold weather patterns (which might facilitate an earlier end point).

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Discussion

Preventing ongoing local malaria transmission depends on diligent human case–finding and treatment activities; however, limited evidence exists for the impact or effectiveness of these strategies in postelimination settings. WHO has conditional recommendations for reactive case detection and treatment in elimination and postelimination settings (*52*,*53*). Reactive case detection typically involves finding parasitemic persons by testing everyone living with or near an index case, or those potentially exposed to infection at the same time and place as the index case and providing treatment to those who receive a positive test result (*52*,*54*). Testing all persons is likely less useful in most U.S. settings because asymptomatic infection among most residents is expected to be less common than in endemic populations. In addition, no Food and Drug Administration–approved malaria rapid diagnostic test is currently available for self-use or general field use outside a clinical laboratory setting. Because malaria is potentially fatal, symptomatic persons who are suspected to have malaria should be referred to a health care facility for prompt clinical evaluation, laboratory testing, and treatment. Finally, CDC has not implemented other strategies such as mass drug administration, targeted or reactive drug administration, or chemoprophylaxis use for persons traveling to or living in an area in the United States where local cases have been identified since at least 1990 (*8*,*52*,*55*–*57*).

Preventing autochthonous malaria transmission also requires effective vector surveillance and vector control strategies (*53*). Vector control and surveillance have been limited by a lack of recent data to describe the distribution of *Anopheles* species in the United States (*4*,*7*). Previous maps illustrating the distribution of *Anopheles* species from a century ago require updating because of changes in mosquito habitat ecology over time. Routine mosquito surveillance and control at the jurisdictional level currently focuses on nuisance mosquitoes and arbovirus vectors in the *Aedes* and *Culex* genera. Thus, surveillance and control of most *Anopheles* mosquitoes in the United States are neither targeted nor optimized (*5*). Although efforts are underway, an ongoing need exists to better characterize the distribution of *Anopheles* species in the United States and validate control strategies for local *Anopheles* species. These control activities are resource-intensive, and coverage for the 6 weeks' duration intends to target any infectious mosquitoes from the identified case, which is shorter than the time frame for the human case vigilance.

The United States has limited laboratory capacity to perform timely blood smear analysis for malaria diagnosis (*58*,*59*). Therefore, laboratory capacity should be rapidly assessed upon detection of a locally acquired malaria case and diagnostic reinforcement plans developed with health departments and CDC. Despite limitations with routine malaria diagnostic capacity in the United States, substantial advances have occurred in parasite molecular surveillance methods. NGS technologies have vastly improved upon previous *Plasmodium* genotyping methods (*24*,*46*). Genotyping methods based on NGS technologies can differentiate distinct malaria strains, provide information on their probable geographic origin, and characterize drug resistance profiles. However, the usefulness of molecular surveillance is contingent on remnant whole blood specimens from patients (with both imported and locally acquired malaria) being retained for reference laboratory confirmatory testing, as advised in CDC's *Malaria Surveillance and Case Investigation Best Practices* (*20*). The analysis of genomic *Plasmodium* populations requires a molecular library of sequenced specimens from a temporally defined and known geographic origin, underscoring the need to conduct sequencing of domestic malaria specimens. Accurate exposure and travel history associated with these specimens is critical because the ability to infer the origin of a specimen requires reference sequences from strains of a similar geographic origin for comparison. Molecular surveillance data should be interpreted along with findings from the outbreak's epidemiologic investigation, because ignoring this can result in misinterpretation of genotyping findings.

In contrast to vectorborne diseases that have other animal reservoirs, prompt detection and response efforts for malaria can successfully ensure that control measures directed at humans and mosquitoes effectively limit the spread of focal outbreaks. Reestablishment of malaria transmission (i.e., 3 consecutive years of at least three indigenous cases of the same *Plasmodium* species in the same geographic area) in the United States appears unlikely under current surveillance and response conditions, although focal outbreaks remain possible (*53*,*60*). The local malaria outbreaks that occurred in 2023 highlight the likelihood that limited focal transmission of this potentially life-threatening disease can still affect multiple communities and susceptible U.S. residents. Rapid identification of autochthonous cases by surveillance and implementation of interventions are important.

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Limitations

The public health activities listed in this report are subject to at least four limitations. First, limited data are available. Although a formal systematic review was not done, a thorough informal review of published and grey literature was conducted. The evidence base for preventing and responding to local malaria transmission in postelimination settings is limited (*53*). Published data on the comparative effectiveness of these recommended interventions are also limited, especially in a U.S. setting. Locally acquired mosquito-transmitted cases are rare, resulting in limited experiences of recent outbreak responses. Moreover, recent data are lacking describing the distribution of *Anopheles* vectors in the United States to guide surveillance and control activities. However, the recommendations here are consistent with what has been done historically for U.S. cases and with guidance from other non-endemic areas. Second, infrastructure, human resources, laboratory, and vector surveillance and response capacity vary across jurisdictions, which can affect the timeliness and comprehensiveness of investigations. Although asymptotic infection is unlikely among U.S. residents, there might be diagnostic delays and possible underascertainment of locally acquired malaria when it does occur. In addition, pre-treatment whole blood specimens for molecular linkage might not always be available. Third, operational thresholds in this guidance are based on a range of vector and parasite species biology and ecology to inform pragmatic programmatic planning within the United States. This guidance does not attempt to reflect the many subtleties known to influence the thresholds that depend upon specific malaria parasites and their vectors. Therefore, time and distance windows should be further tailored to specific conditions as needed. Finally, vector species composition, distribution, resting and feeding behavior, and movement patterns might change in the future.

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Conclusion

The United States remains susceptible to malaria reintroduction because of the continued importation of malaria cases and the continuous presence of competent mosquito vectors. In addition to a robust surveillance system, preventing reintroduction requires a multidisciplinary approach that encompasses epidemiologic, entomologic, and laboratory components. This updated guide provides a general framework for health departments to respond to autochthonous malaria outbreaks, and procedures might need to be adjusted depending on local context (e.g., local population demographics, ecologies, and vector biology). CDC continues to be available to assist local health departments prevent, detect, and respond to outbreaks of locally acquired mosquito-transmitted malaria.

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Conflicts of Interest

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No potential conflicts of interest were disclosed.

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* All vector control measures must comply with Environmental Protection Agency (EPA) pesticide regulations and relevant state and local requirements, including permits, application methods, and community notifications. Local mosquito control programs, in coordination with state agencies, CDC, EPA, and community stakeholders are responsible for legal compliance, operational planning, and environmental safety.

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BOX 1. Enhanced investigation checklist for autochthonous malaria outbreaks in the United States

A. Implement epidemiologic investigation.

- Verify the diagnosis in a reference laboratory.
- Conduct in-depth patient interviews.
- Review surveillance data to identify epidemiologic links.
- Perform retrospective and prospective case-finding activities.

B. Conduct vector surveillance and control activities.

- Initiate vector surveillance activities.
- Initiate vector control activities.
- Perform vector laboratory analyses.

C. Perform molecular surveillance of *Plasmodium* species parasites.

- Conduct genotyping.
- Assess for strain relatedness.

D. Conduct community and partner outreach.

- Alert the medical community.
- Educate local community members.
- Engage local media outlets.

E. Determine whether the outbreak has ended (no new cases identified for at least 8 weeks).

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BOX 2. Malaria outbreak consultative and laboratory services offered by CDC

Clinical and epidemiologic services

Contact the CDC toll-free malaria hotline (770-488-7788 or 855-856-4713, Monday–Friday, 9 a.m.–5 p.m. Eastern Standard Time; or 770-488-7100 after hours and on weekends and Federal holidays) to notify CDC about an autochthonous malaria outbreak and request a consultation on diagnosis and treatment of malaria from a CDC malaria clinician.

Entomologic services

- Vector surveillance and control: request advice and guidance at malarialab@cdc.gov for *Anopheles* species surveillance and control methodologies.
- Vector laboratory analysis: request services at malarialab@cdc.gov for detection of malaria parasites in mosquitoes and for molecular confirmation of mosquito species.

Laboratory services

- Malaria diagnostic services: contact dpdx@cdc.gov to request diagnostic services for malaria (e.g., digital or physical review of microscopic slides and polymerase chain reaction testing).
- Malaria molecular surveillance: contact malarialab@cdc.gov to request molecular surveillance services (e.g., genotyping, strain-typing, and resistance marker testing).

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BOX 3. Topics to cover in detailed interview for enhanced investigation of patients with malaria

Ask about lifetime and recent travel to a malaria-endemic country.

- Identify specific dates the patients were in a malaria-endemic county and the areas visited.
- If patients previously lived in a malaria-endemic country, when did they immigrate to the United States or to another nonendemic country?

Ask about previous diagnoses of malaria (in lifetime), or previous unexplained febrile illness after international travel.

- If yes, list specific dates and if (and what) treatment was received.
- If diagnosed with a relapsing species (*Plasmodium vivax* or *Plasmodium ovale*), did the patients receive antirelapse therapy (e.g., a full treatment course of primaquine or 1 dose of tafenoquine)?

Ask whether the patients experienced any blood exposures (e.g., via blood transfusions, organ transplants, needlestick injuries, unsafe needle sharing, or home tattoos).

Ask whether before the illness began, if there were any visitors, household members, or coworkers who were sick with malaria or another febrile illness.

Ask whether the patients have been in an area where *Babesia* parasites are transmitted and whether they had a recent tick bite.

Ask whether the patients have recently slept outdoors and whether they currently or have recently experienced housing instability or homelessness.

Ask about additional details from the medical records including past medical history (especially immunocompromising conditions, asplenia, and pregnancy status), recent hospitalizations, and medical procedures.

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BOX 4. Outdoor exposure questionnaire for epidemiologic investigation of patients with malaria

Characterize locations where the patients spent time, especially outdoors, while at home, work, or other settings.

- What are the patients' regular routines (at home, school, or work)?
- How do they get to and from school or work?
- When does school or work occur (e.g., during the evenings or during the daytime only)?
- What are the routine activities done at home, school, or work?
- Who do they interact with at home, school, or work?

Characterize the types of outdoor activities the patients participate in, especially in the evenings. For example, do they

- Frequent any parks or outdoor spaces?
- Participate in dog walking or outdoor sporting events?
- Participate in outdoor cooking such as barbecues?
- Partake in gardening, lawn mowing, or yard work?
- Frequent areas outside of their residence?

Characterize where patients experiencing housing instability or homelessness spend their time. For example, do they

- Sleep in the same place every night?
- Stay in any shelters?
- Stay with friends or family?

Characterize exposure history of patients who have traveled domestically.

- Did they travel within the United States during the previous 2 months?
- Where did they go?
- What types of activities did they do?
- How did they spend the evenings and early mornings?

Determine additional risk factors not obtained during initial investigation.

Ask whether any household members, coworkers, extended family, friends, or other persons with whom the patients spent time been sick or had fever in the past month.

Ask whether the patients recall any mosquito bites? (If yes, obtain additional details.)

Ask whether the patients took any medications before their illness? (If the patients took doxycycline or other antimalarial medications, consider extending the period for questions as above.)

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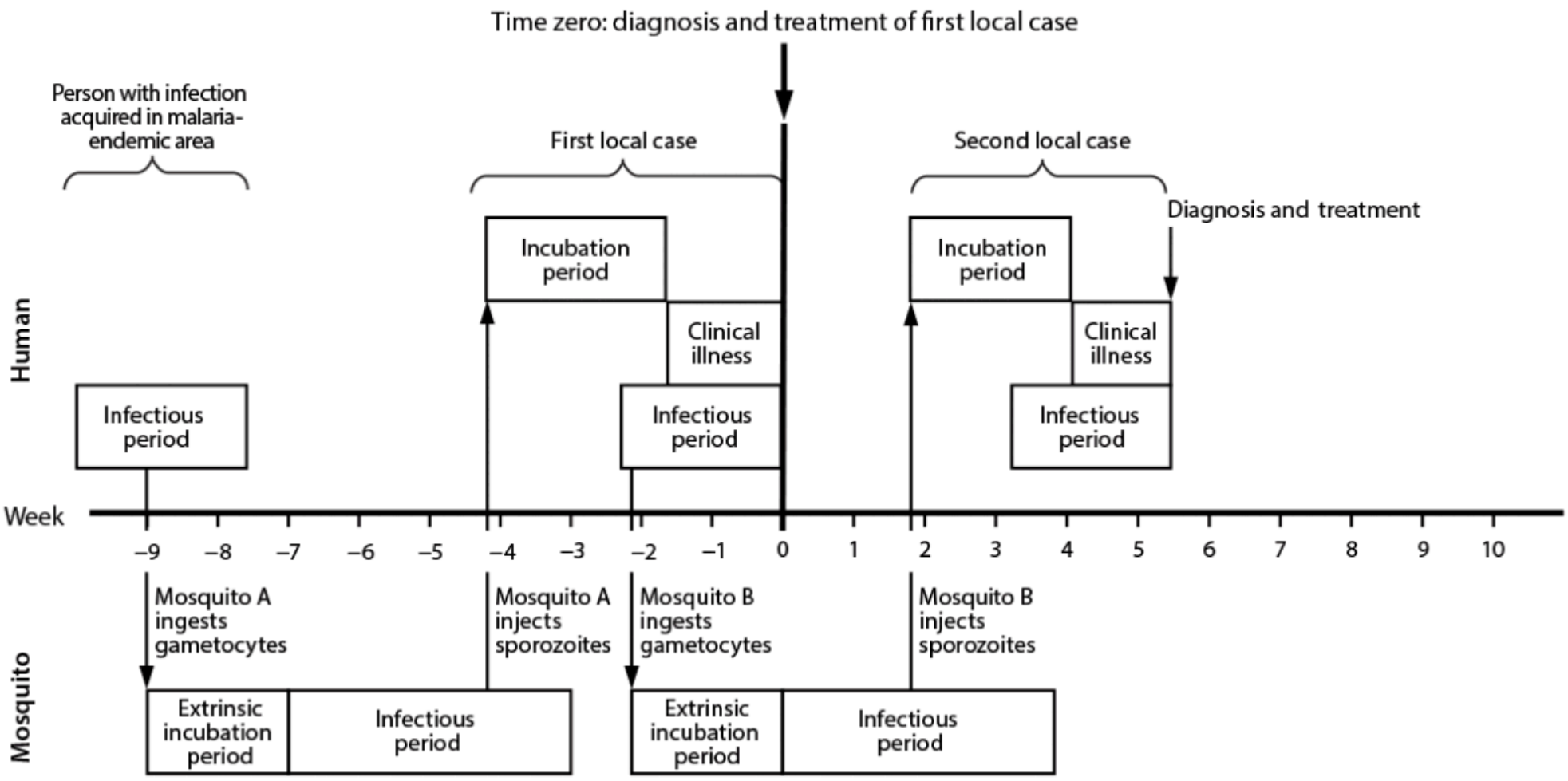
FIGURE. Temporal progression of malaria outbreak for humans* and mosquitoes†



* Human incubation and infectious periods vary depending on species and host factors. This figure is based on *Plasmodium vivax* estimations. The average incubation period is 1–2 weeks for *Plasmodium falciparum* and 2–3 weeks for *P. vivax*; however, persons from areas in which malaria is endemic with partial immunity can be asymptomatic. Human infectious period occurs when gametocytes (sexual stage of the parasites) are circulating in the blood. *P. vivax* gametocytes can appear before symptom onset, and *P. falciparum* gametocytes usually appear approximately 7–10 days after symptom onset. *P. vivax* gametocytes are usually killed with treatment, but *P. falciparum* gametocytes might be found in the blood weeks after treatment, depending on the treatment regimen.

† Mosquito extrinsic incubation period is the time from when a mosquito ingests gametocytes from an infected human to when mature sporozoites have developed that can be injected through a mosquito bite into another human, approximately 8–16 days. Mosquito infectious period is the time from after completion of the extrinsic incubation period to the end of its lifespan, approximately 4 weeks.

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TABLE. Public health response activities and duration after report of a potential locally acquired mosquito-transmitted malaria case

Public health response activity	Description	Duration*
Human case public health vigilance period†		
Review malaria surveillance data	Identify malaria cases associated with the same *Plasmodium* species (or unknown species) ≤5 miles (≤8 km) from the likely place of exposure of local case. • Confirm travel histories. • Evaluate potential epidemiologic links. • Obtain available whole blood specimens.	Retrospective review: cases with illness onset 4–8 weeks before time zero
		Prospective review: cases with illness onset at least 8 weeks from time zero

Public health response activity	Description	Duration*
Perform retrospective and prospective case finding	Identify persons with symptoms consistent with malaria for possible testing. • Surrounding hospitals and clinics (could use syndromic surveillance methods) • Household members • Other persons with similar outdoor exposures	Retrospective case-finding: 4–8 weeks before time zero
		Prospective case-finding: at least 8 weeks from time zero
Health care provider education	Provide access to training on malaria diagnosis and treatment.	At least 8 weeks from time zero
Diagnosis and treatment support	Depending on local capacity, assistance from state public health laboratories or CDC might be necessary to ensure prompt malaria diagnostic testing is available.	At least 8 weeks from time zero
Community and partner outreach	Provide awareness to the community on • Risk for malaria • Prevention measures • Malaria symptoms and when to seek care	At least 8 weeks from time zero
Mosquito public health vigilance period[†]		
Vector surveillance and testing of collected mosquitoes	Conduct the following tasks within a radius of ≥1 mile (≥1.6 km) around the suspected site of transmission: • Trap and collect mosquitoes. • Identify mosquito species and test for *Plasmodium*. • Locate vector larval habitats. • Assess for insecticide resistance.	At least 6 weeks from time zero
Vector control	Implemented over a radius of ≥1 mile (≥1.6 km) around the site of suspected transmission • Adulticiding • Larval source management	At least 6 weeks from time zero

* Time zero represents the diagnosis or treatment date of the most recent local case.

[†] Mosquito and human vigilance periods start when a potential local case is diagnosed or treated. Human case vigilance period continues for at least 8 weeks from the end of the human infectious period (2 weeks for mosquito extrinsic incubation period plus 4 weeks for mosquito infectious period plus 2 weeks for human incubation period). Mosquito vigilance period continues for at least 6 weeks after the last known case is diagnosed (2 weeks for extrinsic incubation period plus 4 weeks for the mosquito's expected lifespan). Delays in care-seeking or diagnosis might occur; therefore, health departments could decide to continue the vigilance period beyond 8 weeks after a potential local case is identified.

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