Arboviral Surveillance and Response Capacity Survey 2021

Section I: Respondent details

1. Country

Yemen

2. Respondent/person to be contacted for clarification, if needed (last name, first name, e-mail address)

3. Professional title and affiliation

4. Date (dd/mm/yyyy)

2/6/2021

Section II: Arboviral disease surveillance system

5. Which arboviruses have circulated in your country at any time since the year 2000? This refers only to arboviruses with autochthonous i.e., local mosquito-borne transmission.

Chikungunya	Yes
Dengue	Yes
Yellow fever	Not selected
Zika	Not selected
Other	West Nile

6. Do you have any written arbovirus surveillance and control plan(s) and/or guideline(s) for your country?

Yes. We do not have arbovirus-specific guidelines, but arboviruses are included within general surveillance guidelines.

6b. For which of the following arboviruses do you have written surveillance and control plans for your country? Please choose all that apply.

Chikungunya	Yes
Dengue	Yes
Yellow fever	Not selected
Zika	Not selected

6c. Please upload surveillance and control plan(s) or protocol(s), or guideline(s)

0 file(s) submitted

7. Is there a specific national programme for arboviral diseases surveillance or is it integrated in another programme? Please select the appropriate answer:

Integrated in another programme

7b. Please specify the programme into which arboviral diseases is integrated

Dengue and Chikungunia integrated within the Malaria Program (MOPHP circular 2018)

8. For which level of the health structure are individual and aggregated data available? (Select all relevant levels)

	Individual level	Aggregated
Primary health care level	Yes	Yes
District level	Yes	Yes
Regional level	Yes	Yes
National level	Yes	Yes

9. What are the tools used for recording case data for surveillance purposes? Select all that apply

National	Mixed methods
State/provincial	Mixed methods
District	Mixed methods

10. Which training has been provided to the staff working on arboviral disease surveillance data?

One-time basic training on data capture and analysis (MS Excel, MS Access, EpiInfo) and/or geographic information systems (GIS)	Not selected
Repeated/continuing basic training on data capture, analysis, and/or GIS	Not selected
One-time advanced training on statistical software for data analysis (e.g. STATA, R, SAS, Tableau, etc)) and GIS	Not selected
Repeated/continuing training on advance statistical software for data analysis (eg STATA, R, SAS, etc) and GIS	Not selected
No training	Not selected
Other	eIDEWS system

11. Is reporting mandatory for any arboviral disease cases in your country?

Yes

11b. For which of the following arboviral disease cases is reporting mandatory in your country?

Chikungunya	Not reportable
Dengue	Mandatory reporting of all suspect cases
Yellow fever	Not reportable
Zika (non-congenital)	Not reportable
Zika (congenital)	Not reportable
Other	Mandatory reporting of all suspect cases

11c. For which other arboviral diseases is reporting mandatory?

1	West Nile	Confirmed cases only
2	Chikungunya	Confirmed cases only
3	Haemorragic fevers	Suspected cases (immediate reporting)

11d. Please upload document(s) containing surveillance case definitions used for reporting of arboviral diseases

0 file(s) submitted

12. In the last 2 years, did your country conduct national epidemiological surveillance for human cases of arboviral disease?

Yes

12b. How frequently are surveillance data reported to the national level?

Weekly

12c. What type of national epidemiological surveillance was conducted?

Primarily passive

For reference, here are the relevant definitions:

Active surveillance is defined as having dedicated systems and staff that routinely and with effort survey for cases of disease or detection of vectors and associated pathogens by the public health department.

Passive surveillance is defined as having a reporting system where physicians, laboratories, mosquito control districts, academic institutions or others routinely report cases of disease or detection of vectors and associated pathogens to the public health department.

12d. If available, please upload the most recent report(s) on arboviral surveillance in humans

0 file(s) submitted

13. Does your country provide regular training sessions for healthcare workers on notification of *Aedes*-borne arboviral diseases?

Yes : Surveillance (case definition/investigation/reporting) and Case Management.

14. What do the arboviral disease surveillance staff perceive as factors contributing to the a) success and b) barriers/challenges to arboviral disease surveillance in humans?

Success: - Diagnosis tools are available at all levels (rapid test and Eliza) - Training on use of RDT Challenges: - the geographical distribution of the disease increased during the last 3 years - case management most of the deaths are related to mismanagement of the cases - Humanitarian crisis, no mapping of stereotype in the country and IDP movement - contributing to the movement of the virus to new areas that previously didn't report cases…

Section III: Arbovirus laboratory capacity

15. Is arbovirus diagnostic laboratory testing performed for confirmation of suspected cases in your country? (Please select the applicable option during outbreak periods and during non-outbreak periods, respectively)

Outbreak periods	Subset of suspect cases tested
Non-outbreak periods	Subset of suspect cases tested

15b. On average, for what percentage of suspected arboviral disease cases your country is laboratory confirmatory testing performed? Please indicate for outbreak and non-outbreak periods, respectively

Non-outbreak (routine) percentage in a year	25
During outbreaks percentage per identifed cluster	65

16. In the last two years, were the positive cases of arboviruses confirmed by a national reference laboratory?

Yes, but only for some arboviral infections. Please specify them:

Dengue, West Nile, Chikungunya

16b. If your country does not have capacity to type and serotype arboviruses, do you send samples for typing to other countries?

No

17. Overall, what arboviral testing capacity(ies) is(are) available in your country? Please check all applicable boxes

	Antigen testing	IgM antibody testing	IgG antibody testing	Neutralizing antibody testing	Virus isolation	RT-PCR or other nucleic acid amplification test	Viral gene/genome Sequencing
Chikungunya		Yes	Yes			Yes	
Dengue		Yes	Yes			Yes	
Yellow fever							
Zika							
Other						Yes	

18. Which additional resources are most needed for your country to perform adequate testing for arboviral diseases? Please describe what would be needed for each checked resource in the adjacent comment field

Additional training of personnel: Lab training (PCR/Eliza) at various levels; RDT training for Health facility FPs; Case management; surveillance

Additional laboratory equipment, reagents, etc.: Maintain the WHO supply of RDT and reagents provided to the lab

19. Do you perform virological surveillance on humans, ie, tracking of prevailing genotypes/serotypes? Please select all that apply

Yes, using RT-PCR: PCR detection of the virus (dengue, chikungunia and west nile)– to be confirmed with Dr Saeed

19b. Which samples do you use for virological surveillance?

Samples from suspected arboviral diseases routinely notified	Yes
Samples routinely collected from patients with fever of unknown origin	Not selected
Other	Some samples collected from suspected cases at referal hospitals mainly

19c. For which viruses do you perform virological surveillance? (check all that apply)

Chikungunya virus	Yes
Dengue viruses	Yes
Yellow fever virus	Not selected
Zika virus	Not selected
Other	West Nile

19d. Does your country provide regular training sessions for healthcare workers on arboviruses virological surveillance?

No

20. What do the arboviral diagnostic laboratory staff perceive as factors contributing to the a) success and b) barriers/challenges with respect to laboratory testing for arboviral infections?

Ask Dr Saeed

Section IV: Management of arboviral disease cases

21. Does your country have clinical guidelines for healthcare workers on diagnosis and clinical management of cases and severe cases of *Aedes*-borne arboviral diseases?

Yes

21b. Please upload the clinical guideline(s) for arboviral disease management

0 file(s) submitted

22. Are severe cases of arboviral diseases managed in a special area (part of the hospital, isolation beds)?

Yes

23. How many hospital beds are available per 100,000 population?

24. Does your country provide regular training sessions for healthcare workers on clinical diagnosis and management of *Aedes*-borne arboviral diseases?

No

25. What do the arboviral disease surveillance/clinical staff perceive as factors contributing to the a) success and b) barriers/challenges with respect to case management?

Success: Electronic disease early warning system - suspected/alert

Challenges: Technical- case management protocol not standardized in all hospitals-clinicians/physicians do not adhere to National/WHO guideline on clinical management; Diagnostic- supply chain management for Eliza, PCR, RDT especially for serotyping No arbrovisus National Strategy Case based surveillance - confirmed cases

Section V: Routine vector surveillance and control

26. Is there a disease programme, agency, or service in charge of arbovirus vector surveillance in your country?

Yes. If so, please specify in the comment field.

Surveillance and Malaria program

27. Which institution/department is in charge of reporting entomologic surveillance data to the national ministry of health/health department? (Check all that apply)

State/provincial health agencies	Yes
Other national agency	Not selected
City/country health departments	Not selected
Local mosquito control districts or similar organisations	Yes
Universities or academic institutions	Not selected
Private companies	Not selected
Other	Malaria units at district level

28. For the last 2 years, did your country conduct entomologic surveillance for arboviral infections in mosquito vectors?

No

28b. Please upload the most recent national vector surveillance report

28c. Did the entomologic surveillance entail country wide programmes or was it restricted to specific locations?

28d. How many sentinel surveillance sites do you have?

28e. How often was the surveillance conducted? Please choose one of the following:

29. Do you conduct adult mosquito surveillance?

Yes

30. Do you conduct larval/pupal mosquito surveillance?

Yes

31. Are trapped mosquitoes identified to species?

Yes

32. Does your country either calculate minimum infection rates (MIR) for any *Aedes*-borne arboviruses with your mosquito data or receive such data from other agencies? Please choose only one of the following:

No

33. Which laboratories performed testing for arboviruses on mosquito pools collected in your country in the last two years? (check all that apply)

National public health laboratory	Not selected
State/provincial/regional public health laboratory	Not selected
Local health department laboratory	Not selected
University or academic institution	Not selected
Local MCD (if different from county health dep't)	Not selected
Mosquito surveillance done, but no testing done on mosquito pools	Not selected
Not applicable (no mosquito surveillance done)	Yes

34. Is there a record of *Aedes aegypti* or *Aedes albopictus* being found in your country in the past 5 years? Please choose only one of the following

Yes, only *Aedes aegypti*

34b. Please describe the potential public health threat from *Aedes aegypti* in your country

Aedes aegypti populations are spreading and pose a significant public health threat

34c. Please describe the potential public health threat from *Aedes albopictus* in your country

35. Over the past two years, did your country use any of the following vector control methods in local jurisdictions (either using government staff and resources, or subcontracting to a different entity to do so)? Please select all that apply

Adulticiding (insecticide application against adult mosquitoes)	Yes
Larviciding	Yes
Insect growth regulators (eg , pyriproxyfen)	Not selected
Wolbachia method	Not selected
Sterile insect release	Not selected
None	Not selected

35b. Would your country have conducted or financially supported adulticiding/larviciding or source reduction activities in the last two years if sufficient funding were available?

35c. Which adulticides and/or larvicides (brand and product name) were used?

Adulticiding: Pyrethroid group Larviciding: Temephos 2 types: 1- liquid (EC) and 2- Granules

36. Does your country provide regular training sessions for staff in charge of vector control and vector surveillance?

Yes, for both

37. For the last two years, did your country have a plan for mosquito-borne disease control that includes a threshold (eg, level of vector mosquito abundance or minimum infection rate) that would result in a recommendation for mosquito adulticiding/other mosquito reduction measures?)

No – have a plan but there is no specific threshold

37b. Which indicator(s) is(are) used as threshold(s)?

38. Overall, are data on any of the following arboviral outbreak risk factors routinely collected and analysed? (Select all that apply)

House Index	Yes
Breteau Index	Yes
Container Index	Yes
Temperatures	Not selected
Rainfall	Not selected
Migration of a non-immune population	Not selected
None	Not selected

39. Is there a surveillance system in place for monitoring *Aedes* resistance to the insecticide(s) used?

No

40. What do the vector surveillance staff perceive as factors contributing to the a) success and b) barriers/challenges with respect to vector surveillance and control in the country?

Success: - Currently available funds in the Malaria department but not sufficient/sustained - Qualified staff in the program implementing WHO guidelines and SOPs -Integrated control management strategy -Steering committee from different sectors - In specific locations there are malaria units with trained ento..

Challenges: - lack of salaries -lack of operational cost Procurement and delivery of control kits have low shelf life and procurement and delivery need 6 months to enter the country

Section VI: Animal surveillance

41. During the last 2 years, did your country conduct national epidemiological surveillance for arboviral disease in animals (eg, epizootic surveillance for yellow fever in endemic areas)?

No

41b. How often was the animal surveillance conducted?

41c. What type of surveillance was conducted in animals?

41d. Please upload a report on the animal surveillance

42. Does your country (or local jurisdictions within the country) perform sentinel animal surveillance or epizootic surveillance, eg, for yellow fever in nonhuman primates in endemic regions?

No

42b. For which viruses is sentinel surveillance conducted and in which animal species?

42c. Please upload the most recent report(s) on sentinel animal surveillance

Section VII: Community sensitization and participation

43. Does your country have a community outreach program that also covers arboviral diseases?

Yes

43b. What entity(ies) is(are) in charge of the outreach program in your country?

MOPHP in coordination with education and other sectors (IVM steering committee)

43c. What is the geographical coverage of the outreach program in your country?

Only selected areas. Please specify where:

areas that include the vector or cases

43d. Is the community outreach/social mobilization program sufficiently funded to cover staff time, prevention and outreach activities as needed?

No

43e. Which resources would help ensure adequate capacity?

Educational materials for the public	Yes
Educational and reference materials for providers	Yes
Educational and reference materials for local health departments	Yes
Additional staff	Yes
Staff training	Yes

44. Did your national arboviral disease program issue notifications to the public about local transmission risk and/or possible vector-control activities (eg larviciding, adulticiding, community mobilization and participation, etc) as a prevention message for arboviral diseases within last 2 years? (Check all that apply)

	During outbreaks	During non-outbreak periods
Issued by national public health agency	Yes	Yes
Issued by state/local health agencies	Yes	Yes
No risk in the past two years	Not selected	Not selected
No notifications even though risk was present	Not selected	Not selected

44b. Which means does your program use for community sensitization, mobilisation and acceptance of interventions in your country? (Check all that apply)

Press releases to electronic and printed media	Yes
Public service announcements on television or radio	Yes
Passive distribution of informational brochures	Yes
Active distribution of informational brochures	Yes
Town, community, or neighborhood meetings	Yes
Posting information on the home page of your agency's website	Yes
Social media outlets (Facebook, Twitter, etc)	Yes
Door-to-door outreach in selected locations	Yes
Participation in community clean-ups	Yes
Modification of messages for all local languages	Yes

45. Does your country provide regular training sessions for staff in charge of community sensitization, mobilisation and acceptance of interventions dedicated to control arboviral diseases?

Yes. If yes, please describe in comments field:

In response to control outbreaks and during vector control campaigns

46. What do the community outreach staff perceive as factors contributing to the a) success and b) barriers/challenges with respect to community participation

Success: -Availability of a community guideline on malaria and dengue awareness. -Political commitment and establishment of steering committee on integration and vector control -Partnership and coordination with NGOs to implement the vector control program in the community -Presence of C4D programme (supported by UNICEF) -Engagement of community health volunteers (females) in the vector control interventions as part of ICCM programme. - Use of social media to spread awareness messages. - Use of community channels (eg: religious leaders, schools..) to spread awareness and participation in source reduction.

Challenges: -Lack of funding for arbovirus activities -Security and accessibility issues -The use of TV/Radio for awareness is limited and expensive

Section VIII: Preparedness for arboviral outbreaks/epidemics

47. Is there either a surveillance and outbreak response committee in your country, or a steering committee for that purpose?

Yes

48. Does your country have a contingency plan to organize healthcare services during an outbreak (including outbreaks of arboviral diseases)?

Yes

48b. Please upload the contingency plan

0 file(s) submitted

49. Are there defined or established criteria for declaring an outbreak of arboviral disease outbreak in your country?

Yes. If so, in the comments field, please briefly describe the criteria or reference the document in which those are sta

eIDEWS- Alert and outbreak thresholds

50. Do you have established collaborations with national/regional research institutions / international agencies that are planned to be activated in case of arboviral outbreak?

Yes. If so, please specify institutions/agencies in the comments field:

- WHO
- NAMRU-3
- Jimma University Tropical and Infectious Diseases Research Center (JU-TIDRC)
- Armaur Hansen Research Institute (AHRI)
- National environmental authority Singapore

51. What vector control interventions are deployed in case of an emergency?

-Larva source reduction -Indoor and outdoor fogging -Mosquito trapping -Community mobilization and awareness -Entomological surveillance -Indoor residual spraying - only if the area is specified

52. For the last 2 years, which of the following government levels had an emergency fund or a specified emergency funding mechanism for arbovirus outbreak response?

National level	Not selected
State/local level	Not selected
None	Yes

53. Does your country provide regular training sessions for staff/committee in charge of preparedness for arboviral outbreaks/epidemics?

No

54. What do the arboviral disease surveillance staff perceive as factors contributing to the a) success and b) barriers/challenges with respect to preparedness of arboviral diseases epidemics in your country?

Success: -Availability of trained and qualified staff at different levels; -Availability of entomologist specialists at affected district levels; -Development of entomologic app as a platform for reporting; Challenges: -No salaries or transportation or operational costs for the staff and programme

Section IX: Arboviral disease surveillance data

55. Please provide total number of cases and deaths for the following arboviral diseases from 2015 to 2020 (if available).

(NA = Not Available)

55b. Were cases of other mosquito-borne arboviruses, not listed in the previous question, reported in your country from 2015-2020?

Yes

55c. Please select any of the following other mosquito-borne viruses that have been reported in your country from 2015-2020

West Nile	Yes

55d. Please provide total number of cases and deaths due to each of the following other arboviruses that you selected from 2015-2020

56. Please provide the number of cases of locally acquired, mosquito-borne *Aedes*-borne arbovirus infections by case classification for 2020 and, if not available, for 2019

57. Do arbovirus surveillance staff have any perceived reasons for increasing trends in arboviral disease incidence? Check all answers that apply.

Climate change (as evidenced by changes in meteorological data)	Yes
Construction activities	Yes
Population migration (within the country or between countries)	Yes
Increased availability of peri-domestic water-bearing containers suitable for mosquito egg deposition	Yes
Other	Emergency/Conflict since 2015 ongoing

Section X: Surveillance staffing

58. During 2019 (prior to the Covid-19 pandemic), indicate below the number of arbovirus surveillance staff at the national level.

	Number of personnel
Entomologists/ vector control specialists	74

59. Indicate below how many total staff persons are needed at the national level in your country to achieve full epidemiology and laboratory capacity* to conduct arbovirus surveillance.

	Number of personnel
Clinicians	50
Epidemiologists	100
Laboratorians	50
Entomologists/vector control specialists	40
Support staff (administration; logistics; other)	23

60. Optional comments to explain responses to questions 58 and 59 above

61. The national health authority/ministry of health has access to expertise in clinical management of arboviruses (Check all that apply)

Within the ministry of health (eg, public health medical officers, clinicians in state hospitals)	Yes
Through other national agency with regulatory authority	Not selected
Through academic institution(s)	Not selected
Private hospitals	Yes
Does not have access	Not selected

62. The national health authority/ministry of health has access to expertise in arbovirus epidemiology (Check all that apply)

Within the ministry of health	Yes
Through other national agency with regulatory authority	Not selected
Through academic institution(s)	Yes
Does not have access	Not selected

63. The national health authority/ministry of health has access to expertise in arbovirus laboratory diagnosis (Check all that apply)

Within the ministry of health (e.g., public health laboratory scientists)	Yes
Through other national agency with regulatory authority	Not selected
Through academic institution(s)	Not selected
Does not have access	Not selected

64. The national health authority/ministry of health has access to expertise in entomology (Check all that apply)

Within the ministry of health	Yes
Through other national agency with regulatory authority	Yes
Through academic institution(s)	Yes
Does not have access	Not selected

65. Optional comments to explain responses to any of Questions 61-64

Section XI: Survey conclusion

66. If you have any further comments to add regarding arbovirus surveillance and control in your country, including whether arboviruses other than *Aedes*-borne arboviruses are of higher priority, please do so in the text field below