# Arboviral Surveillance and Response Capacity Survey 2021

## Section I: Respondent details

**1. Country**

Armenia

**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)**

21/5/2021

## 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 | Not selected |
| Dengue | Not selected |
| Yellow fever | Not selected |
| Zika | Not selected |

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

No

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

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

**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**

Infectious diseases surveillance and response program

**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              | Not selected  |
| District level           | Not selected     | Not selected  |
| 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 |

**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 | Yes |

**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 | Mandatory reporting of all suspect cases |
| Dengue | Mandatory reporting of all suspect cases |
| Yellow fever | Mandatory reporting of all suspect cases |
| Zika (non-congenital) | Mandatory reporting of all suspect cases |
| Other | Mandatory reporting of all suspect cases |

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

| | | |
|---|---|---|
| 1 | CCHF | All suspect cases |
| 2 | WNV | All suspect cases |
| 3 | Yellow fever | All suspect cases |
| 4 | Dengue | All suspect cases |
| 5 | Zika | All suspect cases |
| 6 | Chikungunya | All suspect cases |
| 7 | Tick-borne encephalitis | All suspect cases |

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

1 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?**

Ad hoc

**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?**

No

**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?**

As factors contributing to the a) success to arboviral disease surveillance in humans we have ongoing entomological surveillance throughout Armenia and b) barriers/challenges are lack of the knowledge on Arboviral diseases

## 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)**

| | |
|---|---|
| Non-outbreak periods | All suspect cases tested |

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**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 | 100 |

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

**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 | | | | | | | |
| Dengue | | | | | | Yes | |
| Yellow fever | | | | | | | |
| Zika | | | | | | | |
| Other | Yes | | | | | 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 laboratory equipment, reagents, etc.: Reagents

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

No: There were no diagnosed cases of arboviral diseases but we have capacity to perform RT-PCR testing for some arbovirals

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

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

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

**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?**

> The arboviral diagnostic laboratory staff perceives as factors contributing to the a) success with respect to laboratory testing for arboviral infections sufficient human resources and laboratory equipment and b) barriers/challenges are lack of protocols/algorithms for laboratory investigations (sometimes clinicians send samples with the indication "febrile diseases" and it's a challenge to decide for what the samples should be investigated).

# 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?**

> No

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

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

> No. If so, where are patients with severe disease treated? Please specify in comments field.

We didn't have any diagnosed case of arboviral diseases in the last two years only 1 imported dengue case with mild symptoms in 2018 treated in the infectious diseases hospital

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

3.98

**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?**

Arboviral disease surveillance/clinical staff perceive as factors contributing to the a) success with respect to case management the laboratory investigation capacities in the country and b) barriers/challenges are the absence of case-management protocols, lack of trainings, and low awareness on arboviral infections

# 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.

National Center for Disease Control and Prevention, MoH

**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 | Not selected |
| Universities or academic institutions | Not selected |
| Private companies | Not selected |

**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 | Yes |
| Not applicable (no mosquito surveillance done) | Not selected |

**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 albopictus*

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

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

*Aedes albopictus* populations are stable in select areas and pose a significant threat

**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?**

Cypermethrin was used for vector control in leishmaniases foci. Larvivorous gambusia fish was used for larval control in recent malaria foci.

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

No

**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 – do not have a formal plan that includes adulticiding to control mosquito-borne diseases

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

**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?**

The vector surveillance staff perceive as factors contributing to the a) success with respect to vector surveillance and control in the country - sufficient human resources and some field/laboratory equipment and b) barriers/challenges are not sufficient resources to conduct field investigations

# 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?**

No

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

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

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

**43e. Which resources would help ensure adequate capacity?**

**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      | Not selected     | Not selected                |
| Issued by state/local health agencies        | Not selected     | Not selected                |
| No risk in the past two years                 | Yes              | 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 | Not selected |
| Active distribution of informational brochures | Not selected |
| Town, community, or neighborhood meetings | Not selected |
| 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 | Not selected |
| Participation in community clean-ups | Not selected |
| Modification of messages for all local languages | Not selected |
| Other | Distribution of posters, leaflets |

**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?**

No

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

The community outreach staff perceive as factors contributing to the a) success with respect to community participation is the availability of social media and different tools for outreach campaigns and b) barriers/challenges are the rumors, misinformation, and lack of trust.

# 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?**

No

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

No

**48b. Please upload the contingency plan**

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

No

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

No

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

Indoor resitual spraying and larviciding was conducted in the malaria outbreak period (1994-2005)

**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?**

Arboviral diseases are not considered an emerging public health threat in Armenia.

# 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).**

|  | Dengue | Chikungunya | Yellow fever | Zika |
|---|---|---|---|---|
| 2015 Cases | 0 | 0 | 0 | 0 |
| 2015 Deaths | 0 | 0 | 0 | 0 |
| 2016 Cases | 0 | 0 | 0 | 0 |
| 2016 Deaths | 0 | 0 | 0 | 0 |
| 2017 Cases | 0 | 0 | 0 | 0 |
| 2017 Deaths | 0 | 0 | 0 | 0 |
| 2018 Cases | 1 | 0 | 0 | 0 |
| 2018 Deaths | 0 | 0 | 0 | 0 |
| 2019 Cases | 0 | 0 | 0 | 0 |
| 2019 Deaths | 0 | 0 | 0 | 0 |
| 2020 Cases | 0 | 0 | 0 | 0 |
| 2020 Deaths | 0 | 0 | 0 | 0 |

(NA = Not Available)

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

No

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

**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**

|  | Suspect cases | Probable cases | Confirmed cases | Deaths |
|---|---|---|---|---|
| Chikungunya | 0 | 0 | 0 | 0 |
| Dengue | 0 | 0 | 0 | 0 |
| Yellow Fever | 0 | 0 | 0 | 0 |
| Zika | 0 | 0 | 0 | 0 |

**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) | Not selected |
| Construction activities | Not selected |
| Population migration (within the country or between countries) | Not selected |
| Increased availability of peri-domestic water-bearing containers suitable for mosquito egg deposition | Not selected |

# 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.**

**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.**

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

> We do not have special "arbovirus surveillance staff" at the national level. In Armenia, there is a sufficient number of clinicians, epidemiologists, laboratorians, entomologists, and other support staff, to implement infectious diseases surveillance activities, including arboviral diseases.

**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) | Yes |
| Private hospitals | Not selected |
| 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 | Not selected |
|---|---|
| Through other national agency with regulatory authority | Yes |
| Through academic institution(s) | Not selected |
| 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 | Yes |
| 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 | Not selected |
|---|---|
| Through other national agency with regulatory authority | Yes |
| Through academic institution(s) | Not selected |
| 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**

In 2006, a large entomological survey (64,567 mosquitoes and 45,180 Ixodes ticks) identified 125 distinct strains of 10 arboviruses, including West Nile fever virus, tick-borne encephalitis virus, Tamdy, Tahyna, Geta, Batai, Sindbis, Crimean-Congo hemorrhagic fever, Bhanja, Dhori. In Armenia the only case of Crimean-Congo hemorrhagic fever (CCHF) in humans was registered in 1974, which ended with a death of a young zoologist. During the 1986-1996 entomological survey, the CCHF virus was found in ticks in different regions. In 2016 CCHF virus antigen was detected from 6 tick species. Tick-borne encephalitis (TBE) virus was historically diagnosed in Armenia but has not been studied in recent years. Investigations carried out in 1985-1992, showed TBE virus circulation among bloodsucking arthropods' species found in almost all landscape zones of the country. Natural foci of TBE were identified in various climatic and geographical zones. Available literature indicates Sandfly fever was reported in Armenia until the late 1970s. Phlebotomine shadflies are found in different altitudes of the country. Pappataci fever was found mostly in visitors (24 times more than in residents) in Ararat valley and Southern part of Armenia. Currently, no cases of Sandfly fever are registered in Armenia due to lack of diagnostic capacities and awareness of medical personnel. West Nile fever is now spread all over the world, including the Mediterranean, causing high mortality. It is transmitted by the bites of Culex, the species widely spread in Armenia. Aedes albopictus and Aedes aegypti mosquitoes have been found in the territories bordering Armenia. A VectorNet (European Network of entomologists & public health specialists) field mission of Armenia in 2016 identified 29 different species of mosquitoes, including 6 anophelines, 10 aedes, 3 culiseta, 8 culex, 1 uranotaenia and 1 coquilletidia, including Aedes albopictus for the first time in the northern part of Armenia (bordering to Georgia). Aedes albopictus (Stegomyia albopicta), also known as Asian tiger mosquito, was recorded in a single locality, at the border point with Georgia, on the main road Tbilisi-Yerevan. Routine entomological surveillance (conducted by field entomologists working in NCDC branches) in 2017-2020 on the presence/absence of Aedes invasive species revealed expansion of the area of Aedes albopictus. This important potential vector of many arboviruses was recorded during the four consecutive years 2016-2020. Field observations demonstrate Aedes albopictus's recent introduction and establishment in the north of the country, with implications for public health. More comprehensive studies are required to understand the real distribution of Aedes albopictus in Armenia, to estimate and predict the future distributions of it in response to target surveillance and control efforts that aim to mitigate the spread of arboviral diseases among the population.