Chikungunya virus (CHIKV) threatens Europe through irreversible spread of vector mosquito *Aedes albopictus*. Sustained surveillance implemented in areas colonized by the vector mosquito in mainland France since 2006. Before 2017, 2 CHIKV local transmission episodes detected by this surveillance in mainland France.

### Objectives of sustained surveillance

Early detection of suspected imported cases/probable autochthonous cases to implement vector-control measures and avoid a local transmission of the virus.

### ALERT

- Early August: Notification of a CHIKV-positive test result for an autochthonous case (cluster 1)
- Early September: Notification of a new autochthonous CHIKV-positive test result (cluster 2, 10 km from cluster 1)

### OUTBREAK INVESTIGATION

Objectives: to determine the source of infection and the extent of CHIKV dissemination to guide adequate control measures and prevent further spreading.

#### Epidemiological investigations

- Finding potential secondary cases:
  - door-to-door case-finding
  - health professionals mobilization
  - review of the regional / national surveillance database
  - identification of the origin of the transmissions: primary imported case and link between the episodes

#### Case investigations

- Description of clinical manifestations
- History of visited areas during the exposure period (specific to the first autochthonous case)
- Identification of visited areas while viremics
- Exploring potential secondary cases in the neighborhood and relatives

#### Entomological investigations

- Inside / around places visited by (potentially) viraemic cases (home, workplace, etc.)
- Adulticte (*deltaméthrin*) and larvicide treatments (Btl)
- *Aedes albopictus* oviposition traps

#### Biological analyses

- Laboratory confirmation of the first cases by the National reference laboratory and molecular characterization of the strain of index cases from clusters 1 and 2 (next generation sequencing)
- Confirmation of the secondary cases by private laboratories

### RESULTS

#### Cluster 1

- 11 autochthonous cases: 7 confirmed by RT-PCR and 4 with serological evidence of CHIKV
- 1 primary case imported from Cameroon
- 13 days of treatment against adults in the area and 7 against larvae

#### Cluster 2

- 6 autochthonous cases: 2 confirmed by RT-PCR and 4 with serological evidence of CHIKV infection
- Epidemiological link with cluster 1
- 3 days of treatment against adults in the area and 3 against larvae

#### Molecular analysis

- East Central South African (ECSA) genotype
- Virus carrying the E1-A226V mutation facilitating CHIKV transmission by *Ae. albopictus*

### CONCLUSIONS AND RECOMMENDATIONS

- 3rd and largest occurrence in France of local transmission of CHIKV: 17 autochthonous cases notified, 2 clusters
- Involvement of an ECSA genotype CHIKV harbouring the A226V mutation facilitating transmission by *Ae. Albopictus*
- Early detection of the outbreak allowed timely implementation of vector control measures to limit its spread
- Door-to-door investigations and involvement of health professionals in the active case finding are paramount
- Public awareness campaigns promoting good practices to limit the development of mosquito breeding sites to limit mosquitoes density have to be developed
- Regular awareness campaigns targeting physicians and biologists, focusing on arboviruses diagnosis and reporting, have to be conducted to improve the effectiveness of this surveillance

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