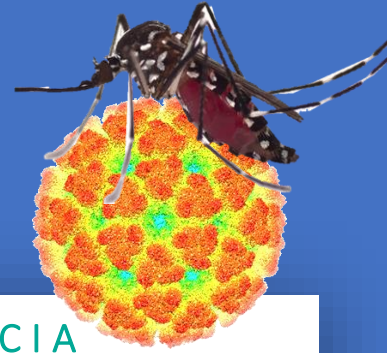




ESOVE 2026 VALENCIA

# Challenges and successes of the vector management plan adopted during the 2025 Carpi chikungunya outbreak

Dr. Alessandro Albieri

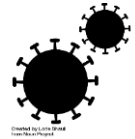
Centro Agricoltura Ambiente “G.Nicoli” • aalbieri@caa.it

CAA Centro Agricoltura Ambiente Giorgio Nicoli

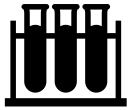
# The PILLARS of the prevention strategy (PRA)



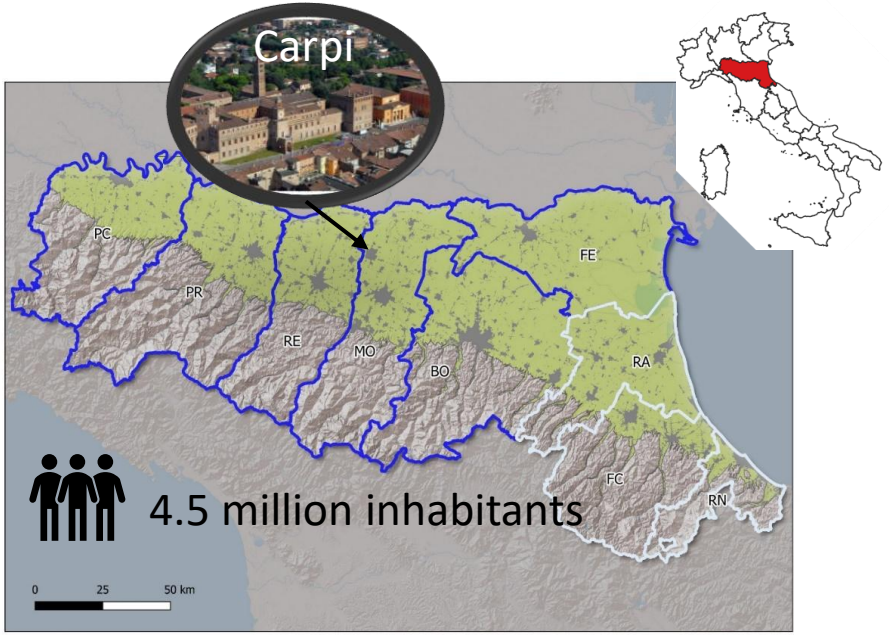
**entomological surveillance** and control of mosquitoes.



**early detection** of arboviruses cases to immediately implement control measures.



**implementation of measures** to prevent transmission of infections through other routes.

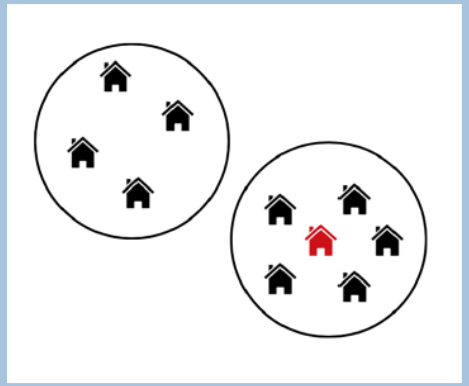



Map of E-R, in green plain area, in grey urban areas

Regional Arbovirsus Surveillance and Control plan (PRA) is active from **1st May to 31st October**

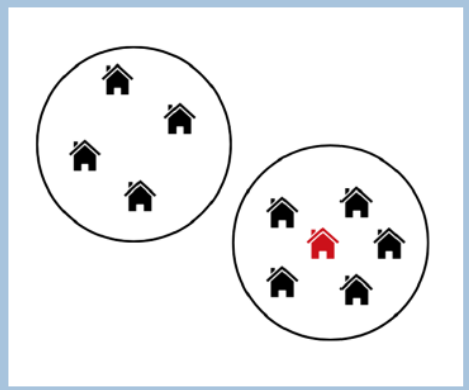
# Autochthonous cases scenarios (PRA)

## first scenario



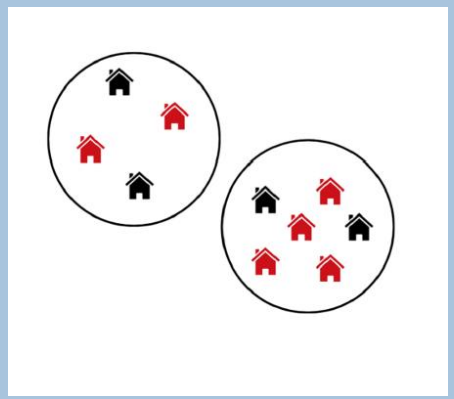
Single confirmed/probable autochthonous case, with no recent travel history (last 15 days)

## second scenario



Identification of additional confirmed/probable autochthonous cases with an epidemiological link and continuity.

## third scenario

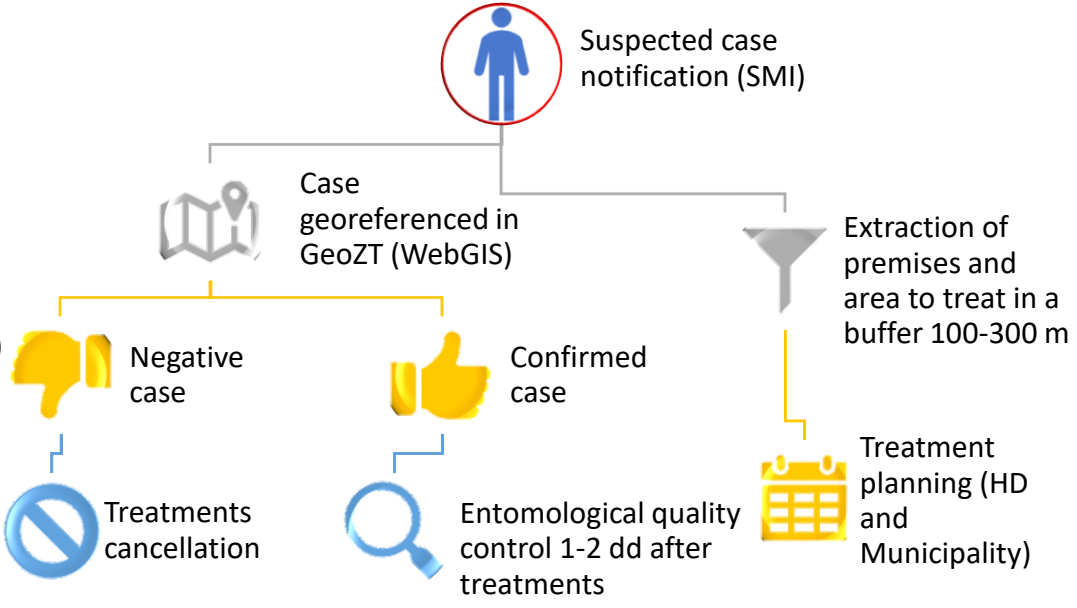


Identification of additional confirmed/probable autochthonous cases with a spatial distribution extending across multiple municipalities.

# Specific protocol for arbovirus case control

Specific mosquito control protocol around suspected or confirmed cases (100 or 200 m buffer around single case / 300 m buffer around clusters) within 24 hours:

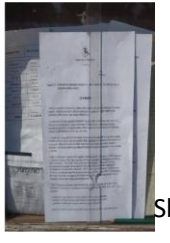
- ✓ Adulticides **in public area** for **3 nights**
- ✓ Larvicides **in public area** (PDMS-silicone oil)
- ✓ **DtoD activities**: adulticides, larvicides and Breeding sites' removal
- ✓**Entomological inspection (quality control)**











# Specific quality control protocol of treatments

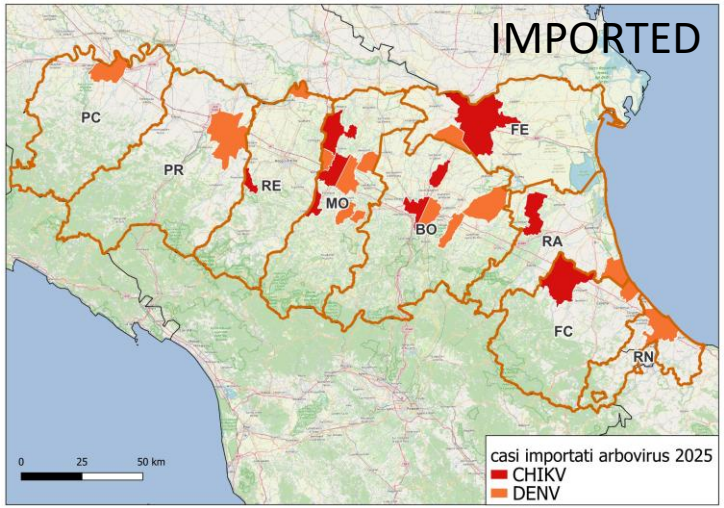


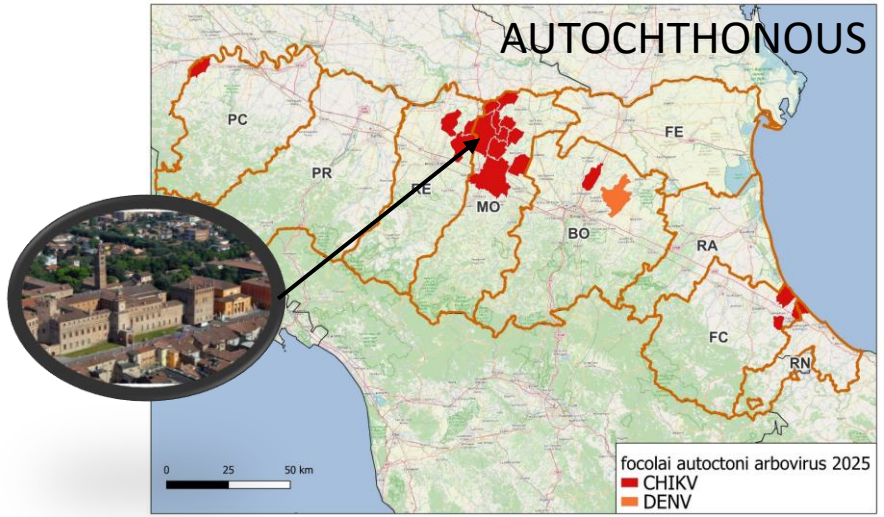






# Arboviruses imported and autochthonous cases



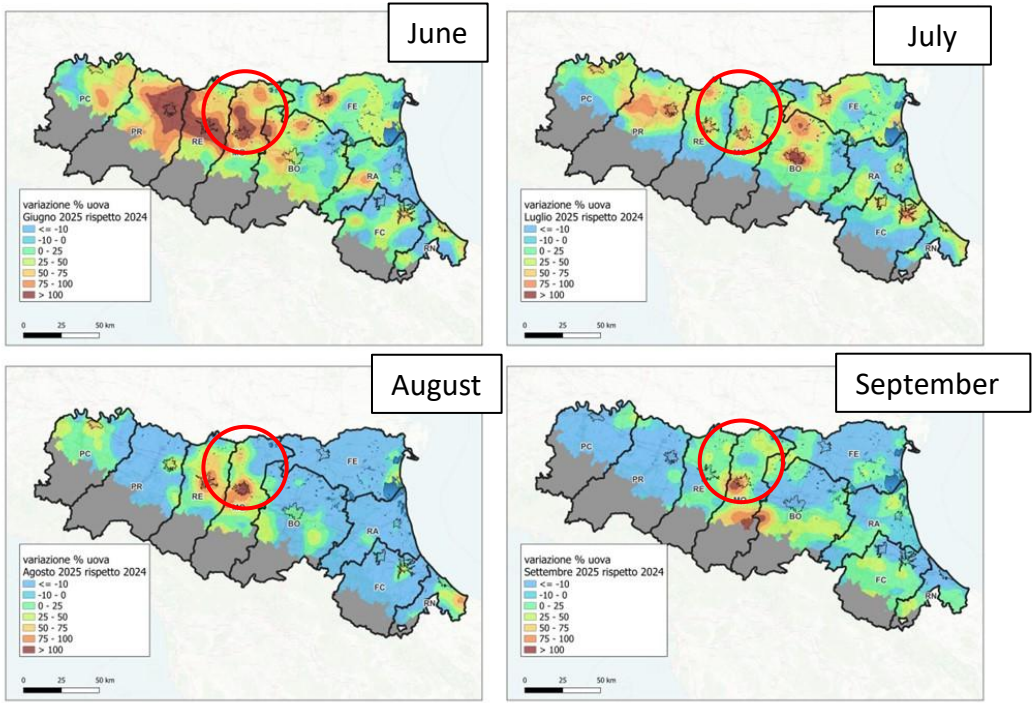




- **25** imported cases of DENV
- **13** imported cases of CHIKV
- **About 1,200** «not confirmed» notifications
- **83%** of imported cases were from South/Central America and South/East Asia – Indian Ocean

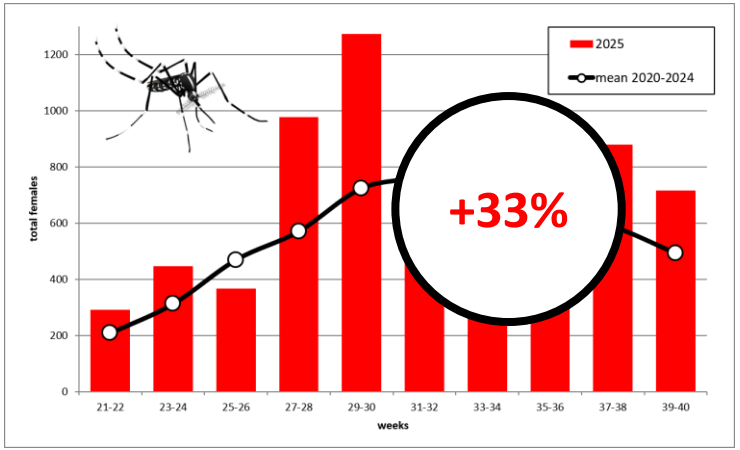
- **18 municipalities**
- **3** cases of DENV
- **358** total regional cases of CHIKV (ECSA-2)

Data source: GeoZT e SMI (Infectious Diseases System)

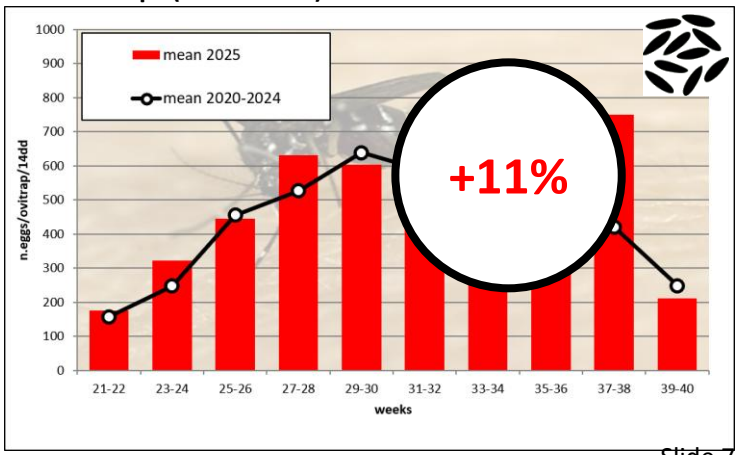
# *Aedes albopictus* population in 2025 in E-R




ML model Emilia-Romagna (% variation 2025 vs 2024):
https://www.zanzaratigreonline.it/it/monitoraggio/modello-previsionale

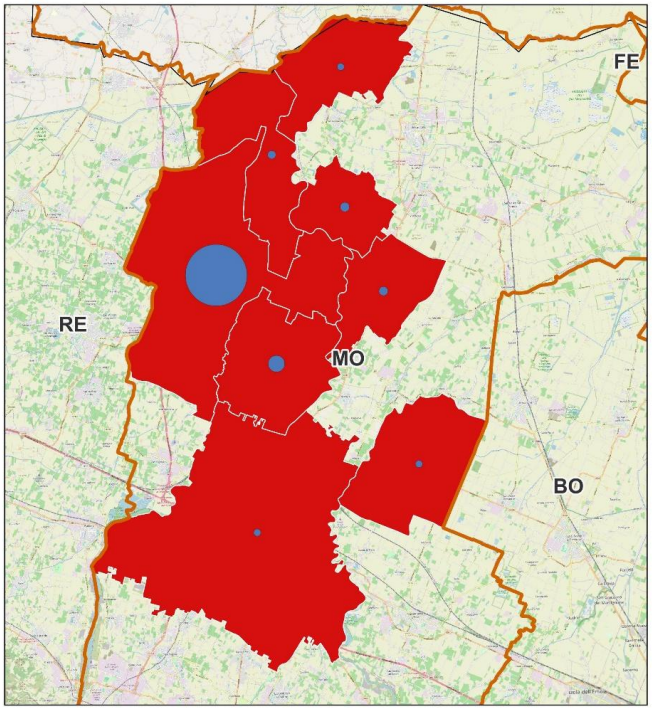


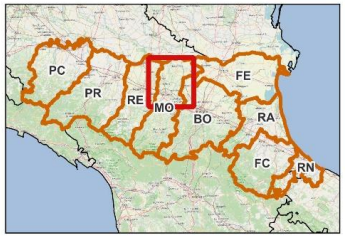

**98 CO2 traps (IZSLER data)**




**755 ovitraps – www.zanzaratigreonline.it**

# The CHIKV outbreak in Carpi 2025



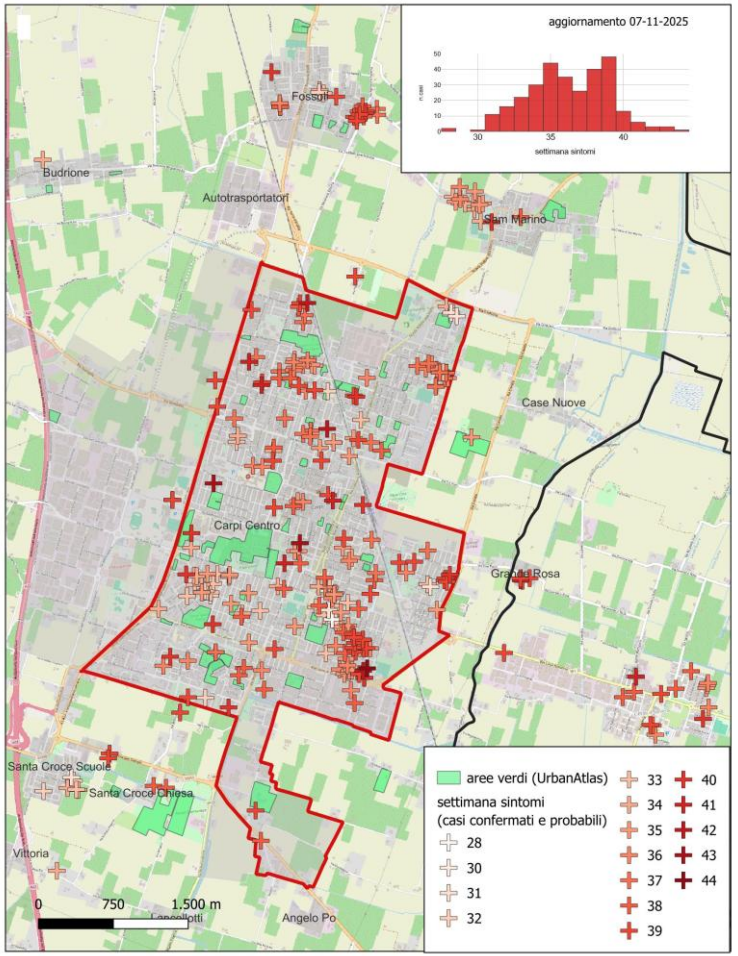




autochthonous arbovirus cases
chikungunya virus

cases number
290
30
5
1

0 10 20 k

- ✓ 8 Municipalities involved in the Modena province cluster
- ✓ 294 autochthonous cases in Carpi (343 total cases)
- ✓ Index case NOT found




≈ **75,000** inhabitants

Main area ≈ 1,165 ha (red polygon in the map)



Rossini et al. Euro Surveill. 2026;31(36):pii=2500962

# Chronology of the Carpi outbreak

**08 Aug 2025**
Local Health Authority (AUSL) alerts the Municipality about the first autochthonous case.

**11 Aug 2025**
First Crisis Unit meeting; treatments begin.

**14–16 Aug 2025**
Wide-ranging treatment across the entire city.
*Protocol remodulation: 1 night + 1DtoD and 36/48 h delay.*

**04–06 Sep 2025**
Wide coverage of the southern part of the city.

**15 Sep 2025**
Extraordinary treatment; Festival.

**22 Sep 2025**
Last treatment; 260 cases reported.

**24 Sep 2025**
Tmax < 24°C
Tmin < 15°C.
*Temperature decline supported stopping treatments.*

**18–21 Sep 2025**
Larvicide-kit distribution stands.

## Healthcare professionals

From the first day of UdC activation, a dedicated communication channel was established with:

- General practitioners and pediatric network
- Emergency departments
- Out-of-hours medical services (whole province)

### Information materials




- ✓ Protective behavior guides (repellent, clothing, nets, standing water)
- ✓ Protection for animals (pets and livestock)
- ✓ Notification protocols during adulticide campaigns

Multilingual sheets (~ 15% of residents non-Italian speakers)

Beyond institutional websites: community mediators and ethnic media

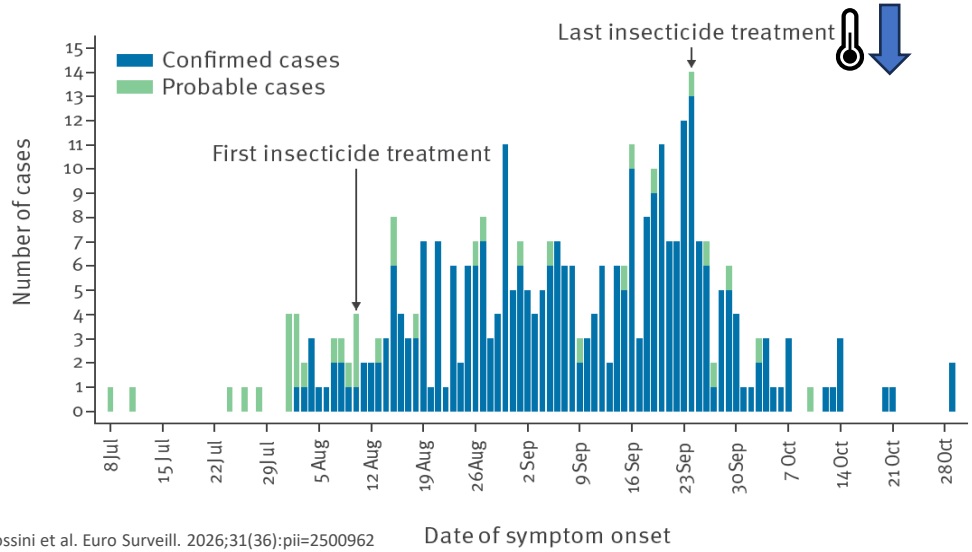
### Multi-channel strategy

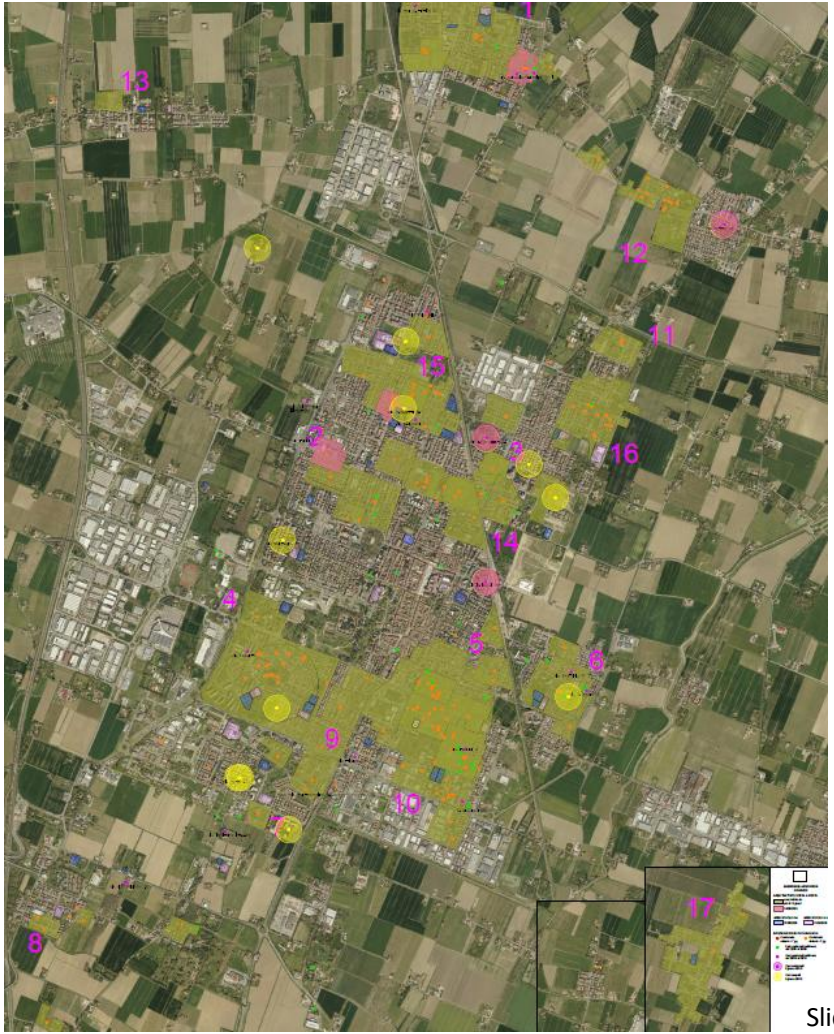
Based on the regional arbovirus prevention campaign (since May 2025)

- **Institutional websites** (dedicated sections from 11 Aug, including outbreak FAQ)
- **Press releases** (on outbreak evolution and UdC decisions)
- **Social media** (coordinated activity)
- **Press briefings** (with clinical professionals)
- **Television programs** (targeting elderly and vulnerable people)

# Vector management

- ≈ **1,500 ha** treated (areas in the map)
- Larvicides mainly by PDMS-silicone oil and adulticides by pyrethroids (cypermethrin and tetramethrin)
- Adulticides in early morning (00:00-06:00 am)
- DtoD (larv. and adut. in daytime hours)
- Containment in about **8 weeks**
- **Treatments costs: ≈ 372,000 euros**




Rossini et al. Euro Surveill. 2026;31(36):pii=2500962

# Entomological results

Mosquito sampling areas
(4-10 5-min HLC sessions)

**73**

August–October 2025

Adult mosquitoes collected

**2,714**

2,364 females + 350 males

CHIKV-positive mosquito pools

**39/263**

14.8% of female pools tested

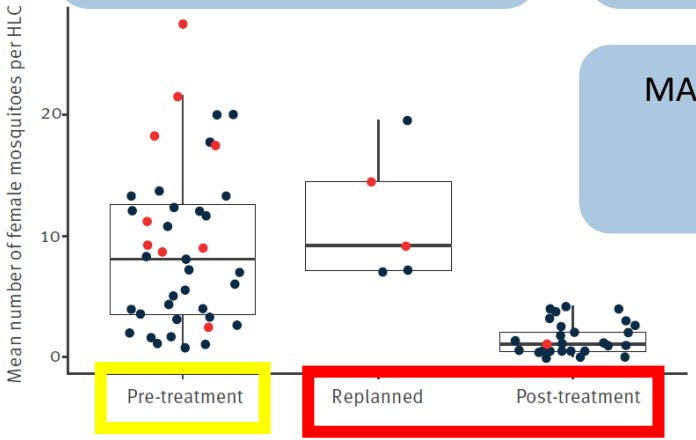
Mean female catch
per session

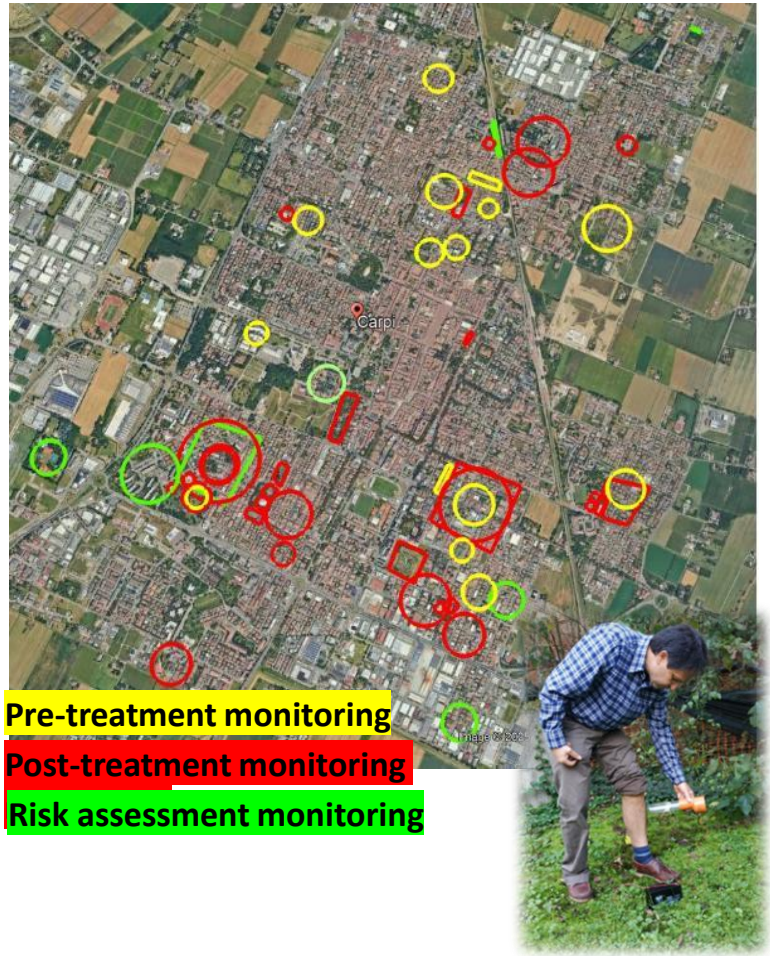
**–89%**

9 before vs 1 after treatment

MAX Infection Rate (MLE)

**16.7%**




Rossini et al. Euro Surveill. 2026;31(36):pii=2500962

# Conclusions

## Lesson learned by our experience

1. **Rapid integration of epidemiological and spatial data** is crucial to enable immediate pest control operational decisions and to stop the epidemic chain.
2. **Entomological surveillance and laboratory capacity** for mosquito testing provide important evidence during outbreak investigations.
3. **Pre-established operational protocols** and agreements with pest-control operators significantly reduce response time.
4. **Training and communication** remain essential both for clinicians detecting cases and for vector control professionals (PCO) implementing interventions.

## Take home messages (regional preparedness)

1. **Pest Control companies** Dedicated to mosquito control for autochthonous cases.
2. **Increased training** for doctors and healthcare workers.
3. **Training for pest control workers** about proper mosquito control techniques.
4. **Simulations of hypothetic outbreaks** for the Health departments.
5. **Increased financial investment** in entomological quality controls and surveillance.
6. **Shorter response times** between suspected and confirmed autochthonous cases.



# Thank you for the attention

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RER Emilia-Romagna

Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna