

IPFA/PEI 32nd International Workshop on Surveillance and Screening of Blood-borne Pathogens

20 - 21 May 2026 | Bilbao, Spain

www.ipfa.nl

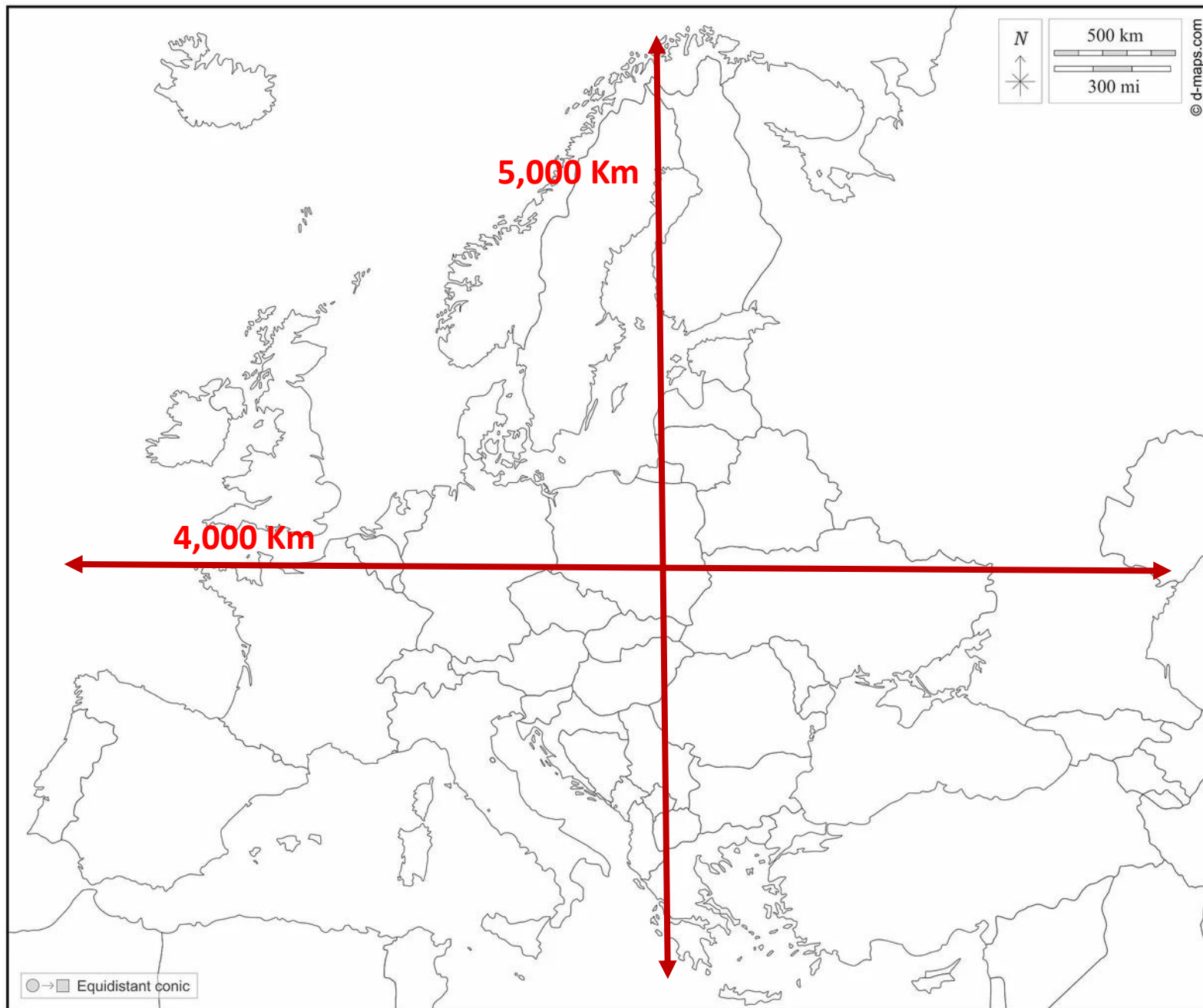


European strategies for Arboviruses

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Disclosures:

My Institution, Banc de Sang i Teixits, has received financial support from Grifols for research projects



- Different Gross Domestic Product (GDP)
- Different Health organization
- Different surveillance capabilities
- Different climates
- Different arbovirus epidemiology**

Europe Summer 2025: Autochthonous arbovirus cases



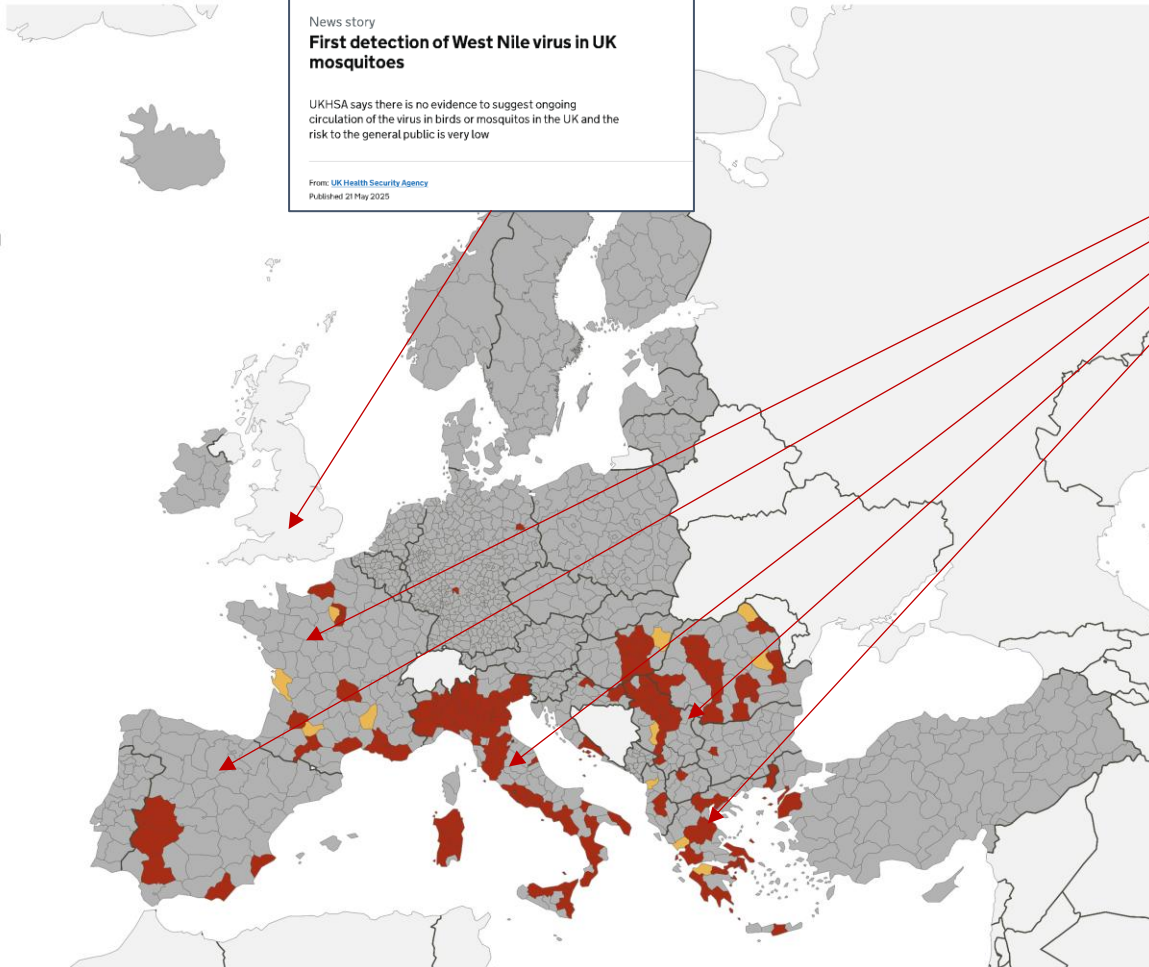
West Nile virus infection

- Confirmed cases reported
- Probable cases reported
- No cases reported
- Not included

Countries not visible at the current scale



GOV.UK
Home > Health and social care > Public health > Health protection > Infectious diseases
News story
First detection of West Nile virus in UK mosquitoes
UKHSA says there is no evidence to suggest ongoing circulation of the virus in birds or mosquitoes in the UK and the risk to the general public is very low
From: UK Health Security Agency
Published 21 May 2025



West Nile Virus (WNV)

Italy, Greece, France, Serbia, Romania, Spain, Hungary, Croatia, Albania, Germany, North Macedonia, Bulgaria, Kosovo, Türkiye

Dengue

Italy, France

Chikungunya (CHKV)

Italy, France

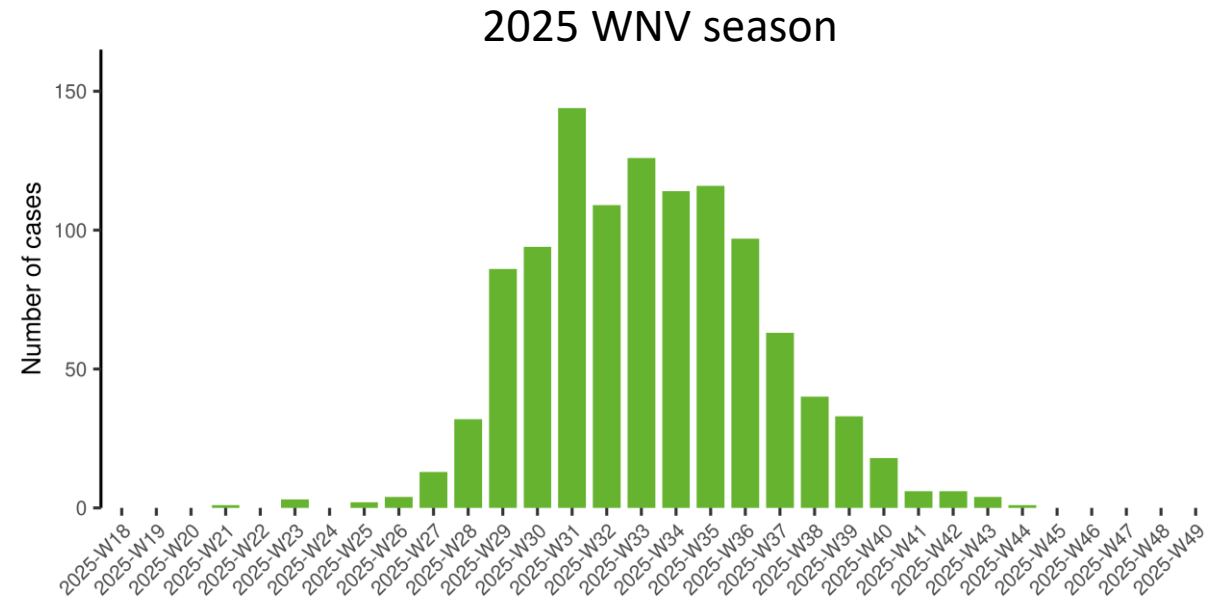
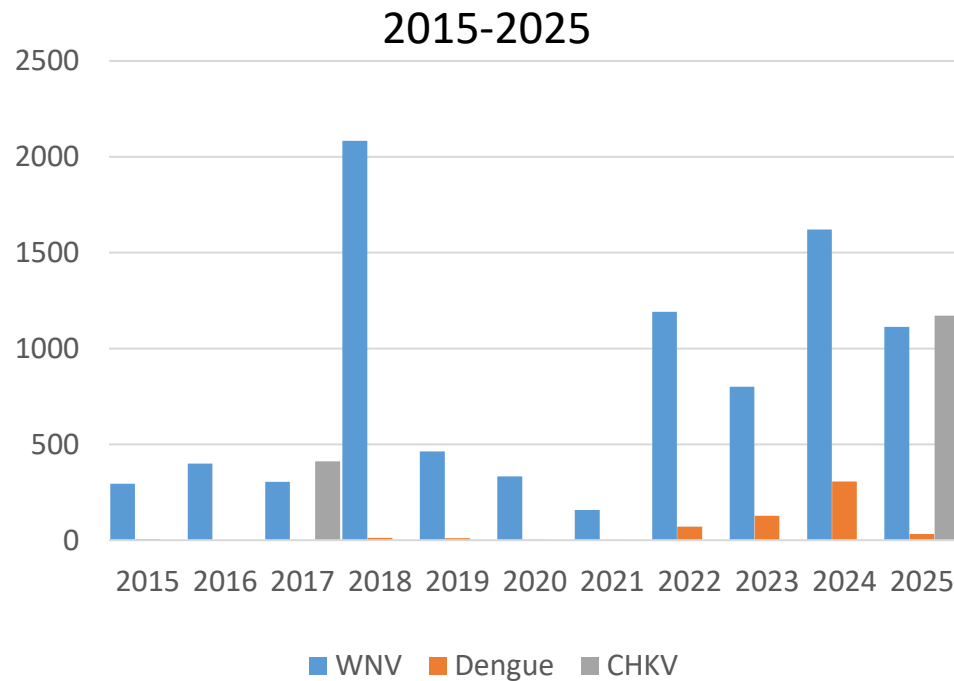
Crimean-Congo Hemorrhagic Fever

Spain, Greece

TBE, Toscana virus, Usutu

Administrative boundaries: ©EuroGeographics ©UN-FAO. The boundaries and names shown on this map do not imply official endorsement or acceptance by the European Union. Map produced by ECDC on 11 December 2025. Created with data reported to EpiPulse Cases as of 10 December 2025.

Evolution of autochthonous WNV, dengue, CHKV cases in Europe



First case: 19 May

Peak: 14 July- 1 September

Last case*: 27 October (End of season 5 December)

*Spain: 1 case detected in Málaga December 8

<https://www.ecdc.europa.eu/en>

European regulations and recommendations on arboviruses and blood safety

- European Directive DIRECTIVE 2002/98/EC

Additional tests may be required for specific components or donors or epidemiological situations.

- European Directive DIRECTIVE 014/110/EU

“28 days deferral after leaving a **risk area** of locally acquired West Nile Virus unless an individual Nucleic Acid Test (NAT) is negative”

- Council of Europe, Guide for blood components

- Individual NAT testing or 28-day deferral for WNV
- NAT testing or 28-day deferral for dengue, ZIKA and Chikungunya

- European Center for Disease Control (ECDC) Rapid Risk assessments

- 28-day deferral
- NAT testing
- Consider Pathogen Reduction Technologies (PRT) for plasma and platelets

- National and local regulations and recommendations



Impact of arbovirus outbreaks in Europe: Blood Safety & Sufficiency

- Safety: Implement optimal strategies according to risk?
 - Comply with European and national regulations
 - Apply the precautionary principle

- Sufficiency: Defer or screen?
 - Ensure blood sufficiency in summer months



Impact of arbovirus outbreaks in Europe: Blood Safety & Sufficiency

- Safety: Implement
 - Comply
 - Apply th



WARNING!

The risk of WNV transmission through blood components by a local outbreak is on average 113 times higher than the risk of transmission by travelling donors in Europe

Garzon-Jiménez et al. Vox Sang. 2021

- Sufficiency: Defen
 - Ensure k

How to define RISK AREA?

- Country: when endemic circulation throughout the country?
- NUTS-3* (ECDC): when only some provinces within a country are affected?
 - *Nomenclature of territorial units for statistics (Regulation (EC) No 1059/2003)
- County/municipality when sporadic cases are identified within a province?
- Radius of 500 m for *Aedes sp.* mosquito competent for dengue/ZIKA/CHKV?
- Radius of 10 Km for *Culex sp.* mosquito competent for WNV?



When to start blood safety measures against arboviruses?

- Confirmed human cases?
 - Often suspected human cases do not fulfill the laboratory criteria for confirmation
 - WNV suspected human cases may coexist with WNV circulation in mosquitos/birds/equids
 - Reporting of suspected/confirmed cases occur after several weeks of symptoms onset
- Pre-defined risk areas according to circulation in previous seasons?
 - Update the arbovirus risk maps weekly to add new affected areas

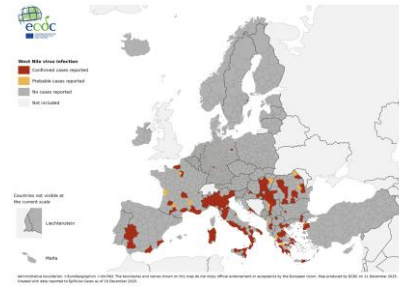
(2025: WNV cases detected in 39 new regions, total 157 regions in 14 countries)
- Start May? End December?
 - Longer and warmer summers enhance mosquito activity and arboviruses spread

West Nile Virus and Usutu in Italy: Integrated epidemiological surveillance

2010



2025



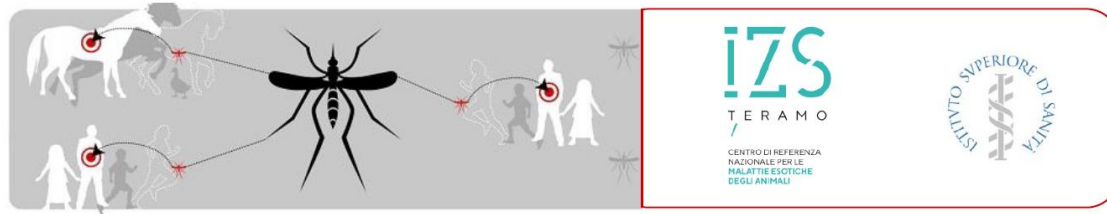
- Integrated veterinary (vectors, birds, horses) and human surveillance
- Affected areas defined by NUTS 3 (province), and expanded to NUTS 2 (region) if necessary
- WNV NAT screening of blood, tissues, cells and organ is triggered by vector surveillance

In 2025, largest outbreak of WNV since 2010: 773 confirmed human cases, them 56 blood donors (7%)

- Lazio region (including Rome) affected for the first time, starting in the Latina province in July 14th
- Simultaneous detection of WNV in 2 patients (meningoencephalitis), one horse and one mosquito pool
- On July 16th, WNV NAT screening was implemented in Latina, expanded to Lazio region on July 24th
- Other public health measures: Vector (mosquitos) control, specific training to physicians to detect and notify suspected cases

Rizzo C et al, Eurosurveillance 2016 Musseto I et al, Eurosurveillance 2025; Buonfrate D et al, 2026 J Inf; Prati D et al, 2025 ISBT Milan

West Nile Virus and Usutu in Italy: Integrated epidemiological surveillance



Sorveglianza integrata del West Nile e Usutu virus

Bollettino N. 18 del 31 ottobre 2024
RISULTATI NAZIONALI



- 0 In Evidenza
 - 1 Sorveglianza umana
 - 2 Sorveglianza equidi
 - 3 Sorveglianza uccelli bersaglio
 - 4 Sorveglianza uccelli selvatici
 - 5 Sorveglianza entomologica
 - 6 Sorveglianza avicoli
 - 7 Sorveglianza Usutu virus
 - 8 Piano nazionale prevenzione, sorveglianza e risposta arbovirosi (PNA) 2020-2025
- Clinical cases
Donor screening

Dedicated page for arbovirus: <https://www.epicentro.iss.it/>

Surveillance of arbovirus in mainland France

Bulletin



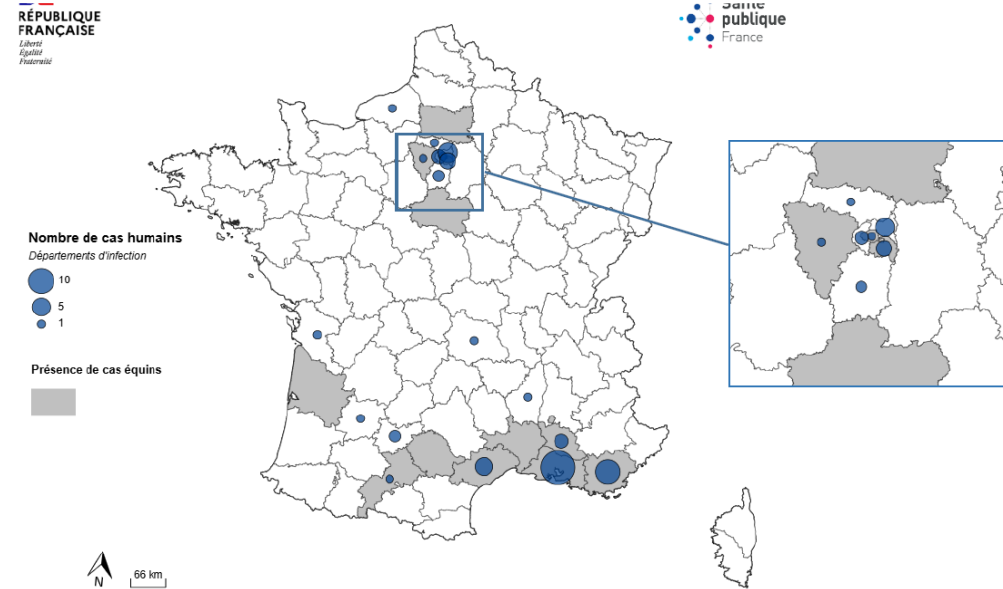
Arboviroses - Hexagone

Semaine 48-2025. Date de publication : 26 novembre 2025

ÉDITION NATIONALE

Bilan de la surveillance renforcée des arboviroses, du 1^{er} mai au 24 novembre 2025, France hexagonale

Figure 5 : Carte de la surveillance West Nile en France hexagonale, saison 2025 (au 24/11/2025)



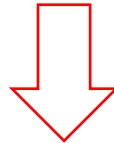
- Île de France region (including Paris) affected for the first time in 2025
- 61 WNV confirmed cases, of them 9 blood donors (15%)
- WNV NAT implemented in the NUT3 (département) after detection of the first human case
- 788 CHKV autochthonous cases (81 outbreaks) and 29 dengue cases (12 outbreaks), deferral strategy

Blood sufficiency: An Olympic Challenge

Preventive strategy implemented in mainland France in blood donations during the 2024 Olympic Games

- In July 1st 2024, WNV NAT as a preventive measure in 14 departments, including 10 affected by the viral circulation in previous seasons, and 4 departments especially involved in maintaining self-sufficiency at the national level
- To prevent the risk of major urban outbreaks that could affect the availability of blood products, DENV/CHIKV NAT duplex assay was introduced on July 22nd in departments around Paris and in 7 urban areas with very high vector density
- 176,128 tested donations tested for WNV, 6 donations were positive (4 confirmed + 2 probable)
- In two departments, the first WNV case was identified in a blood donor (mid July and mid August, respectively)

Gallian P et al, ISBT Milan 2025



- Extremadura (Spain) 2025: First reported case of the season was a blood donor identified during universal WNV screening (6 blood donors out of 32 cases, 19%)

WNV NAT screening strategy in Germany

SURVEILLANCE

Assessment of the effectiveness of West Nile virus screening by analysing suspected positive donations among blood donors, Germany, 2020 to 2023



Paul-Ehrlich-Institut
Federal Institute for Vaccines
and Biomedicines

Stefano Orru¹, Annette Reissinger², Angela Filomena³, Anna Heitmann⁴, Markus Benedikt Funk¹, Jonas Schmidt-Chanasit^{4,5}, Julia Kreß², Heinrich Scheiblaue³, Dániel Cadar^{4,*}, Sarah Anna Fiedler^{1,*}

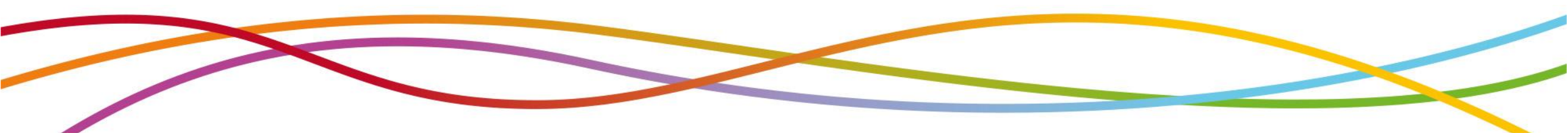


European Directive DIRECTIVE 014/110/EU

“28 days deferral after leaving a risk area of locally acquired West Nile Virus unless **an individual Nucleic Acid Test (NAT) is negative**”

- Responsible body: Paul Ehrlich Institut (PEI)
- The spirit of the law: Optimal sensitivity to prevent transfusion-transmission is set to 120 IU/mL in individual donation for WNV lineages 1 and 2
- Certified marked-approved or in-house NAT methods, in ID-NAT or minipool testing
- 2020-2023, >26M donations tested, 74 suspected cases, 26 blood donors could be confirmed as WNV infections
- Difficulties in confirmation of suspected cases, cross-reaction with other flaviviruses

Orru S et al, Eurosurveillance 2025



Different strategies to manage arbovirus risk in Spain

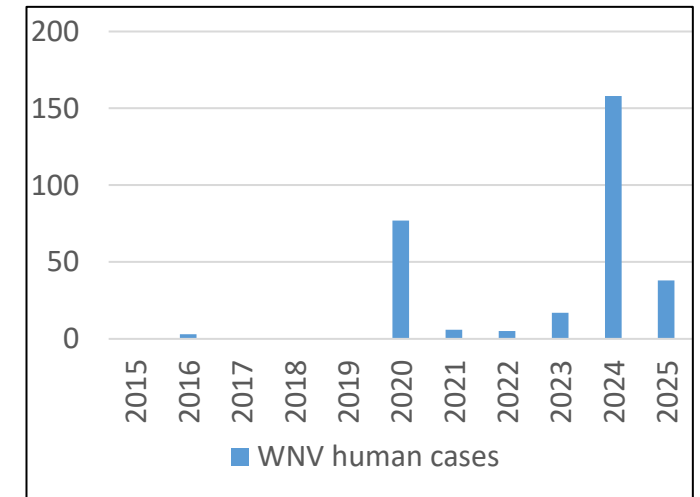
Season 2024



Regions with WNV human cases since 2010: Andalucía, Extremadura, Valencia, Castilla-La Mancha, Cataluña
Multiple outbreaks in birds and horses

Data from 15 Blood Banks, including the Transfusion Center from the Spanish Army:

- 28-day temporary deferral: 2 Blood Banks
 - Selective WNV screening: 9 Blood Banks
 - Universal screening: 4 Blood Banks
- NAT screening reagent:
- WNV ID-NAT in 11 Blood Banks
 - WNV ID-NAT and multiplex Dengue/CHKV MP
 - multiplex WNV/dengue/Zika/CHKV ID-NAT



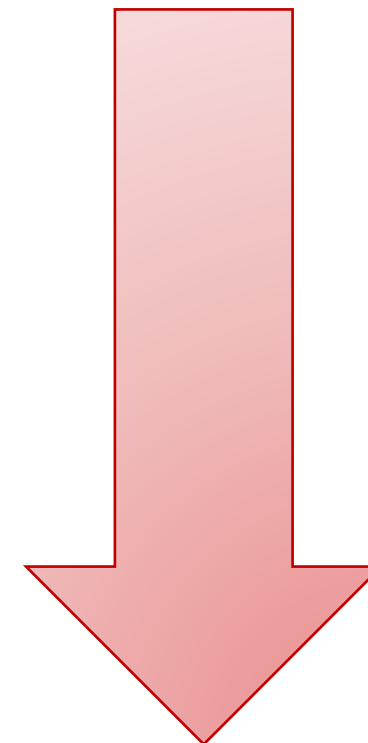
In Centers implementing deferrals or selective screening, the definition of **risk area** is different in each Center

There is no national consensus **when to start and when to finish** the measures against arboviruses, although most Centers adapt to ECDC weekly communicable disease reports

Managing arboviruses in BST Catalonia

BST in Catalonia (Spain) monitors arbovirus circulation in Europe from June-July to November-December, according to ECDC weekly reports and other available surveillance information

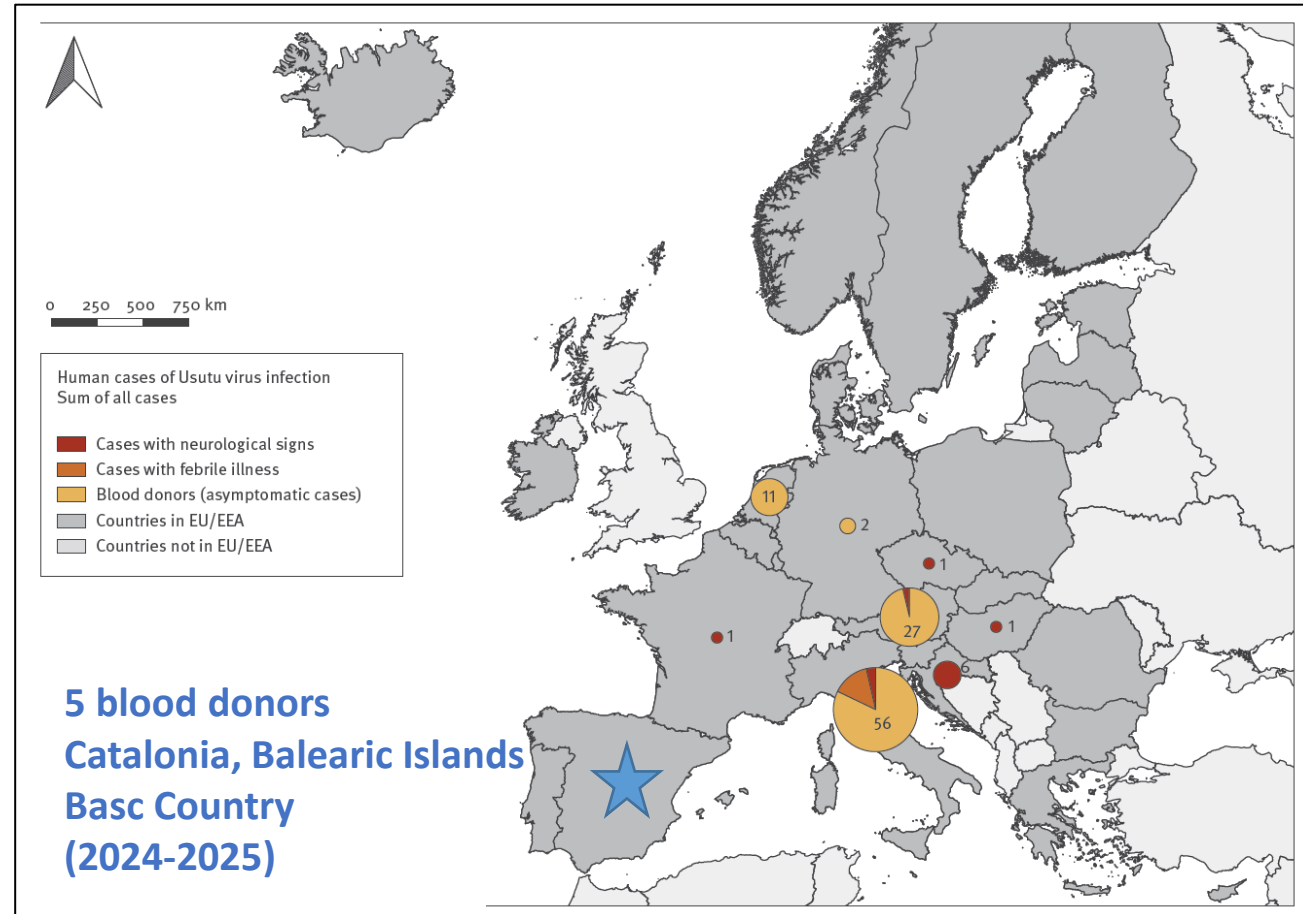
- From 2010 to 2018, 28-day **deferral** of at-risk blood donors
- In 2019, **selective** WNV ID-NAT and dengue MP-16 (dengue in Barcelona)
- In 2020, 28-day **deferral** (COVID year)
- From 2021 to 2022, **selective** WNV ID-NAT screening (WNV in Tarragona)
- In 2023, **universal** WNV ID-NAT and dengue MP-16 screening (WNV in Barcelona, dengue in Barcelona and Tarragona)
- **From 2024, universal multiplex WNV(Usutu)/dengue/Zika/CHKV ID-NAT**



WNV NAT cross-reactivities

- Arbovirus Reference Laboratories should be able to confirm or discard WNV NAT reactive donations as WNV or other flaviviruses
- WNV NAT can cross-react with Japanese encephalitis vaccine
- WNV NAT can detect Usutu infections
- Usutu and WNV share epidemiological and clinical features
- Usutu is not mentioned in the Quality Guidelines
- Should Usutu be treated as WNV in terms of blood safety?

Human Usutu cases in Europa (2012-2021) N=105 (96 blood donors)



**Transfusion-Related Transmission of Yellow Fever
Vaccine Virus — California, 2009**

CHKV and dengue vaccines

IXCHIQ[®] (Valneva) (live, attenuated) $>3,0 \log_{10} \text{TCID}_{50}$ (contraindicated in immunosuppressed patients)

- Detection of persistent CHKV viremia in a blood donor by Arboplex (Grifols) in Guadeloupe
- Vaccine administered 31 days prior to blood donation
- Red cell concentrate and plasma discarded, pool platelets transfused (PRT Amotosalen)

EDQM deferral for live, attenuated vaccines: 4 weeks

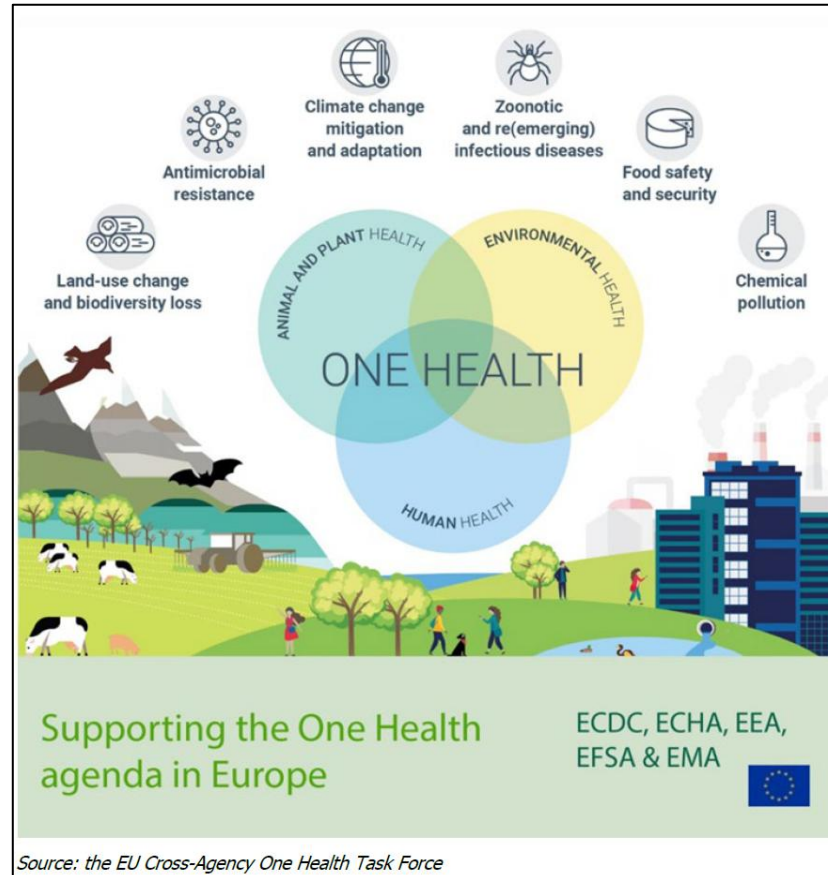
Gallian P et al, Int J Inf Diseases 2026

QDENG[®] (Takeda) (contraindicated in immunosuppressed patients)
Dengue virus serotype 1 (live, attenuated)*: $\geq 3.3 \log_{10} \text{PFU}^{**}/\text{dose}$
Dengue virus serotype 2 (live, attenuated)#: $\geq 2.7 \log_{10} \text{PFU}^{**}/\text{dose}$
Dengue virus serotype 3 (live, attenuated)*: $\geq 4.0 \log_{10} \text{PFU}^{**}/\text{dose}$
Dengue virus serotype 4 (live, attenuated)*: $\geq 4.5 \log_{10} \text{PFU}^{**}/\text{dose}$

- Detection of dengue RNA in a blood donor by Arboplex (Grifols) in Catalonia
- Vaccine administered 21 days prior to blood donation
- In the donation interview, the donor reported rabies and typhoid vaccines, did not mention dengue vaccine

BST SOP deferral for live, attenuated vaccines: 8 weeks

How to predict the arbovirus epidemiology at the beginning of the season?



Summary

- Arbovirus outbreaks, namely WNV and dengue, are expected every year in Europe, coinciding with the mosquito activity
- Blood safety measures to prevent arbovirus transfusion-transmitted infections are widely regulated, some measures based on a precautionary principle (i.e. CHKV)
- However, defining the areas at risk, education of blood collection personnel, timing of deferrals/screening implementation, selective vs. universal screening, are challenging issues for Blood Establishments

Thank you!

