Febbre dengue autoctona: esperienza della regione Marche

Francesco Barchiesi

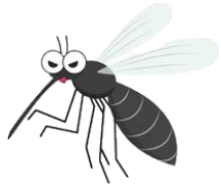
Dipartimento di Scienze Biomediche e Sanità Pubblica
Università Politecnica delle Marche
Ancona

Malattie Infettive Azienda Sanitaria Territoriale Pesaro- Urbino

UNIVERSITÀ POLITECNICA DELLE MARCHE

ast PESARO URBINO MARCHE

DENGUE: perché questo nome?



<< ⟨*dénġe*⟩ s. f., spagn. [propr. «smorfia, noia», da una voce africana della famiglia bantu]>>

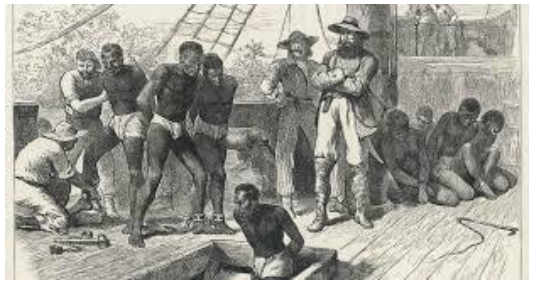
- <<…Omonimo spagnolo dello swahili ki denga pepo, che descrive un attacco improvviso, simile a un crampo, causato da uno spirito maligno …>>

- <<…Da una fonte africana, forse swahili dinga "convulsione, crampo"…>>

DENGUE: un po' di storia

Si ritiene che l'infezione da Virus Dengue sia stata registrata per la prima volta in un'enciclopedia medica cinese della dinastia Jin (265–420 d.C.). I cinesi chiamavano la Dengue "veleno dell'acqua" e sapevano che era in qualche modo associato agli insetti volanti.

La prima epidemia di Virus Dengue documentata è quella che, tra il 1779 e il 1780 colpì Africa, America settentrionale e gran parte dell'Asia probabilmente legata alla tratta degli schiavi e agli scambi commerciali.



DENV & Co. → Arbovirus

Virus Family	Viral Genus	Virus	Vector Species
	Orthobunyavirus	California serogroup viruses	Mosquito (Aedes sp.)
	Phlebovirus	Rift Valley Fever virus	Mosquito (various)
Bunyaviridae	Phlebovirus	Toscana virus	Sandfly (Phelbotomus sp.)
	Phlebovirus	Phlebotomus fever virus	Sandfly (phelbotomus)
	Phlebovirus	Sandfly Fever Naples virus	Sandfly (phelbotomus)
	Phlebovirus	Sandfly Fever Sicilian virus	Sandfly (phelbotomus)
	Phlebovirus	Heartland virus	Tick (A. americanum)
	Phlebovirus	Severe fever with thrombocytopenia syndrome virus	Tick (H. longicornis)
	Nairovirus	Crimean Hemorrhagic Fever virus	Tick (Hyalomma sp.)
Flaviviridae	Flavivirus	Dengue Virus	Mosquito (Aedes sp.)
	Flavivirus	Zika virus	Mosquito (Aedes sp.)
	Flavivirus	Yellow fever virus	Mosquito (Aedes sp.)
	Flavivirus	West Nile Virus	Mosquito (Culex sp.)
	Flavivirus	St. Louis Encephalitis virus	Mosquito (Culex sp.)
	Flavivirus	Japanese encephalitis virus	Mosquito (Culex sp.)
	Flavivirus	Murray Valley encephalitis virus	Mosquito (Culex sp.)
	Flavivirus	Usutu	Mosquito (various)
	Flavivirus	Omsk Hemorrhagic fever virus	Tick (dermacentor)
	Flavivirus	Kyasanur Forest Diesease virus	Tick (Haemaphysalis sp.)
	Flavivirus	Tick-borne encephalitis virus	Tick (Ixodes and Haemaphysalis sp.)
	Flavivirus	Powassan virus	Tick (Ixodes sp.)
Orthomyxoviridae	Thogotovirus	Bourbon virus	Tick (A. americanum)
Reoviridae	Coltivirus	Colorado tick fever	Tick (dermacentor)
Rhabdoviridae	Vesiculovirus	Vesicular Stomatitis (New Jersey) virus	Sandflies (Lutz. Sp) | Mosquitos (various)
	Vesiculovirus	Chandipura	Sandfly (Phlebotomus Sp.)
Togaviridae	Alphavirus	Barmah Forest Virus	Mosquito (Aedes and Culex sp.)
	Alphavirus	Chikungunya virus	Mosquito (Aedes sp.)
	Alphavirus	Venezuelan equine encephalitis virus	Mosquito (Culex sp.)
	Alphavirus	Sindbis virus	Mosquito (Culex sp.)
	Alphavirus	Equine encephalitis virus	Mosquito (Culex sp.)
	Alphavirus	Mayaro virus	Mosquito (Haemagogus sp.)

Figure 1. Virus families and common arthropod vectors of viral disease.

Global spread of arboviruses fuelled by human migration, urbanization, and animal transportation

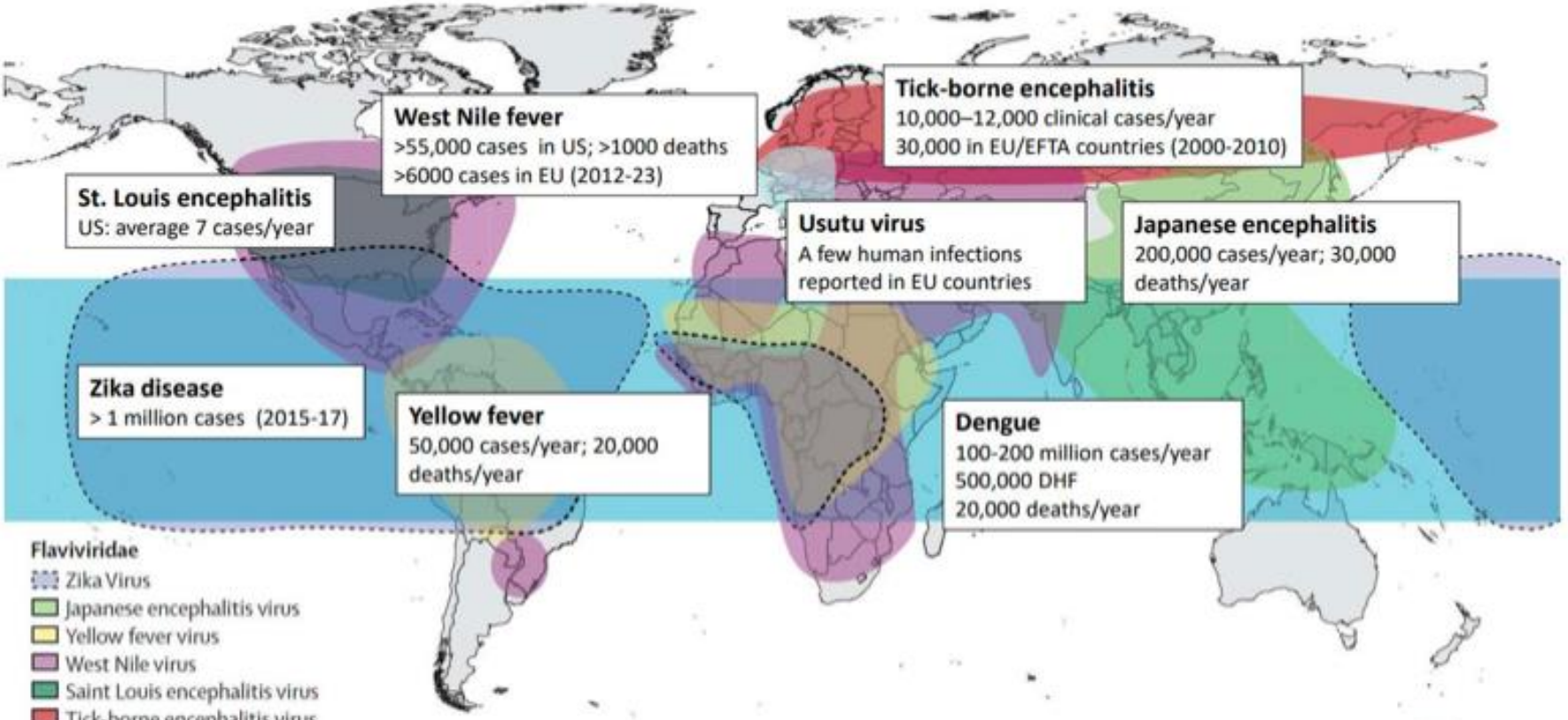
No specific treatments available
for *Aedes*-borne infections

Supportive care is available (management of symptoms such as headache, seizure, and maintaining vital organs)

Some vaccines developed:
17D YFV, Japanese encephalitis, tetravalent DENV vaccines.
Research on other arboviral infection vaccines (ZIKV, WNV, RRV, CHIKV) in progress but not yet approved

Int. J. Mol. Sci. 2021, *22*, 9173

Global burden of clinically relevant orthoflaviviruses



Modified from Charlier *et al, Lancet Child Adolesc Health 2017*

Luisa Barzon

Università degli Studi di Padova

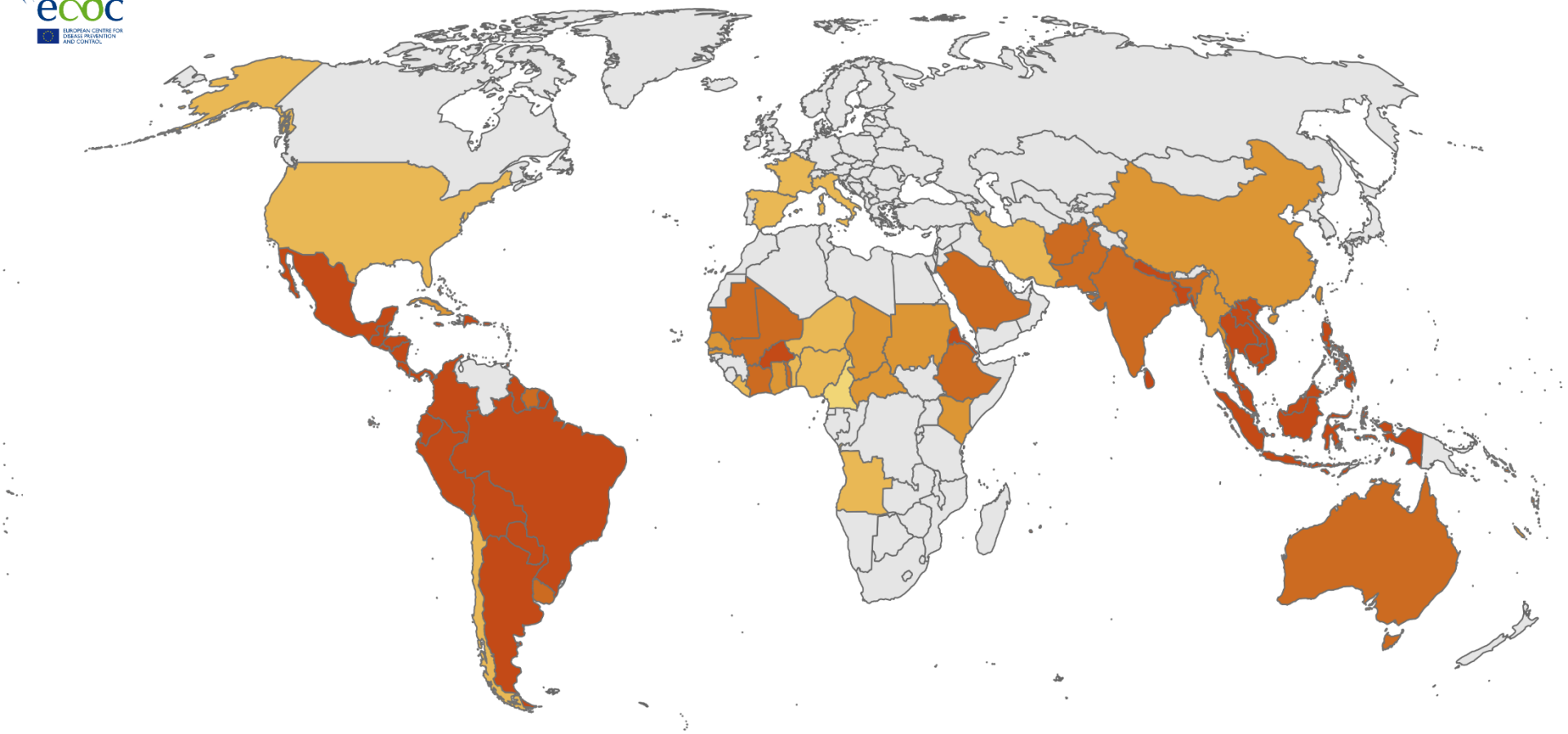
Situation update, December 2024

Since the beginning of 2024, **over 14 million dengue cases** and **over 10 000 dengue-related deaths** have been reported globally.

Most cases globally have been reported from the WHO PAHO region. This region reported over 12.5 million cases in 2024, 53% of which were laboratory confirmed, and over 7 000 deaths. Brazil has reported the most cases in 2024 (over 10 million) followed by Argentina, Mexico, Colombia and Paraguay, as of November 2024 (Situation Report No 44 - Dengue Epidemiological Situation in the Region of the Americas).

In mainland Europe, autochthonous cases have been reported by France, Italy and Spain.

Region with most cases	The Americas
Locally acquired cases in continental Europe	France, Italy and Spain.
Risk of transmission in continental Europe	Low



Note: Data refer to Dengue virus cases reported in the last 12 months (December 2023-November 2024) [Data collection: December 2024].
Case numbers are collected from both official public health authorities and non-official sources, such as news media, and depending on the source, autochthonous and non-autochthonous cases may be included.

European Centre for Disease Prevention and Control

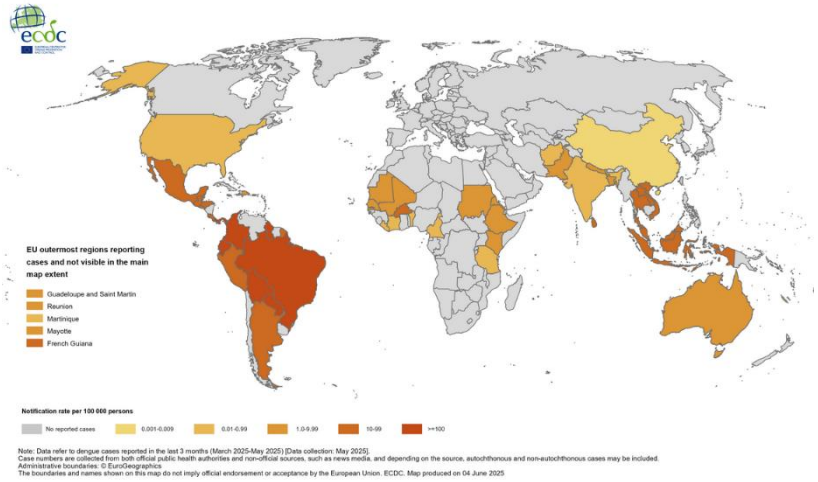
An agency of the European Union

Dengue worldwide overview

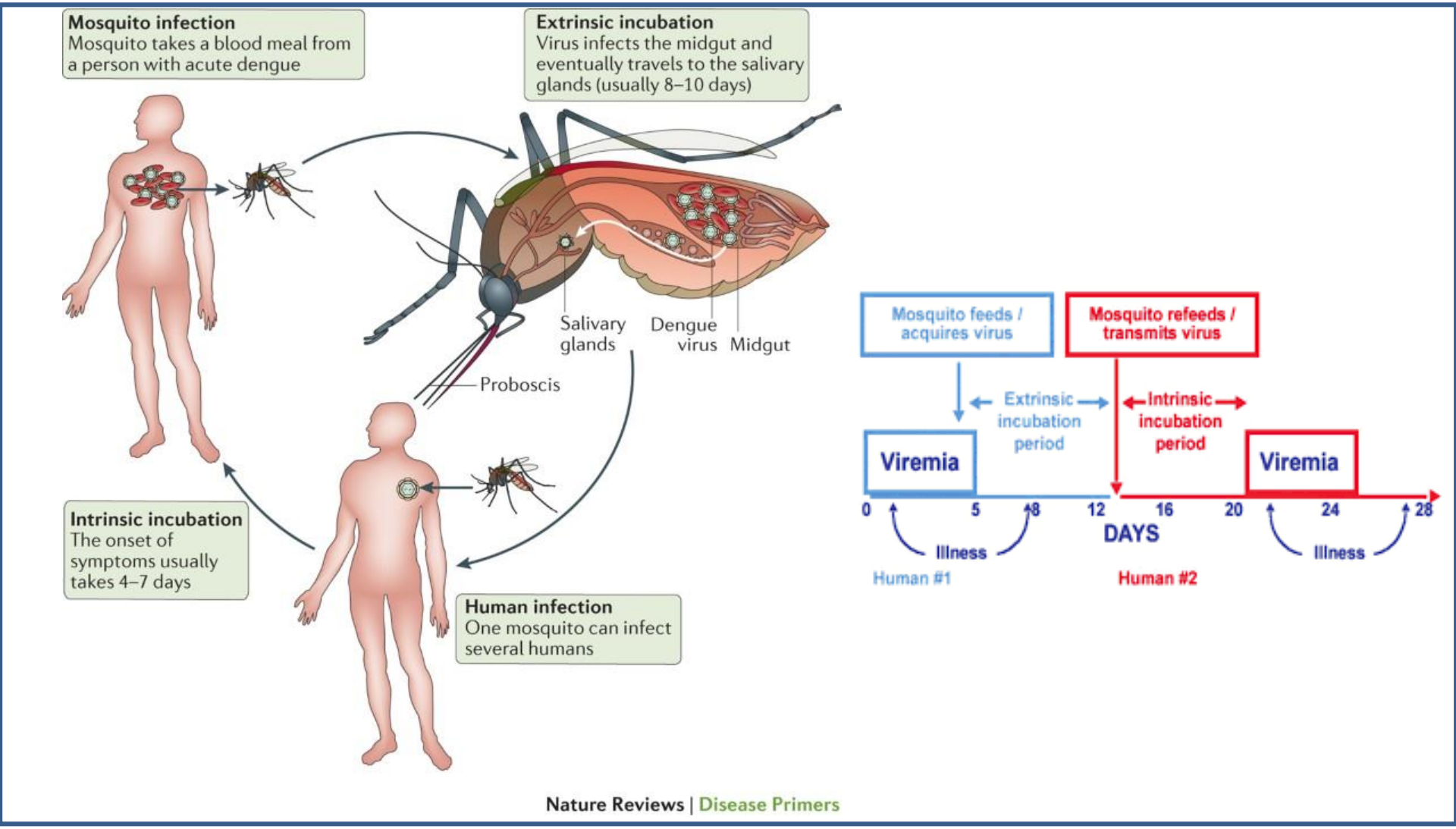
Situation update, June 2025

Since the beginning of 2025, **over three million dengue cases and over 1 400 dengue-related deaths** have been reported from 90 countries/territories in the WHO Regions of the Americas (PAHO), South-East Asia and West Pacific Regions (SEARO and WPRO, respectively), in the Eastern Mediterranean WHO Region (EMRO) and in Africa.

In mainland Europe, no autochthonous cases have been reported in 2025. However, cases have been reported from the EU's outermost regions.

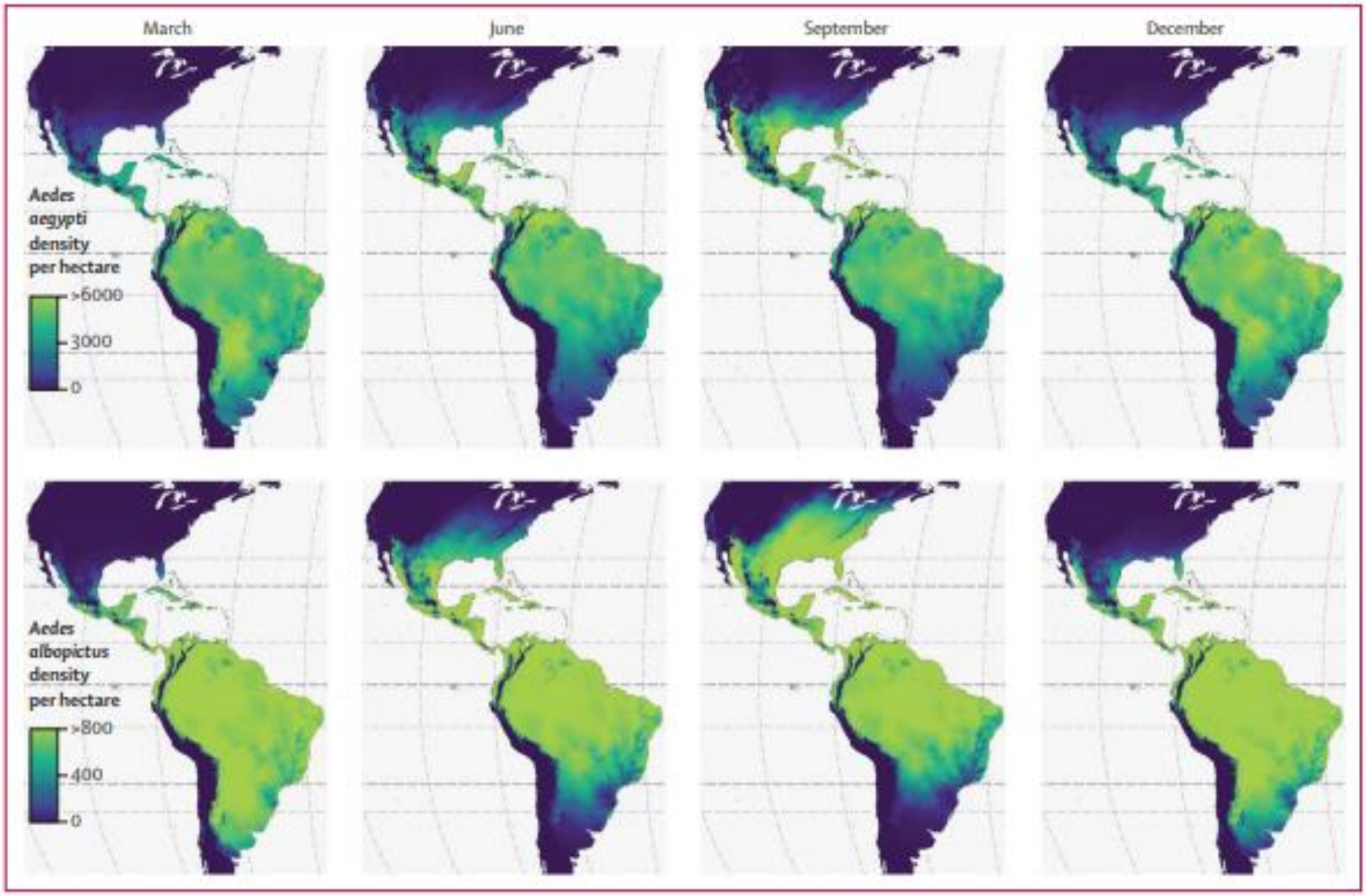


Dengue infection

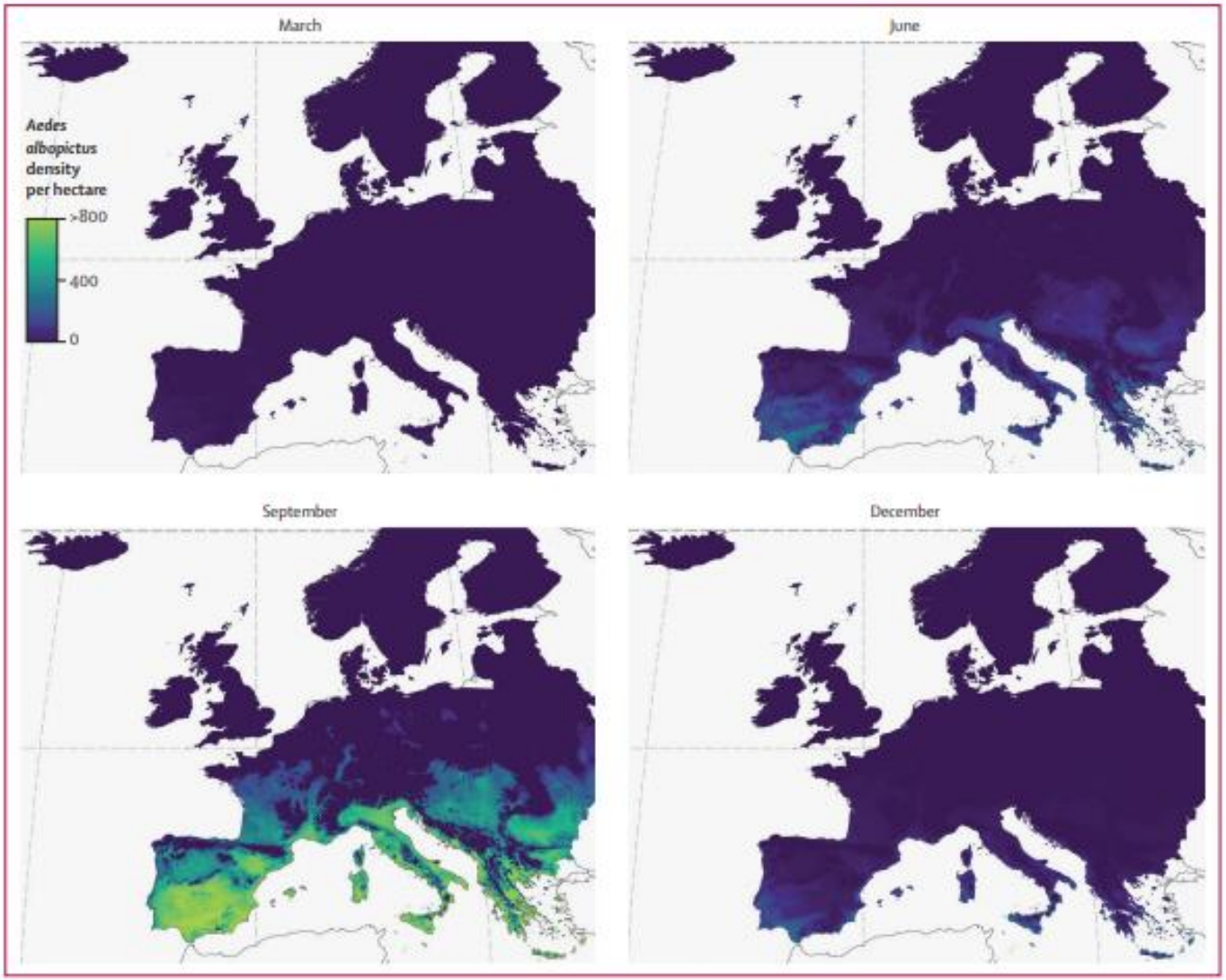


Nat Rev Dis Primers. 2016 Aug 18:2:16055.

Estimating the potential risk of transmission of arboviruses in the Americas and Europe: a modelling study

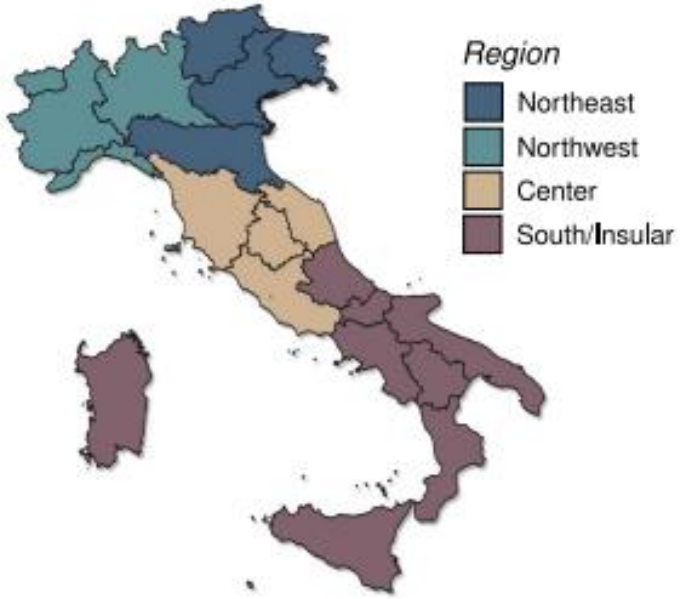


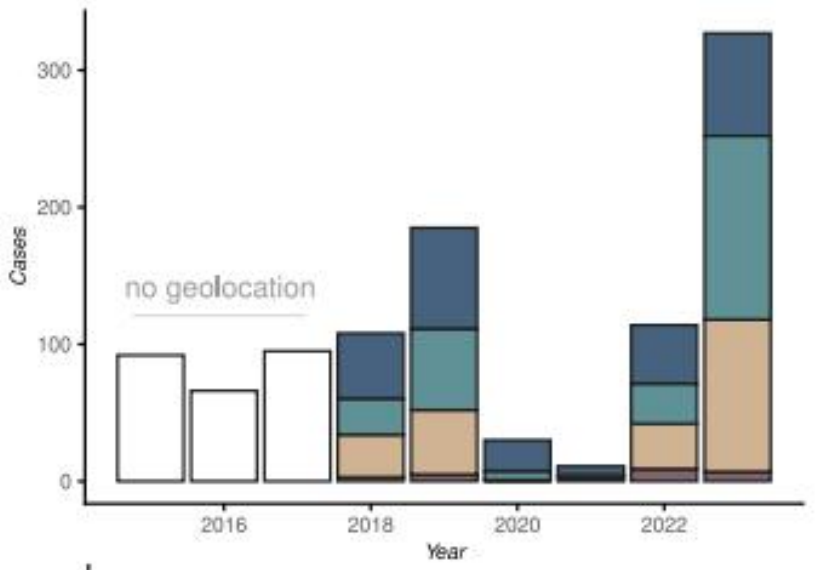
Estimating the potential risk of transmission of arboviruses in the Americas and Europe: a modelling study

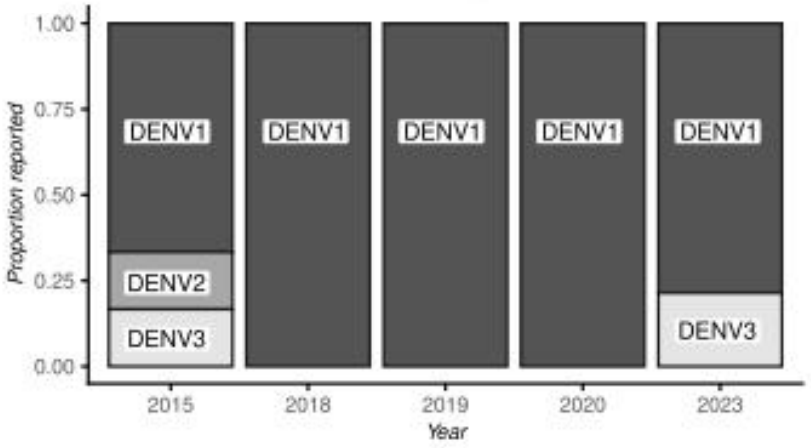


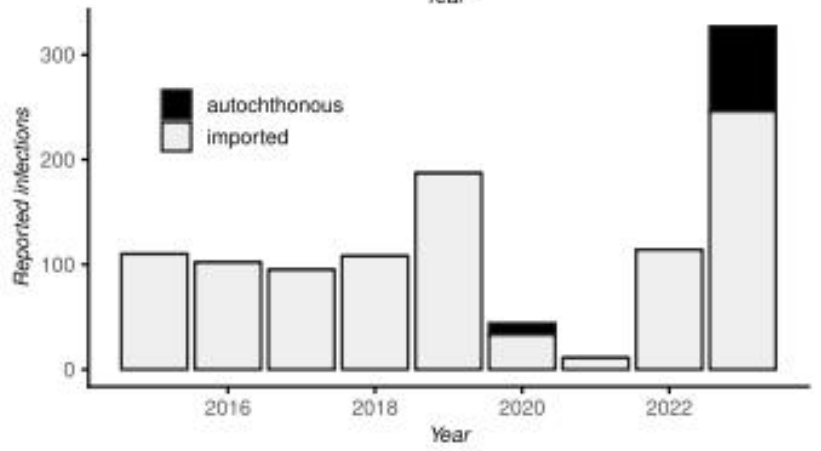
Dengue virus transmission in Italy: historical trends up to 2023 and a data repository into the future

1028 cases





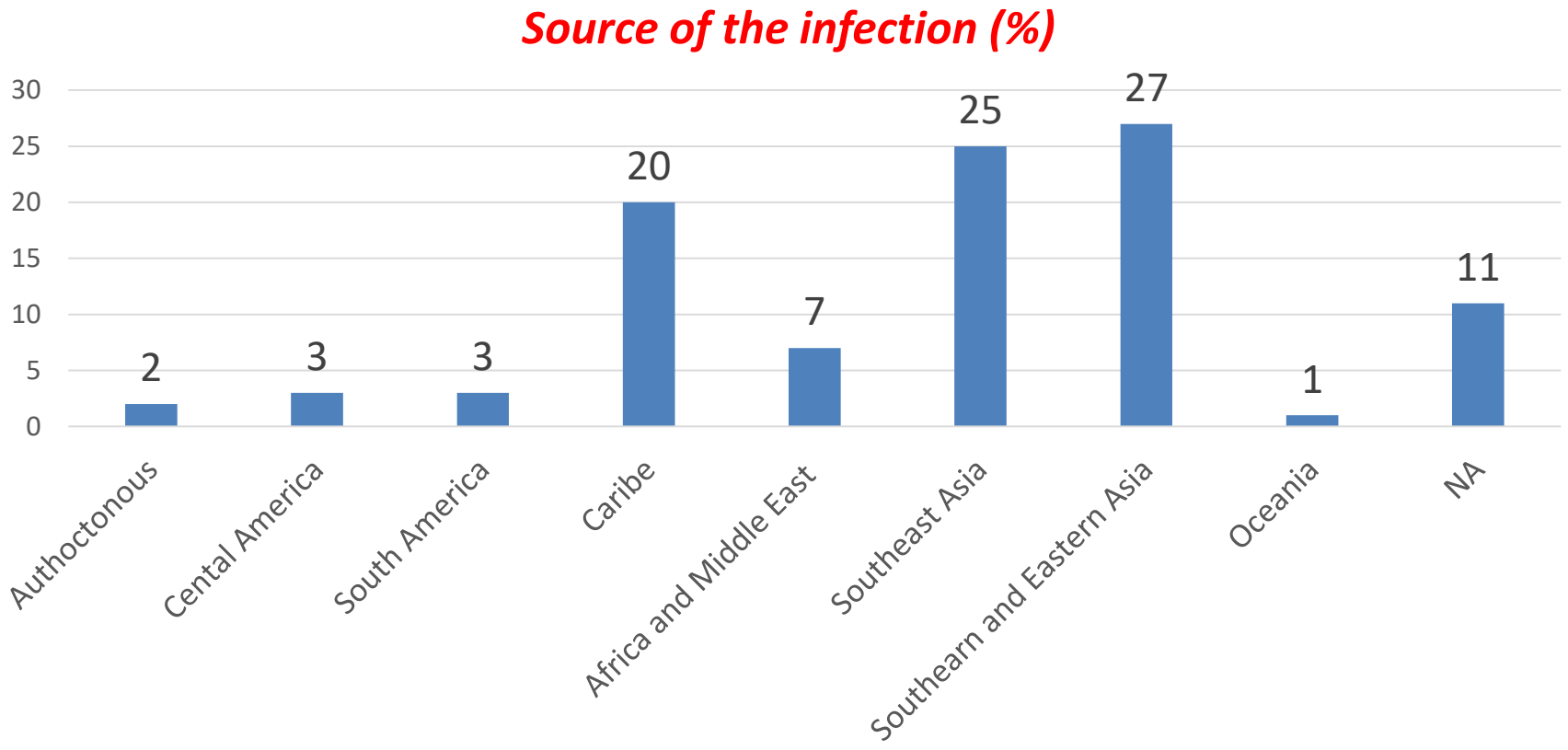




F. Branda, *et al.* SCIENTIFIC DATA | (2024) 11:1325 | https://doi.org/10.1038/s41597-024-04162-7

Dengue Fever in Italy: The "Eternal Return" of an Emerging Arboviral Disease

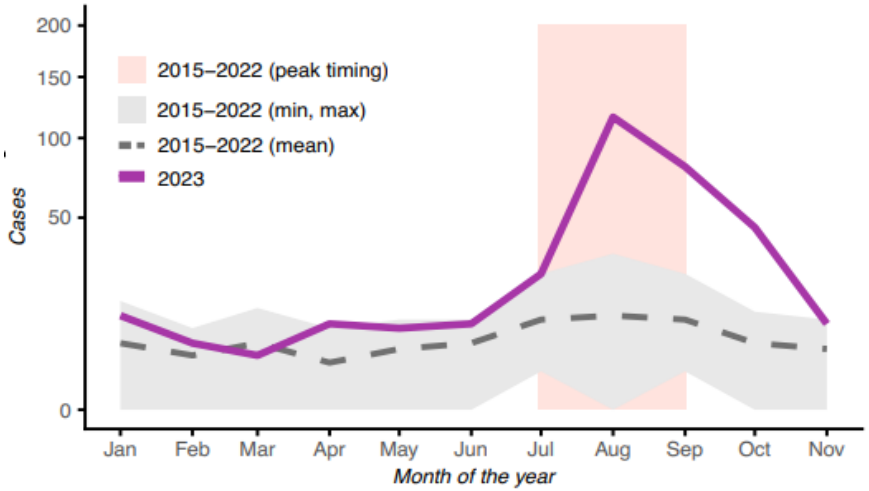
1043 cases

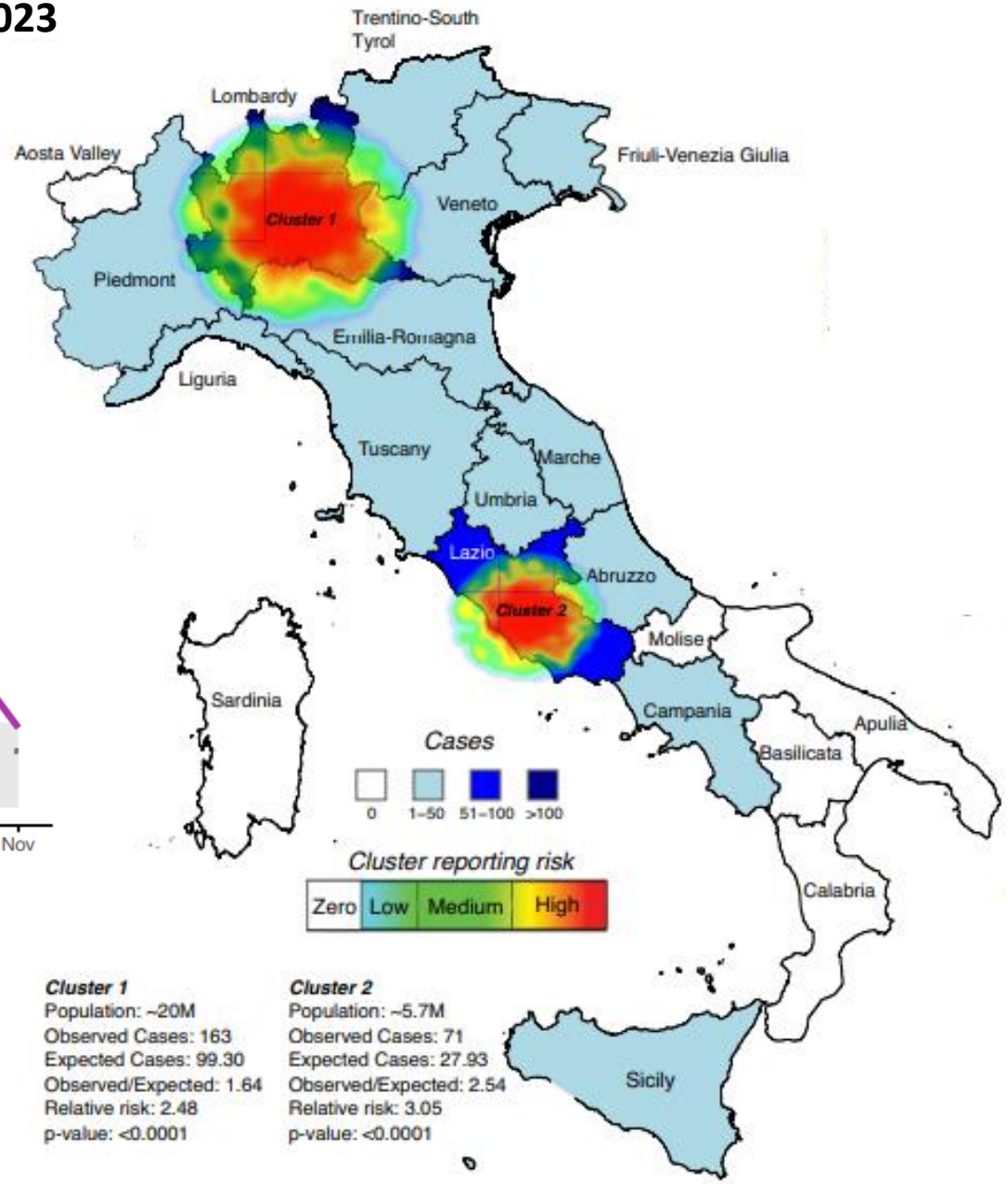


Trop. Med. Infect. Dis. **2022**, *7*, 10. https://doi.org/10.3390/tropicalmed7010010

2023

2015-2023





F. Branda, *et al.* SCIENTIFIC DATA | (2024) 11:1325 | https://doi.org/10.1038/s41597-024-04162-7

Local transmission of dengue virus in mainland EU/EEA, 2010-present

Year	Country	Department or regions affected	Number of autochthonous cases	Probable period of virus circulation
2010	Croatia	Korčula Island and the Pelješac peninsula	10	August–October
2010	France	Alpes-Maritimes department	2	August–September
2013	France	Bouches–du-Rhône department	1	September-October
2014	France	Var and Bouches-du-Rhône departments	4	July-September
2015	France	Gard department	8	July–September
2018	France	Alpes Maritimes, Hérault, and Gard departments	8	September–October
2018	Spain	Catalonia region, Murcia region or province of Cádiz	6	August-October
2019	Spain	Catalonia region	1	September
2019	France	Alpes-Maritimes and Rhône departments	9	July-September
2020	France	Hérault, Var, Alpes-Maritime, and Gard departments	13	July-October
2020	Italy	Veneto region	10	August
2021	France	Var and Hérault departments	2	July and September
2022	France	Pyrénées-Orientales, Hautes-Pyrénées, Haute-Garonne, Tarn et Garonne, Var, Alpes-Maritimes and Corse-du-Sud departments	65	June-September
2022	Spain	Ibiza	6	August-October
2023	France	Val-de-Marne (3 cases), Bouches–du-Rhône (14 cases in 2 clusters), Pyrénées-Orientales (11 cases), Hérault (3 cases), Gard (9 cases), Alpes-Maritimes (3 cases) and Drôme (2 cases) departments	45	July-October
2023	Italy	Lodi (41 cases), Rome (38 cases in the Rome metropolitan city and 1 case in Anzio) and Latina (2 cases) provinces	82	End of July-November
2023	Spain	Catalonia region (3 cases)	3	August-October
2024	France	Alpes-Maritimes (17 cases in 3 clusters), Drôme (2 cases), Hérault (3 cases in 2 clusters), Pyrénées-Orientales or Lozère (2 cases), Vaucluse (18 cases), Var (41 cases in 3 clusters) departments	83	Mid-June - October
2024	Italy	Abruzzo (15 cases), Emilia-Romagna (36 cases), Lombardy (12 cases), the Marches (146 cases), Tuscany (2 cases), Veneto (1 case) regions*	213	August-October
2024	Spain	Catalonia region (Tarragona province)	8	August-September

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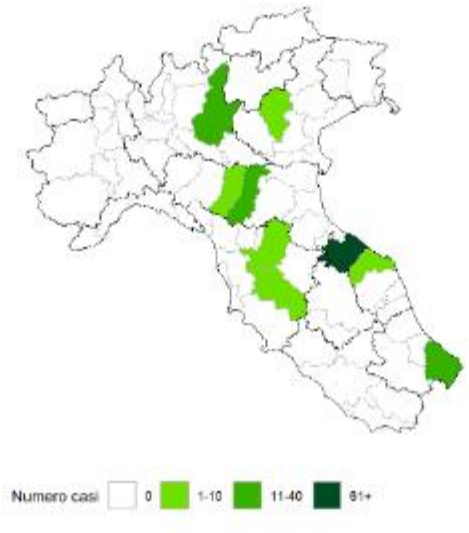
EpiCentro - L'epidemiologia per la sanità pubblica

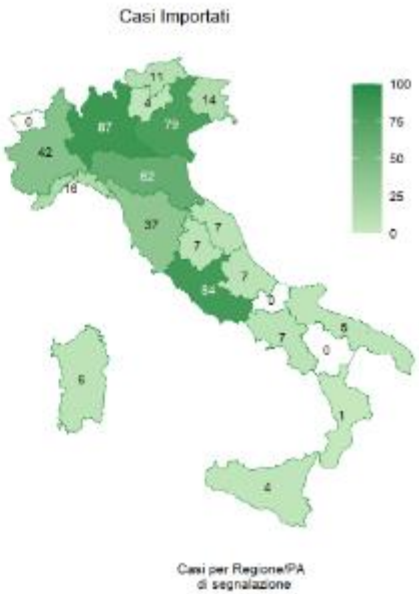
Arbovirosi

Arbovirosi in Italia 2024

Dengue | Zika Virus | Chikungunya | TBE | Toscana Virus

693	50% | 50%	45 anni	0	213 casi | 480 casi
Casi*	Maschi | Femmine*	Età mediana*	Decessi*	Autoctoni | Importati*

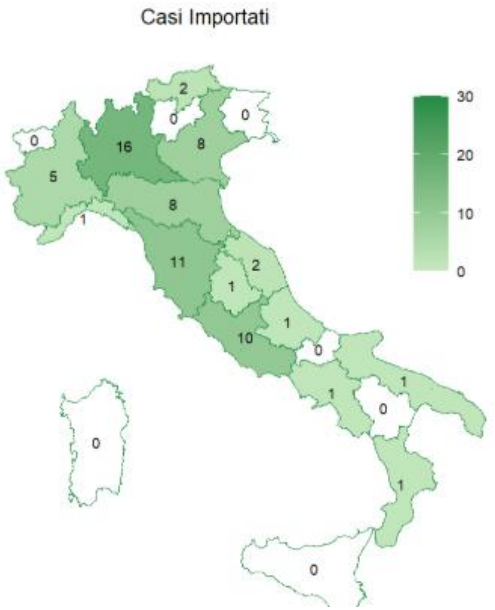




Data di ultimo aggiornamento: *03 dicembre 2024*

Ultimi aggiornamenti

3/7/2025 - Casi di arbovirosi in Italia: i dati al 30 giugno 2025



Arbovirosi in Italia 2025	Dengue	Chikungunya	TBE
68 Casi*	**51% | 49%** Maschi | Femmine*	**41 anni** Età mediana*	**0** Decessi*

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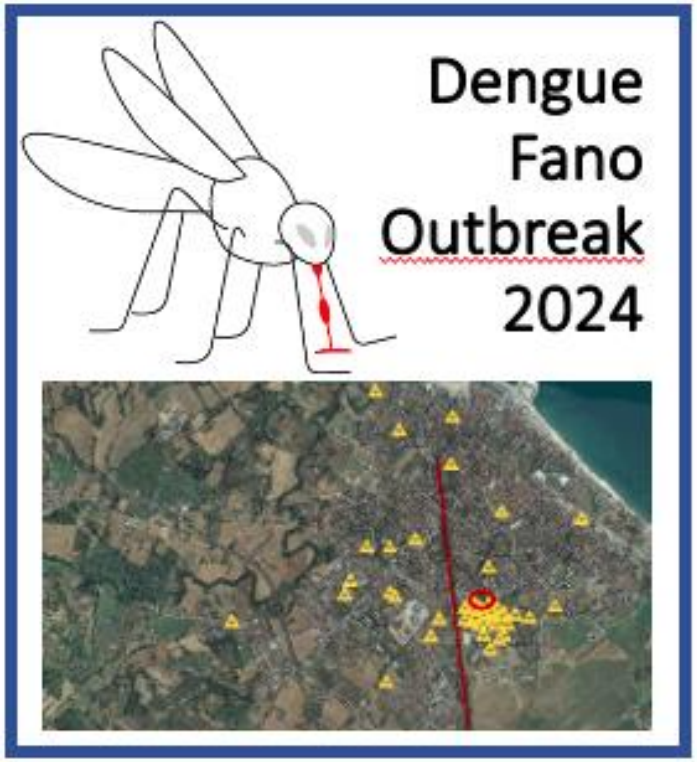
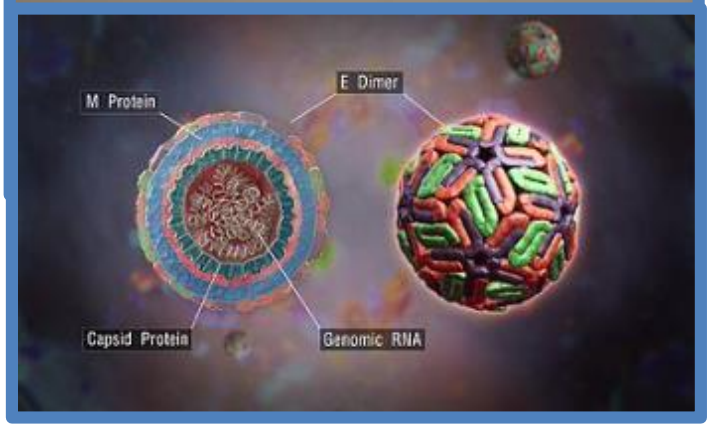
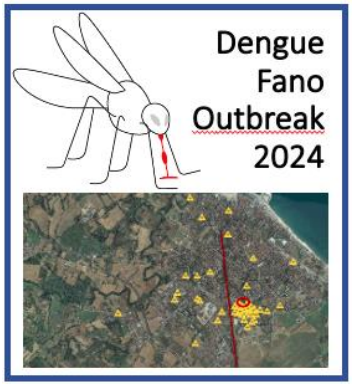

Dengue
Fano
Outbreak
2024


M Protein
E Dimer
Capsid Protein
Genomic RNA

Dengue Fano Outbreak 2024
in sintesi



212 casi (200 accertati + 12 probabili)

data esordio clinico primo caso: **03/09/2024**
data esordio clinico ultimo caso: **31/10/2024**

98% residenti o domiciliati a Fano
caratteristica: **casi molto concentrati in un quartiere di Fano**

tutti **DENV-2**

ospedalizzazioni: 43 casi (20% c.a)
ospedalizzazioni + accessi al Pronto Soccorso: 63 casi (30% c.a)

età<15 anni: 9 casi
età 20-59: 80 casi
età>60 anni: 120 casi

RAPID COMMUNICATION

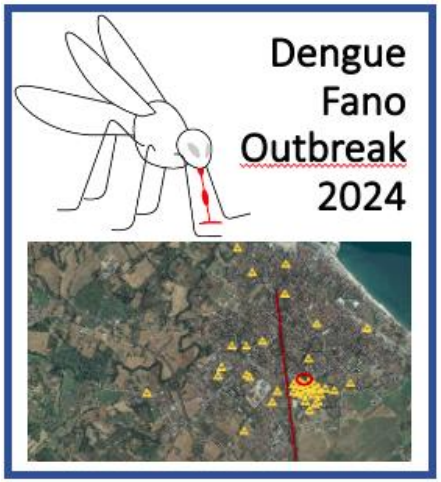
Autochthonous dengue outbreak in Marche Region, Central Italy, August to October 2024

Chiara Sacco[1,2,*], Augusto Liverani[3,*], Giulietta Venturi[1], Stefano Gavaudan[4], Flavia Riccardo[1], Giovanna Salvoni[5], Claudia Fortuna[1], Katia Marinelli[6], Giulia Marsili[1], Alessia Pesaresi[3], Carla Molina Grané[7], Irene Mercuri[3], Mattia Manica[7], Sara Caucci[6], Daniela Morelli[8], Lolita Sebastianelli[9], Maurilia Marcacci[8], Federica Ferraro[10], Marco Di Luca[1], Ilaria Pascucci[4], Christina Merakou[1], Anna Duranti[4], Ilaria Pati[11], Letizia Lombardini[12], Daniel Fiacchini[13], Giorgio Filipponi[9], Francesco Maraglino[10], Anna Teresa Palamara[1], Piero Poletti[7], Patrizio Pezzotti[1], Fabio Filippetti[9], Stefano Merler[7,**], Martina Del Manso[1,**], Stefano Menzo[6,**], Marche dengue outbreak group[14]

1. Department of Infectious Diseases, Istituto Superiore di Sanità, Rome, Italy

Eurosurveillance
21 Nov 2024

→ dati su 199 casi



Infection
https://doi.org/10.1007/s15010-025-02476-1

BRIEF REPORT

Outbreak of autochthonous dengue in Fano, Pesaro-Urbino Province - Marche region, Italy, September 2024

Luca Santilli[1,2] · Benedetta Canovari[1] · Maria Balducci[1] · Giovanni Corbelli[1] · Monia Maracci[1] · Antonio Polenta[1] · Ylenia Farinaccio[1,2] · Francesco Ginevri[1,2] · Norma Anzalone[1,2] · Lucia Franca[1,2] · Lucia Sterza[1,2] · Francesco Barchiesi[1,2]

Received: 12 November 2024 / Accepted: 13 January 2025

→ dati su 86 casi

Infection
13 Jan 2025

Infection
https://doi.org/10.1007/s15010-025-02476-1

BRIEF REPORT

Outbreak of autochthonous dengue in Fano, Pesaro-Urbino Province - Marche region, Italy, September 2024

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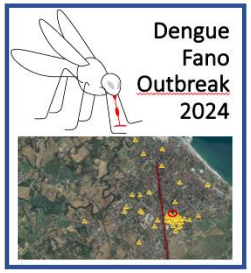


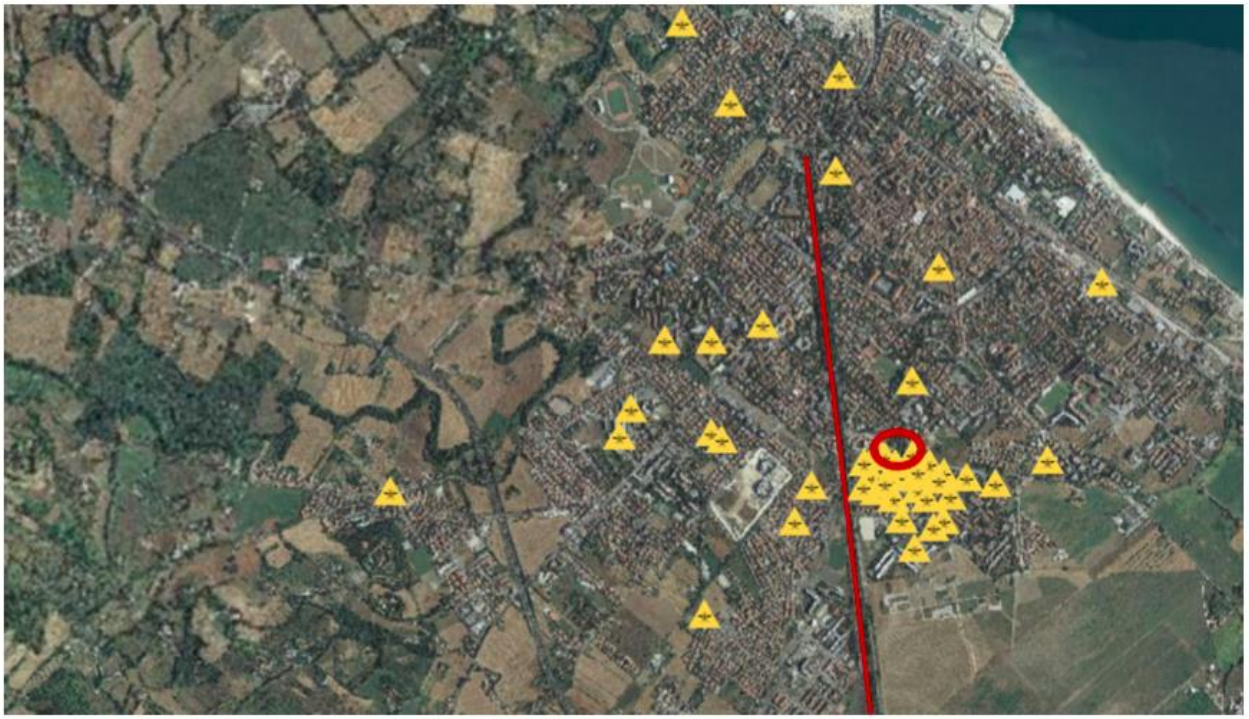


Fig. 2 The distribution of cases after one week from the discover of the first Dengue confirmed patient. In red we observe the pond (circle) and the canal (line)

Casi geograficamente concentrati in una zona della città, **vicino al canale** che attraversa la città **e allo stagno.**

Quartiere residenziale: prevalenza di **case a due piani con terrazzi e giardini privati, circondate da ampie aree verdi con fitta vegetazione (canneti) e viali alberati.**

Alternanza di brevi piogge estive e periodi di siccità; **presenza di acque stagnanti** nel canale.

Fano
Canale Albani

DENV-2
ceppo di Fano

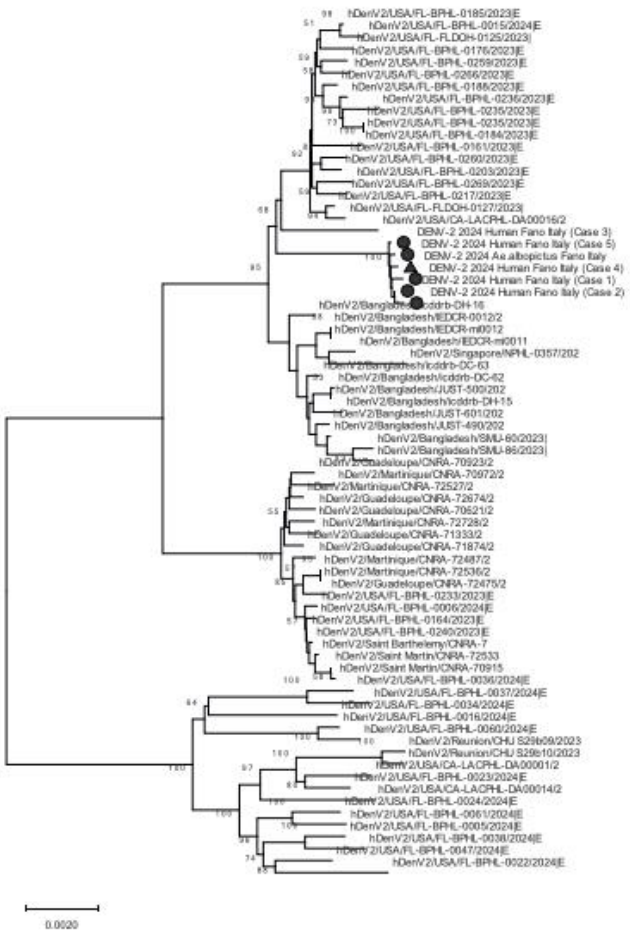
Tipizzazione virologica effettuata su campioni estratti da 5 pazienti e da 1 zanzara Aedes albopictus catturata a Fano durante l'epidemia, confronto con ceppi isolati presenti nel database GISAID

DENV-2 genotipo II, lineage F1 (Cosmopolitan genotype)

in base al confronto con oltre 1700 isolati di DENV-2 provenienti da tutto il mondo, il ceppo di Fano mostra **la maggiore similarità con isolati da US (Florida e California) e Bangladesh**

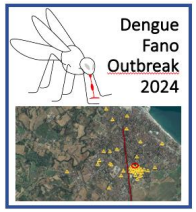
FIGURE 3

Neighbour-joining phylogenetic tree of dengue virus 2 isolates from human samples (n = 5) and mosquito pool (n = 1) in a dengue outbreak, Fano, Italy, August–October 2025, compared with global isolates*



* More than 1,700 recent global DENV-2 isolates from the GISAID repository (https://gisaid.org/publish/) included.

Eurosurveillance
Volume 29, Issue 47, 21 Nov 2024



DENV-2
associato a maggiore severità clinica

DENV-1 and DENV-2 are the most common types associated with known outbreaks

Highest pooled mortality rate reported during DENV-2 outbreaks

DENV-2 causes more severe secondary infections than other serotypes

Meta-analysis of 20 studies: infection with **DENV-2 increased the odds of developing dengue shock syndrome by 66%**

Prolonged viremia upon DENV-2 infection, potentially associated with its superior immune evasion potential (India, 2016 outbreak).

- **DENV-2 includes five non-sylvatic genotypes** (Asian I, Asian II, American, Asian-American, Cosmopolitan) dominant in different regions.
- **Cosmopolitan genotype:** most widespread genotype of DENV-2; expanded further in recent years; evolved in parallel to its global dispersal to achieve a **higher heterogeneity** than other DENV-2 genotypes.

NT Huy et al.
Factors associated with dengue shock syndrome: a systematic review and meta-analysis.
PloS Negl Trop Dis. 2013;7(9)

KM Soo et al.
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PLoS ONE 2016; 11(5)

A Agarwal et al.
Co-circulation of dengue virus serotypes in Central India: Evidence of prolonged viremia in DENV-2
Infect Genet Evol. 2019 Jun:70:72-79

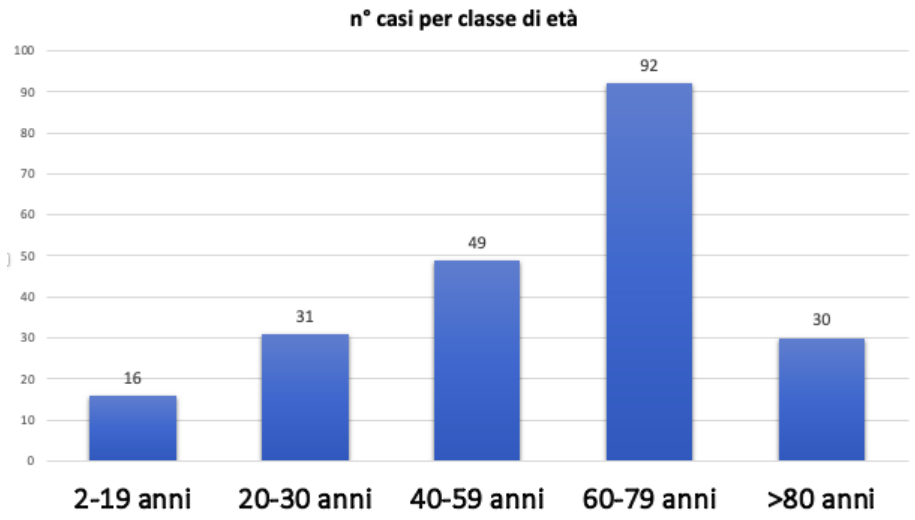
SP Yanemandra et al.
Evolution, heterogeneity and global dispersal of cosmopolitan genotype of Dengue virus type 2
Nature Portfolio Scientific Report 2021

Dengue Fano Outbreak 2024

range età: 2-92 anni
maggior parte dei casi in persone adulte e anziane

età<15 anni: 9 casi (4%)
età 20-59: 80 casi (38%)
età>60 anni: 123 casi (58%)

	n° casi	%
2-19 anni	**16**	7
20-39 anni	**30**	14
40-59 anni	**49**	23
60-79 anni	**92**	43
>80 anni	**30**	14



Infection
https://doi.org/10.1007/s15010-025-02476-1

BRIEF REPORT

Outbreak of autochthonous dengue in Fano, Pesaro-Urbino Province - Marche region, Italy, September 2024

Luca Santilli[1,2] · Benedetta Canovari[1] · Maria Balducci[1] · Giovanni Corbelli[1] · Monia Maracci[1] · Antonio Polenta[1] · Ylenia Farinaccio[1,2] · Francesco Ginevri[1,2] · Norma Anzalone[1,2] · Lucia Franca[1,2] · Lucia Sterza[1,2] · Francesco Barchiesi[1,2]

Received: 12 November 2024 / Accepted: 13 January 2025

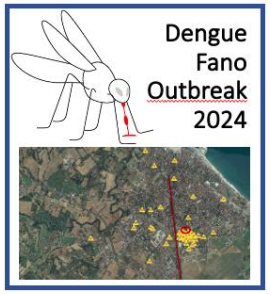
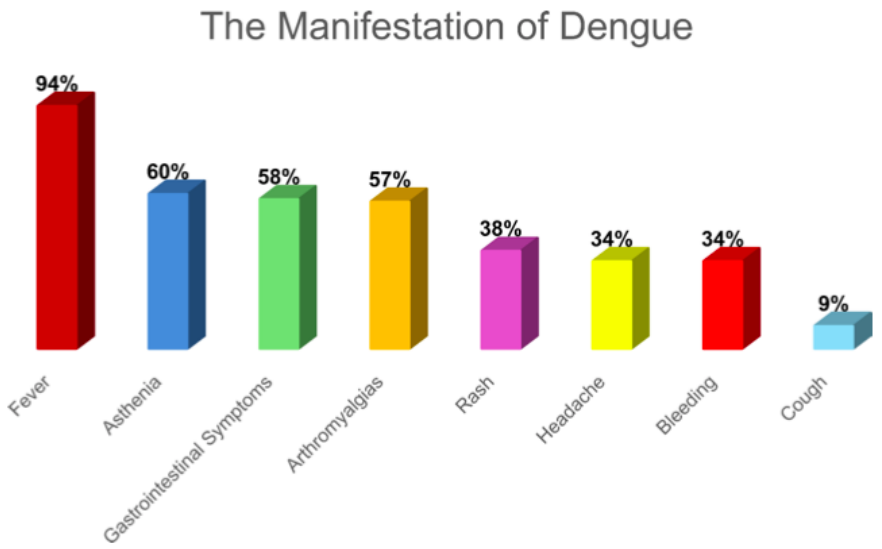


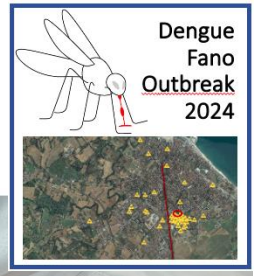
Fig. 3 The graphs show the frequency of various symptoms in patients who visited the emergency room for Dengue infection



descrizione di 86 casi confermati
osservati nel mese di settembre

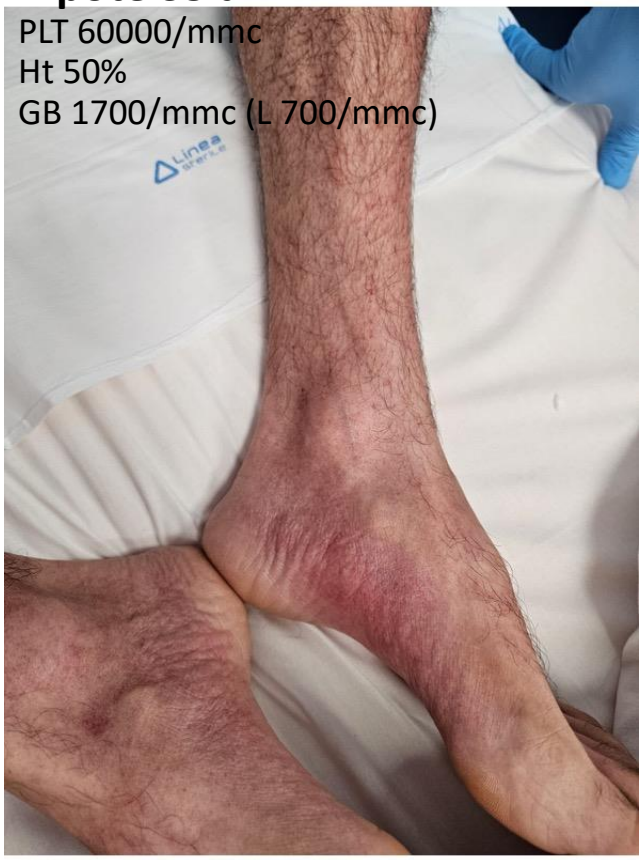
Dengue fever	**74%**
Dengue with warning signs	**26%**
Severe Dengue	**0%**

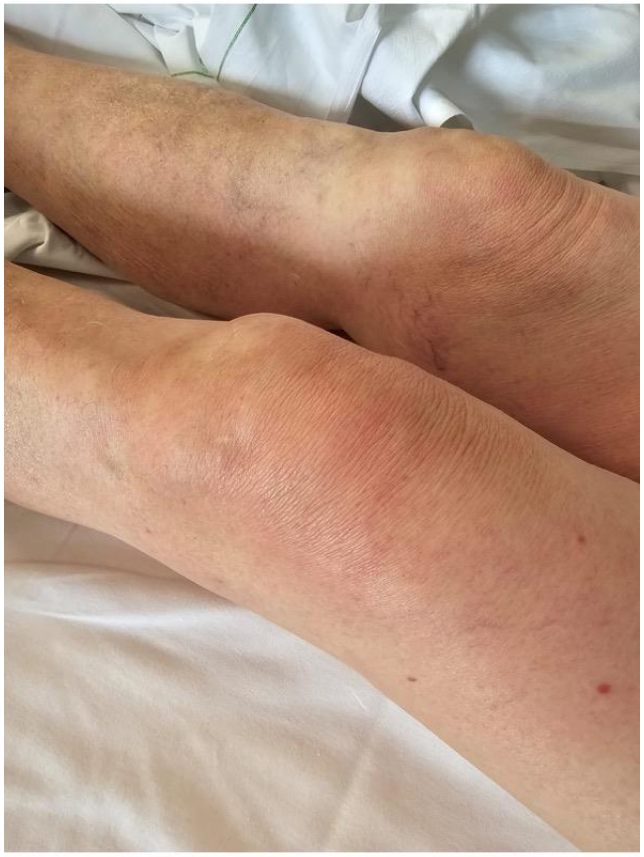
Manifestazioni cutanee

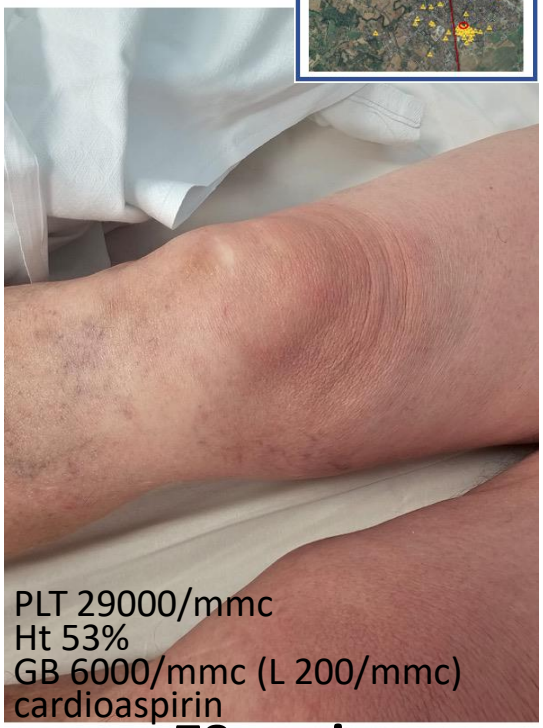


nipote 35 anni

PLT 60000/mmc
Ht 50%
GB 1700/mmc (L 700/mmc)



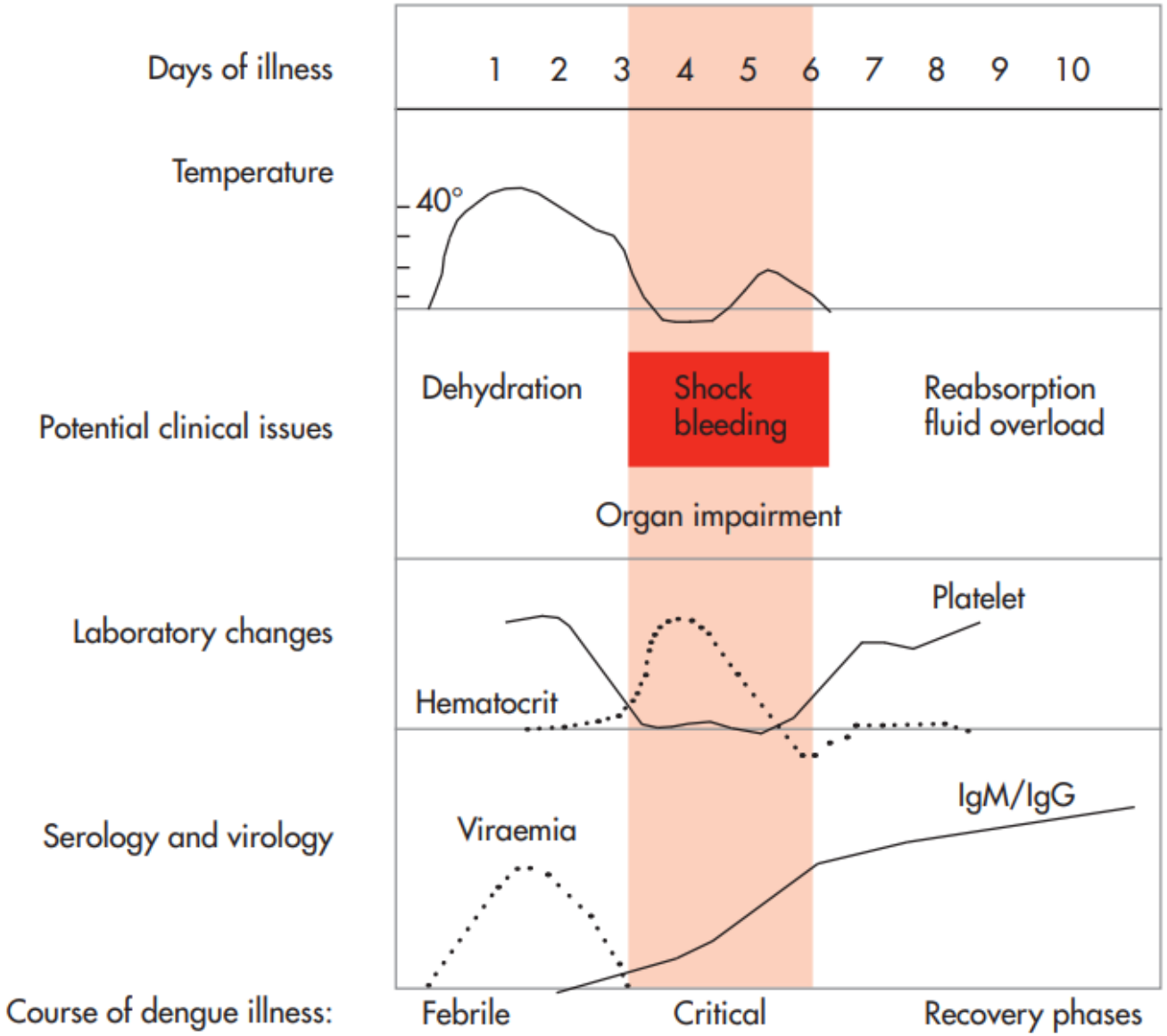


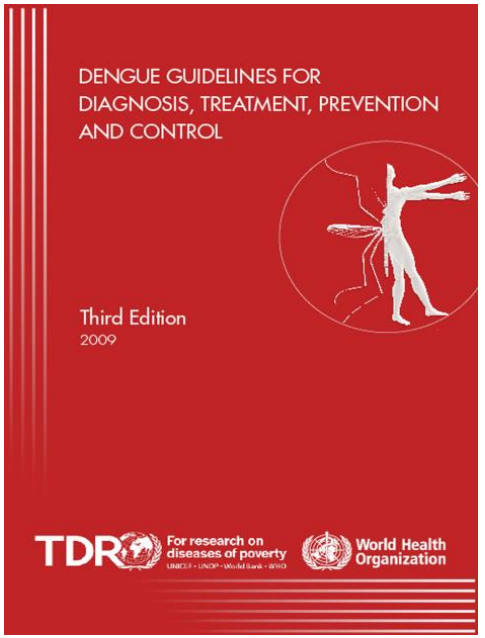


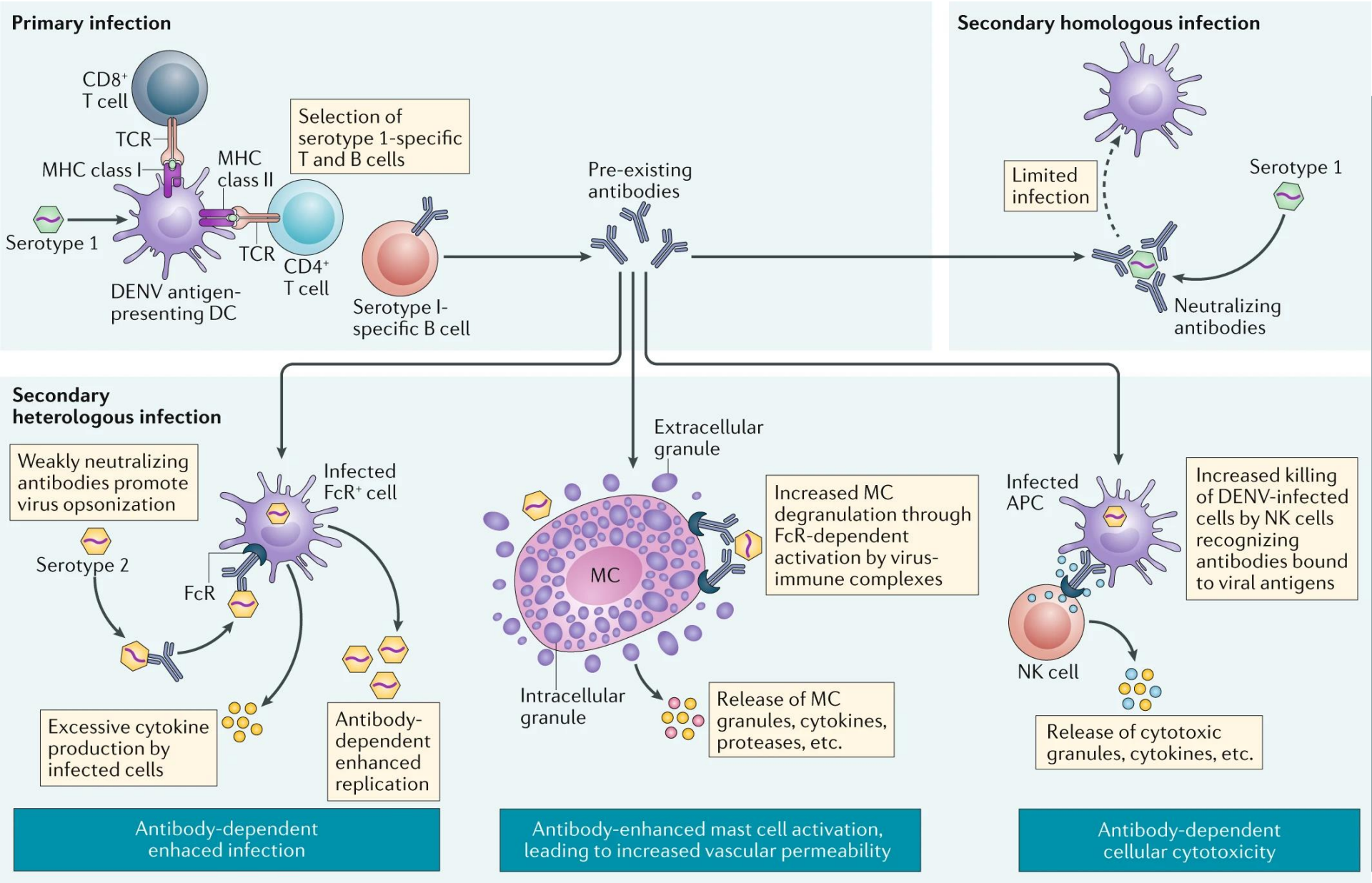
PLT 29000/mmc
Ht 53%
GB 6000/mmc (L 200/mmc)
cardioaspirin

nonna 78 anni

The course of dengue illness*







Cross reactivity sub neutralizing Ab

John, 2019, Nat Rev Imm

Outpatient Management

1. Control the fever
2. Prevent dehydration
3. Prevent spread of dengue within the house

CRITERIA FOR DENGUE + WARNING SIGNS

Probable dengue
live in /travel to deng
Fever and 2 of the fol
- Nausea, vomiting
- Rash
- Aches and pains
- Tourniquet test posit
- Leukopenia
- Any warning sign

Laboratory-confirm
(important when no sign o

Criteria for hospitalization

1. Pregnancy, acute renal failure, coagulopathy
2. Co-infection requiring inpatient management
3. Co-existing conditions *hypertension, diabetes, asthma, chronic kidney disease, peptic ulcer disease or other gastritis, body mass index ≥ 30kg/m^2, receiving anticoagulant medications, aging < 1 year or > 65 years*

Group B
Inpatient Management

Does the patient have any dengue warning signs? (See page 1)

NO

B1. Patient with coexisting conditions or social risk*
Is the patient tolerating oral intake?

YES
- Encourage oral fluid intake
- Monitor vital signs, urine output, and for warning signs and compensated shock‡
- Manage coexisting conditions

Development of dengue warning signs?

NO
Monitor vital signs, urine output, and clinical improvement until 4-6 hrs after the end of the critical phase

YES
Manage as B2

NO
- Obtain IV access
- Administer IV crystalloid solution at 2-4 mL/kg/hr†
- Encourage oral fluid intake
- Stop IV crystalloid solution once oral fluids are tolerated

YES

B2. Dengue with warning signs
- Obtain IV access and CBC
- Monitor vital signs, intake, and output
- Watch for signs of compensated shock‡

Administer IV crystalloid solution at 10mL/kg in 1 hr and reevaluate§

Improvement in clinical status and urine output >1mL/kg/hr, stable or minimal change in hematocrit?¶

YES
Reduce IV crystalloid solution progressively§
- 5-7mL/kg/hr for 2-4 hrs
- if improving decrease to 3-5mL/kg/hr for 2-4 hrs
- if improving decrease to 2-4mL/kg/hr

Improvement of clinical status and minimal change in hematocrit?¶

YES
Continue IV crystalloid solution at 2-4mg/kg/hr
OR
If tolerating oral fluids then can stop IV fluids and **manage as B1**

NO
Continue IV crystalloid solution at current rate and consider need for 10mL/kg dose

NO
Repeat IV crystalloid solution at 10mL/kg up to two times§

Improvement in clinical status, urine output >1mL/kg/hr, stable or minimal change in hematocrit?¶

YES
Reduce IV crystalloid solution progressively§
- 5-7mL/kg/hr for 2-4 hrs
- if improving decrease to 3-5mL/kg/hr for 2-4 hrs
- if improving decrease to 2-4mL/kg/hr

NO
Treat as group C (dengue with shock) Transfer to a higher level of care

* In the absence of coexisting conditions or social risk and if the patient is tolerating oral intake they can be treated as outpatient (see Group A). See page 6 for co-existing conditions and social risk.

† For children, follow Holliday-Segar formula (see page 6).

‡ See page 7 for signs of compensated shock.

§ Less volume of IV crystalloids may be required for patients >65 years, pregnant, or with volume sensitive conditions (see page 6).

¶ Check hematocrit before and after IV fluid administration and then every 12-24 hrs (if unavailable base next steps on the patient's clinical status).

Group C
Inpatient Management for Patients with Compensated or Hypotensive Shock

- Obtain IV access, CBC, and blood type and screen
- Strictly monitor intake and output
- Monitor vital signs every 5-30 minutes

Administer 1st dose of IV crystalloid solution at 20mL/kg in 15-30 min and reevaluate§

Improvement in clinical status and urine output >1mL/kg/hr, and **stable or minimal change in hematocrit?¶**

YES
Reduce IV crystalloid solution to 10mg/kg for 1-2 hrs

Improvement in clinical status, urine output >1mL/kg/hr, and **stable or minimal change in hematocrit?¶**

YES
Progressive reduction in IV crystalloid solution§¶
- 5-7mL/kg/hr for 2-4 hrs
- if improving decrease to 3-5mL/kg/hr for 2-4 hrs
- if improving decrease to 2-4mL/kg/hr for 24-48 hrs

Improvement of clinical status and tolerating oral fluid intake then transition to **B1**

NO
Continue IV crystalloid solution at current rate and consider need for 20mL/kg dose

NO
Administer up to 2 additional doses of IV crystalloid solution at 20mL/kg in 15-30 min§

Improvement in clinical status, urine output >1mL/kg/hr, and **stable or minimal change in hematocrit¶** after 2nd or 3rd dose of IV crystalloid solution?

YES

NO
If hematocrit is elevated relative to baseline consider administering **up to two doses of IV colloid solution**
Consider hemorrhage if there is a rapid decrease in hematocrit and persistent shock**

Improvement in clinical status, urine output >1mL/kg/hr, and **stable or minimal change in hematocrit¶** after first or second dose of IV colloid solution?

YES

NO
Treat for persistent shock
- Manage in an intensive care unit
- Consider the use of vasopressors to maintain mean arterial pressure >60-70mmHg and assess heart function
- Evaluate other causes of shock, including coexisting conditions or coinfections
- Assess for acidosis and occult bleeding
- If additional IV fluid boluses are needed within 24hrs, the dose will depend on the clinical response
- Treatment with steroids or immunoglobulins is NOT routinely recommended

§ Less volume of IV crystalloids may be required for patients >65 years, pregnant, or with volume sensitive conditions (see page 6).

¶ Check hematocrit before and after IV fluid administration and then every 12-24 hrs (if unavailable base next steps on the patient's clinical status).

** See page 6 for treatment of hemorrhagic shock.

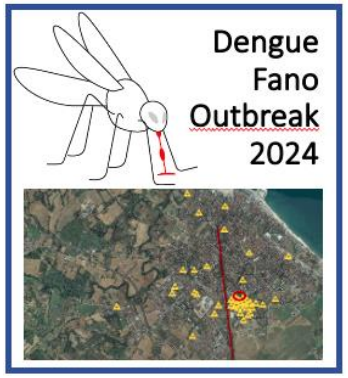
Dengue Management DO's and DON'Ts

- **DON'T use corticosteroids routinely.** They are not routinely indicated and can increase the risk of GI bleeding, hyperglycemia, and immunosuppression.
- **DON'T give prophylactic platelet transfusions or for a low platelet count.** Platelet transfusions do not decrease the risk of severe bleeding and may instead lead to fluid overload and prolonged hospitalization.
- **DON'T give half normal (0.45%) saline.** It leaks into third spaces and may worsen ascites and pleural or pericardial effusions.
- **DON'T assume that IV fluids are necessary.** First check if the patient can take fluids orally. Use only the minimum amount of IV fluid to keep the patient well-perfused. Decrease IV fluid rate as hemodynamic status improves or urine output increases.

- **DO tell outpatients when to return.** Teach them about warning signs and their timing, and the critical phase that follows defervescence.
- **DO recognize the critical phase.** The critical phase begins with defervescence or an increasing hematocrit and lasts for 24-48 hours. During this phase some patient may deteriorate within hours and require close monitoring.
- **DO closely monitor fluid intake and output, vital signs, and hematocrit levels.** Intake and output should be monitored according to hemodynamic status and severity of clinical presentation as outlined in the treatment algorithms.
- **DO recognize and treat early shock.** Early shock (also known as compensated or normotensive shock) is characterized by narrowing pulse pressure (systolic minus diastolic BP $\leq$ 20 mmHg), increasing heart rate, and delayed capillary refill or cool extremities.
- **DO administer colloids (such as albumin) for refractory shock.** Patients who do not respond to 2–3 boluses of isotonic saline should be given colloids instead of more saline.
- **DO give pRBCs or whole blood for clinically significant bleeding.** If hematocrit is dropping with unstable vital signs or significant bleeding is apparent, immediately transfuse blood.

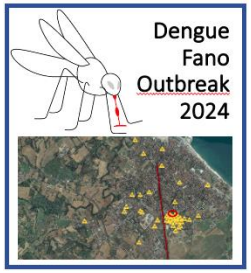
Do not – Choosing wisely

- Most patients will experience only minor cutaneous and/or mucosal bleeding
- Prevention +++
  - **NO aspirin, NO NSAIDs,**
  - **NO steroids**
  - **NO IM injections**
  - **NO puncture of large** vessels, no **nasogastric tube**, no **urine catheterization or central line** unless absolute necessity
  - **NO hyper or over hydration**
  - in severely thrombocytopenic patients (<20,000 /mL):
    - Consider associated pathology or treatments
    - Prevention of trauma +++

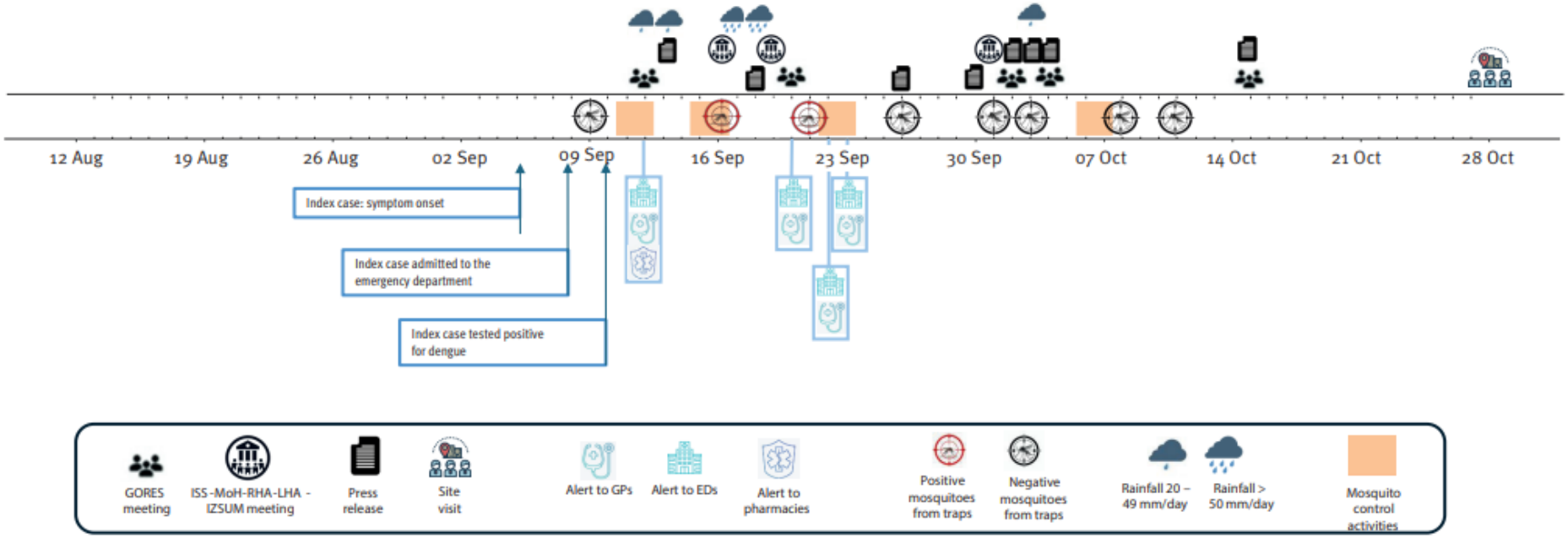


Alcune peculiarità osservate

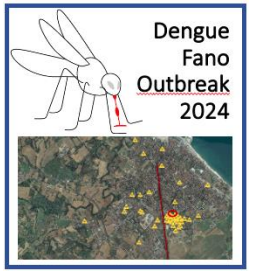
- Pochi casi in età pediatrica
- Sintomi gastrointestinali preponderanti in molti pazienti
- Astenia molto marcata e rallentamento ideomotorio/letargia in pazienti anziani
- Metrorragia in giovani donne senza comorbidità
- Piastrinopenia in pazienti anziani in terapia anticoagulante o antiaggregante → warning sign specifico nella vecchia Europa
- Caveat: cortisone e FANS per virosi aspecifiche



Public health measures and rainfall



Euro Surveill. 2024 Nov;29(47):2400713. doi: 10.2807/1560-7917.ES.2024.29.47.2400713



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Pesaro Urbino

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/ NEWS / PROTEGGITI DALLA DENGUE: DOMANDE E RISPOSTE PER SAPERNE DI PIÙ

Proteggiti dalla dengue: domande e risposte per saperne di più

27 Settembre 2024

Il virus della dengue è trasmesso all'essere umano dalla puntura di una zanzara del genere Aedes. La dengue può essere asintomatica, presentarsi come malattia febbrile autolimitante o in alcuni casi in forme gravi.

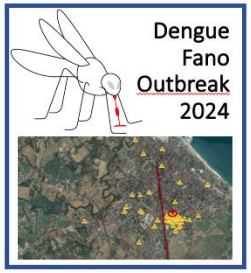
Per fare chiarezza sul virus, sono state elaborate Domande Frequenti (FAQ). Inoltre è possibile inviare richieste specifiche all'indirizzo ***dengue.ast.pu@sanita.marche.it****: le risposte saranno fornite dallo specialista di riferimento.*

PROTEGGITI DALLA DENGUE

Nella lotta alla Dengue è fondamentale la **PREVENZIONE**:

- COMUNICAZIONE DEL RISCHIO
- FORMAZIONE
- MISURE DI CONTRASTO AL VETTORE

Test su persone asintomatiche



- **2200 test virologici (DENV-RNA)** effettuati dal **12/09 al 28/10/2024**
  su donatori di sangue residenti a Fano o che avevano soggiornato a Fano e nei comuni circostanti:
  tutti negativi
  (idem per organi e tessuti donati nello stesso periodo)

- **40 test sierologici** effettuati **dal 7/10 al 21/10/2024**
  su familiari e conviventi dei casi accertati (range età 15-90 aa, 24 F):
  tutti negativi

Comparison of vaccine efficacy for the target use population for live attenuated tetravalent dengue vaccines that are licensed or in phase 3 trial

	Dengvaxia (CYD-TDV)[163]	Qdenga (TAK-003)[167]	TV003[168]
Status	Recommended by WHO for two patient groups: seropositive peop e aged 9–45 years, or all people regardless of serostatus in high seroprevalence areas (>80% seropositivity). Licensed in 20 countries. Recommended for seropositive children aged 9–16 y ars living in endemic areas in the USA [5]	Recommended by WHO to be considered for introduction in children aged 6–16 years in settings with high transmission intensity. Licensed in several countries, including Indonesia, Brazil, Argentina, the UK, and Germany	Ongoing phase 3 trial
Platform	Four chimeric viruses for each DEI V serotype on a yellow fever virus backbone	Attenuated DENV-2 and three chimeric viruses for each of the four DENV serotypes	Attenuated DENV-1, DENV-3, and DENV-4, and a chimeric virus for DENV-2 on a DENV-4 backbone
Ages of trial participants	9–16 years	6–16 years	2–59 years
Doses	Three doses 6 months apart	Two doses 3 months apart	One dose
Prevaccination antibody screening recommended?	Yes	No	Unknown
Timeframe for efficacy endpoint	25 months for VCD and 60 month for hospitalisation	54 months for VCD and hospitalisation	24 months for VCD
Efficacy among seropositive people			
VCD: overall	76% (64% to 84%)	64% (58% to 69%)	89% (78% to 96%)
Efficacy among seronegative people			
VCD: overall	39% (−1% to 63%)	54% (42% to 63%)	74% (58% to 84%)

www.thelancet.com Vol 403 February 17, 2024

Raccomandazioni/Linee guida sul vaccino provenienti da alcuni paesi europei

Italia- Società Italiana di Medicina dei Viaggi e delle Migrazioni (SIMVIM)

- Il vaccino può essere somministrato ai soggetti sieronegativi alla dengue, senza dover effettuare preventivamente alcun test sierologico
- Se non è possibile completare il ciclo vaccinale a due dosi prima della partenza, si raccomanda comunque di somministrare almeno la prima dose

Germania - Robert Koch Institute (STIKO)

- Persone con storia di precedente infezione da dengue confermata in laboratorio che viaggiano in una regione endemica
- Prima del viaggio è necessario completare il ciclo di vaccinazione (2 dosi)
- Se si prende in considerazione la vaccinazione in un individuo senza precedente dengue è necessario informarlo che non i può essere escluso il rischio di malattia grave in caso di successiva infezione. È necessario completare un ciclo vaccinale (2 dosi) prima della partenza.

Diverse Linee Guida **NON** considerano abbastanza forti le prove di **efficacia** contro i **sierotipi 3 e 4**, e quindi non raccomandano questo vaccino a individui che non sono stati precedentemente infettati del DENV

Esiste un **rischio teorico di dengue grave** se una persona senza pregressa infezione da dengue viene vaccinata e successivamente contrae l'infezione con i sierotipi DENV 3 o DENV 4 del virus della dengue

New dengue vaccine for UK travellers: recommended only for those with a previous infection

Dengue virus is the most abundant and rapidly spreading arbovirus worldwide. 390 million dengue infections are estimated to occur annually, of which approximately 25% are symptomatic.[1] Climate change and urbanisation have conferred 61·2% protection against virologically confirmed dengue and 84·1% protection against dengue infection requiring hospitalisation. Long-term follow-up did not indicate disease enhancement among baseline

Lancet Microbe 2025; 6: 101054
Published Online December 25, 2024
https://doi.org/10.1016/j.lanmic.2024.101054

"UK Joint Committee on Vaccination and Immunisation approved Qdenga as a pretravel vaccine only for individuals aged 4 years and older with previous dengue infection. Confirmation of previous infection will be based on a combination of clinical and exposure history, in addition to laboratory testing "

Misure di sanità pubblica

11. Offerta della vaccinazione contro la dengue ai soggetti con documentata infezione

Nell'ipotesi remota di un ulteriore focolaio, le infezioni secondarie da sierotipo diverso sono considerate un importante fattore di rischio associato alle forme gravi dengue

- Dai primi di febbraio 2025 : **attiva gratuita** ai **casi confermati e probabili**

- Dal 14/03/2025: estensione dell'offerta**, su richiesta**, ai Pazienti con:

- Certificazione del MMG/ PLS attestante che abbiano avuto sintomi compatibili con Dengue a seguito di esposizione a Fano nel periodo del Focolaio;

E

- Esame sierologico che attesti **pregressa infezione: IgG positive per DENV**

DENGUE VACCINE

THERAPEUTIC ADVANCES in
Vaccines and Immunotherapy

Review

Recommendations for dengue vaccine implementation in the elderly population

Ther Adv Vaccines Immunother

2025, Vol. 13: 1–15

DOI: 10.1177/25151355251321718

Nguyen Ngoc Truong Giang and Andrew W. Taylor-Robinson

School-age children are the primary target group for immunization programs of the two recently licensed dengue vaccines.
In endemic areas (typically low- and lower-middle-income countries) the elderly comprise a relatively modest proportion of the total population. Hence, despite the high mortality rate associated with dengue in this age group, the absolute numbers of clinical cases and deaths are still less than those reported for other age groups.

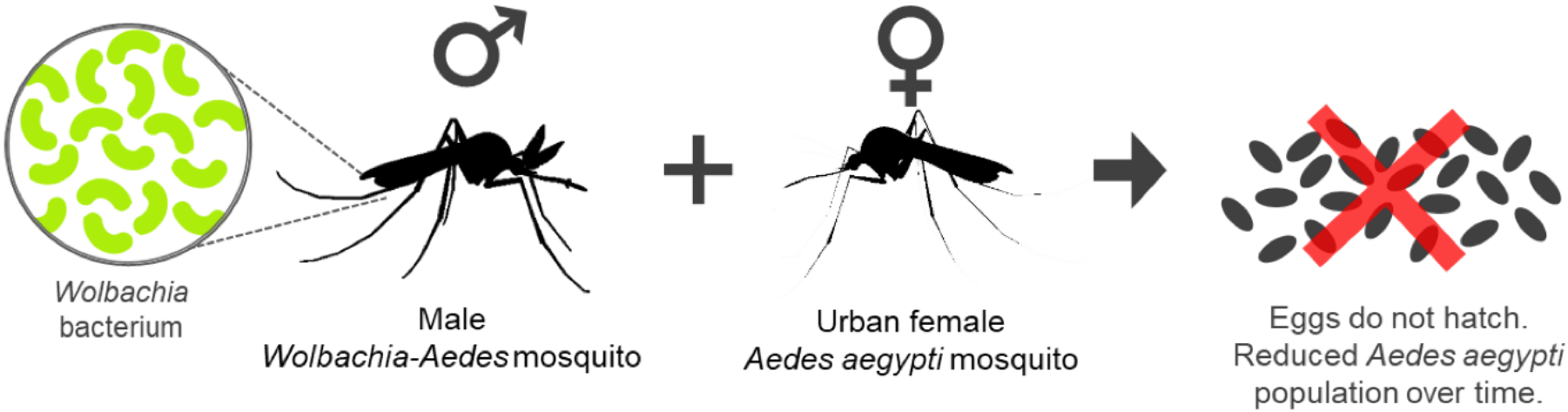
There is limited information on the efficacy of either vaccine among the elderly or of two further immunogenic preparations currently undergoing clinical trials

Although each vaccine is recommended for different age groups, none is indicated for elderly individuals (age ⩾60years) due to insufficient clinical trial data, challenges addressing safety concerns, and/or low efficacy in this age group

Nguyen NTG and AW Taylor-Robinson
Ther Adv Vaccines Immunother 2025, Vol. 13: 1–15

Wolbachia-Aedes Technoloy

•*When male Wolbachia-carrying Aedes aegypti (Wolbachia-Aedes) mosquitoes mate with urban female Aedes aegypti that do not carry Wolbachia, their resulting eggs do not hatch.*



•*Over time, continued releases of male Wolbachia-Aedes mosquitoes will lead to a decline in urban Aedes aegypti populations. This not only reduces the risk of dengue, but also of other Aedes aegypti-borne diseases such as Zika and chikungunya.*

The NEW ENGLAND JOURNAL of MEDICINE

CURRENT ISSUE SPECIALTIES TOPICS

ORIGINAL ARTICLE

Efficacy of Wolbachia-Infected Mosquito Deployments for the Control of Dengue

Authors: Adi Utarini, M.D., Ph.D., Citra Indriani, M.D., M.P.H., Riris A. Ahmad, M.D., Ph.D., Warsito Tantowijoyo, Ph.D., Eggi Arguni, M.D., Ph.D., M. Ridwan Ansari, M.Sc., Endah Supriyati, M.Sc. , +17 , for the AWED Study Group* Author Info & Affiliations

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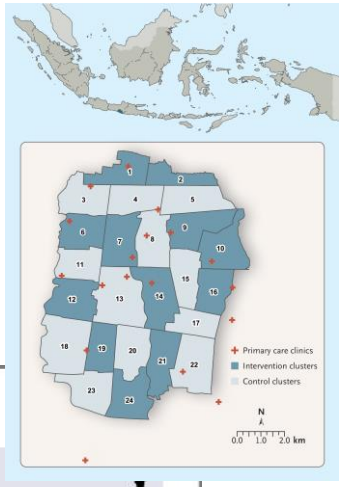

The NEW ENGLAND JOURNAL of MEDICINE

Wolbachia-Infected Mosquito Deployments for Dengue Control

CLUSTER-RANDOMIZED TRIAL

8144 Participants with acute undifferentiated fever

	Intervention clusters (N=3721)	Control clusters (N=4423)
Incidence of virologically confirmed dengue	2.3%	9.4%
	Protective efficacy, 77.1%; 95% CI, 65.3 to 84.9	
Hospitalization for virologically confirmed dengue	0.4%	3.0%
	Protective efficacy, 86.2%; 95% CI, 66.2 to 94.3	

Protective efficacy similar against the four dengue virus serotypes

Introduction of wolbachia-infected *A. aegypti* was effective in reducing the incidence of symptomatic dengue and hospitalizations.

A. Utarini et al. 10.1056/NEJMoa2030243

Grazie per l'attenzione