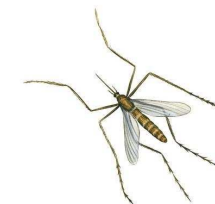




Overview of surveillance system of infections with West Nile virus (WNV) in Dolj County, Romania

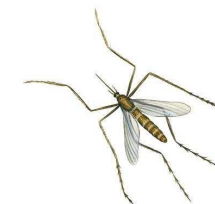
**Dr. Ana Bobîrnac, epidemiologist
DOLJ COUNTY PUBLIC HEALTH AUTHORITY (DCPHA)**

Venice, October 6, 2018





ROMANIA – DOLJ COUNTY





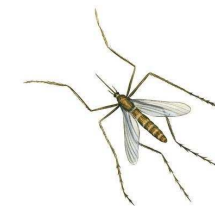
General data

	Romania	Dolj County Coordonate: 44°10'N 23°42'E
Area	238 397 km ²	7.414 km ² , 3.1% of the Romanian territory
Demografy	20 121 641 inhabitants	735 335 inhabitants, 2.7% of the country's population
Climate	temperate-continental	temperate climate with Mediterranean influences, 10-11.5° C, annual average
Relief	(35% mountains, 35% hills and plateaus, 30% plains, Danube Delta)	plain (+ Danube meadow and the hill area).
Hydrographic network	rivers, lakes, underground waters, marine waters	rivers, lakes and ponds
Vegetation and flora	specific to the alpine area, forest area and steppe area, Danube Delta.	specific to the <i>steppe</i> area

[Craiova](#) 269.506 inhabitants

[Venice](#) 268.7410 inhabitants

[Province of Venice](#) 841.609 inhabitants Coordonate: [45°44'N 11°51'00"E](#)





Infections with West Nile virus in Romania (instead of introduction)

* **Infectious disease** produced by West Nile virus (WNV) transmitted by mosquito bite. In humans, in most cases, the infection has subclinical manifestations, and when they are typical, the clinical spectrum and severity can be very varied.

* **Risk factors**

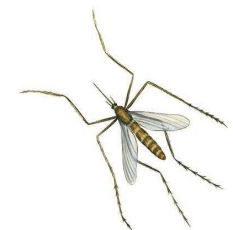
- climatic changes (high temperatures, waves of heat after heavy rains, drought, stagnant water)
- increased traffic of passengers and goods.

* **Measures of disease control :**

- vector control measures
- health education of the population regarding self-protection and cooperation in prevention programs (knowledge, attitudes and behavior)

* **!!!! Romania**

- in **1996**, outbreak of West Nile Neuroinfection with **352 cases** (44% meningoencephalitis, 40% meningitis and 16% encephalitis)
- ***in 1997 the surveillance system was implemented,***
- every year occurred cases of West Nile virus neuroinfectivity in humans.

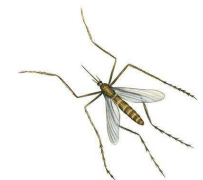




Surveillance system of infections with WNV in Romania

I. Legal basis:

- Romanian Government Decision (**GD**) **No. 589/2007**- the methodology for reporting and collecting data for the surveillance of communicable diseases
- **Decision No 2119/98/EC** of the European Parliament and of the Council – setting up a network for the epidemiological surveillance and control of communicable diseases in the Community;
(Romania is reporting on *Tessy system*)
- **Commission implementing decision (EU) 2018/945** of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant *case definitions*
- **Directive 2004/33/EC**-on the *safety of blood and blood products donated*



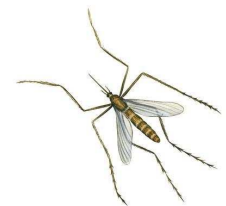


Surveillance system of infections with WNV in Romania

- I. **Purpose:** to prove the presence of WNV infection in humans - ➡ alert the authorities for apply :
- measures to combat vector populations
 - security measures blood donors (according to Directive 2004/33/ EC).

II. Objective:

- identifying favorable conditions for exposure to the virus;
- risk analysis of the potential for human disease, using available information from monitoring NWN infection in the natural cycle (wild birds and horses) by responsible authorities, especially NSAVSA;
- the setting of alert levels,
- the delimitation of affected areas, risk areas and free areas of virus transmission.
- establishing the public health measures to be implemented;





Surveillance system of infections with WNV in Romania

Case definition :

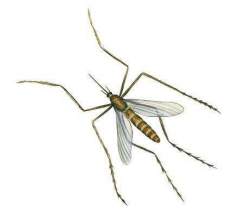
Clinical Criteria : *age ≥ 15 years with fever and at least one of neurological symptoms : encephalitis/meningitis/meningo-encephalitis with clear CSF.*

Laboratory Criteria

- * *for a probable case* : WNV specific antibody response in serum
- * *for case confirmation* - at least one of the following four :
 - isolation of WNV from blood or CSF
 - detection of WNV nucleic acid in blood or CSF
 - WNV specific antibody response (IgM) in CSF
 - WNV IgM high titre AND detection of WNV IgG, AND confirmation by neutralisation

Epidemiological Criteria : at least one of the following two epidemiological links:

- * *Animal to human transmission*
 - people who do not apply mosquito protection measures and who recognize mosquito bites during the maximum incubation period
 - residing, having visited or having been exposed to mosquito bites in an area where WNV is endemic in horses or birds
- * *Human to human transmission* (vertical transmission, blood transfusion, transplants)





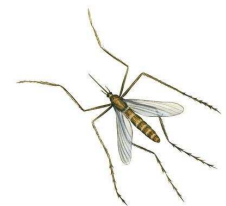
Surveillance system of infections with WNV in Romania

Case Classification:

- * **Probable case:** *age ≥ 15 years* with clinical criteria AND with at least one of the two:
 - an epidemiological link
 - a laboratory test for a probable case
- * **Confirmed case :** any person meeting one of the laboratory criteria for the confirmed case
- * **Infirm case :** **no antibody Ig M for WNV detected in the CSF and/or serum**

Laboratory Investigation: 2 sets of biological products:

- * **Set 1** (harvested at hospital admission, preferably in the first 5 days of clinical onset) :
 - **serum**
 - **CSF**
- * **Set 2** (harvested 14-21 days from clinical onset of disease /to discharge):) :
 - **Serum**
- * **In case of death** of a person confirmed with WNV will have samples autopsy: 4-5 samples of tissue from the brainstem, cerebellum and the lesion length (if it exists).





Surveillance system of infections with WNV in Romania

Type of surveillance and target population:

Passive surveillance of neurological forms of WNV infection : 1997

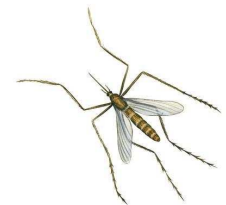
- National coverage (from 2009)
- Period of surveillance: May-October (in 2018 was extended until 30th November)
- Territory at risk: all counties of the country

Active surveillance: we look for febrile syndromes of undetected etiology :

- after confirmation of neurological forms of WNV infection *in a new affected area*

AND

- in the area where cases of acute infection in horses/birds have been reported

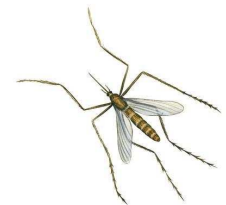




Surveillance system of infections with WNV in Romania

Reporting data

- case code,
- home address (mention the address where the patient actually lived in the maximum incubation period of the disease)
- trips made in the country or abroad (the maximum incubation period of the disease)
- occupation, job,
- age,
- sex,
- the date of onset of the disease,
- date of hospital admission,
- date of collection of samples set 1 (CSF and serum)/set 2 (serum)
- disease progression (possibly date and diagnosis of death),
- associated diseases





Reporting Sheets

1. Reporting Unique File :

- according to Order MoH 1466/2008:
possible cases of West Nile meningitis /
meningoencephalitis /encephalitis
hospitalized in Infectious Diseases
Hospitals

- *used for all communicable diseases*

FISA UNICĂ DE RAPORTARE CAZ DE BOALĂ TRANSMISIBILĂ
Bolile marcate cu (T) se raportează telefonic imediat.
Toate fișele se trimit la DSP, în termen de 5 zile, doar prin: curier/ poștă/ fax.

Date despre pacient:

Numele și prenumele :
CNP
Localitate de domiciliu:
Adresa:
Localitate/fără de incubație:
Data nașterii (sau vârsta dacă nu se cunoaște D.N.): ____/____/____
Sex: F / M (incercuțiți)
Ocupația:
Locul de muncă / Colectivitatea:

Date despre boală:

Data debutului bolii: ____/____/____
Data depistării: ____/____/____
Internat: DA / NU (incercuțiți) Data decesului: ____/____/____
Deces: DA / NU (incercuțiți)
Cum a fost depistat: consult clinic ____ contact ____ screening ____ alte ____
Datele privind modalitatea confirmării cazului:
Conform definiției clinice de caz: DA / NU (incercuțiți)
Conform diagnosticului etiologic: DA / NU (incercuțiți)
Data recoltării probei: ____/____/____
Rezultatul diagnosticului etiologic:
Metoda de laborator:
Conform criteriilor epidemiologice: DA NU
Observații privind cazul:

Date clinice/paraclinice:

febra ☐ erupție ☐ icter ☐ dispnee ☐ hemoragii ☐
diaree apoasă ☐ diaree sânguolentă ☐ deshidratare severă ☐
hemoglobina ____ % trombocite ____ /μL LCR clar ☐
uree ____ mg/dL creatinina ____ mg/dL
alte ☐ care

Date privind sursa probabilită de infecție și calea de transmitere a infecției:

Sursa depistată? DA NU
Contact cu caz similar / confirmat: DA NU
Transmitere aerogenă DA NU
Transmitere prin alimente DA NU
Transmitere hidrică DA NU
Transmitere prin elemente de mediu DA NU
Transmitere parenterală (alta decât iatrogenă) DA NU
Transmitere iatrogenă DA NU
Mentionați unitatea sanitară

Transmitere sexuală DA NU
Transmitere prin vectori DA NU

Numele și prenumele medicului: Semnatura și parafa:
Locul de muncă al medicului:
Bifați (X) în cazul în care mai doriți fișe
Cod DSP ____/____/____ (cod auto + nr. din registru)
Data primirii fișei la DSP: ____/____/____

Bifați

(T) Poliomielită*
Tetanoș
(T) Difterie
(T) Rujeolă
(T) Rubeolă
Infecție urliană
Pertussis
Varicela
(T) Gripă umană cauzată de un nou subtip/variantă/aviară*
Infecție cu Haemophilus infl. b.
Infecție pneumococică
(T) Boală meningococică
Scarlatină
Sifilis
Infecție gonococică
Infecție cu Chlamydia spp.
Limfogranulomatoză veneriană
Infecție HIV**
Hepatită virală acută tip A
Hepatită virală tip B
Hepatită virală tip C
Hepatită virală tip E
Alte hepatite virale acute
Infecție cu Rotavirus
(T) Holeră
(T) Infecție cu E. coli Enterohemoragic (EHEC)
(T) Infecție cu E. coli Enteropatogen producător de toxine (STEC)
Salmoneloză
Campylobacterioză
Yersinioză
Shigeloză (dizenterie bact.)
Dizenterie amebiană
(T) Listerioză
(T) Botulism
(T) Febră tifoidă și paratifoiză
Leptospiroză
Trichineloză
Toxoplasmoză
Echinococoză
Giardioză
Cryptosporidioză
(T) Antrax
(T) Bruceloză
Leishmanioză
Rabie
(T) Tularemie
Tuberculoză**
(T) Legioneloză
Meningita/meningo-encefalită cu LCR clar
(T) Infecție cu virus West Nile
Encefalită de capșe (TBE)
Boală Lyme
Febră Q
(T) Infecție cu virus Zika
(T) Febre virale hemoragice (Febră galbenă, Dengă,
Febră Crimeea-Congo, Hantaviroză, Lassa, Ebola,
Marburg etc.)
(T) Malarie
Varianta transmisibilă Creutzfeldt-Jakob
(T) Variolă
(T) Sindrom Acut Respirator Sever (SARS)
Infecție asociată asistenței medicale**
(T) Boală cu etiologie necunoscută
(T) Eveniment neobișnuit/neașteptat

* Confirmarea cazului și introducerea în sistem se fac numai de către Medicul Șef al Serviciului/Compartimentului de
Supraveghere și Control al Bolilor Transmisibile din DSP/DSP
a Mun. București
** se utilizează fișele specifice



2. Specific surveillance file for WNV infection

Institutul National de Sănătate Publică Romania



FISA DE SUPRAVEGHERE A INFECTIEI CU VIRUSUL WEST NILE

JUDETUL: _____

Data raportarii la DSP judetean de catre Spital/Sectie Boli Infectioase: ____/____/____

DATE DE IDENTITATE:

COD DE CAZ (acelasi din fisa unica): _____ Sex: M/F

Data nasterii: ____/____/____

Domiciliul:

stabil: Localitatea _____ Str. _____ Nr. _____ Bl. _____ Ap. _____ Sector _____

flotant: Localitatea _____ Str. _____ Nr. _____ Bl. _____ Ap. _____ Sector _____

Ocupatia _____

locul de munca _____

DATE PRIVIND IMBOLNAVIREA:

Debut clinic: ____/____/____ Data internarii in Sp. BI: ____/____/____

Diagnosticul de internare: _____

Simptome si semne la internare (bifati):

- | | | |
|--|---------------------------------------|---|
| <input type="checkbox"/> febra | <input type="checkbox"/> greata | <input type="checkbox"/> dureri oculare/retroorbitale |
| <input type="checkbox"/> frison | <input type="checkbox"/> vomă | <input type="checkbox"/> pierderi de memorie |
| <input type="checkbox"/> cefalee | <input type="checkbox"/> fotofobie | <input type="checkbox"/> redoare de ceafa |
| <input type="checkbox"/> mialgii | <input type="checkbox"/> confuzie | <input type="checkbox"/> semn Kernig |
| <input type="checkbox"/> dureri articulare | <input type="checkbox"/> dezorientare | <input type="checkbox"/> semn Brudzinski |
| <input type="checkbox"/> scaderea fortei musculare | | |

Punctie lombara DA/NU

LCR : data recoltei ____/____/____

Rezultat :

Aspect : _____ Pandey : _____ Nr. elemente(mm³) : _____

% Polimorfonucleare _____ % Limfocite : _____

Glicorahie ☐ Normala ☐ Crescuta ☐ Scazuta

Albuminorahie ☐ Normala ☐ Crescuta ☐ Scazuta

Clorurorahie ☐ Normala ☐ Crescuta ☐ Scazuta

Data externarii ____/____/____ Nr. zile spitalizare _____

Boli asociate: ☐cardiovasculare ☐HTA ☐neurologice ☐boli cronice renale ☐diabet zaharat

☐neoplasm ☐tratament imunosupresor ☐hepatita cronica ☐transplant ☐alcoolism cronic

☐Alte boli (precizati): _____

Forma clinica de boala: ☐usoara ☐medie ☐severa

Starea la externare: ☐vindecata ☐ameliorata ☐stationara ☐agravata



Institutul National de Sănătate Publică Romania



Diagnostic externare: _____

Decedat : DA/NU Data deces: ____/____/____ Diagnostic deces: _____

DATE DE LABORATOR:

SETUL 1 (recoltat in primele 5 zile de la debutul clinic):

Ser 1 : Data recoltarii ____/____/____ Data trimiterii : ____/____/____

Data primirii rezultatelor: ____/____/____ Rezultatul _____

LCR : Data recoltarii ____/____/____ Data trimiterii : ____/____/____

Data primirii rezultatelor: ____/____/____ Rezultatul _____

SETUL 2 (recoltat la 14-21 zile de la debutul clinic):

Ser 2 : Data recoltarii ____/____/____ Data trimiterii IC: ____/____/____

Data primirii rezultatelor: ____/____/____ Rezultatul _____

EXAMEN ANATOMOPATOLOGIC

(prelevate de la autopsie din creier, LCR, sange, alte organe) Data recoltei : ____/____/____

Data primirii rezultatelor: ____/____/____ Rezultatul _____

DATE EPIDEMIOLOGICE :

Depistarea cazurilor aditionale : DA/NU Cate :

☐ calatorii in zone cu activitate cunoscuta a populatiei de tantari : DA/NU

☐ calatorii in alte tari da/nu unde.....

Identificarea linkului epidemiologic:

☐ recunoaste intepaturai de tantari cu 3-15 zile anterior debutului, la: ☐domiciliu

☐ locul de munca ☐ recreational

☐ utilizarea de masuri de protectie: mecanica da/nu chimica da/nu

☐ transmitere interumana: ☐ transfuzii ☐ transplant

☐ factori favorizanti ☐ deficiente canalizare ☐ apa stagnanta ☐ gunoarie menajere

☐ gradinarit ☐ crestere pasari curte ☐ lipsa plasa geam ☐ alte

Dezinsectie in focar : DA/NU

Educatie sanitara : DA/NU

CLASIFICAREA CAZULUI :

Data clasificarii : ____/____/____

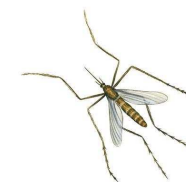
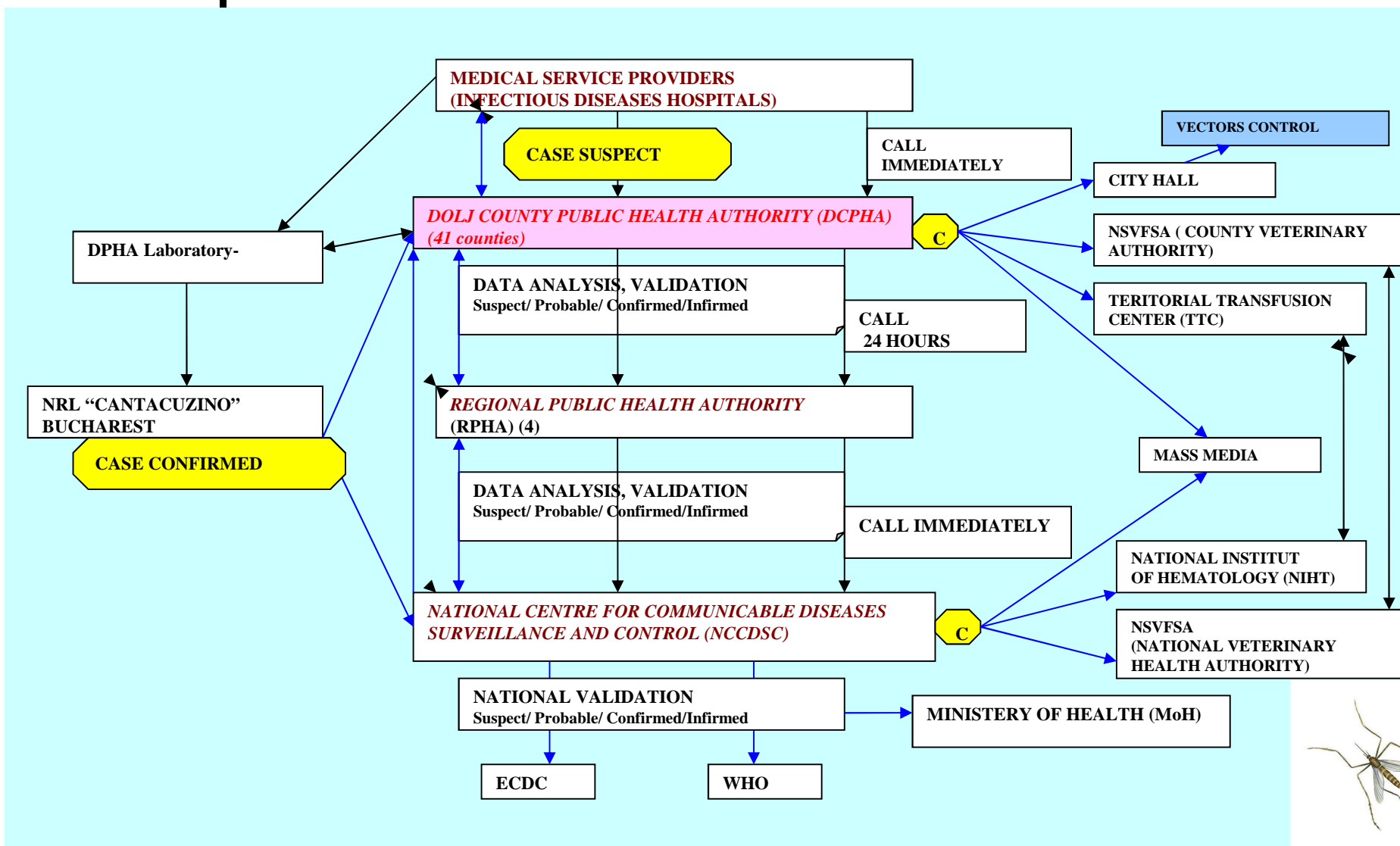
INFIRMAT : DA/NU Diagnosticul de infirmare : _____

PROBABIL : DA / NU

CONFIRMAT : DA/NU



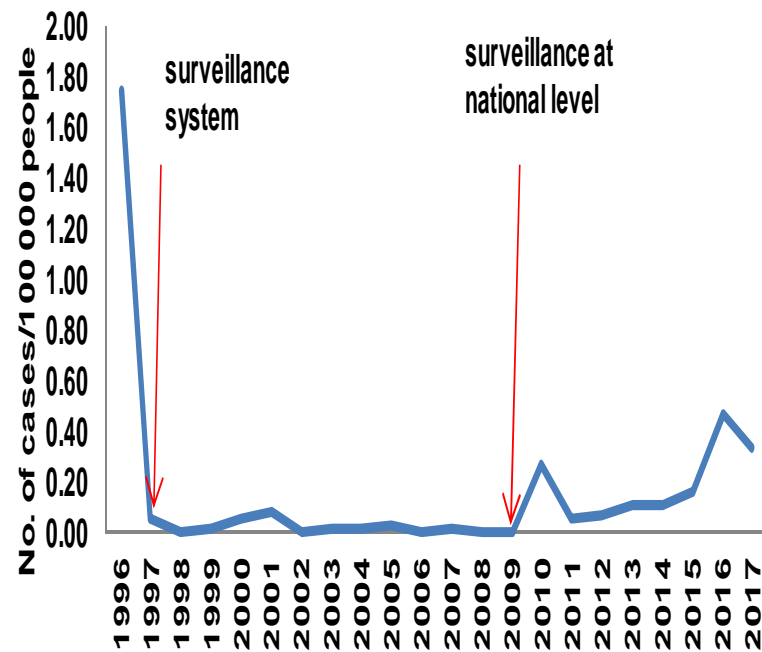
Surveillance system of infections with WNV in Romania



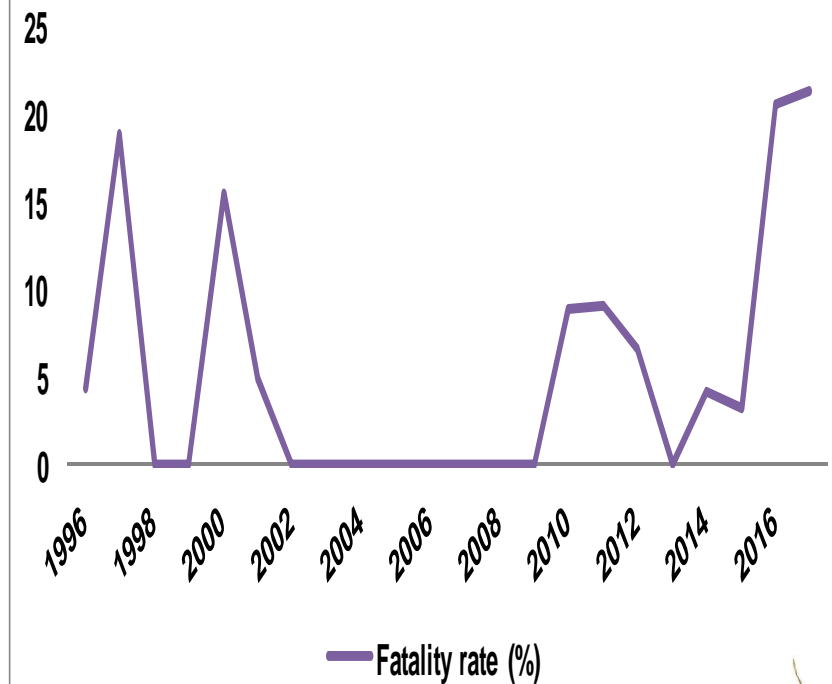


Background

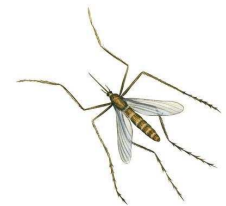
Incidence of cases with West Nile virus infection, Romania 1996-2017



Fatality rate of cases with West Nile virus infection, Romania 1996-2018



Source of data : NCCDSC





Human epidemiological situation

2 May-1st November 2018

ROMANIA

- 607 suspected cases of meningitis/meningo-encephalitis/encephalitis with West Nile virus:
 - confirmed cases: 267
 - probable cases: 9
 - infirmed cases: 325
 - pending: 6
- Number of deaths: 43 (FR=15.6%)
 - in elderly patients (average age: 75.5 years) and had underlying conditions (cardiovascular, diabetes)

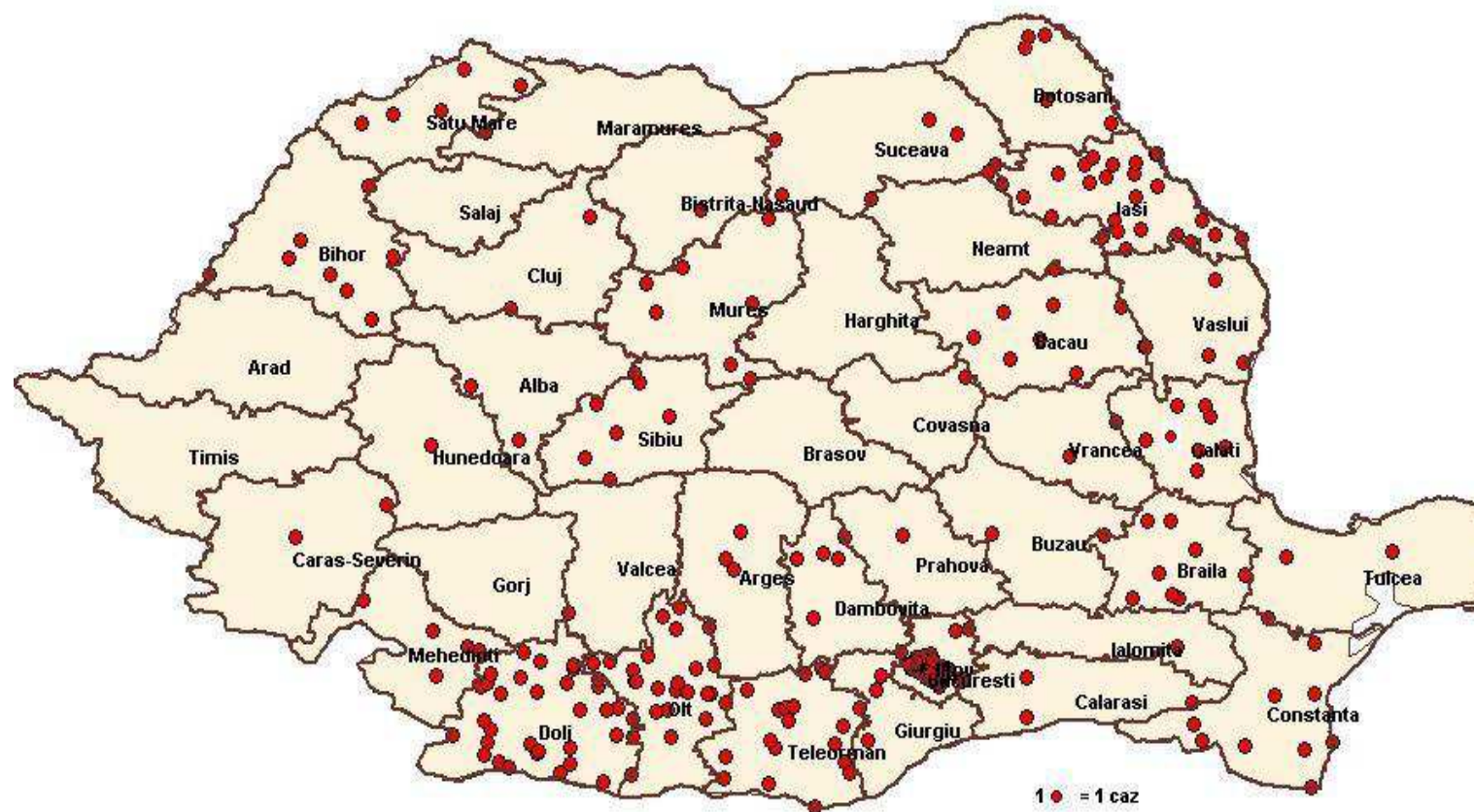
DOLJ COUNTY

- 44 suspected cases of meningitis/meningo-encephalitis/encephalitis with West Nile virus:
 - confirmed cases: 34
 - probable cases: 0
 - infirmed cases: 10
- Number of deaths: 3 (FR=8.82%)
 - in elderly patients (average age: 76.6 years) and other comorbidities (cardiovascular, neurological, diabetes)
- Severity of the disease:
12 severe, 21 medium, one easy

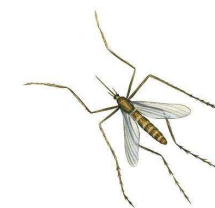




Geographical distribution of cases of West Nile virus infection, by place of exposure, Romania 2018 (n=276)

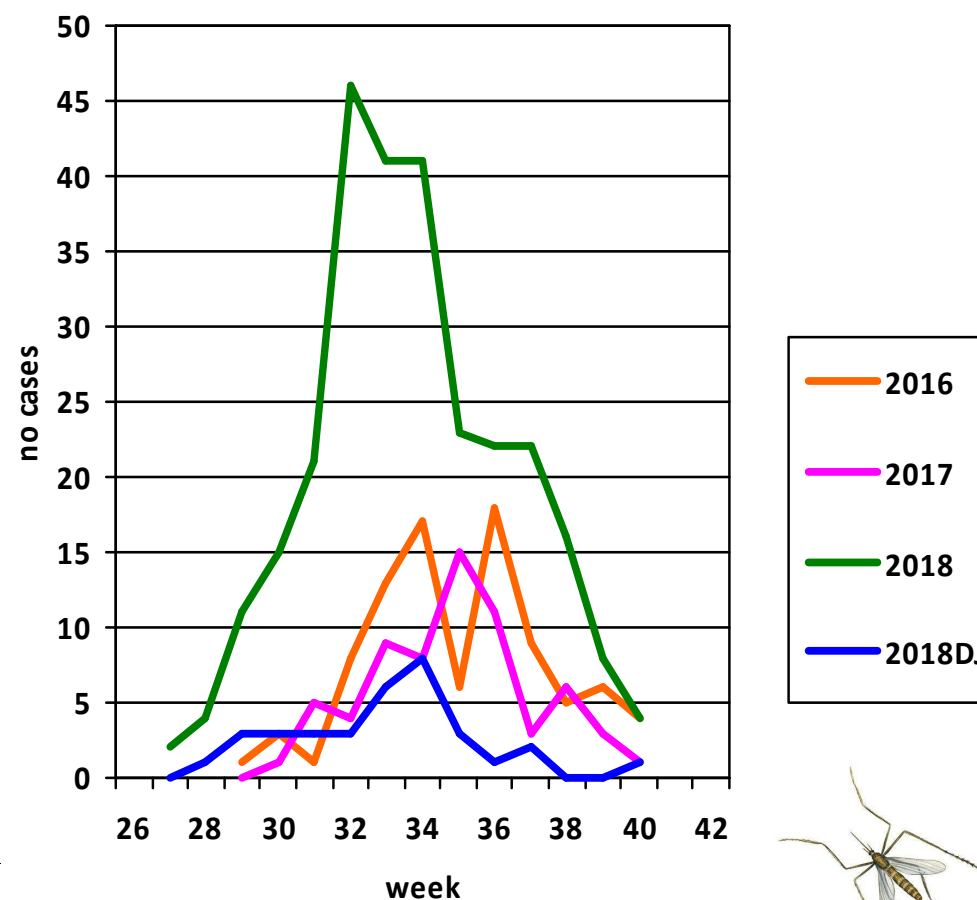
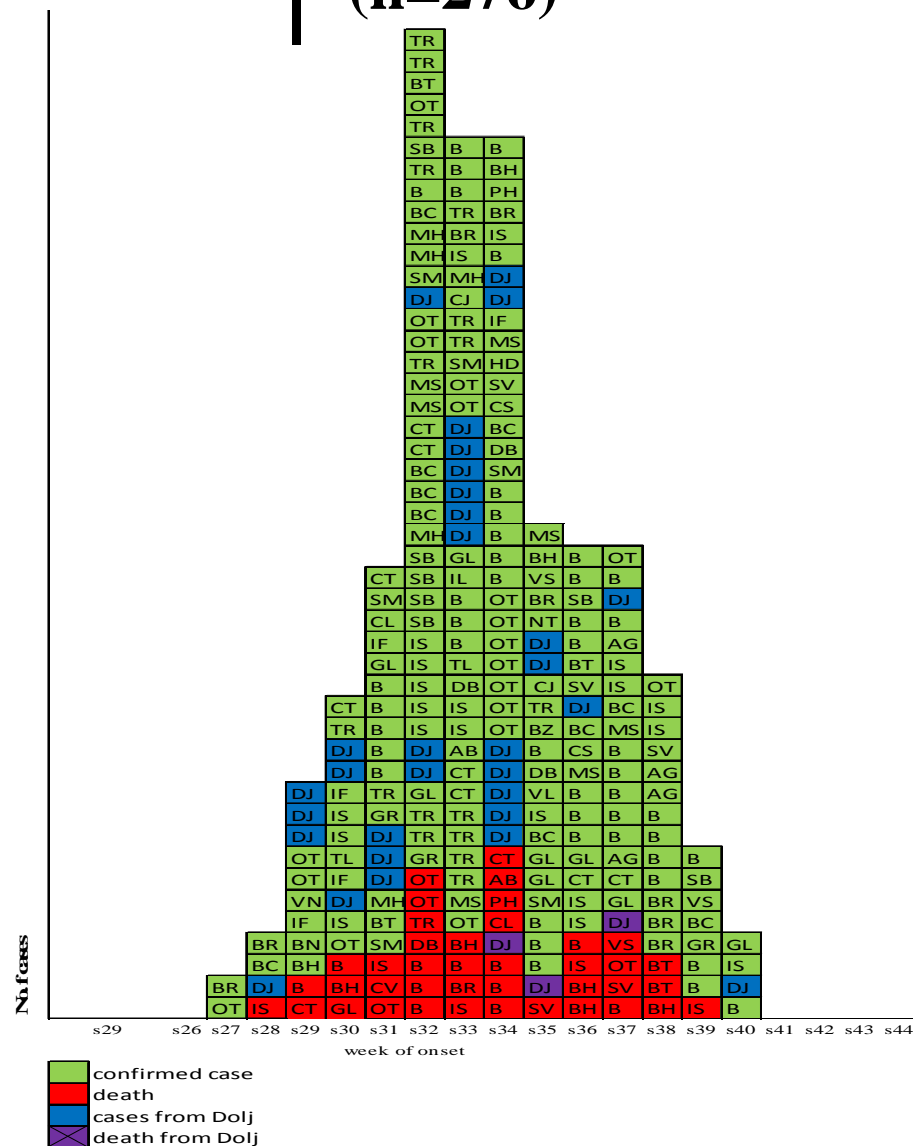


Source of data : NCCDSC

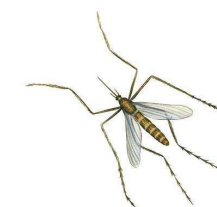




Distribution of cases of West Nile virus infection by date of onset in Romania and Dolj county, 2018 (n=276)



Source of data : NCCDSC

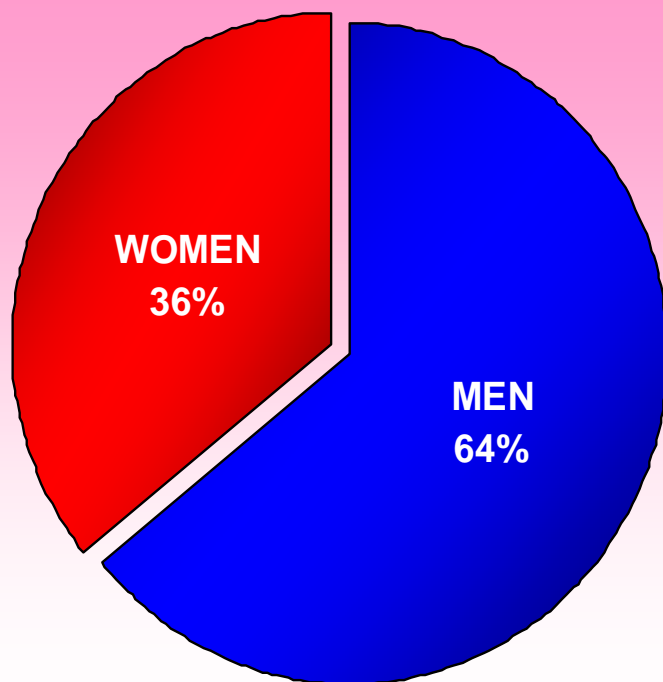




Human epidemiological situation 2 May-1st November 2018

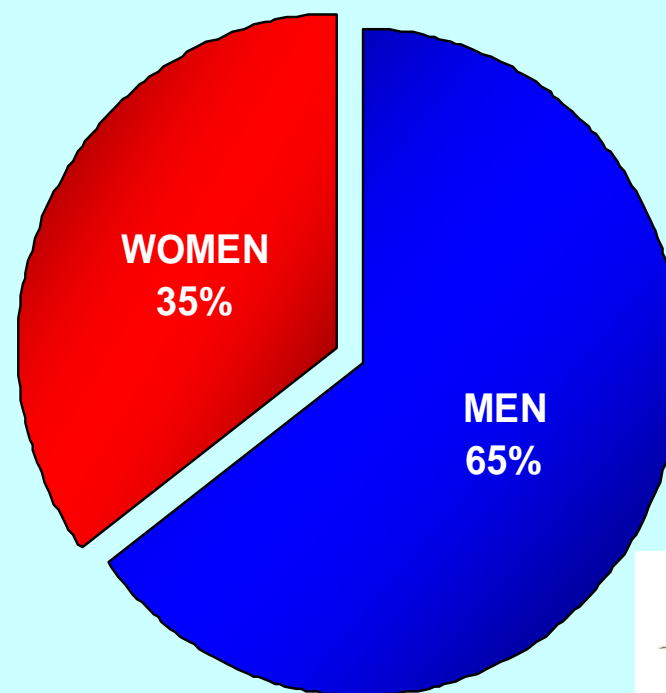
ROMANIA

Gender ratio: men/women=1.8



DOLJ COUNTY

Gender ratio: men/women=1.8



Source of data : NCCDSC

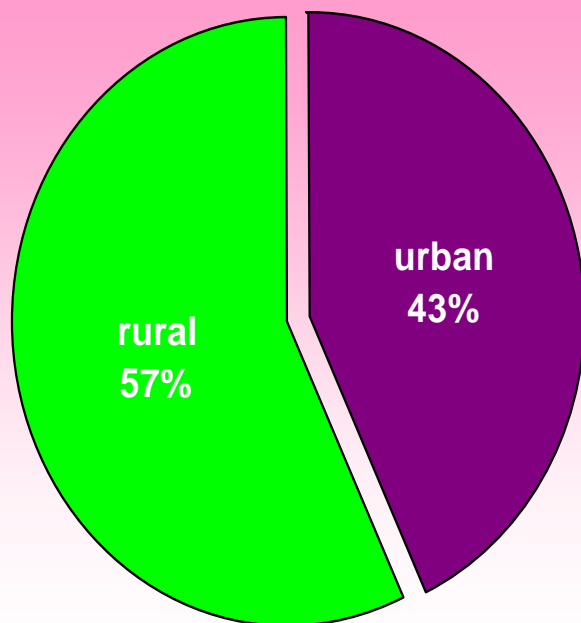




Human epidemiological situation 2 May-1st November 2018

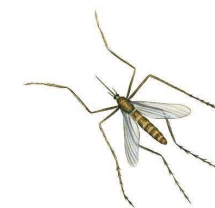
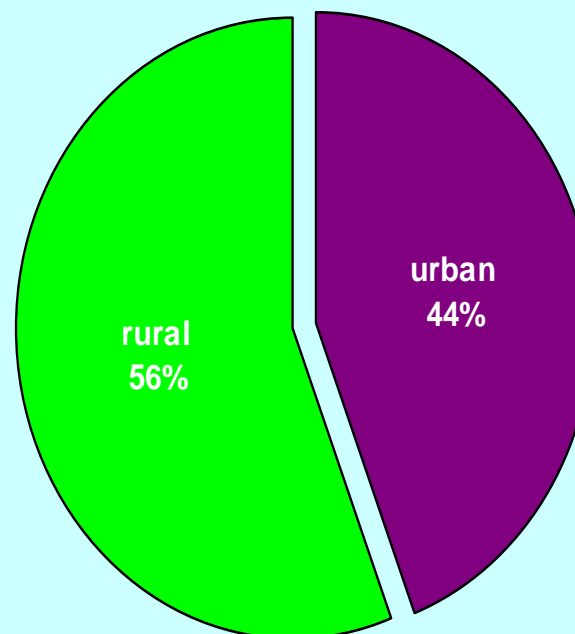
ROMANIA

Residence ratio: rural/urban = 1.3



DOLJ COUNTY

Residence ratio:rural/urban = 1.3

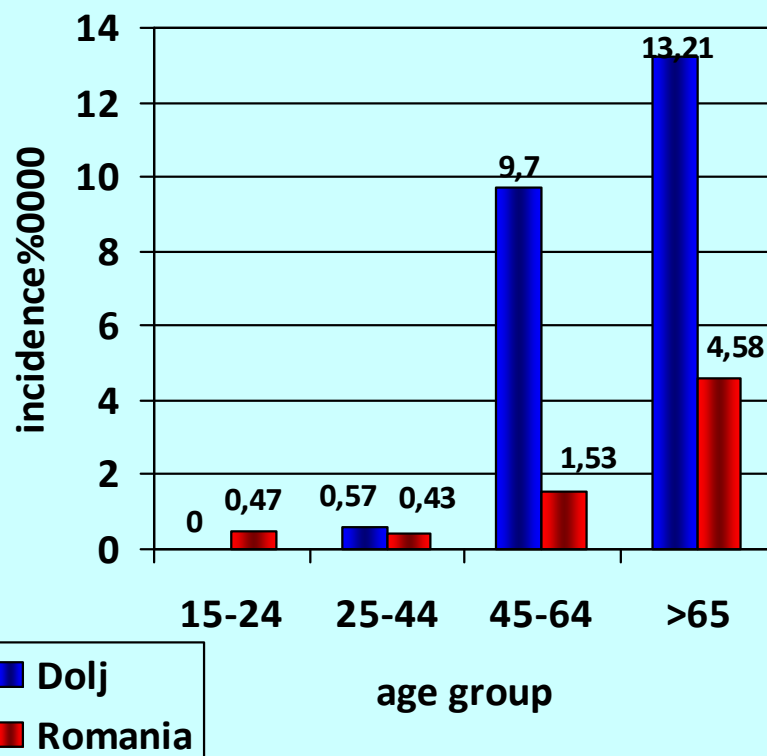




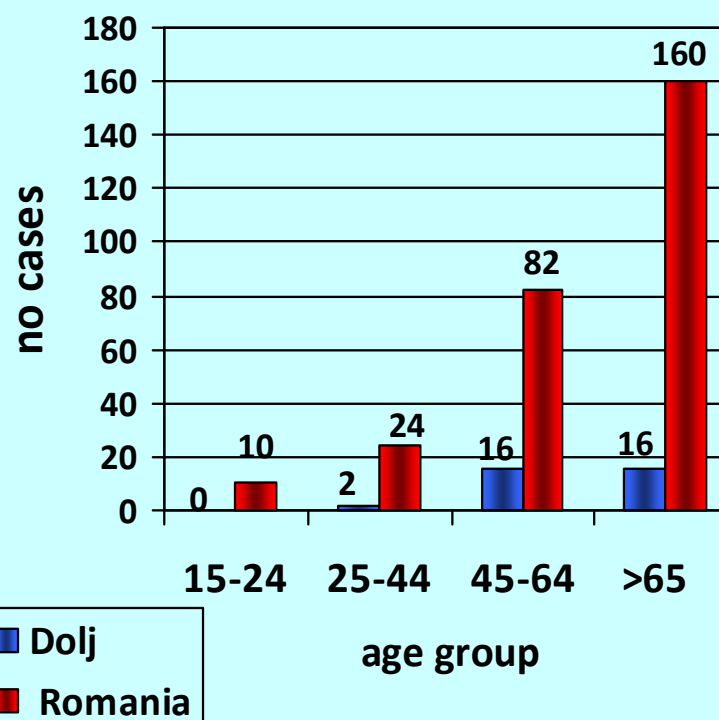
Human epidemiological situation

2 May-1st November 2018

Specific incidence of WNV infection by age groups in Romania and Dolj county, 2018



Number of cases of WNV infection by age groups in Romania and Dolj county, 2018

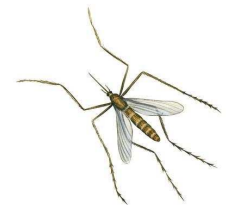




What have we done?

Public health measures (I)

- *At the first positive samples of every case with WNV infection DCPHA:*
 - informed and received information from:
 - town halls and public sanitation - vector control of the localities with disease
 - Veterinary (NSVFSA)
 - Territorial Transfusion Center (TTC)
 - awareness messages to clinicians from hospitals
 - health education : website DCPHA/MoH/NCCDSC, local media
- *Halls must follow an annual Plan of action and control of vectors (mosquitoes) approved by DCSPHA :*
 - Vector control - conducted by various public and private bodies under local town halls : repeated chemical actions *in the air* and *on the earth* against active vectors
 - the actions were difficult due to heavy rainfall, high precipitation

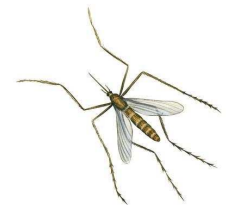




What have we done?

Public health measures (II)

- ***Measures on donors -Territorial Transfusion Center (TTC)***
(Directive 2004/33/EC-on the safety of blood and blood products donated)
 - **Temporary deferral of donors from affected areas**
 - **the question about traveling in WNV infections countries in the last 28 days has been included in the Donor Questionnaire**
 - **NAT(nucleic acid testing) for donors from areas with confirmed cases (Bucharest)**
 - **health education on donors**
- **Veterinary situation**
 - **Bird / horses serum samples were collected from some areas with WNV human disease = none detected antibody IgM anti WNV**





Entomological situation

- Currently, no vector surveillance system is in place (*we had* a network of entomologists with responsibilities on vector surveillance and control under authority of MoH, between 1997-2003)
- Information about vectors is obtained from the National Research Laboratory (NRL) “Cantacuzino” which conducts different studies in vectors ;
- According to last year's studies it has been established that the *Culex pipiens* species is present in all the country.
- No information about vectors, for this season but high density of mosquitoes (*Culex pipiens* and *Aedes albopictus*) caused discomfort perceived by the population





GRAZIE!



**GREETINGS
FROM
CRAIOVA**