

Recent epidemics

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Content

- **Number of reported outbreaks 2008**
- **Noteworthy pathogens**
 - Viruses
 - Bacteria
 - Parasites
 - Fungi
- **Noteworthy pathogen vectors**

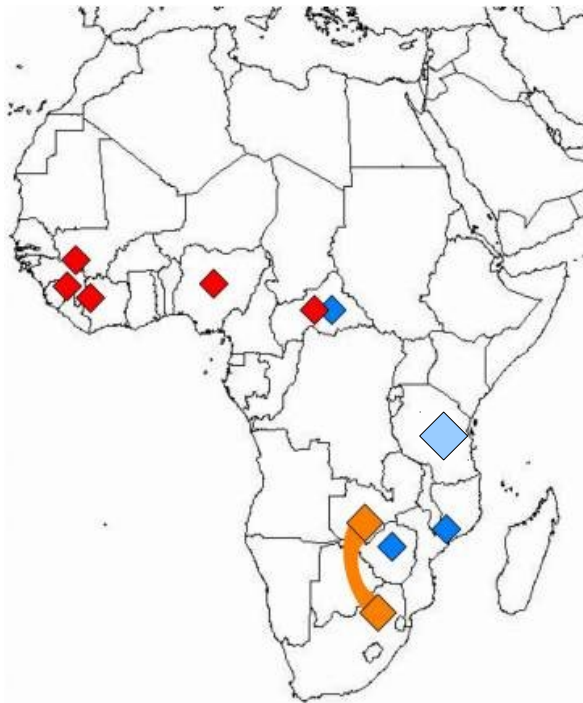
Increasing number of epidemics reported

Table 4.1.1. Initial sources of information for newly opened threats, by year

Number of new threats monitored	2005*	2006	2007	2008	Total
Confidential sources					
EWGLI	2	30	40	78	150
EWRS	23	52	42	73	190
WHO	17	14	5	3	39
Information from Member States	1	5	2	6	14
European surveillance networks	9	11	8	4	32
Other confidential source	0	2	4	10	16
Total	52	114	101	174	441
Public sources					
ProMed	36	15	20	9	80
MedISys	2	5	0	1	8
GPHIN	4	19	4	1	28
Eurosurveillance	0	1	2	0	3
Public report published on the internet	5	9	12	17	43
Other public source	0	0	3	25	28
Total	47	41	41	53	190
Overall total	99	163	142	227	631

* includes only the second half of 2005.

Lujo virus



Geographic distribution of African arenaviruses.

MOBV, MOPV, and IPPYV (blue) have not been implicated in human disease; LASV (red) can cause hemorrhagic fever. The origin of the LUJV index and secondary and tertiary cases linked in the 2008 outbreak are indicated in gold.

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- **Novel “Old World” Arenavirus**
- **Hemorrhagic fever**
- **South Africa ex Zambia**
- **Case fatality: 4/5 (case 5 survived with ribavirin)**
- **Source/Reservoir remains undetermined**
- **No cases identified outside of Africa**

Briese et al. PLoS Pathog. 2009 May; 5(5): e1000455. Paweska. Emerg Infect Dis. 2009 Oct;15(10):1598-602.

Lujo virus

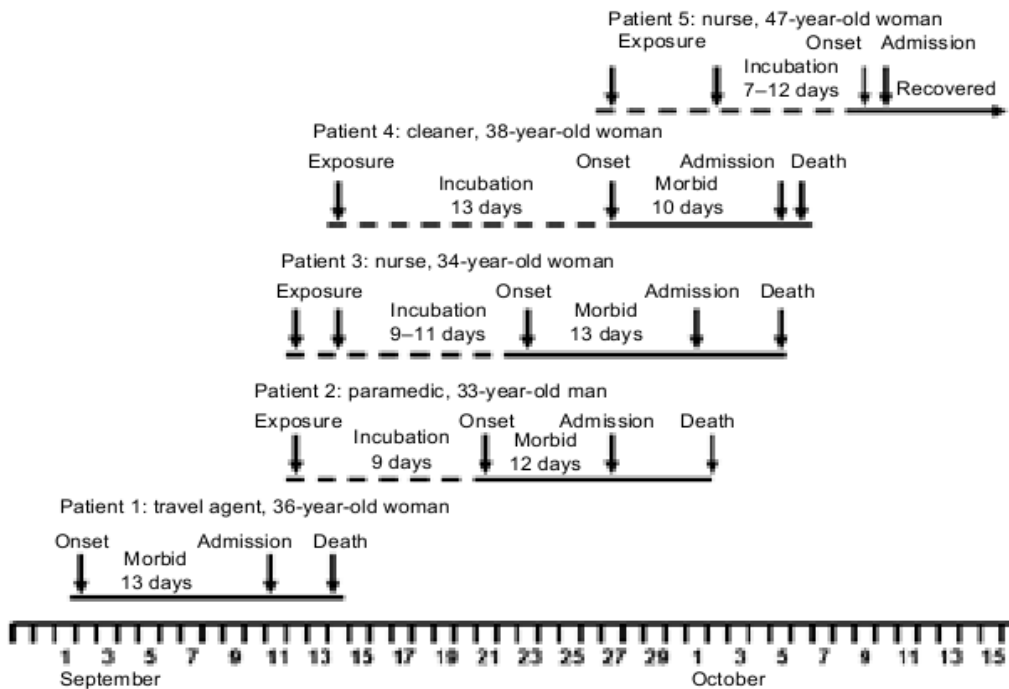


Figure 1. Epidemic curve showing, as appropriate, dates of exposure to infection, onset of illness, admission to hospital, and death or recovery of 5 patients involved in an outbreak of infection with a novel arenavirus, southern Africa, 2008.

• Signs and symptoms

- Fever
- Diarrhea
- Rash (centripetal)
- Facial swelling
- Cerebral edema

• Lab:

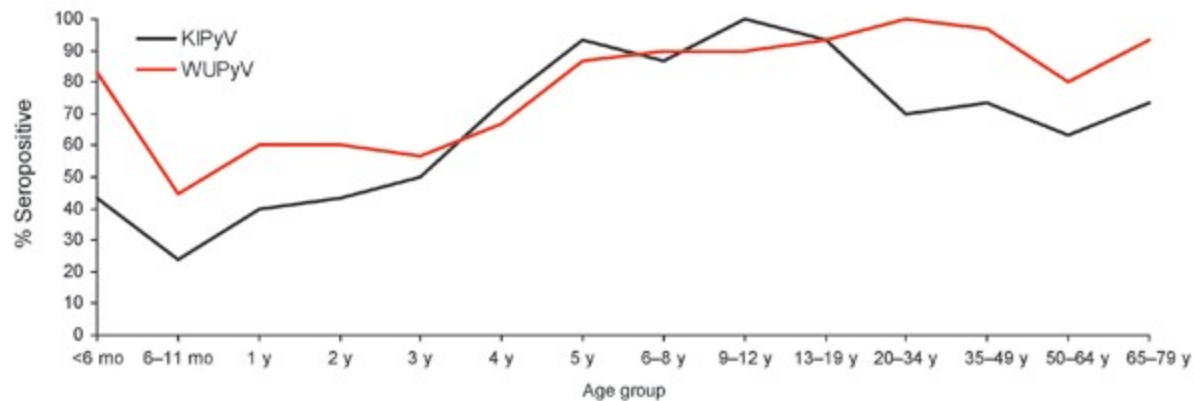
- Thrombocytopenia,
- Leucopenia followed by granulocytosis,
- Elevated ALT/AST levels

• Biopsy:

- Hepatocyte necrosis and vasculitis compatible with viral hemorrhagic fever

Polyomaviruses

- **WU, KI and MC (Merckel cell)**
 - Acute respiratory tract infections
 - Tonsils
 - Diarrhea
 - Neoplasia
- **Infection early on in life**



Parechovirus

- **Picornaviridae (HpeV 1 – 8) (6 more to be published)**
- **HpeVS 1 & 2 = Enteroviruses 22 & 23 (1999)**
- **Bi annual epidemic - seasonality**
- **Young children (aged < 3 y)**
- **Mild disease: gastrointestinal and respiratory symptoms**
- **Severe disease: (HpeV 3) acute flaccid paralysis (AFP), encephalitis, aseptic meningitis, myocarditis, neonatal sepsis, and Reye syndrome**

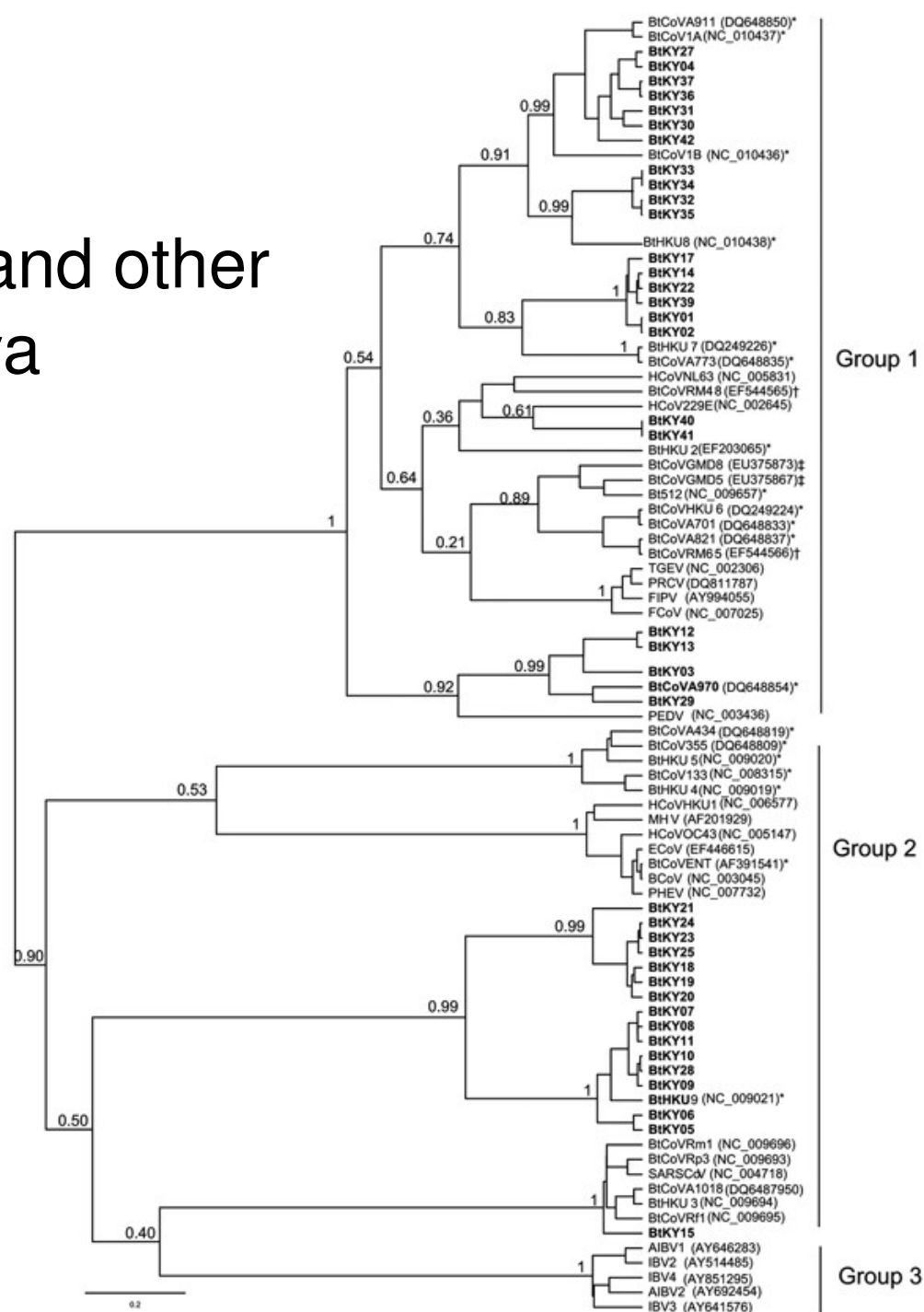
Novel SARS-like and other coronavirus, Kenya

- **Bat reservoir**

- Asia
- Europe
- North America
- *Africa*

- Understanding reservoir → detecting new disease introduction in humans

Tong. EID. 2009(15): 482-485



Do the new viruses matter?

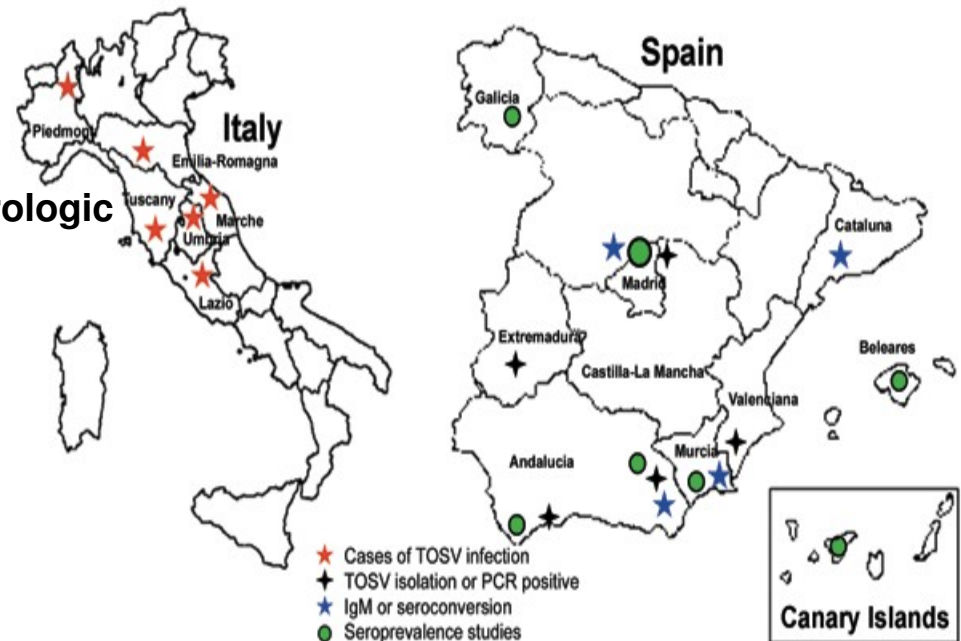
- **Brazilian children RTI**

- 205 children (1 m – 15 yrs)
- Acute respiratory illness in outpatient and inpatient clinics, urban area
- Viruses identified 45% (93/205)

- Influenza A/B	}	→ 36% (74/205)
- Parainfluenza		
- Adenovirus		
- Respiratory syncytial virus		
- <i>Human metapneumovirus</i>	}	→ 9.2% (19/205)
- <i>Human Bocavirus</i>		
- <i>Polyoma virus WU and KI</i>		
- <i>Human Coronavirus</i>		

Toscana Virus: Severe presentations

- Bunya viridae
- Pappataci fever
- Surveillance for mild nonneurologic febrile illness
- 7 cases/358 screened
- 4/7 Mild aseptic meningitis
- 3/7 atypical presentation
 - 2/3: persistent infection
 - Meningoencephalitis
 - Ischemic complications
 - 1/3: febrile exanthema



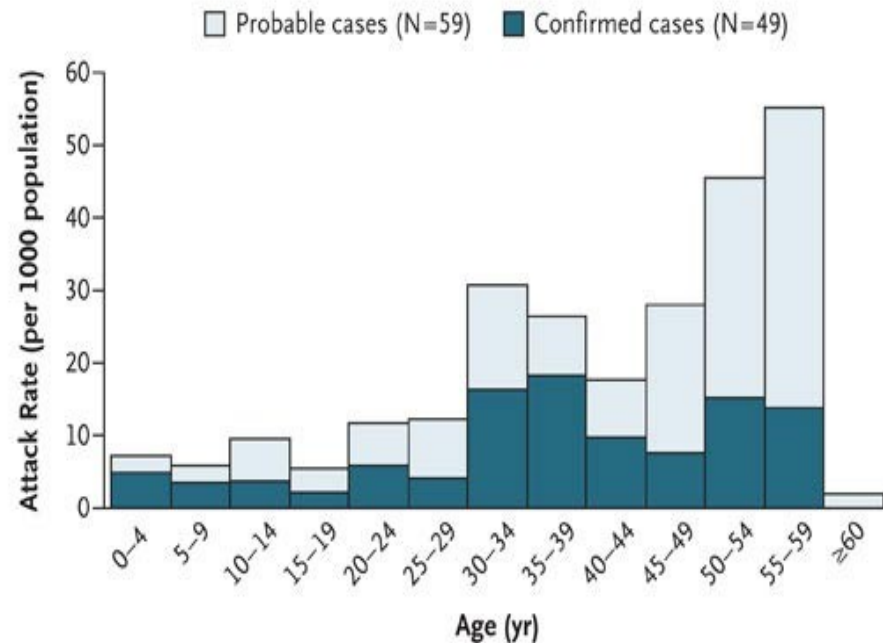
Zika virus

Table 1. Clinical Characteristics of 31 Patients with Confirmed Zika Virus Disease on Yap Island during the Period from April through July 2007.

Sign or Symptom	No. of Patients (%)
Macular or papular rash	28 (90)
Fever*	20 (65)
Arthritis or arthralgia	20 (65)
Nonpurulent conjunctivitis	17 (55)
Myalgia	15 (48)
Headache	14 (45)
Retro-orbital pain	12 (39)
Edema	6 (19)
Vomiting	3 (10)

* Cases of measured and subjective fever are included.

- Flavivirus related to yellow fever, dengue, West Nile virus and Japanese encephalitis virus
- 2007 outbreak: Federated States of Micronesia
- One US student viraemic traveled to US



Hayes. EID. 15(9): 1347 – 1350; Duffy. NEJM. 2009;360:2536-2543

Retrovirus: Chronic Fatigue Syndrome

Science

AAAS

REPORTS

Detection of an Infectious Retrovirus, XMRV, in Blood Cells of Patients with Chronic Fatigue Syndrome

Vincent C. Lombardi,^{1,*} Francis W. Ruscetti,^{2,*} Jaydip Das Gupta,³ Max A. Pfost,¹ Kathryn S. Hagen,¹ Daniel L. Peterson,¹ Sandra K. Ruscetti,⁴ Rachel K. Bagni,⁵ Cari Petrow-Sadowski,⁶ Bert Gold,² Michael Dean,² Robert H. Silverman,³ Judy A. Mikovits^{1,†}

Chronic fatigue syndrome (CFS) is a debilitating disease of unknown etiology that is estimated to affect 17 million people worldwide. Studying peripheral blood mononuclear cells (PBMCs) from CFS patients, we identified DNA from a human gammaretrovirus, xenotropic murine leukemia virus–related virus (XMRV), in 68 of 101 patients (67%) as compared to 8 of 218 (3.7%) healthy controls. Cell culture experiments revealed that patient-derived XMRV is infectious and that both cell-associated and cell-free transmission of the virus are possible. Secondary viral infections were established in uninfected primary lymphocytes and indicator cell lines after their exposure to activated PBMCs, B cells, T cells, or plasma derived from CFS patients. These findings raise the possibility that XMRV may be a contributing factor in the pathogenesis of CFS.

Last but not least: H1N1v Influenza A

- In part Flemish origin...
- Confusing communication
 - **Ukraine:** high mortality and morbidity
 - De Morgen:
 - ...new deadly reassorted virus... ... bodies of the death internally charred....
 - The New York Times:
 - ... attributed to poor health care system...



DeMorgen.be

NIEUWS DE GEDACHTE FINANCIËLE MORGEN SPORT BIS VI

DOSSIER
MEXICAANSE GRIEP

Cocktail van drie virussen zorgt voor paniek in Oekraïne

The New York Times

Tuesday, November 17, 2009 Last Update: 5:31 PM ET

Fragile Care Worsened Swine Flu in Ukraine

By ELLEN BARRY
Published: November 13, 2009

LVIV, Ukraine — When patients began arriving in Vyacheslav Bondar's intensive care unit two weeks ago, their lungs so saturated with blood that they could barely gasp, the only thing he could compare it to was a field hospital in wartime. As soon as he hooked one patient up to a ventilator, a second and third would appear in the doorway.

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Borrelia hispanica

- **Morocco: Detected in 20.5% in patients with unexplained fever**



Figure 1. Locations in the Kenitra District of Morocco where tick-borne relapsing fever was diagnosed. A, Sidi Mohamed Lahmar; B, Had Ouled Jelloum; C, Idrissi Kenitra; D, Lalla Mimouna; E, Mnasra; F, Sidi Taybi.

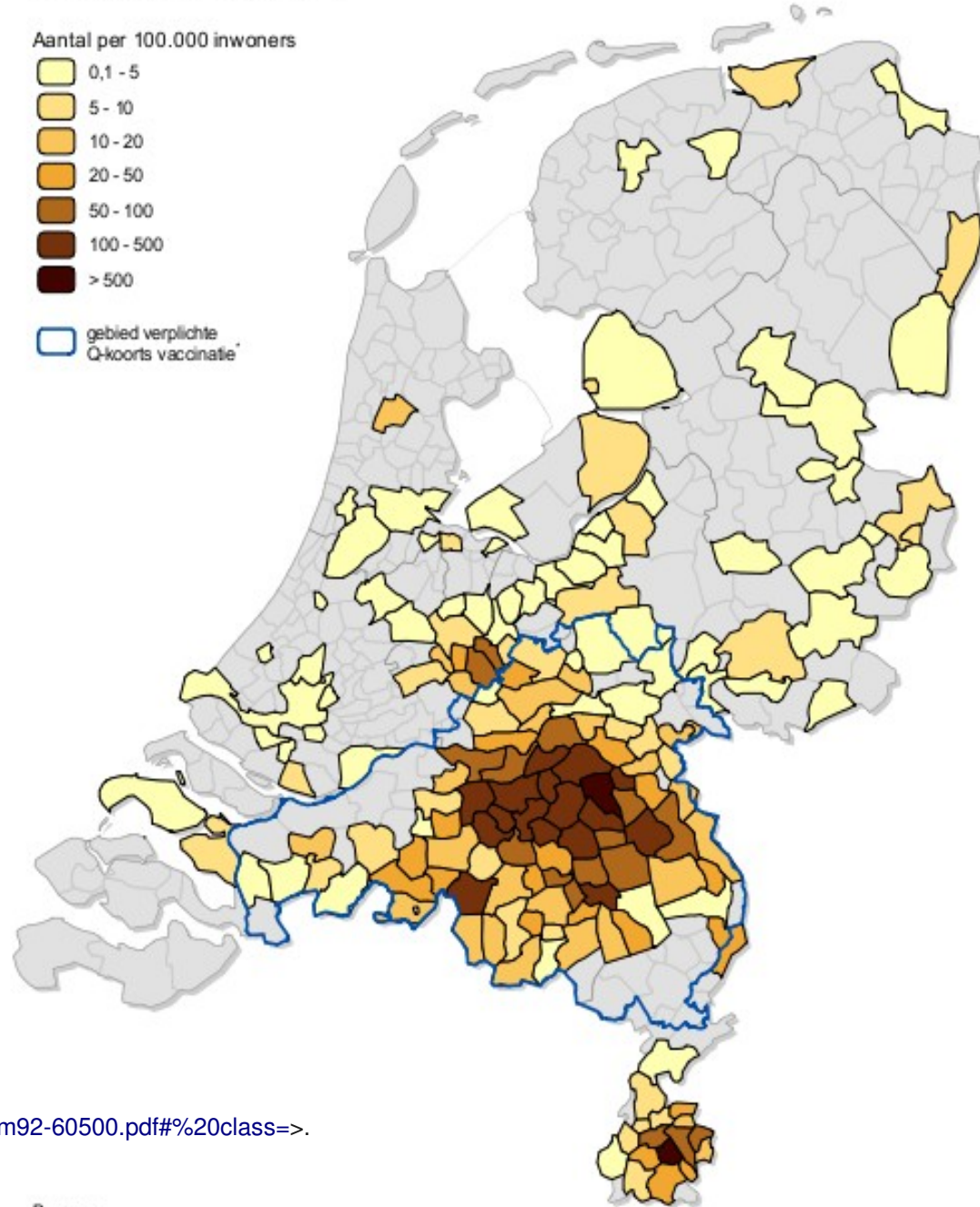
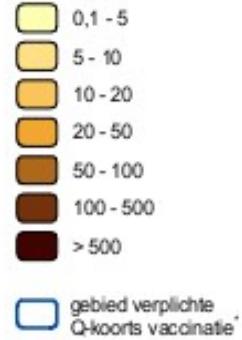
Table. Results of PCR assays for detection of *Borrelia* spp. in 127 patients with unexplained fever in Kenitra, northwestern Morocco

Location	No. patients with positive results/total no. patients (%)	
	16S rRNA seminested PCR	Intergenic spacer sequence nested PCR
Sidi Mohamed Lahmar	2/73 (2.7)	15/73 (20.0)
Had Ouled Jelloum	10/26 (38.5)	11/26 (42.3)
Idrissi Kenitra	0/8	0/8
Lalla Mimouna	0/12	0/12
Mnasra	0/3	0/3
Sidi Taybi	0/5	0/5
All	12/127 (9.4)	26/127 (20.5)

Q fever outbreak in the Netherlands

Incidentie per gemeente
1-1-2009 t/m 27-10-2009 (17:00)

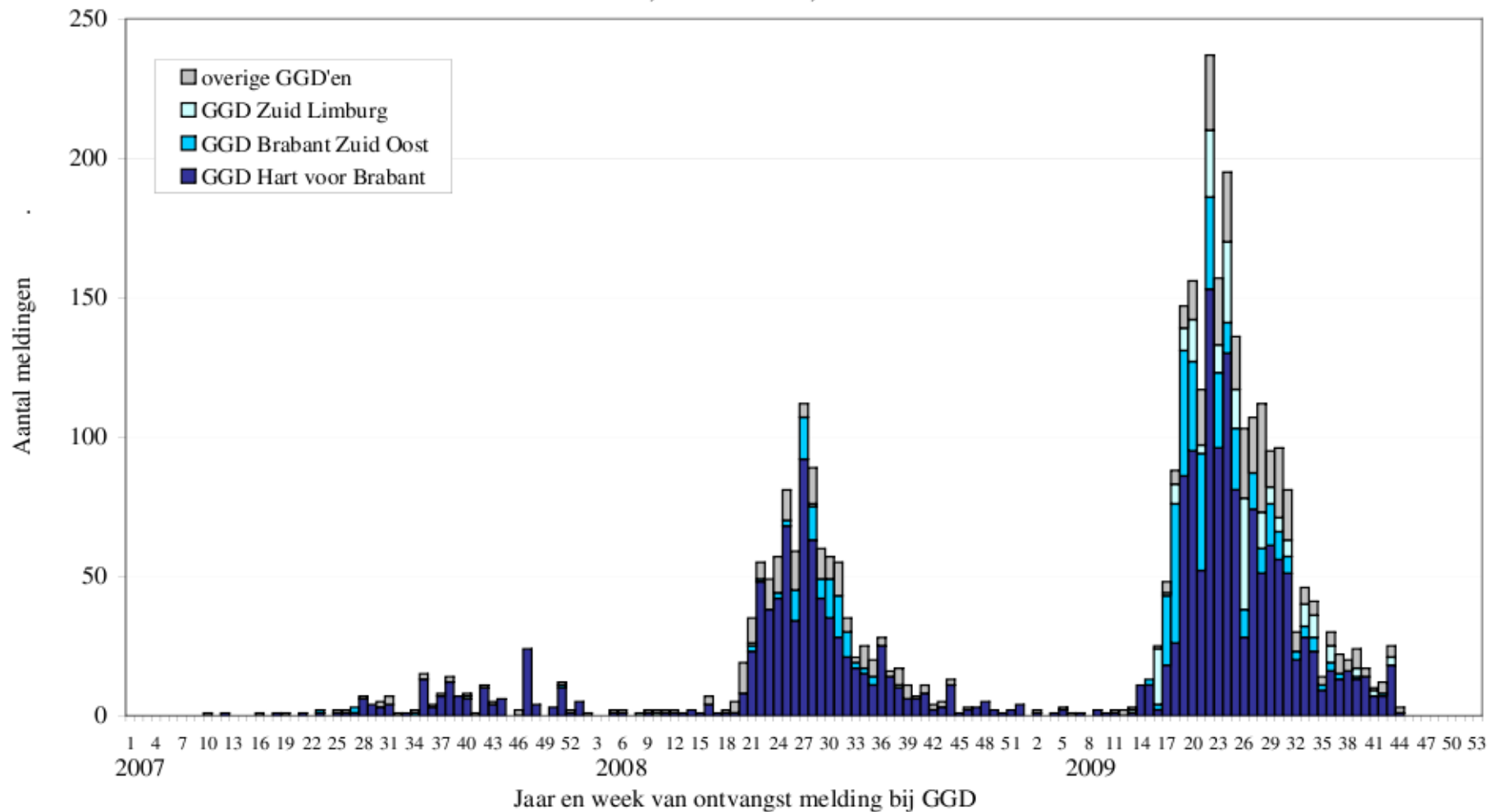
Aantal per 100.000 inwoners



<http://www.rivm.nl/cib/binaries/Qkoorts_per_gemeente_tcm92-60500.pdf#%20class=>>

**Aantal gemelde patiënten met Q-koorts naar week van ontvangst melding bij de GGD,
periode 01-01-2007 t/m 28-10-2009.**

2007: N=168, 2008: N=1000, 2009: N=2236



Brucellosis, Bulgaria and Balkan region

- **No cases since 1958**
- **105 human cases: 2005 - 2007**
 - Occupational risk: 80%
 - Exposure to infected animals (abortion/delivery products)
 - Consumption of diary from family farms
 - Young children

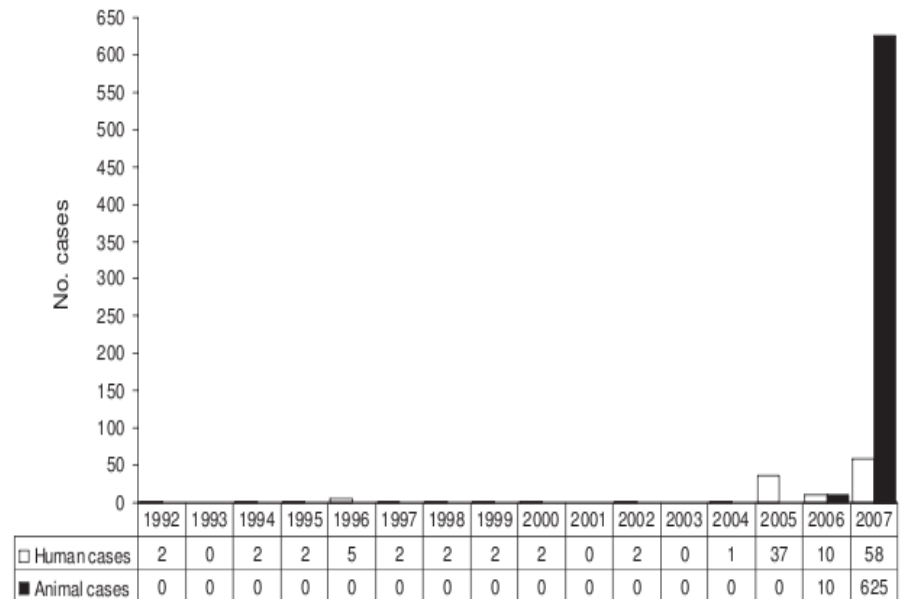


Figure 2. Human and animal cases of brucellosis in Bulgaria, 1992–2007. In Bulgaria, during 1992–2004, a total of 22 human cases and 0 animal cases of brucellosis were recorded; during 2005–2007, a total of 105 human cases and 635 animal cases of brucellosis were recorded.

Russo. EID. 2009 (15): 314-316

Trypanosomiasis, foodborne

- **Brazil, Para state**
- **13 cases in two weeks time in Belem**
- **Through ingestion of contaminated food: Acai berry juice**
- **2007: Venezuela, Colombia**



Promedmail 20091111.3909

Diphyllobothriasis

- **Wild pacific salmon**
 - *D nihonkaiense (klebanovskii)*: Chum, masu and pink (*musculature*)
 - *D ursi*: sockeye salmon (*stomach*)
 - *D. latum*: Cultivated Atlantic salmon

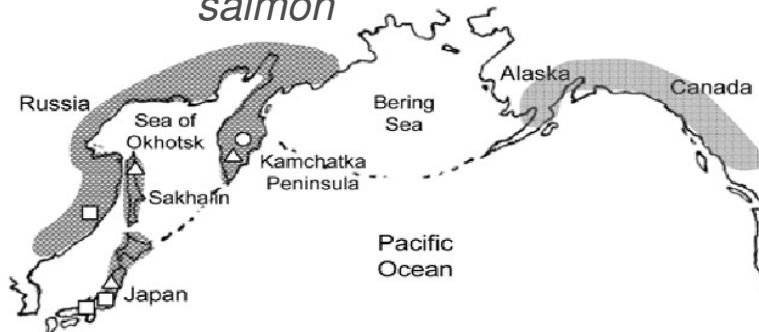


Figure 5. Possible distribution area of *Diphyllobothrium nihonkaiense*. Open circle, open square, and open triangle represent brown bears, humans, and Pacific salmon, respectively, from which *D. nihonkaiense* adult worms or plerocercoids were isolated and identified by DNA sequencing (DNA sequences refer to reference 21). Patients in European countries are suspected to have eaten salmon imported from the Pacific coast of North America.

Arizono. EID. 2009 15(6): 866 - 870

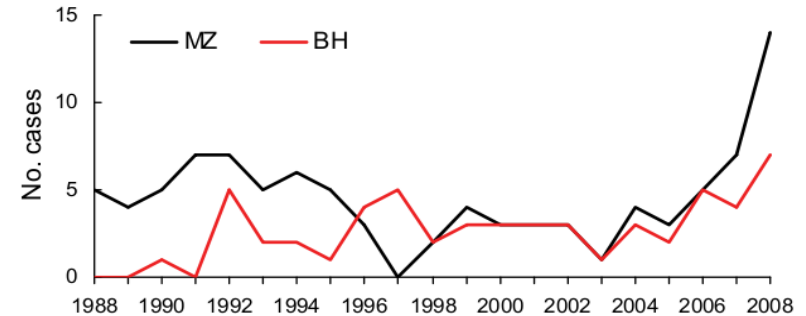


Figure 2. Diphyllobothriasis cases, Department of Medical Zoology of the Kyoto Prefectural University of Medicine (MZ) in Kyoto and Department of Infectious Diseases of the Tokyo Metropolitan Bokutoh Hospital (BH) in Tokyo, Japan, 1988–2008.

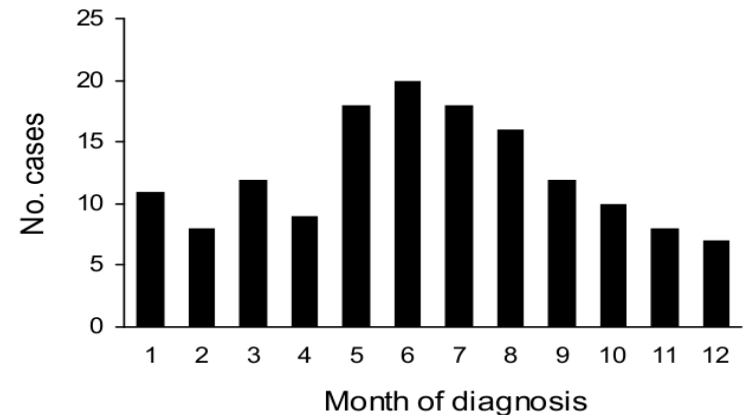


Figure 3. Seasonal occurrence of diphyllobothriasis nihonkaiense, 149 cases, Department of Medical Zoology of the Kyoto Prefectural University of Medicine in Kyoto and Department of Infectious Diseases of the Tokyo Metropolitan Bokutoh Hospital in Tokyo, Japan, 1988–2008.

Zygomycosis

Bitar. EID. Sept 09:15(9)

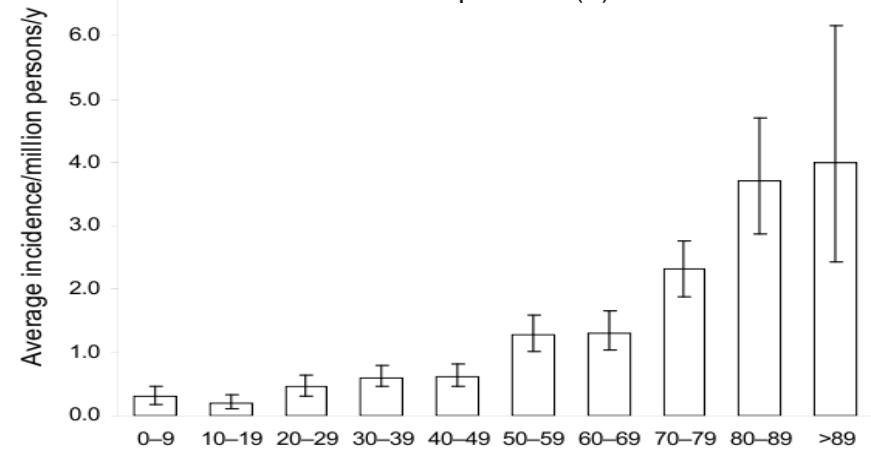
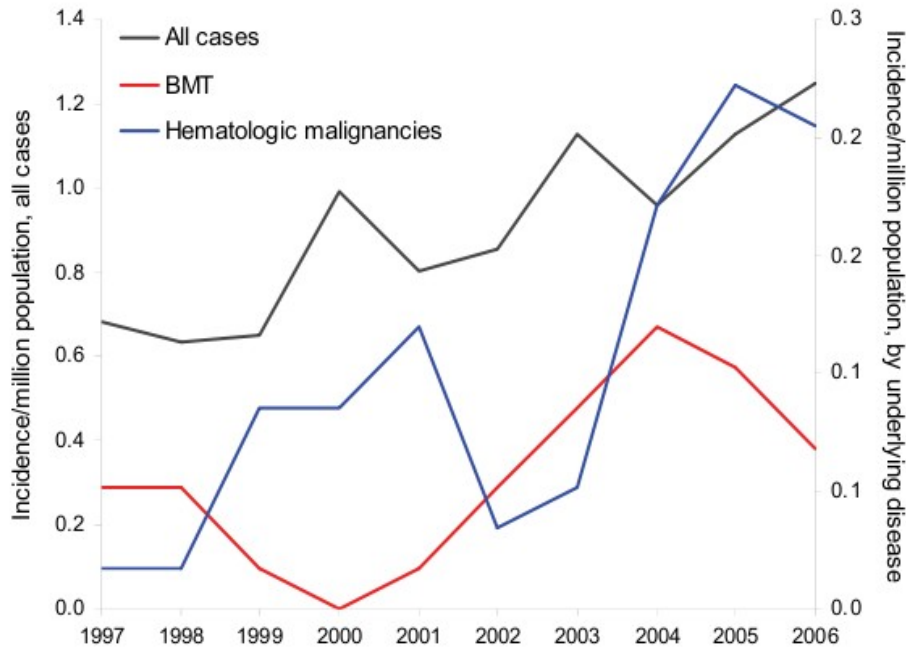


Figure 1. Evolution of the incidence of zygomycosis, France, 1997–2006. BMT, bone marrow transplantation.

Figure 2. Average annual incidence rate of zygomycosis, by age group, France, 1997–2006. Error bars indicate 95% confidence intervals.

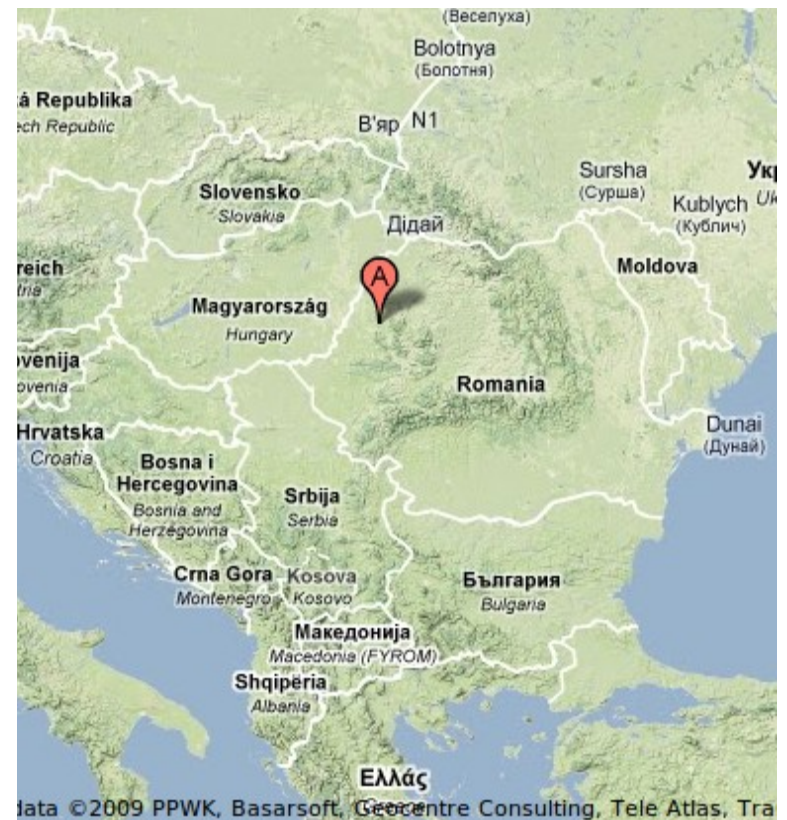
Table. Distribution of zygomycosis cases and deaths, by underlying disease, France, 1997–2006

Known risk factors	No. cases	No. deaths	Case-fatality ratio, %*
Bone marrow transplantation	33	12	36.4
Hematologic malignancies	59	21	35.6
Neutropenia/aplastic anemia	23	11	47.8
Acute lymphoid/myeloid leukemias	20	6	30.0
Other lymphoid/myeloid disorders	16	4	25.0
Nonhematologic immunodepression	64	8	12.5
Cancers of the solid organs	28	3	10.7
HIV/AIDS	26	1	3.8
Solid organ transplantations	10	4	40.0
Diabetes	86	8	9.3
No known risk factor	289	12	4.2
Total	531	61	11.5

*Calculated only for the 61 deaths reported in hospital records for which information about underlying diseases was available.

Biomphalaria tenagophilia

- **Established in Romania in 2006**
- **Vector Shistosomiasis**
- **No detection of cercaria.... so far**



Majoros. EID. Nov 08:14(11)

