

Leptospirose in de Lage Landen

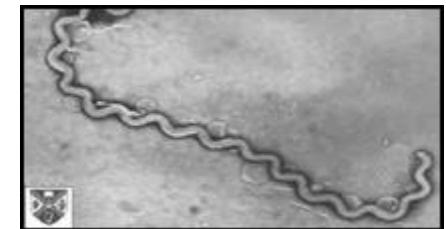
72^{STE} EDITIE GENEESKUNDIGE DAGEN VAN ANTWERPEN

Marjan Van Esbroeck – referentielaboratorium ITG Antwerpen
Wim Flipse - Agentschap Zorg en Gezondheid

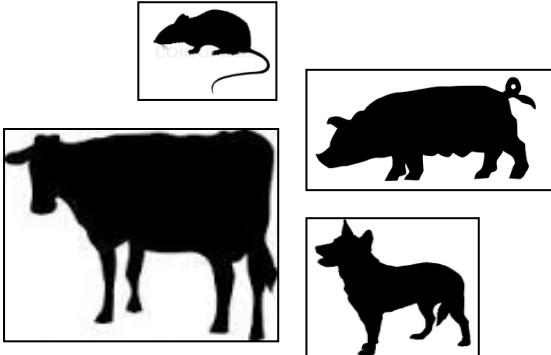


Leptospira species

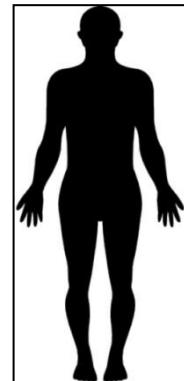
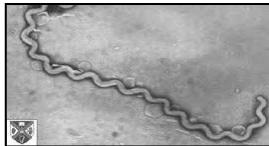
- Order Spirochaetales - family Leptospiraceae - genus Leptospira
- Phenotypic classification: nearly 300 pathogenic serovars
- Often specific to particular host reservoirs
 - Rats
 - Icterohaemorrhagiae icterohaemorrhagiae
 - Icterohaemorrhagiae copenhageni
 - Dairy cattle
 - Hardjo
 - Dogs
 - Canicola
- 29 serogroups
- Genotypic classification: 16 genomospecies



Transmission



(in)direct contact
with urine of
excreting animals



Port of entry
skin abrasions
skin cuts
conjunctiva

Professional/recreational
exposure to fresh water

flooding/ heavy rain
flooding of basements
outdoor sports
bathing in rivers
fishing
cattle raising, farming
working on the land

sewage workers, veterinarians,
abattoir workers, farm workers,
hunters, trappers, animal
shelter workers, militarians,
scientists

Risk factors

Water, agriculture & landscape risk

Social, sanitation, behavioural risk

Animals as risk factor

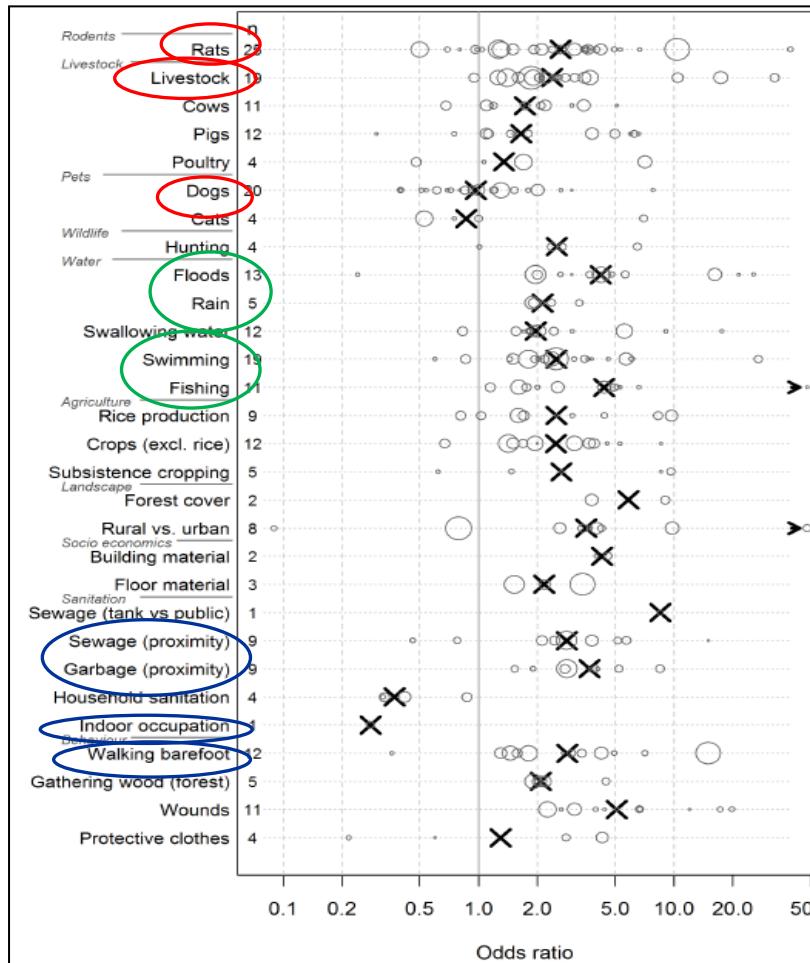
PLOS NEGLECTED TROPICAL DISEASES

RESEARCH ARTICLE

Environmental and Behavioural Determinants of Leptospirosis Transmission: A Systematic Review

Mwanaja Abdalla Mwachui^{1,2}, Lisa Crump^{1,2}, Rudy Hartskeerl³, Jakob Zinsstag^{1,2}, Jan Hattendorf^{1,2*}

¹ Department of Epidemiology and Public Health, Swiss Tropical and Public Health Institute, Basel, Switzerland, ² University of Basel, Basel, Switzerland, ³ Royal Tropical Institute (KIT), KIT Biomedical Research, Amsterdam, The Netherlands



Clinical manifestations

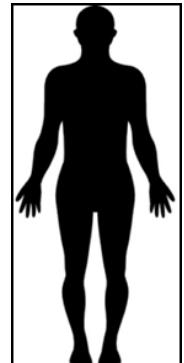
Wide variety of symptoms, mild to severe, potentially fatal ~ serovar, host immune status,...

Early acute disease: non-specific Σ: t°, myalgia, headache

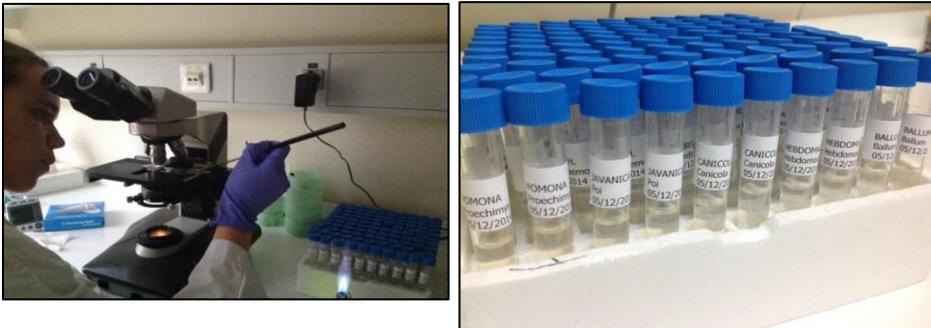
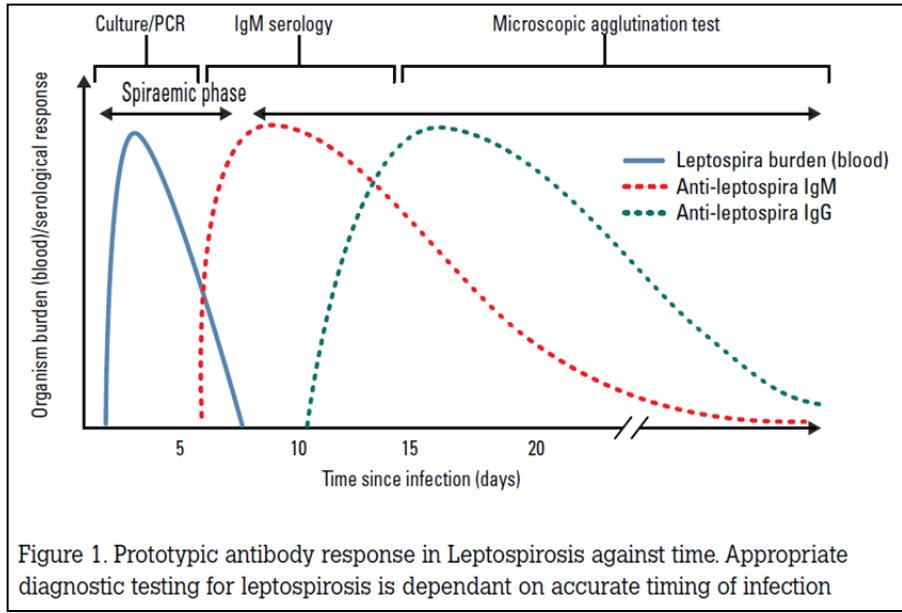
- fever
 - myalgias
 - severe headache
 - chills
 - diarrhoea
 - nausea/vomiting
 - oliguria/anuria
 - jaundice
 - conjunctival suffusion
 - aseptic meningitis
 - haemorrhages
 - joint pain
 - skin rash
 - cough
 - cardiac arrhythmia
 - psychosis/delirium
- Anicteric disease
■ massive pulmonary hemorrhage
- Icteric disease - Weil's disease
■ jaundice, bleeding, renal failure
- Case fatality rates from 3 to > 50%

Differential diagnosis

- influenza
- hepatitis
- dengue fever
- hantavirus infection
- gele koorts
- malaria
- brucellosis
- borreliosis
- typhoid fever
- pneumonia



Laboratory diagnosis



serogroep
Grippotyphosa
Icterohaemorrhagiae
Icterohaemorrhagiae
Pomona
Sejjroe
Semaranga
Javanica
Canicola
Hebdomadis
Ballum

serovar
grippotyphosa
Icterohaemorrhagiae
copenhageni
proechimys
hardjo
patoc ←
poi
canicola
hebdomadis
ballum

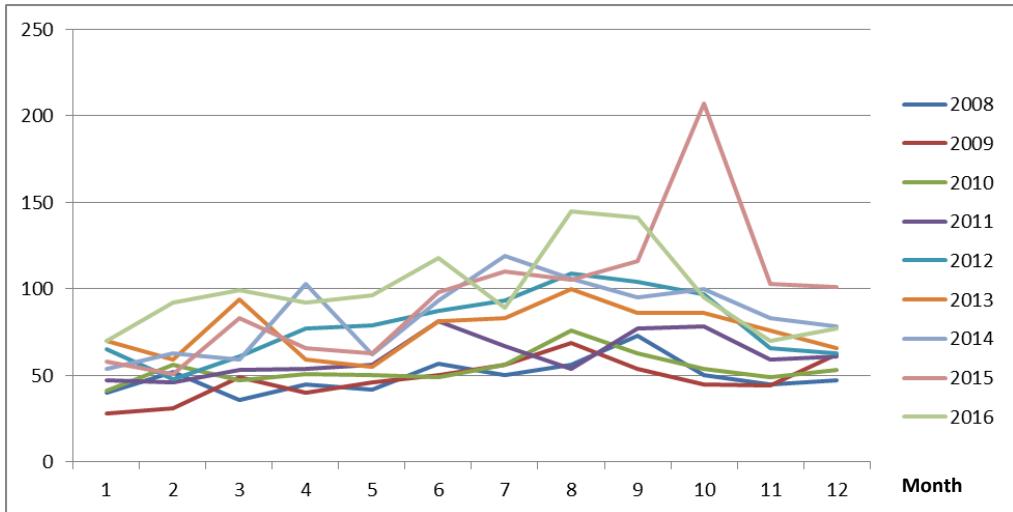
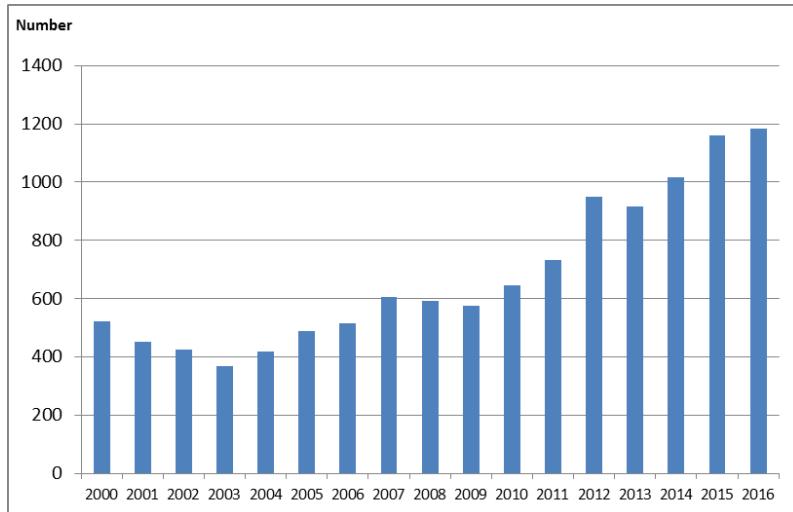


Laboratory diagnosis

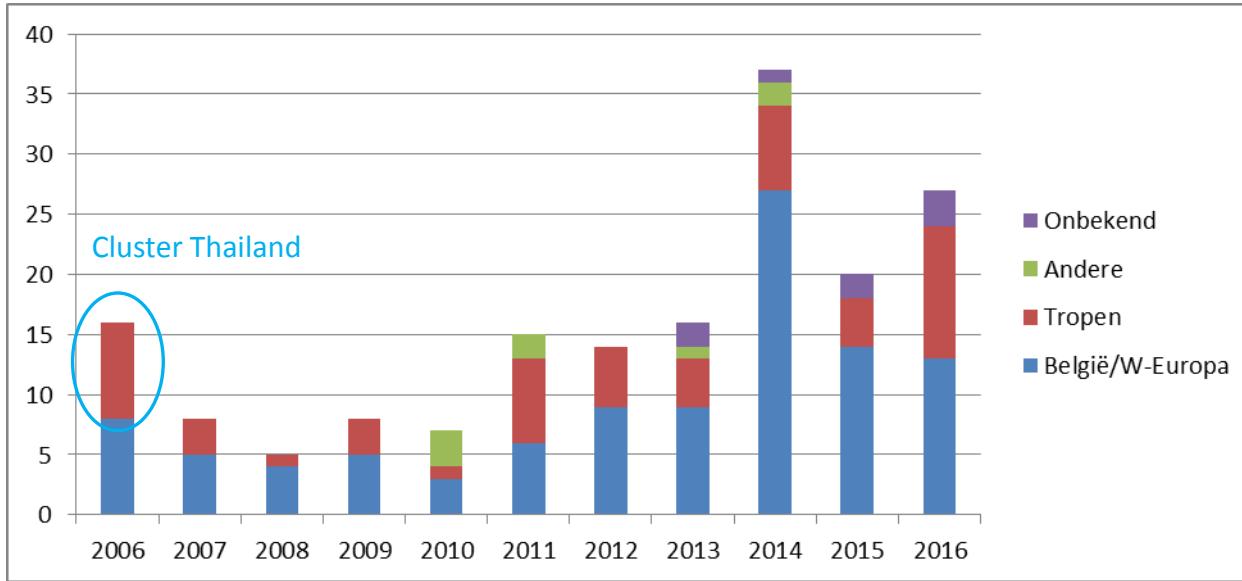
M/35 j Vietnam jungletocht (rivieren)			
serogroep	serovar	d4	d21
Grippotyphosa	grippotyphosa	n	n
Javanica	poi	n	n
Canicola	canicola	n	1/800
Hebdomadis	hebdomadis	n	n
Ballum	ballum	n	n
Pomona	proechimys	n	n
Icterohaemorrhagiae	Icterohaemorrhagiae	n	1/6400
Icterohaemorrhagiae	copenhageni	n	1/12800
Sejjroe	hardjo	n	n
Semaranga	patoc	n	1/800
IgM		pos.	ND



Number of samples tested at ITM



Number of cases in Belgium/country of exposure



Sex and Age distribution

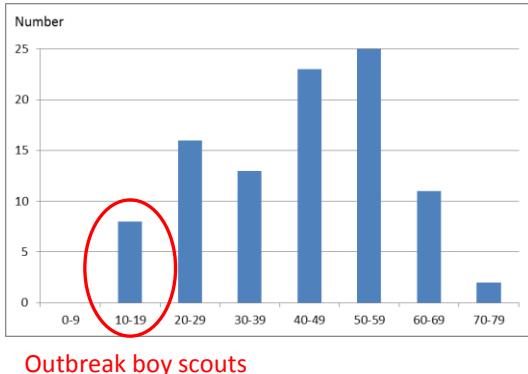
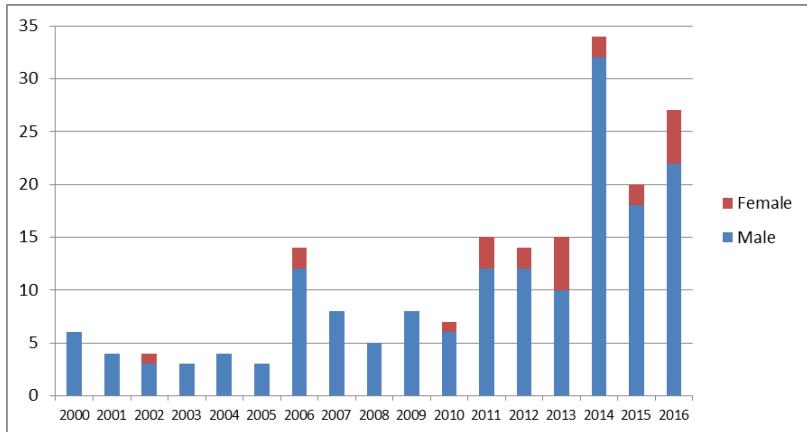
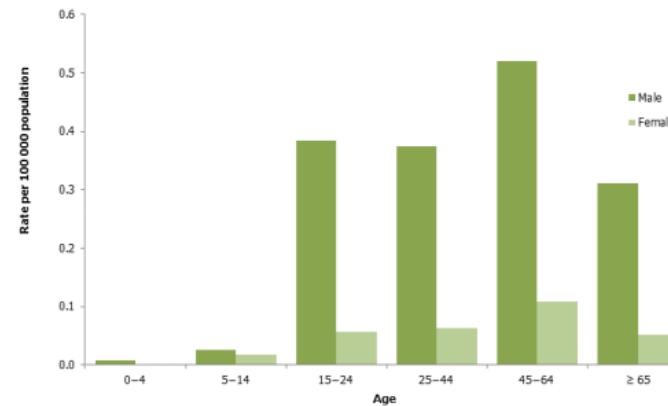


Figure 3. Reported confirmed leptospirosis cases: rates by age group and gender, EU/EEA, 2014



Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

Suggested citation: European Centre for Disease Prevention and Control. Annual epidemiological report 2015. Leptospirosis. Stockholm: ECDC; 2016.

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Leptospirosis in Europe

Country	2010		2011		2012		2013		2014		
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Reported cases	Confirmed cases	Rate
Austria	9	0.1	3	0.0	16	0.2	15	0.2	9	9	0.1
Belgium	7	0.1	15	0.1	16	0.1	15	0.1	34	34	0.3
Bulgaria	11	0.1	12	0.2	4	0.1	3	0.0	43	31	0.4
Croatia	.	.	.	.	.	.	0	0.0	105	105	2.5
Cyprus	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0.0
Czech Republic	40	0.4	31	0.3	22	0.2	6	0.1	37	35	0.3
Denmark	6	0.1	9	0.2	7	0.1	3	0.1	7	7	0.1
Estonia	1	0.1	2	0.2	5	0.4	2	0.2	2	2	0.2
Finland	0	0.0	8	0.1	2	0.0	1	0.0	2	2	0.0
France	39	0.1	71	0.1	25	0.0	36	0.1	628	96	0.1
Germany	70	0.1	50	0.1	85	0.1	80	0.1	160	123	0.2
Greece	24	0.2	20	0.2	14	0.1	24	0.2	36	36	0.3
Hungary	9	0.1	16	0.2	9	0.1	7	0.1	62	31	0.3
Iceland	.	.	.	.	.	.	0	0.0	.	.	.
Ireland	17	0.4	16	0.4	15	0.3	13	0.3	23	22	0.5
Italy	33	0.1	43	0.1	7	0.0	.	.	.	.	.
Latvia	2	0.1	6	0.3	1	0.0	1	0.0	7	7	0.3
Liechtenstein	.	.	.	.	.	.	.	.	.	.	.
Lithuania	5	0.2	3	0.1	20	0.7	10	0.3	3	3	0.1
Luxembourg	0	0.0	0	0.0	1	0.2	0	0.0	0	0	0.0
Malta	1	0.2	1	0.2	3	0.7	3	0.7	0	0	0.0
Netherlands	30	0.2	29	0.2	48	0.3	26	0.2	100	100	0.6
Norway	.	.	.	.	.	.	.	.	.	.	.
Poland	4	0.0	3	0.0	2	0.0	0	0.0	43	10	0.0
Portugal	29	0.3	33	0.3	21	0.2	37	0.4	69	65	0.6
Romania	181	0.9	98	0.5	74	0.4	65	0.3	96	92	0.5
Slovakia	27	0.5	7	0.1	8	0.1	5	0.1	12	12	0.2
Slovenia	9	0.4	9	0.4	4	0.2	0	0.0	31	31	1.5
Spain	0	-	4	-	0	-	0	-	0	0	-
Sweden	4	0.0	4	0.0	4	0.0	5	0.1	6	6	0.1
United Kingdom	42	0.1	52	0.1	78	0.1	50	0.1	78	78	0.1
EU/EEA	600	0.1	545	0.1	491	0.1	407	0.1	1593	937	0.2

Source: Country reports. Legend: Y = yes, N = no, C = case based, A = aggregated, · = no data reported, ASR: age-standardised rate, - = no report

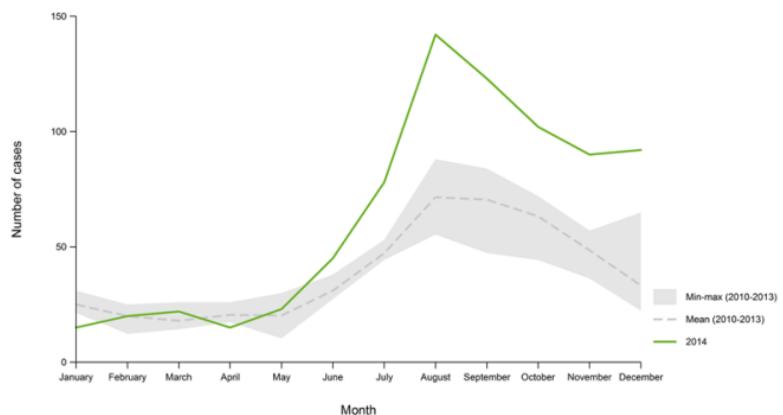


cases per 100 000 population

Europe 2014



Figure 4. Reported confirmed leptospirosis cases by month, EU/EEA, 2014, compared with 2010–2013

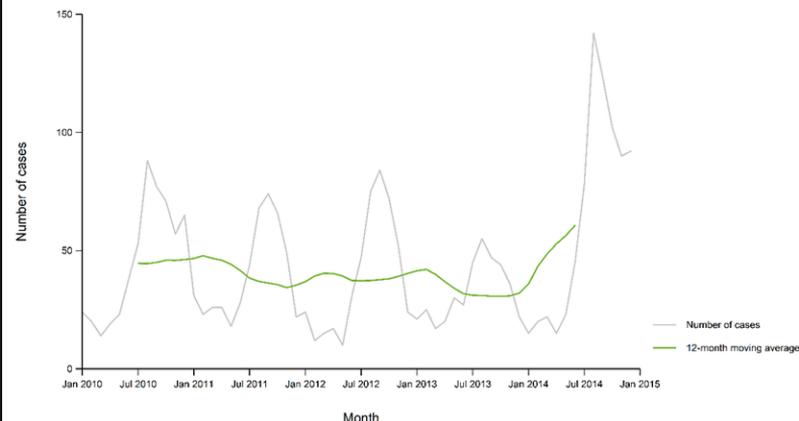


Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

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Figure 5. Reported confirmed leptospirosis cases: trend and case numbers, EU/EEA, 2010–2014



Source: Country reports from Austria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

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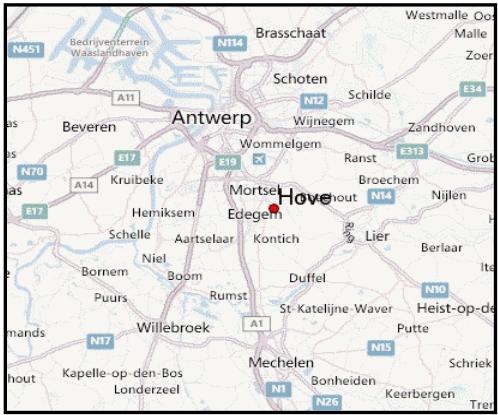
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2006: cluster Thailand

- July 2006
- 7 Belgian travelers
- Rafting in the Mae Taeng river Chiang Mai province
- 3 febrile syndrome, 2 hospitalisation
- 1 death (pulmonary hemorrhage)



2006: Hove



Visser loopt zeer zeldzame infectieziekte op aan parkvijver

HOVE - In het UZ Antwerpen is deze week een geval vastgesteld van leptospirose, een zeldzame infectieziekte. Het slachtoffer liep de besmetting vermoedelijk op tijdens het vissen in de gemeentelijke parkvijver van Hove.

Volgens professor Van Gompel van het Instituut voor Tropische Geneeskunde gaat het om een zeer zeldzaam geval. "Leptospirose is een besmetting die wel meer voorkomt bij dieren, zonder dat die er zelf ziek van worden. We treffen zo'n besmetting enkel aan in zoet water. In dit geval is het water waarschijnlijk besmet geraakt via de urine van ratten. Besmetting van de mens is enkel mogelijk via kleine



De parkvijver van Hove werd met linten ontoegankelijk gemaakt en het gemeentebestuur vraagt de eenden en watervogels niet te voeden.

Foto Dirk VAN DE VELDE

Juli 2006

2012: Semois river , boy scouts

Epidemiol. Infect., Page 1 of 6. © Cambridge University Press 2014
doi:10.1017/S0950268814002763

SHORT REPORT

Outbreak of leptospirosis during a scout camp in the Luxembourg Belgian province, Belgium, summer 2012

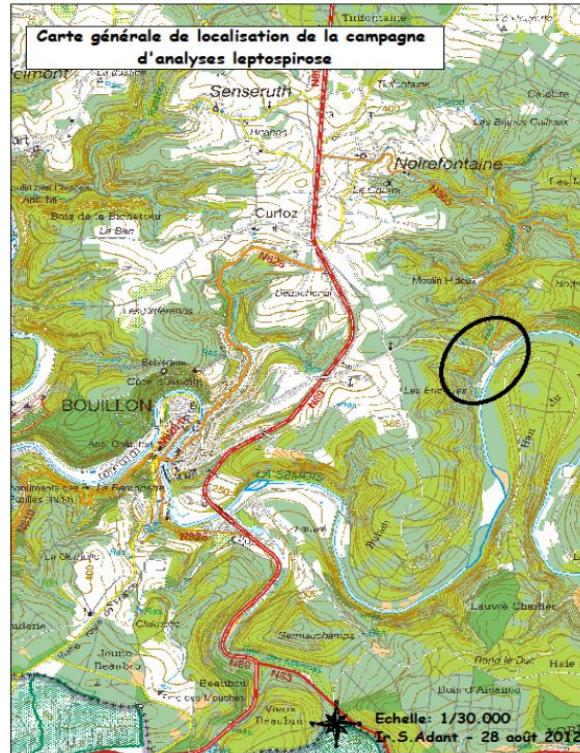
M. MORI^{1*}, M. VAN ESBROECK², S. DEPOORTER³, W. DECALUWE³,
S. J. VANDECASSELE³, D. FRETIN¹ AND M. REYNDERS³

¹Veterinary and Agrochemical Research Centre, CODA-CERVA, Brussels, Belgium

²Tropical Medicine Institute, ITM, Antwerp, Belgium

³AZ Sint-Jan Brugge-Oostende AV, Campus Sint-Jan, Bruges, Belgium

- August 2012, > 10 cases, 4 lab confirmed
- Adventure scout camps near the Semois river
- Risk factors: direct contact muskrat - indirect contact contaminated environments incl. the river water.
- Environmental investigation near the river banks:
muskrat as Leptospira sp. reservoir.



2015: Nijlen, Titan run



Vrees voor massale besmetting ratteziekte na Titan Run

03/10/2015 om 08:15 door werner rommers



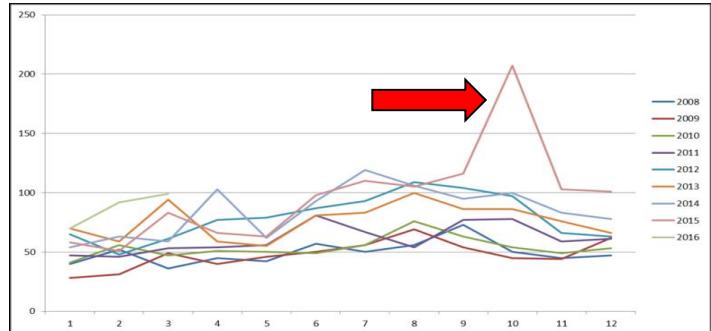
2.500 deelnemers Titan run blootgesteld aan leptospirose



LAATST BIJGEWERKT: OKTOBER 2015 | 1232 X GELEZEN

NIJLEN Er zijn drie gevallen van leptospirose vastgesteld bij deelnemers aan de zogenaamde "Titan run" in Nijlen. Ze hadden koorts,ademhalingsproblemen en aantasting van lever en nieren. Ze werden in het ziekenhuis opgenomen.

De Titan run is een loopwedstrijd op zondag 13 september. Al deze deelnemers zijn mogelijk blootgesteld geweest aan leeftijd voor leptospirose kan 30 dagen duren. De komende



The screenshot shows a web page from the Vlaanderen.be website. At the top, there's a navigation bar with links for 'Per domein', 'Procedures', 'Publicaties en documenten', 'Cijfers', 'Nieuws', and 'Beleid'. Below this, a banner features a smiling person and the text 'Wat zoekt u?'. The main content area has a blue header 'Een meldingsplichtige infectieziekte aangeven' (Report a mandatory infectious disease). Underneath, there's a breadcrumb trail: 'Home > Per domein > Infectieziektes en vaccinaties > Virale hemorragische koorts >'. The main text on the page says 'Een meldingsplichtige infectieziekte aangeven'.

CRITERIA

Klinische criteria

- koorts ($>38^{\circ}\text{C}$)

EN minstens twee van de volgende:

- rillingen, hoofdpijn, spierpijn, conjunctivale vaatinjectie, hemorragische diathese met bloedingen t.h.v. huid en muceuze membranen, rash, icterus, myocarditis, meningitis, nierinsufficiëntie, respiratoire symptomen zoals hemoptysis

Epidemiologische criteria

Minstens één van de volgende:

- transmissie van dier naar mens
- blootstelling aan een gemeenschappelijke bron
- blootstelling aan gecontamineerde omgeving

Criteria voor laboratoriumconfirmatie

- isolatie van *Leptospira spp* via kweek uit bloed, weefsels, liquor of urine

OF

- detectie van *Leptospira spp* via PCR

OF

- seroconversie of viervoudige titerstijging van specifieke serumantilichamen via de microscopische agglutinatie test (MAT) uitgevoerd met een adequaat panel van stammen (interval van een of meer weken en in hetzelfde laboratorium onderzocht)

OF

- éénmalige hoge titer in MAT (≥ 800)

GEVALSDEFINITIE

Waarschijnlijk

- patiënt met klinische criteria EN epidemiologische criteria

Bevestigd

- patiënt met klinische criteria EN laboratoriumconfirmatie

TRA

Quitter Accueil



Treatment

Early antibiotic treatment

- ↗ survival/course of the disease

Antibiotic treatment later on

- ↘ recovery period
- ↘ sequelae

Severe leptospirosis

- Penicilline, high doses, IV
 - rapid clearance of leptospires
 - Jarish herxheimer reaction

Less severe cases

- Doxycyclin
- Amoxicillin
- Ampicillin
- Erythromycin
- Cephalosporines 3^e gen.



Control

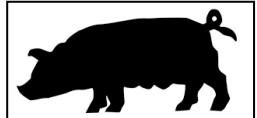
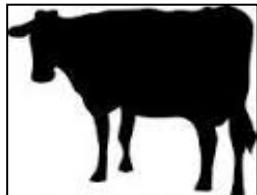
(in)direct contact
with urine of
excreting animals



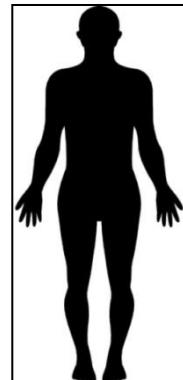
Control of rodents



Identification and
reduction of
infection source



Herd control measures
(treatment of carriers,
vaccination)



Increasing awareness in clinicians, population (risk groups) - Surveillance
Reduce exposure: use of appropriate protective equipment (rubber boots, gloves, protective eyewear) - Local risk assessment & training

Conclusions

- Relatively uncommon disease → limited public health problem
- Recreational versus occupational exposure
- Male > female patients ~ exposure
- Small clusters/outbreaks
- Surveillance → notifiable disease



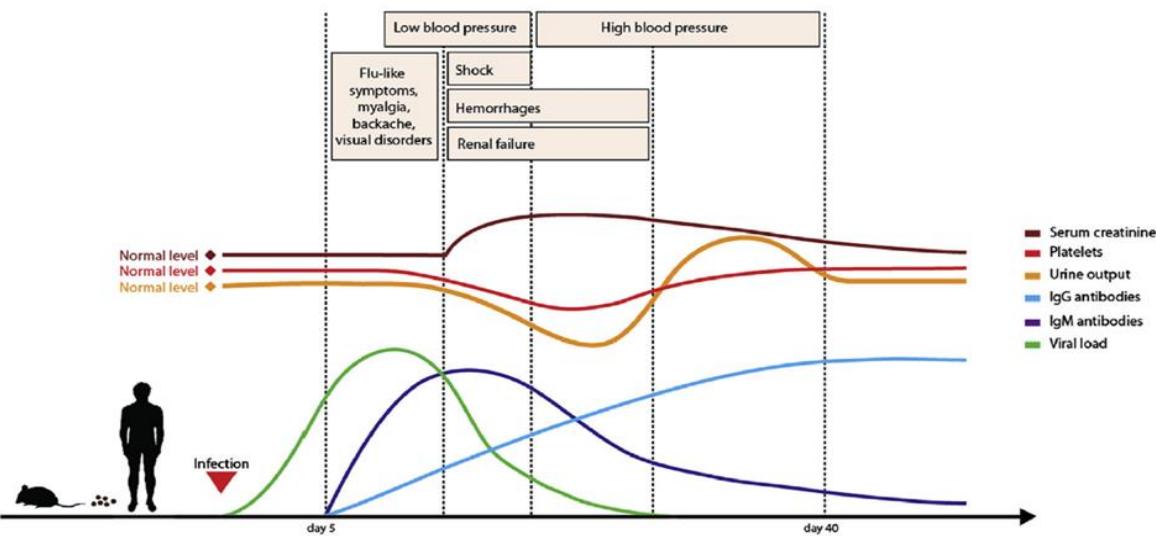


Thank you

Hantavirus

ARTICLE IN PRESS

T. Avšič-Županc et al. / Clinical Microbiology and Infection xxx (2016) 1–11



- PCR
- ELISA - Puumala virus
- Western blot - Dobrava, Belgrade, Seoul, Hantaan

NRC

UZ Leuven/KU Leuven

M. Van Ranst

Hantavirus

	# requests			# cases			
	2015	2016	2017	2015	2016	2017*	2017§
NRC	319	233	276	29	13	52	...
ITG	140	196	235	11	10	22	50
	459	429	511	40	23	74	...

*May §Sept

Sentinel Lab Network

- Most cases located in the provinces Namen, Luxemburg, Antwerpen and Henegouwen
- Highest number of cases in April

