EPI-NEWS NATIONAL SURVEILLANCE OF COMMUNICABLE DISEASES

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LEPTOSPIROSIS 1982-2001

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In the 20-year period 1982-2001, a total of 238 cases of leptospirosis were diagnosed in Denmark, representing an average of 12 cases per annum. Only 76 (32%) of cases were notified. The largest number was seen in 1999, with a total of 34 cases, of which 14 were notified. The large number of cases in 1999 was due to a lot of heavy rainfall and consequent flooding. Five of the cases are described in EPI-NEWS 49/99. Overall, the M:F ratio was approximately 3:1. Among notified cases, the ratio was 10:1. For all patients, the median age was 55 years (4-97 years). A total of 70 (92%) of the notified patients were admitted to hospital. Most cases occurred in the period July to January, most commonly in September and October.
For all cases, the incidence was highest in Ribe and Funen Counties, and in Copenhagen Municipality Table 1.

Table 1. No. of diagnosed cases of leptospirosis, by county, 1982-2001

County	No.
Copenhagen Municipality	32
Frederiksberg Municipality	1
Copenhagen County	9
Frederiksborg	3
Roskilde	6
West Zealand	6
Storstrøm	12
Bornholm	1
Funen	23
South Jutland	7
Ribe	39
Vejle	13
Ringkøbing	19
Aarhus	21
Viborg	12
North Jutland	19
Not stated	15
Total	238

Serotypes
The two most commonly occurring serotypes, both among diagnosed and notified cases of leptospirosis, were L. icterohaemorrhagiae and L. sejroe.
The different Leptospira types are adapted to various hosts, primarily rodents, and can therefore often point to a probable primary source of infection.
For example, L. icterohaemorrhagiae is seen in rats, L. sejroe and saxkoebing in mice, L. canicola in dogs, L. hardjo in cattle and L. pomona in pigs. The most important hosts in Denmark are thus rats and mice. L. icterohaemorrhagiae is the most important pathogen among the total of appr. 210 known serotypes.

Transmission
Leptospira is secreted with urine into surface water and drainage, primarily from rats. In water and in very moist soil, Leptospira can survive for several months. Infection takes place by direct contact with an infected animal or contaminated water. The most important route of infection is the skin, either through small scratches or through sodden, but otherwise intact skin. Peroral infection has also been described.
In 42 (55%) of the notified patients, the source of infection was related to their occupation, particularly fish farming or agriculture, Table 2.
In 22 (29%) patients, the source of infection was related to leisure activities, including angling, hobby farming or other contact with agriculture, drainage, rat infestation or foreign travel, particularly to the East.

Table 2. No. of notified cases of leptospirosis, by source of infection, 1982-2001

Source of infection	No.
Fish farm	23
Agriculture	10
Mink farm	2
Refuse	1
Drainage	1
Other occupation	5
Leisure activity	22
Unknown	12
Total	76

Prevention consists of rat eradication and consistent use of personal protection, i.e. heavy, long-sleeved rubber gloves and rubber boots/waders while working on fish farms and in drains. Employees should always be informed about the risk of leptospirosis.

Symptoms and course of disease
Incubation time is one to two weeks. The disease has an acute onset with rigors, raised temperature, fatigue and malaise, headaches, nausea and muscle pains. For cases without fatal outcome, the convalescence period is long, but there is full recovery. In serious cases, jaundice, proteinuria and possibly oligo- or anuria will develop, and massive neutrophilia is seen. Among jaundiced cases, mortality is 10-20%. Untreated, the septic stage lasts 8-10 days. In fulminant cases, death occurs one to two weeks after the onset of symptoms.

Diagnosis and treatment
The diagnosis is made on the basis of clinical symptoms, occupational history, elevated infection parameters and microbiological investigation. The treatment consists of penicillin, 2 million IU x 4 IV for a week. Early commencement of treatment with penicillin is of crucial significance, for which reason it may be necessary to treat on suspicion.

Laboratory diagnosis
Leptospira are motile, spiral-shaped bacteria, and leptospirosis can be diagnosed serologically and by culture from blood or spinal fluid, as well as by dark-field microscopy of urine. The diagnosis of leptospirosis is a specialist task, which is only carried out at the SSI. Culture from blood is possible from the first week after onset of disease, whereas the presence of Leptospira in urine is first seen in the third to fourth week after onset. Culture is performed on mid-stream urine with a drop of NaOH added. The blood sample is submitted in a blood-culture set. After the first week of disease antibodies can be demonstrated in the blood. Investigations for the 15 most common serotypes in Denmark are carried out. The antibodies typically react with many different serotypes, and the titre is increasing on repeated measurements in the course of the disease. However, antibiotic therapy early in the course of the disease may reduce the level of antibodies. After one to two months, the serospecific titre will be high, and the titres of the other serotypes will be falling.

Comments
Leptospirosis is a zoonosis that is widespread throughout the world, but in Denmark it is a seldom occurrence, seen particularly among fish farmers.
Leptospirosis should be notified on form 1515 on clinical diagnosis and simultaneous detection of Leptospira or detection of serological markers. In this way, the seriousness of the disease, means of transmission and possible preventive measures are better illustrated.
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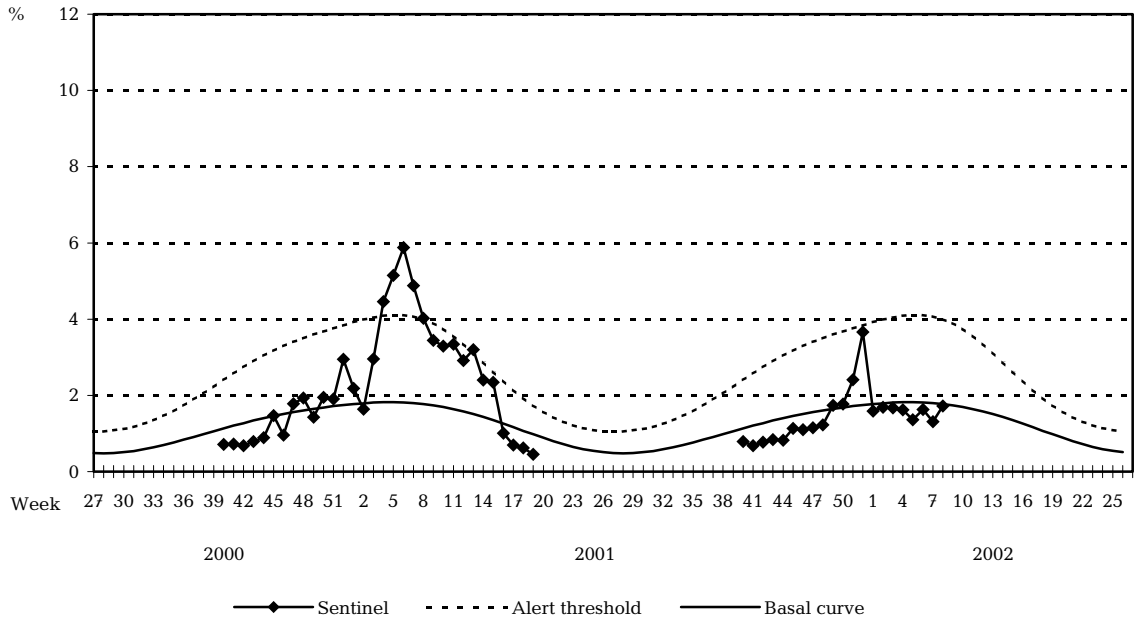
Monthly no. of serum specimens positive for Mycoplasma pneumoniae by complement fixation test, 4th quarter 2001, Statens Serum Institut

	October	November	December
Positive specimens during current period	70	108	103
Positive specimens during same period of previous year	36	54	37
Average for same period of the 5 previous years	124	195	145

(Dept. of Respiratory Infections, Meningitis and STIs)

Sentinel surveillance of influenza activity

Weekly percentage of consultations, 2000/2001/2002



Sentinel: Influenza consultations as % of total consultations

Basal curve: Expected frequency of influenza consultations under non-epidemic conditions

Alert threshold: Possible incipient epidemic

(Dept. of Epidemiology)