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Updates on Leptospirosis in Malaysia

Leptospirosis was put on spotlight again July this year with the death of Mohd Thaqif Amin Mohd Gaddafi whose death was initially thought due to beatings by an assistant warden in a tahfiz school in Johor. Post-mortem revealed that the cause of death was leptospirosis complicated with skin necrosis and micro blood congealing condition (blood coagulation) which affected his blood vessels and eventually organ failure.

Leptospirosis is an infectious disease which is caused by pathogenic *leptospires* belong to the genus *Leptospira* that affects humans and animals. Its endemic mainly in countries with humid subtropical or tropical climates and has epidemic potential as the bacteria is able to survive longest in hot and humid conditions. It is most common in India, China, Southeast Asia, Africa, Australia, Central and South America and the Caribbean. It often peaks seasonally, sometimes in outbreaks and is often linked to climate changes, poor urban slum communities, agriculture, waste management sector, recreational activities, animal farms and those involved in search-and-rescue activities.

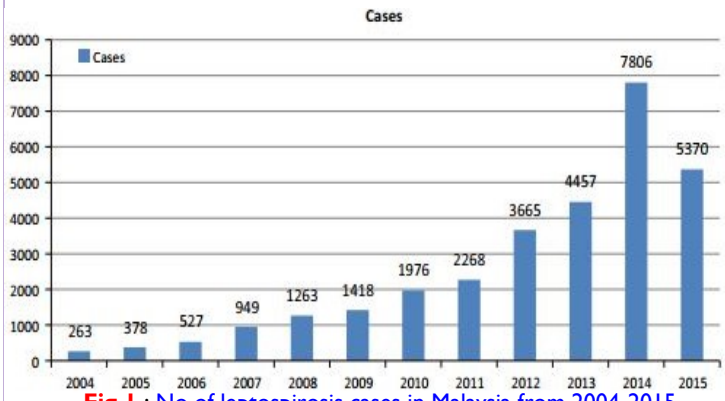


Fig 1 : No of leptospirosis cases in Malaysia from 2004-2015

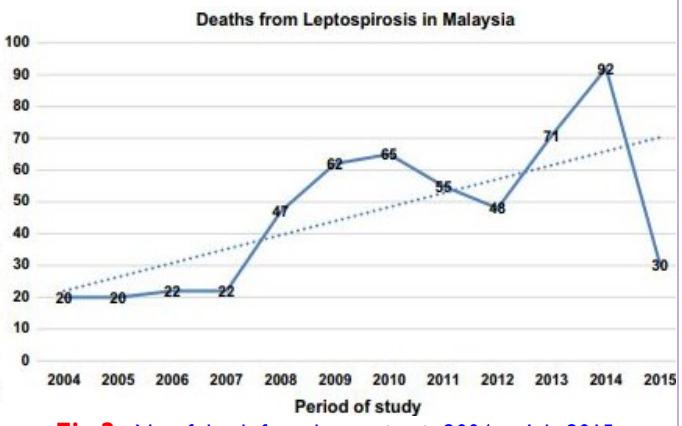


Fig 2 : No of death from leptospirosis 2004 to July 2015

HOW DOES IT SPREAD?

The bacteria spread through the urine of infected animals, which can get into water or soil and can survive there for weeks to months. It can enter the body through skin or mucous membranes (eyes, nose, or mouth), especially if the skin is broken. Animals known to be carriers of the *leptospira* bacteria include cattle, pigs, dogs and rodents, particularly rats. Infected animals may continue to excrete the bacteria into the environment continuously or every once in a while for a few months up to several years. Although person to person transmission is rare, humans can become infected through:

- Contact with **urine** (or other **body fluids, except saliva**) from infected animals.
- Contact with **water, soil or food** contaminated with the urine of infected animals.

PHASES & SYMPTOMS

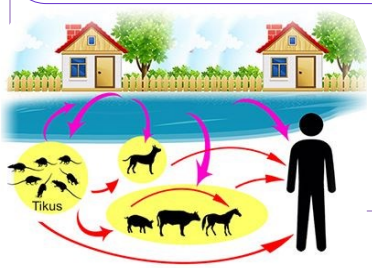
The incubation period is usually 5-14 days, range 2 to 30 days. It may occur in 2 phases :

1. *ACUTE septicaemic phase:*

- lasting about **1 week.**
- It is characterised by nonspecific symptoms such as fever, chills, headache, nausea, vomiting and transient rash.

2. *IMMUNE-MEDIATED phase:*

- when antibodies are produced and *leptospires* are excreted in the urine **(6 days-4 weeks).** Symptoms includes fever, aseptic meningitis, conjunctival suffusion, uveitis, muscle tenderness, adenopathy and purpuric rash.
- if severe, can be jaundice, renal dysfunction (Weil Syndrome), haemorrhagic pneumonia, cardiac arrhythmias and even fatal.
- The illness lasts from **less than 1 week to several months**. In some patients, the 2 phases are separated by a short-lived abatement of fever (3-4 days). However, some infected persons may have no symptoms at all.



References : 1. https://www.cdc.gov/leptospirosis/index.html 2.PPUKM 2012 Antibiotic Guideline 3. Guidelines for The Diagnosis, Management, Prevention & Control of Leptospirosis in Malaysia, Disease Control Division Department of Public Health, Ministry of Health , 2011
4. National Antibiotic Guideline 2014

Treatment of Leptospirosis

Below are the recommended treatment according to local guidelines :

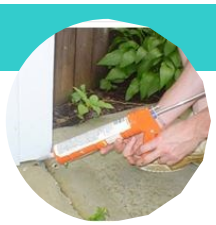
	PPUKM Antibiotic Guideline 2012	MOH Guideline 2011	National Antibiotic Guideline (NAG) 2014
Adult	Benzylpenicillin 1.5 MU q6h IV x 7days **or** Ceftriaxone 1g q12h IV x 7days	Mild : Doxycycline 2 mg/kg per dose (up to 100 mg) PO q12h x 5-7 days **or** Amoxicillin 500mg q6h/1g q8h PO **or** Azithromycin 500mg q24h PO x 3 days Moderate to Severe: Benzylpenicillin 2MU q6h IV x 5-7 days.	Mild : Doxycycline 100mg PO q12h for 5-7 days **or** Azithromycin 500mg PO q24h x 3 days. Moderate to Severe : Benzylpenicillin 2MU IV q6h for 5-7 days **or** Ceftriaxone 1-2gm IV q24h **or** Cefotaxime 1g IV q8h x 7days
Child	-	Mild : < 8years old : Ampicillin 75-100mg/kg/dose PO q6h x7days **or** Amoxicillin 50mg/kg/dose PO q6-8h x 7 days Moderate to Severe : ** Benzylpenicillin G 100, 000 U/kg/dose IV q6h x 7days > 8years old : Doxycycline 4mg/kg/dose PO q12h x 7days	Mild: Amoxicillin 20-50mg/kg PO q6hq8h for 7 days For children > 8 yr: Doxycycline 4mg/kg PO q12h x7 days Moderate to Severe : **Benzylpenicillin 100,000 units/kg IV q6h x 7days **or** Ceftriaxone 80-100mg/kg IV q24h for 7days **or** Cefotaxime 150-200mg/kg/24h IV in 4 divided doses x 7 days.

* Do NOT use doxycycline for pregnant women as it may harm the unborn baby. Use Azithromycin in pregnant ladies.
** Use Penicillin with caution in impaired renal function. Jarisch-Herxheimer reaction has been described in patients with leptospirosis.
*** 1MU Benzylpenicillin = 600mg

Prophylaxis & Post-Exposure of Leptospirosis

Pre-exposure (For people at risk of exposure)	Post-exposure (empirical)
Doxycycline 200mg PO stat dose then weekly throughout the stay. **or** Azithromycin 500mg PO stat dose then weekly throughout the stay. (For pregnant women and those who are allergic to Doxycycline)	Doxycycline 200mg stat dose then followed by 100mg BD for 5 – 7 days for those symptomatic with the first onset of fever. **or** Azithromycin 1g on Day-1, followed by Azithromycin 500mg daily for 2 days. (For pregnant women and those who are allergic to Doxycycline)

Leptospirosis Prevention & Control



- Avoid swimming or wading in water that may be contaminated with animal urine.
- Promote cleanliness and keep premises free from rodents. Seal up holes inside and outside the home and trap rodents around the house to reduce the rodent population.
- Minimize exposure to contaminated water or soil (due to occupational/recreational reasons) by :
  - ⇒ Wearing water proof protective clothing such as rubber boots and gloves.
  - ⇒ Wash with clean water immediately after exposure.
  - ⇒ Avoid swallowing water from lakes, rivers or swamps while swimming.
  - ⇒ Avoid participation in adventure racing activities if you have any cuts or abrasion of the skin.

REMEMBER !! Seek immediate medical treatment if develop symptoms within the incubation period.

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