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Distribution of Leptospirosis in Indonesia at 2017
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Abstract:
Leptospirosis spreaded widely in most parts of Indonesia. The International Leptospirosis Society (ILS) data states that Indonesia was a country with a high incidence of leptospirosis and third ranks in the world. This article presents leptospirosis cases that has been reported infected humans in 2017. The data retrieve was quantitative study with descriptive design. The data used for the analysis were reports of leptospirosis cases from the Zoonosis Program in the area during 2017 which were reported to the Directorate of the Prevention and Control of Vector and Zoonotic Diseases in the Ministry of Health. Data were analyzed descriptively. Leptospirosis cases infected human in 2017 occur in six provinces in Indonesia were DKI Jakarta, Banten, West Java, Central Java, East Java and DIY (Daerah Istimewa Yogyakarta). The number of leptospirosis cases was 908 with 136 people died. The most cases occurred in Central Java as many as 409 with 65 people died. The highest mortality rate due to leptospirosis infection occurred in East Java Province which amounted to 17.9 %. During 2017 there were still many cases of leptospirosis in Indonesia. The government through the Ministry of Health had sought the search and treatment of patients with leptospirosis by involving all related factors comprehensively. Leptospirosis rapid assessment after extraordinary events had carried out to determine the magnitude of health problems faced and to control efforts to break the chain of transmission.

Keywords: Distribution, disease, incidence, zoonotic

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Introduction
Leptospirosis has been an–emerging global public health problem because of its increasing incident in both developing and developed countries. The infection greater incident is in tropical regions but has wide geographical distribution no only in tropical also in subtropical and temperate zone. In the developed world, the incidene of this disease has come from contaminated water. Most country in South East Asia region are endemic to leptospirosis (¹).

Leptospirosis is a zoonotic bacterial disease caused by bacteria of the genus Leptospira that affects in human and animal. The infection greater incident is in tropical regions, that now has been identified as a part of the emerging infectious disease. The bacteria that cause leptospirosis are spread through the urine of infected animal, which can get into water or soil and can survive there for weeks and months. Many different kinds of animal carry the Leptospira, are cattle, pigs, dogs, horses, and rodents. When the animal are infected, they may have no symptoms of the disease. Humans can become infected through contact with urine, water, soil, and food contaminated with urine of infected animal (²,³).

Most mammalian species are natural carrierecoes of pathogenic leptospires. The risk of acquiring leptospirosis is associated with contact with animal (⁴). Transmission from animals to humans occurred when people with open sores on the skin came into contact with water or soil that has been contaminated with animal urine. Bacteria could also entered the body through the eyes or mucous membranes. Outbreak of leptospirosis are usually caused by exposure to contaminated water, such as floodwateres. Human to human transmission is rare (⁵).
Leptospirosis is an important occupational disease, especially affecting farmers, slaughterhouse worker, pet traders, veterinarian, rodent cathcers and also sewer worker. Also as a recreational disease from increasing international travel and activities in tropical countries which be an–endemic of leptospirosis. Leptospirosis is also a veterinary problem, because of farmers and slaughterhouse personal acquiring leptospirosis, it will has direct impact on the trade of animals and meat. The economic impact caused by reproductive failures in live–stock.

Pathogenic leptospires live in kidneys of their natural hosts, the genital tracts of domestic animals act as sites of persistence. Human are considered dead end hosts, because people can maintain leptospires in certain ecosystem. Leptospires excreted in urine into the envireoment, can survive for several months, depending on favourable environmental condition. Un–like natural hosts, accidental hosts often develop disease. Leptospirosis is difficult to diagnose both in clinic and laboratory. Standart tests, as culturing and the microscopic agglutination test (MAT), are laborious and require well–equipment laboratories with experience staff and restricted to a few expert centres. MAT is sero diagnostic that has international proficiency testing scheme has been developed to standardize its performance level at a global scale.

This analysis aims to provide an overview of the incidence and distribution of leptospirosis cases that infect in humans that occurred in Indonesia at 2017. The incidence and distribution of leptospirosis cases are presented based on the place where the case occurred.

**Materials and Methods**

The data used for the analysis were reports of leptospirosis cases from the Zoonosis Program in the area during 2017 which were reported to the Directorate of the Prevention and Control of Vector and Zoonotic Diseases in the Ministry of Health.

**Results**

Leptospirosis cases infected human in 2017 occur in six provinces in Indonesia were special area of the capital Jakarta, Banten, West Java, Central Java, East Java and Special Region of Yogyakarta. The number of leptospirosis cases was 908 with 136 people died. The most cases occurred in Central Java as many as 409 with 65 people died. The highest mortality rate due to leptospirosis infection occurred in East Java Province which amounted to 17.9 %.

The increase in the number of cases in 2017 was due to the implementation of leptospirosis sentinel surveillance in various regions so that case reports were more likely to rise.

**Figure 1** Leptospirosis distribution by province in 2017.
Leptospirosis is a disease that can be transmitted through water (water borne disease). Transmission can occur directly or indirectly. Direct transmission occurs due to contact between humans and urine or infected animal tissue. Indirect transmission occurs when contact between humans and water, soil or plants contaminated with urine from infected animals (9). Humans are incidental hosts who get a systemic infection directly or indirectly into the urine, blood or tissues of infected animals (12).

The Leptospira bakater has about 175 serovars. Other sources say that Spira has more than 200 serovars. Leptospirosis infection can be caused by one or more serovars at the same time (13). If an infection occurs, then the patient’s body will form immune agglutination within 6 d to 12 d. When exposed to chemicals or eaten by phagocytes, Leptospira collapses into a ball–like and thin shape. In this condition, bacteria do not have pathogenic activity. Leptospira bacteria can survive for a long time in water environments, damp soils, plants and mud (14).

Some risk factors associated with Leptospira infection include occupation, age, sewer conditions, the presence of pets, the presence of rats, garbage disposal facilities, and waste water disposal facilities (15). People who are active as farmers, veterinarians, sewer workers, animal guards pets, rodent catchers and people participating in–aquatic recreational activities are more susceptible to disease. In–addition to groups exposed in the workplace, residents of urban slum areas in areas with poor sanitation are high–risk communities. 12 Infections associated with outdoor activities, international travel especially to endemic areas in the tropics, and flood conditions are also risk factors transmission (16, 17).

Clinical symptoms of leptospirosis are not specific and laboratory tests that are difficult to establish a diagnosis result in this disease often un–diagnosed. Clinical symptoms and severity of leptospirosis vary greatly. The forms range from mild, flu–like illnesses to fatal hemorrhagic forms with the involvement of heavy vital organs such as the liver, lungs and kidney (18). Clinical symptoms of leptospirosis include high fever, headache, retro–bulbar pain, transient maculopapular skin rash, photophobia, sub–conjunctival confusion, severe myalgia, oliguria, soft and rare hepatomegaly, and splenomegaly (19, 20).

Laboratory tests are very necessary to diagnose leptospirosis. Leptospirosis sufferers are sometimes difficult to distinguish from other diseases, so it needs to be confirmed by laboratory examination. Non–specific laboratory examination of leptospirosis can lead to the diagnosis of leptospirosis, including by means of blood chemistry examination, hemotology and urine analysis (21).

Efforts to prevent leptospirosis can be done by maintaining personal and family hygiene and the environment. Workers who are active in places at risk of contracting leptospirosis can use personal protective equipment on their hands and feet. The condition of the water channel is maintained so that it can flow smoothly and not dispose of waste on the channel. Avoid direct contact with the source of transmission of Leptospira bacteria (13).

Conclusions
During 2017 there were still many cases of leptospirosis in Indonesia. The government through the Ministry of Health had sought the search and treatment of patients with leptospirosis by involving all related factors comprehensively. Leptospirosis rapid assessment after extraordinary events had carried out to determine the magnitude of health problems faced and to control efforts to break the chain of transmission.
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