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Urban slum conditions are a source of leptospirosis

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A study conducted in an urban slum setting in Salvador, Brazil has found that open sewers, accumulations of refuse, and inadequate floodwater drainage are acting as sources for transmission of the disease leptospirosis. The study is published in this week's *PLoS Neglected Tropical Diseases*.

Leptospirosis, caused by the bacterium Leptospira, is transmitted during direct contact with animal reservoirs or water and soil contaminated with animals' urine. The disease can range in severity from a mild flu-like illness to life-threatening forms of the diseases, such as Weil's disease (which kills over 1 in 10) and severe pulmonary hemorrhage syndrome (which kills over 1 in 2). The huge growth of urban slum communities worldwide has produced conditions for rodent-borne transmission.

In the new study, Dr Albert Ko (Centro de Pesquisas Gonçalo Moniz, Fundação Oswaldo Cruz, Ministério da Saúde, Salvador, Brazil) and colleagues tested 3,171 slum residents for Leptospira antibodies, which are a marker of past infection with the bacterium. The researchers then used Geographical Information System (GIS) and modeling approaches to identify deficiencies in the sanitation infrastructure of the slum that were linked to Leptospira infection. They also investigated whether there was a link between poverty and Leptospira infection.

Dr Ko and colleagues found that the households of those with Leptospira antibodies clustered in squatter areas at the bottom of valleys. The risk of acquiring Leptospira antibodies was higher in people living in flood-

risk regions with open sewers, or near to accumulated refuse, and those who saw rats or lived in the presence of chickens. In addition, being poor was a risk factor for infection—an increase of US$1 per day in per capita household income was associated with an 11% decrease in infection risk.

"These findings," say the authors, "indicate that effective prevention of leptospirosis will need to address the social factors that produce unequal health outcomes among slum residents, in addition to improving sanitation."

Citation: Reis RB, Ribeiro GS, Felzemburgh RDM, Santana FS, Mohr S, et al. (2008) Impact of Environment and Social Gradient on Leptospira Infection in Urban Slums. PLoS Negl Trop Dis 2(4): e228. doi:10.1371/journal.pntd.0000228

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