The potential emergence of leptospirosis in Sri Lanka

Article *in* The Lancet Infectious Diseases · October 2009

DOI: 10.1016/S1473-3099(09)70211-7 · Source: PubMed

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Bribing health-care workers is not difficult—government salaries are frequently paid months late while hospital workers struggle to make ends meet. According to a report on corruption in Mozambique by the US embassy in Maputo, "major corruption and mismanagement problems in the public health system stand as obstacles to continued improvement in health care delivery".[6]

The price for falsified health documents can be quickly recouped—one programme in northern Mozambique offers goats, worth $20–30 each, to HIV-positive people. The drive to fake one's own HIV-positive status is even stronger for government employees, who are eligible for a substantial salary increase for testing positive.

A second area of widespread corruption involves HIV prevention. Prevention activities necessarily occur in remote villages, where they are difficult to monitor. A growing trend in Mozambique has been to request grants for rural education programmes (such as taking a theatre group to a rural primary school). However, because of a lack of monitoring—almost a technical impossibility in a country as vast and as lacking in infrastructure as Mozambique—it is common practice to pocket the money and falsify reports of having done prevention work.

Not only is aid money misspent, but the data collected on the number of people reached by prevention programmes are inaccurate. The process of monitoring and evaluation is confounded by false data and an inaccurate picture of the progress in HIV/AIDS prevention results. NGOs have outreach targets and require statistics to report to donors, so there is little motivation to investigate fraud.

Money remains available because the total funds available outpace the amount being spent. There have been many benefits from the influx of money for HIV/AIDS into Mozambique. Over 460 000[7] people that are HIV-positive have benefited from support and care, and many times that benefit from well run and well intentioned prevention programmes. However, abuse of HIV/AIDS money has become widespread in Mozambique, detracting from the overall public health effort.

Although the detrimental effects of low-level corruption are not enough to seriously derail the HIV/AIDS effort in Mozambique, the situation is a cause for concern. For example, suspect data and subsequently inaccurate project evaluations make resource allocation, as well as monitoring and evaluation, difficult. The possibility that small-scale innocuous corruption will set the stage for large-scale systemic corruption is also a concern. Possible solutions might include stronger monitoring and auditing by donors and stricter controls on project monitoring and evaluations. A requirement for individuals to take antiretroviral drugs to qualify for wage increases or material incentives might help reduce the number of people with a falsified HIV status. In the end, careful and creative resource management will be needed to maximise aid efficiency and limit corruption.

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I declare that I have no conflicts of interest. I would like to thank Jane Turner for support during the writing of this article.

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The potential emergence of leptospirosis in Sri Lanka

Leptospirosis became a notifiable disease in Sri Lanka in 1991. The number of cases every year reported by clinicians to the Sri Lanka Epidemiology Unit of the Ministry of Health in the decade leading up to 2007 remained around 1000–2000 cases, with an incidence in 2007 of 11·0 per 100 000 population (figure). This was followed by a substantial increase in reported cases to 35·7 per 100 000 during 2008.[1] Documented increases occurred in at least nine districts (Colombo, Gampaha, Kaluthara, Kandy, Galle, Matara, Kurunegala, Kegalle, and Matale), representing a large area of west, south, and central Sri Lanka (figure). The case fatality rate for reported cases was 2·8%.

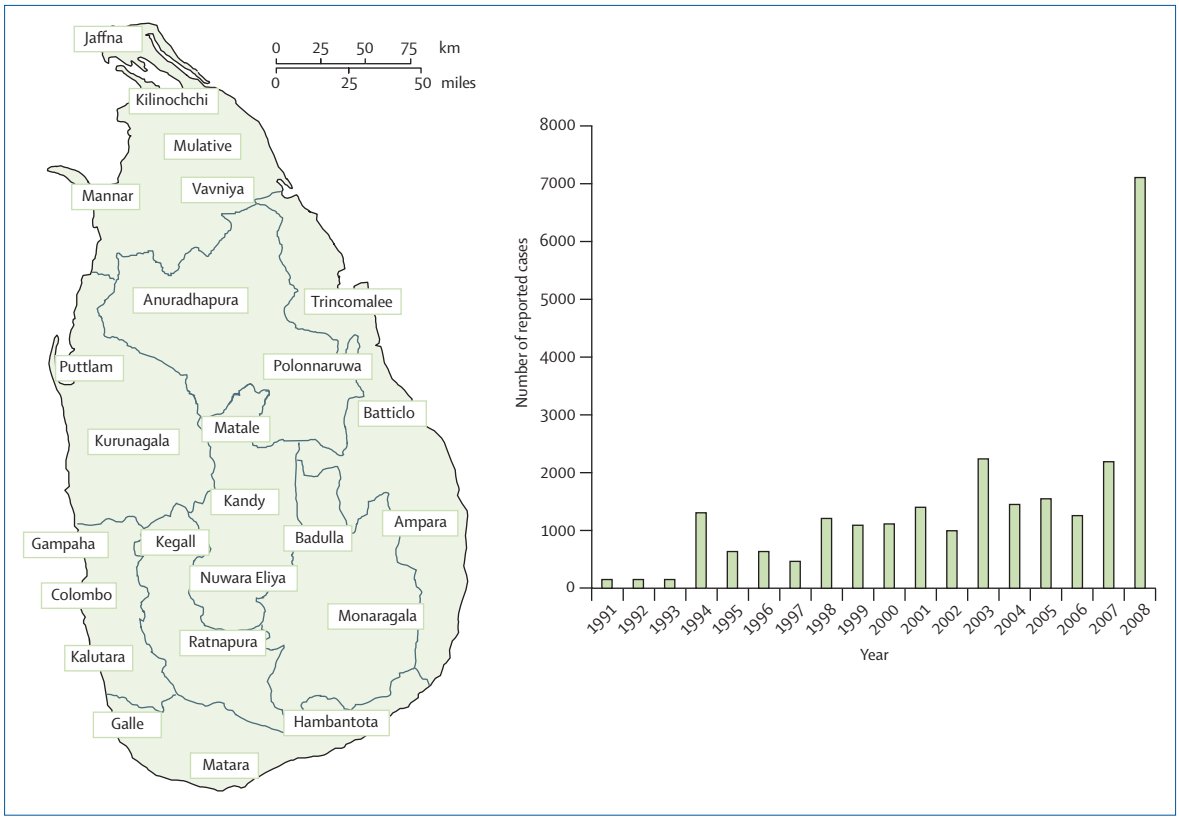

Figure: **Map of Sri Lanka and reported cases of leptospirosis during 1991–2008**

Laboratory confirmation of leptospirosis is not routinely available in Sri Lanka, and the diagnosis of reported cases was on the basis of clinical features (fever with chills and headache together with severe muscle pain or muscle tenderness especially calf muscle, meningism or alteration of consciousness, conjunctival suffusion, dry cough, or haemoptysis). The clinical diagnosis of leptospirosis is very inaccurate because it shares clinical features with a range of other infectious diseases that occur in the tropics, including rickettsia, dengue, and hantavirus infections. In one study in Thailand,[2] the positive predictive accuracy of a hospital-based diagnosis of leptospirosis in nine provinces was very low, with only 143 (20%) of 700 of suspected cases being confirmed by laboratory testing. The cause of illness in the remaining 80% of cases was not found.

In the absence of a change in the way notification is done in Sri Lanka, the data presented here support the suggestion that an outbreak of a presumed infectious disease has taken place. The causes of most cases during the 2008 outbreak is unlikely to be identified, since samples from most of that period have not been systematically taken and stored, although our investigation of 400 cases of suspected leptospirosis presenting to three hospitals around Kandy towards the end of 2008 will provide information on the rate of leptospirosis infection in this cohort in the near future. We think that it is probable that at least some of the reported cases are leptospirosis, on the basis of the endemicity of this infection in Sri Lanka. The first human cases in Sri Lanka were reported in 1959 in a study of four cases,[3] three of whom were laboratory confirmed (with the compliment fixation test) and one, a fatal case, was clinically diagnosed. This study was followed during the 1960's and 1970's by case series reported from Gampaha, Kegalle, Ratnapura, and Colombo districts.[4-6] The first published Sri Lankan seroprevalence study was reported in 1962, in which the presence of antibodies was defined as 24% in a high-risk population living along the Colombo-Negambo-Putlum canal and high-risk groups among the farming population.[7] Subsequent studies, done in 1962–64 in healthy individuals and inpatients admitted to hospital with other infectious diseases, reported seropositivity rates of between 4% and 18%.[8] In retrospect, these studies lacked standardisation in relation to both the laboratory tests used and their defined cut-

off. Isolation of *Leptospira* spp was done in the 1960s and 1970s, which showed that *Leptospira interrogans* serovars Autumnalis, Pyrogenes, Icterohaemorrhagiae, Pomona, and Canicola were prevalent at that time.[9]

A worrying feature of the outbreak in Sri Lanka is that an infectious disease that is presumed to have affected many thousands of people over a period of a year has not attracted substantial international attention, despite several reports posted on ProMED in 2008.[10–14] In an era when emerging infectious diseases are given high priority, the need to identify infectious disease that could pose a threat to global health is not matched by the ability to define these in resource-poor settings where diagnostic microbiology laboratories are weak or absent. Although the outbreak in Sri Lanka has so far been attributed to leptospirosis, we await the results of confirmatory diagnostic test to confirm or refute this assumption.

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We declare that we have no conflicts of interest.

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