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Lassa Fever
Frequently Asked Questions

What is Lassa fever?

Lassa fever is a viral hemorrhagic illness that was first discovered in 1969 when two missionary nurses died from the illness in the Nigerian town of Lassa. The Lassa virus is a zoonotic or animal-borne virus and the animal vector is the "multimammate rat" (*Mastomys natalensis*). The virus is a single-stranded RNA virus and is a member of the arena virus family. Lassa fever occurs naturally in the West African countries of Sierra Leone, Liberia, Guinea and Nigeria. Sporadic cases have also been reported from Central African Republic, Burkina Faso, Côte d'Ivoire, Mali, Togo, Benin, Senegal, Ghana and Democratic Republic of Congo.

Who can get Lassa fever?

People at greatest risk of getting Lassa fever are those who live in or visit Sierra Leone, Liberia, Guinea, and Nigeria and have been exposed to infected multimammate rats or environmental sources where lassa fever virus (LFV) from rat urine has remained viable. The risk of exposure may also exist in other neighboring West African countries where *Mastomys* rodents are found. Hospital staff or family members who nurse persons with Lassa fever are also at risk of contracting Lassa fever as nosocomial (hospital) and household inter-personal transmission does occurs.

Where does Lassa fever occur in South Africa?

Lassa fever is not endemic to South Africa. South African travelers to endemic countries may be at risk if they are exposed to environments where rats are found. A single, fatal case has been managed in South Africa in a 46-year-old Nigerian doctor in 2007 who was evacuated here for treatment in a private hospital. There were no secondary cases. A South African man who worked in Sierra Leone died after contracting the virus in Makeni in northern Sierra Leone in 2010.

How is Lassa fever transmitted?

The Lassa virus spreads easily from the rodent vector to humans as these rats are often found in homes and areas where food is stored. Transmission occurs most commonly through inhalation and ingestion. Once the rat is infected, it continues to excrete the virus in urine and droppings for extended periods of time. Direct contact with these materials through touching soiled objects, eating contaminated food or exposure to broken skin, can lead to infection. Airborne infection may occur when contaminated particles (dust) are inhaled. *Mastomys* rodents are sometimes consumed as food and infection may occur when rodents are caught and prepared. Person-to-person infections and laboratory transmission can occur, particularly in the hospital environment (nosocomial transmission) through direct contact with infected secretions (blood, saliva, urine, semen or vomitus) and mucous membranes or non-intact skin.

How does Lassa fever affect animals?

Infected *Mastomys* rats do not develop illness from the virus. They continue to shred the virus from excretions for extended periods of time, most probably during their whole lifetime.

What are the signs and symptoms of Lassa fever?

Signs and symptoms of Lassa fever usually appear 1-3 weeks after exposure to the virus. Approximately 80% of Lassa fever infections will result in mild symptoms and are often undiagnosed. These symptoms are a low grade fever, headache and malaise. Severe symptoms occur amongst 20% of infected persons and may include hemorrhage, respiratory distress, severe vomiting, facial swelling, pain in the chest, back, and abdomen and shock. Encephalitis may also occur. Death is from multi-organ failure, usually 2 weeks after the onset of illness. The case-fatality rate is <2% overall, but it is increased to 15%–20% for hospitalised cases, > 30% in highly pregnant women and up to 50% during nosocomial outbreaks. Deafness is a common complication of Lassa fever (30% of survivors) and may be permanent.

How is Lassa fever diagnosed?

Diagnosis is based on the detection of IgM and IgG antibodies as well as Lassa antigen, using enzyme-linked immunosorbent serologic assays (ELISA). During early stages of the disease (day 1-5), reverse transcription-polymerase chain reaction (RT-PCR) or culture can be performed. Diagnostic tests should be conducted in a P3 or P4 biocontainment facility. Immunohistochemistry on formalin-fixed tissue specimens can be used to make a postmortem diagnosis.

How is Lassa fever treated?

Treatment for mild symptoms includes supportive measures (analgesia, fluids, rest). For severe cases, the maintenance of fluid and electrolyte balance, oxygenation and blood pressure, as well as managing any complications are essential. The anti-viral drug ribavirin has been used with success if given early during the onset of disease.

How can Lassa fever be prevented?

Prevention of Lassa fever relies on avoiding exposure to rats or to environments where rats frequent. Keeping homes and public spaces clean, adequate sanitation and refuse removal, keeping food in containers, trapping and appropriate poisoning are important means of keeping the environment free of rats. Nosocomial transmission can be prevented by observing appropriate infection control measures, including protective clothing and gloves to avoid contact with patient's secretions.

Where can I find out more information?

For more information contact: Centre for Emerging and Zoonotic Diseases (Tel) +27 11 386 6382
For medical or clinical queries call the NICD Hotline at +27 82 883 9920 (for use by Healthcare professionals only). For Laboratory related queries call Dr Jacqueline Weyer (Tel) +27 11 386 6376 or 6339, or email her at jacquelinew@nicd.ac.za . For results call the Centre for Emerging and Zoonotic Diseases Laboratory at +27 11 386 6339