Tackling Lassa Virus Transmission in Endemic Regions: A Collective Responsibility

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Lassa virus (LASV) is a single stranded RNA virus and belongs to the Arenaviridae family. It was first isolated in 1969 from a nurse who worked in a missionary hospital in a town, Lassa, in Borno state, northeastern Nigeria.[1] The virus is the aetiological agent of lassa fever; a haemorrhagic fever. It is found mainly in some countries of West Africa, such as Sierra Leone, Guinea, Liberia, and Nigeria, although there is evidence to show that, there are pockets of LASV seen in other West African countries. [2-7] In Nigeria, Edo, Ondo and Ebonyi were the three most affected states until in 2022, when Bauchi state became the third highest in the prevalence of Lassa fever disease in Nigeria.[8]
The rodent Mastomys natalensis, which is also known as the 'multimamate rat' is commonly seen in sub-Saharan Africa , and is the specie of rat mostly infected with this virus, thus serving as its natural reservoir.[9] These rats shed saliva, urine and faeces rich in Lassa virus on food items in the homes, thereby infecting children and adults in the communities. The infection with LASV occurs primarily through contact with body fluids or excreta, or inhalation of aerosols produced by infected rats.[10]Secondary transmission of the LASV occurs from an infected person to another person through contact with blood or other body fluids, including semen, vaginal fluids and breast milk of infected persons.[11]
Lassa fever has an incubation period that ranges from 3-21 days.[11] The clinical features usually begins with flu-like illness characterized by fever, general weakness and malaise. [12]This may be followed by cough, sore throat, and severe headache, nausea, vomiting and diarrhea.[13]

Clinical features suggestive of encephalopathy, such as seizures, irrational behaviour and coma sometimes occur.[12-13] While bleeding from mucosal surfaces occur in late stages of the disease, sensori-neural deafness may occur during convalescence.[12]

Mastomys rat is abundant in endemic areas of West Africa and it may not be possible to eliminate them from the environment. A prevalence rate of household rat infestation of 82.3%, was reported in a study carried out in a Lassa fever endemic region in Nigeria.[14] Although the rats identified in the above study were not classified into species, up to 30% of Mastomys rat seen in Lassa fever endemic regions carry the virus.[15] Rodents are commonly found in and around homes that are dirty, with unkempt bushy surroundings, and have open

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solid waste dump sites; these enhance their breeding and multiplication.[16] Hence promotion of good community hygiene to discourage rodents from entering homes becomes very imperative. Measures that discourage breeding of rats include; storing grains and other food stuff in rodent-proof containers, disposing of waste far from the home, keeping dustbins with lids, maintaining clean households, blocking of holes around the house and keeping of cats and dogs as pets.[17]

In health care settings, health workers should apply standard infection prevention and control measures when caring for patients regardless of the presumed diagnosis. These include basic hand hygiene, cough hygiene, use of appropriate personal protective equipment and safe injection practices. Extra infection control measures should be applied by health care workers in the management of suspected or confirmed Lassa fever cases to prevent contact with blood and body fluid of infected patients, Nosocomial outbreaks have been associated with higher mortality rates, and a case fatality rate of 18.9% was reported in Nigeria. [18] There is evidence to show that the hospital staff who practiced basic hygienic measures had no higher risk of the infection than the local population.

Personnel working in the hospital laboratories are also at risk. Samples taken from suspected Lassa fever cases for diagnostics should be handled by trained staff and processed in suitably equipped laboratories under maximum biological containment conditions.
Ignorance of the cause of Lassa fever, and its modes of transmission and lack of the knowledge of the availability of treatment with good clinical outcomes when patients present early to hospitals have contributed to the spread of the disease in endemic rural communities. Many communities see Lassa fever as a mysterious illness inflicted on them by their enemies or a punishment from God for sins committed by affected individual or communities and thus seek unorthodox solutions instead of going to the hospital. Poverty also limits the ability of people to afford appropriate housing and appropriate food storage facilities. Financial handicap and Out of Pocket Expenses for Health also limit the ability of individuals and families to seek orthodox medical care leading to delays in presentation to hospitals. Severe cases with high viral loads transmit the virus very efficiently and this leads to further spread of the infection.

Community sensitization and health education of the populace on the symptoms and signs of Lassa fever are very vital in tackling the transmission of the virus. The belief in traditional remedies to febrile illness by many rural dwellers, coupled with the mistrust of and inability to afford treatment offered at hospitals encourages late presentation to hospital setting with its attendant increase in case fatality rates and secondary spread of the virus.

Healthcare workers also need to be constantly reminded about the necessity to apply universal precautions when attending to all patients especially those with a history of fever. Personal Protective Equipment should also be routinely available for use in Health Care Settings to enable HealthCare staff practice safely.

Effective control of Lassa virus transmission therefore requires the education and commitment of every sector of society using the One Health Approach involving individuals, communities, hospital authorities, Governments at all levels, Non-Governmental organizations and International organizations. Government agencies that need to work together to achieve this include the Ministries of Health; Environment; Education; Agriculture; and Finance and Economic Development among others. International Organizations like WHO, UNICEF, USAID may need to directly intervene in local endemic communities not only to help those communities but limit local and international spread and thereby secure international health.

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