

# Just-In-Time Learning Series: INTRODUCTION TO CLINICAL MANAGEMENT OF EXPOSURE TO ARENAVIRUSES



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## ARENAVIRUSES

Arenaviruses are a family of enveloped, negative-sense, single-stranded RNA viruses using ambisense coding. 13 arenaviruses can cause human disease.

There are two main families of arenaviruses:

1. Lassa-lymphocytic choriomeningitis complex
  - also "Old World" arenaviruses
2. Tacaribe complex
  - also "New World" arenaviruses

The following arenaviruses cause viral hemorrhagic fevers with high mortality and require extra infection control measures when managing patients

Lassa virus
Lujo virus
Chapare virus
Guanarito virus
Junin virus
Machupo virus
Sabia virus

All clinically significant arenaviruses are **primarily transmitted by exposure to rodents**, either directly or indirectly via exposure to rodent urine or feces. **Human to human transmission can also occur**, particularly in health care settings, and accidental lab exposure can result in human infection. **Data suggests the potential for sexual transmission of Lassa virus, but is very limited.** Patients with arenavirus infections should be informed that it is a potential risk, and counseled appropriately.

## CLINICAL MANAGEMENT OF ARENAVIRUSES

1. Identify if an exposure has occurred and if so, to what virus(es)
2. Isolate the patient according to the CDC guidelines for viral hemorrhagic fevers and consider transfer to a biocontainment unit
3. Inform local services, including infection control and local public health authorities.
  - Appropriate protective control includes both individuals having contact with the patient and lab workers.

## SUPPORTIVE CARE

- Vital sign monitoring
- Maintaining appropriate volume
- Management of electrolyte disturbances
- Management of acid-base status
- Evaluate and treat any underlying conditions or co-infections
- Symptom-based, mental, and social support
- Transfusions, if appropriate
- Supportive interventions if evidence of organ damage

## TREATMENT AND POST EXPOSURE PROPHYLAXIS

- There are no licensed therapies for arenavirus infections. Antiviral treatments used to treat arenavirus infections include off-label use of ribavirin or investigational use of favipiravir, or a combination of the two (additional key details on each below if there is room). Additionally, investigational antibody therapies exist for Lassa virus and Junin virus, although have limited availability and require an eIND for use (additional key details on each below if there is room).
  - IV ribavirin has been used as an off-label antiviral for the treatment of multiple arenavirus infections, but may not be appropriate for all patients. Ribavirin can have significant side effects and is both embryotoxic and teratogenic.
  - Oral favipiravir has been used as an investigation antiviral for arenavirus infections, but the effectiveness in humans is not known. Favipiravir requires an eIND for use. Favipiravir is embryotoxic, teratogenic, and secreted in breastmilk.
  - Animal models suggest a potential for synergistic benefit for treating arenavirus infections with a combination of ribavirin and favipiravir, although experience in humans is very limited
  - For Lassa virus infection, animal models suggest that a combination of 3 monoclonal antibodies called arevirumab-3 shows potential therapeutic benefit. Arevirumab-3 would require an eIND for use.
  - For Junin virus, convalescent sera may reduce mortality when used for treatment, but availability is limited
- Oral ribavirin has been used for post-exposure prophylaxis following arenavirus exposure, but the effectiveness is unknown. Favipiravir has not been used for post-exposure prophylaxis for arenaviruses, but has been used for post-exposure prophylaxis for Ebola virus exposure.

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