Clinical Management of Lassa Fever
Lessons Learned at Emory

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Case Presentation: History

- 33 yo male who developed a fever while working as a medical missionary in Mango, Togo and was medically evacuated to the Serious Communicable Diseases Unit (SCDU) at Emory University Hospital in March 2016.
- Recently provided 7 days of nursing care to a fellow medical worker (presumptive source patient) in Togo who had developed septic shock. Presumptive source patient required medical evacuation to Cologne, Germany where he subsequently died and a postmortem exam confirmed Lassa fever. Last contact with presumptive source was 9 days prior to the onset of symptoms.
- Symptoms included **persistent high fevers**, **sore throat**, **retro-orbital headache**, **intermittent diminished hearing**, **diarrhea**, **malaise**, and **generalized weakness**.
- In Togo, his laboratory workup revealed **neutropenia** and **thrombocytopenia**. He was treated empirically for malaria with oral artemether/lumefantrine with no improvement. On day 6 of illness, he was started empirically on oral ribavirin prior to being medically evacuated to Emory.

Case Presentation: Arrival to SCDU

Exam

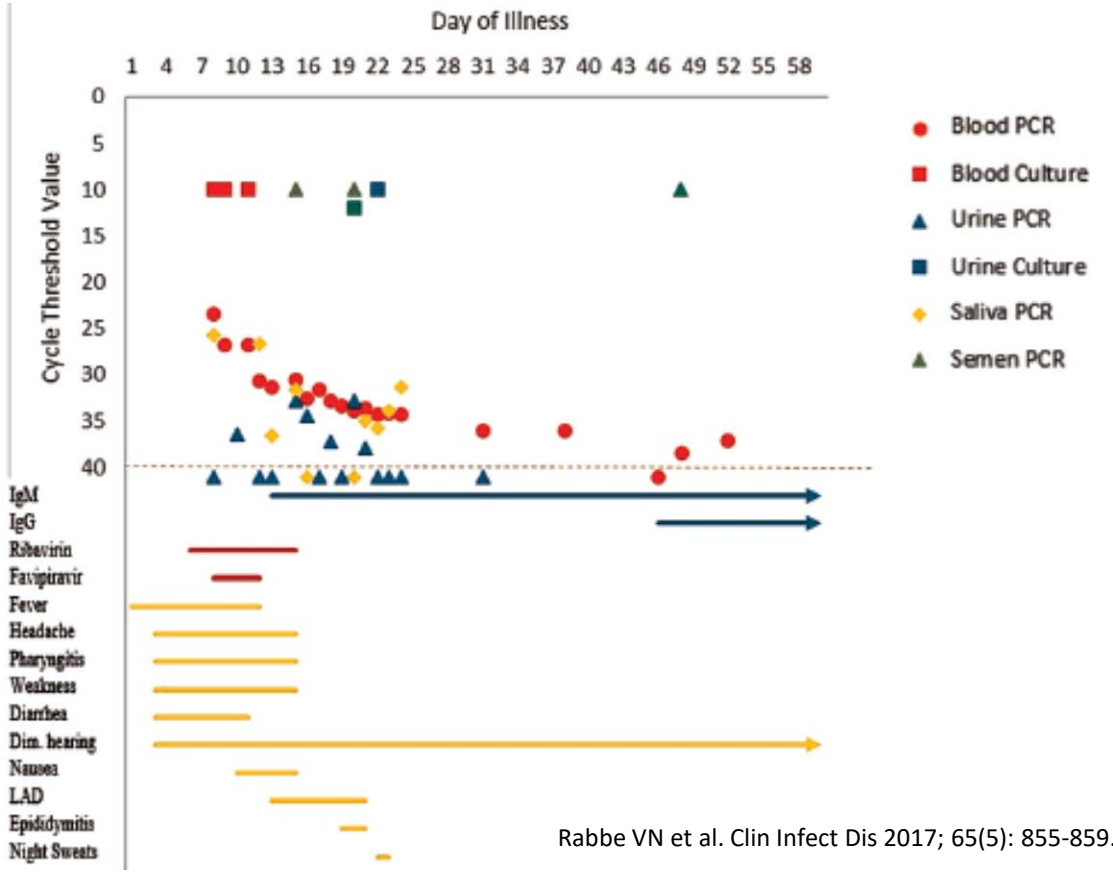
- T: 37.1, P: 50, BP: 140/91, RR: 24
- Thin, ill appearing male
- Mild conjunctival pallor
- Oral thrush
- Soft precordial systolic murmur
- Mild bladder distension with suprapubic tenderness

Laboratory

- WBC: 2.7 x 10^3 cells/mcL
- Hgb/HCT: 13.4/37.9%
- Platelet: 28 x 10^3 cells/mcL
- AST/ALT: 261/105
- CK: 497
- Blood: (+) for Lassa by RT-PCR
  - Cycle threshold: **23.4**

Clinical Course (by Day after Symptom Onset)

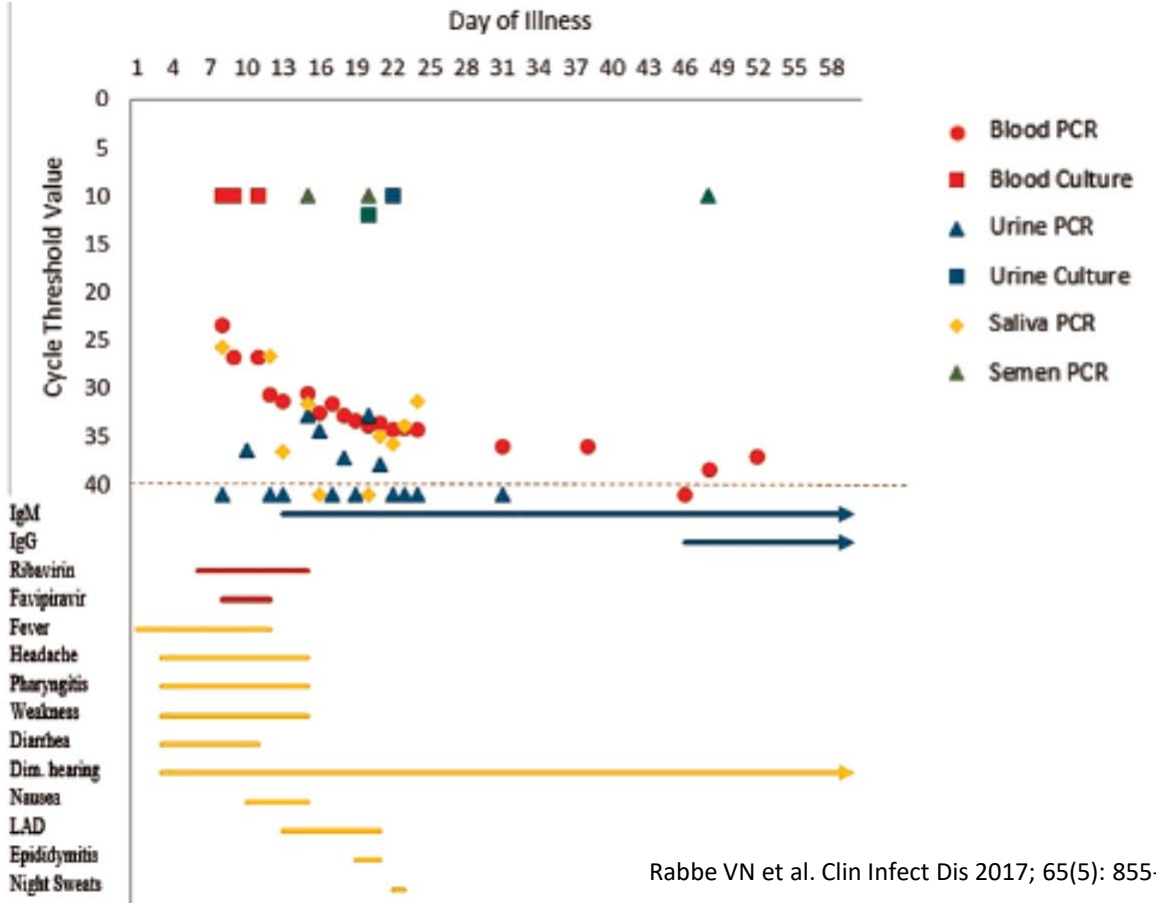
- Fevers (Tmax: 40.4ºC) resolved on day 12
- ↑appetite & resolved pharyngitis on day 14
- Painful diffuse LAD on day 14-21
- Epididymitis on day 19-21
- Night sweats on day 22
- Diminished hearing slowly improved
- D/C to outpatient quarantine on day 25



Rabbe VN et al. Clin Infect Dis 2017; 65(5): 855-859.

Clinical Management: Antiviral Therapy

- Prior to arrival in SCDU: Ribavirin 2 g by mouth x 1 followed by 1 g by mouth q8h on day 6 and 7 of illness
- After arrival to SCDU: Ribavirin 16 mg/kg IV q6h and Favipiravir 2 g by mouth x 1 followed by 1 g by mouth q12h on day 8-12
- Favipiravir d/c'd on day 12 secondary to concern it may be exacerbating nausea and transaminitis
- Ribavirin 8 mg/kg IV q8h day 12-15



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Clinical Management: Supportive Care

- Fluid replacement with balanced crystalloids
- Platelet transfusion
- Peripheral parenteral nutrition (PPN): Transient
- Oral nutrition and vitamin supplements
- Treatment of thrush
- Self-directed physical/occupational therapy

Post-Discharge: Clinical Course and Management

- Outpatient quarantine discontinued in collaboration with public health authorities after negative results on patient-specific RT-PCR on day 59
- Outpatient visit 120 days after onset of illness
  - Eating well and gaining weight
  - (Nearly) resolved lymphadenopathy
  - Resolved testicular pain
  - Improved physical stamina: Jogging
  - Improved hearing but still subjectively diminished on right
- Referred to ENT: Normal audiogram

Prevention of Person-To-Person Transmission

- Infection Control: Similar to Ebola Virus Disease
  - “Wet” PPE: Full body coverall and PAPR
  - “Dry” PPE: Gloves, gown, N95 respiratory, goggles and foot coverings
  - Blood and body fluid specimens handled in SCDU lab with samples to CDC
    - Blood: Viable virus isolated on day 8, 9 and 11
    - Urine: Positive by PCR in 6 specimens—viable virus NOT isolated
    - Saliva: Intermittently positive by PCR—viable virus NOT isolated
  - Medical waste handled under Category A regulations

- Potential for Sexual Transmission
  - Semen was positive by RT-PCR on day 15, 20, and 48
  - Virus isolated on day 20

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Lessons Learned at Emory

1. Clinical care of Lassa Fever is a team-sport: Infectious Diseases, Critical Care, Nursing, Laboratory, Environmental Services, Infection Prevention, Occupational Health, Pharmacy, Administration, Security, Communications, and Public Health
2. Coordination between clinical team, local hospital pharmacy, local IRB, the FDA, and pharmaceutical industry is critical to ensure timely access to medical countermeasures that require emergency investigational new drug (IND) application
3. Laboratory-developed patient-specific RT-PCR assays may detect viral nucleic acid for a prolonged period after RT-PCR utilizing conventional Lassa primer sets are negative
4. Coordination between clinical team and public health authorities is critical to ensure safe discharge when patient no longer requires hospitalized care but may still potentially harbor infectious virus.
5. Sexual transmission of Lassa fever infection during convalescence has been described. Individuals should wait *at least* three months following resolution of Lassa fever infection before sexual activity without barrier protection.

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References

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