Emerging Infectious Diseases

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Competence Center Highly Infectious Diseases
State of Hesse
Emerging Infectious Diseases

- Pathogens that had never before infected humans
  - Ebola-Virus
  - HIV
  - Influenza A Virus Subtypes
  - SARS-CoV

- Pathogens spreading into new geographical areas
  - West Nile-Virus

- Newly discovered pathogens causing previously known diseases
  - Kaposi Sarcoma associated Herpes-Virus

- Pathogens with increasing significance due to increasing numbers of immunocompromised patients
  - Cytomegaly-Virus

- Pathogens causing increasing numbers of infections
  - Dengue-Virus

- Re-emerging pathogens
  - Yersinia pestis (Plague)
  - Smallpox-Virus ???

≈ 4.500 years
Emerging Infectious Diseases

Worldwide Distribution of Viral-Hemorrhagic Fever

Imported Cases of VHF in Europe
Lassa

Lassa-Fieber in Deutschland

Todes-Kampf auf Station 1-1/E3

...sie ist so jung, so schön
Lassa Fever, not seen in US for 35 years, claims life of 38-year-old in New Jersey (Revised: 11:30:00, 9/9/04)

The New Jersey Department of Health and Senior Services reported today that a 38-year-old Mercer County man died on August 31 from an acute viral disease called Lassa fever, a condition that is rare in the U.S., but endemic to West Africa.

The federal Centers for Disease Control and Prevention (CDC) confirmed the diagnosis of Lassa fever through laboratory tests today.

The man had traveled to Liberia, where he stayed for several months, before returning to the United States and New Jersey on August 29. After arriving in New Jersey and spending several hours at his home, the man presented at the emergency department of Capital Health System in Mercer with symptoms of nausea, vomiting, headache, fever and myalgia. He was admitted and died four days later.

"There is no reason to believe this disease is terrorism-related," said DHS Commissioner Clifton R. Lacy, Jr. "A man traveling from a part of the world where the disease is well-known to occur. He brought the illness to New Jersey and unfortunately succumbed to it."
Case Fatality Rates
Ebola-/Marburg-Epidemics

Source: WHO

West Nile Virus (WNV)
1999

Aedes vexans
Culex pipiens
Culex restuans

2000

Aedes aegypti
Anopheles gambiae
Culex quinquefasciatus
Culiseta melanura
Ochlerotatus japonicus
Psorophora ferox

2001

Aedes albopictus
Anopheles punctipennis
Culex nigripalpus
Culiseta melanura
Ochlerotatus japonicus
Psorophora ferox

2002

Aedes aegypti
Anopheles gambiae
Culex quinquefasciatus
Culiseta melanura
Ochlerotatus japonicus
Psorophora ferox

2003

Aedes albopictus
Anopheles punctipennis
Culex nigripalpus
Culiseta melanura
Ochlerotatus japonicus
Psorophora ferox

Monkeypox
Ultimately, whenever novel infectious agents appear suddenly, it is probably inevitable that there will be speculations and rumors: that they were designed in biowarfare laboratories or emerged from biomedical research (as was argued for HIV), that they came from space (as suggested for SARS), or that they represent a bioterrorist attack. However, reality is more banal but nevertheless painful: Nature itself is the best bioreactor for apocalyptic biological agents and, through evolution, has at the same time developed the best defense strategies against them...
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