Scenario
Hairy Immunodeficiency Virus (HIV)

Summary of Experiment
A researcher is working to create a new animal model for HIV studies. Using mice, he plans on injecting the mice with HIV using 1 ml syringes. A technician will hold the animals for the researcher during inoculation. They plan on using a biosafety cabinet, nitrile gloves, goggles, and lab coats. The researcher recently has been distracted with personal issues and appears stressed. All details of this research are kept in the researcher's log book, which he keeps to himself.

Agent Criteria

Infectious Dose: unknown

Stability:

Susceptibility to disinfectants: Susceptible to many disinfectants - 1% sodium hypochlorite, 2% glutaraldehyde, formaldehyde, ethanol

Physical inactivation: Effectiveness of 56-60 °C heat in destroying HIV in serum not certain, however, heating small volumes of serum for 30 min at 56-°C before serologic testing reduces residual infectivity to below detectable levels

Survival outside host: Drying in environment causes rapid (within several hours) 90-99% reduction in HIV concentration

Incubation Period: Epidemiologic evidence suggests that duration from exposure to onset of symptoms has a minimum range from 6 months to more than 7 years.

Mortality Rate: 100% of untreated patients, of various complications related to compromise of the immune system. Patients can be treated and survive with HIV as a chronic infection/disease.

Morbidity:

Duration of Illness: Initial infection produces flu-like symptoms. An HIV positive patient can be asymptomatic for many years before developing the disease. Untreated patients may survive 8-12 years post-infection, with illness worsening towards the end of this period.

Severity of Illness: High.

Duration of Infection: Lifetime

Long term effects after infection: Active disease can be triggered at any time after the establishment of a latent infection, though the probability of developing active disease is higher 1-2 years after infection, in immune compromised patients, small children, young adults, and the very old.

Allergen (yes/no): No

Carcinogenic/mutagenic (yes/no): Potentially

Abortogenic (yes/no): No

Toxin Production (yes/no): No

Immune Suppression (yes/no): Yes

Ability to Mutate in Host or Environment (yes/no): Yes
Infection Mitigation Measures:

For human pathogens

*Immunization:* No. (Various experimental vaccines have been developed, but none that are proven effective yet)

*Prophylaxis:* Anti-HIV drugs

*Post Infection Treatment:* Anti-HIV drugs

*Existence of Diagnostic tests:* Yes.

**Routes of Infection:**

*Inhalation:* No

*Ingestion:* No

*Percutaneous:* Yes

*Contact:* Possible (fluid contact with damaged skin or mucosal membranes)

*Vector-Borne:* No

*Sexual Transmission:* Yes

*Vertical Transmission:* Yes

**Communicability:**

*Human to Human:* Yes

*Human to Animal:* No Evidence

*Animal to Animal:* No Evidence

*Animal to Human:* No Evidence (although some theories on the emergence of HIV involve animal to human transmission through fluid contact)

*Multiple Species:* No

**Geographical distribution:** Worldwide.

**Perception of malicious use:** LOW

**Culture:** Virus isolation and culture is possible in a relatively simple diagnostic laboratory using fresh peripheral blood cells from healthy donors or suitable culture lines such as T-lymphomas. This procedure is typically not used in diagnosis as it is tedious and lengthy in comparison with other diagnostic techniques. It is mainly used in characterizing viruses.

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1 *Please Note: The information contained in these pages is intended for training purposes ONLY. Do not rely on this information to make critical biosafety or laboratory biosecurity decisions.*