

CHARACTERISTICS

Synonym or Cross Reference	HDV, Delta Hepatitis
Disease	HDV, Delta Hepatitis
Morphology	36 to 43 nm diam. Circular or linear RNA genome surrounded by nucleocapsid protein (HDV antigen) and enveloped by Hepatitis B surface antigen (HBsAg). HDV requires hepatitis B virus (HBV) as a helper virus; only infects individuals who have HBV.
Zoonosis	None

RISK GROUP & CONTAINMENT REQUIREMENTS

ABSL-2	For all procedures utilizing infected animals.
BSL-2/BSL-2+	For all procedures involving suspected or known infectious specimen or cultures, work in a BSC unless otherwise approved and stated in lab-specific manual.
Risk Group 2	Agents that are associated with human disease which is rarely serious and for which preventive or therapeutic interventions are often available.

LABORATORY HAZARDS

Primary Hazards	Parenteral inoculation, droplet exposure of mucous membranes, and contact exposure of broken skin. Individuals infected with HBV are at risk of being infected with HDV.
Sources	Blood and blood products and other samples described in the IBC
Lab Acquired Infections (LAIs)	No cases of laboratory-acquired HDV infection have been reported.

PERSONAL PROTECTIVE EQUIPMENT

Additional Precautions	Additional PPE may be required depending on lab-specific SOPs and IBC Protocol.
Minimum PPE Requirements	Lab coat, disposable gloves, safety glasses, closed toed shoes, long pants.

SPILL PROCEDURES

Large	Immediately notify all lab personnel and clear the area. Remove any contaminated PPE/clothing before exiting the lab. Lock all entry doors, post warning signage, and deny entry. Call DPS (213-740-4321) and ask to notify EH&S. Inform the PI and/or Lab Manager/Supervisor.
Small	Notify all lab personnel lab. Remove contaminated PPE and don new PPE. Cover spill area with absorbent material and add fresh 1:10 bleach:water. Allow 20 minutes (or as directed) contact time. After 20 minutes, clean up and dispose of materials.

VIABILITY

Disinfection	Use 10 % dilution of household bleach (minimum 0.3% sodium hypochlorite) for 20 to 30 minutes, or an acceptable time approved by IBC and EH&S.
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VIABILITY

Survival Outside Host	Can survive in blood/blood products under conditions used for storage of such products.
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HEALTH HAZARDS

Host Range	Humans and, experimentally, chimpanzees and woodchucks
Incubation Period	HDV superinfection: 2-8 weeks; HBV and HDV co-infection: 45-160 days
Infectious Dose	Unknown
Modes of Transmission	Transmitted via blood/blood products, parenteral inoculation (injection drug use), or sexual contact. Individuals must also be infected with HBV.
Signs and Symptoms	Fatigue, lethargy, anorexia, jaundice, nausea, and abdominal discomfort. Self-limiting with complete viral clearance (> 90% of cases). HDV superinfection causes severe acute hepatitis and leads to chronic hepatitis D infection (90% of cases). Chronic hepatitis D individuals can develop cirrhosis (60-70%) or fulminant hepatitis (characterized by severe hepatitis and encephalopathy; mortality rate ~ 80%). Overall mortality rate: 2-20%

EXPOSURE PROCEDURES

Medical Follow-up	Visit USC’s designated healthcare provider. Bring a copy of this PSDS.
Mucous Membrane	Flush eyes for 5-10 minutes at eyewash station.
Other Exposures	Immediately wash affected area with soap and water for 15 minutes.
Reporting	Immediately report incident to supervisor, notify EH&S, and complete Manager’s Report.

MEDICAL PRECAUTIONS/TREATMENT

Prophylaxis	Personnel exposed to HDV can be given HBV vaccine or Hepatitis B immunoglobulin to prevent coinfection of HBV and HDV.
Surveillance	Monitor for symptoms of infection. Diagnosis is based on serological testing for the presence of IgM or IgG antibodies to the delta antigen.
Treatment	Though HDV is highly difficult to treat due to severity of illness, long-term treatment with high doses of IFN-alpha shows some improvement.
USC Requirements	Immediately report any exposures to Environmental Health & Safety.
Vaccines	A vaccine is available to prevent infection with HBV and HDV in HBV seronegative individuals.

REFERENCES

BMBL http://tiny.cc/cdc-bmb1	Canadian PSDS http://tiny.cc/canada-gov-psds
CDC https://www.cdc.gov/	NIH Guidelines http://tiny.cc/nih-bio-secure

