Clinical Assessment of a Patient with Suspected HCID

A comprehensive history and examination are critical when assessing a patient with a suspected high-consequence infectious disease (HCID). This guide is designed for clinical staff when assessing a patient with a suspected HCID and is adapted from the Centers for Disease Control and Prevention (CDC) Yellow Book: Post-Travel Evaluation of the Ill Traveler (www.cdc.gov/yellow-book/hcp/post-travel-evaluation/post-travel-evaluation-of-the-ill-traveler.html) and CDC: Guide for Clinicians Evaluating an Ill Person for VHF or Other High-Consequence Disease (www.cdc.gov/viral-hemorrhagic-fevers/hcp/diagnosis-testing/evaluating-an-ill-person-for-vhf.html). Assessment should be tailored to the specific clinical situation.

If a HCID is suspected, please contact your facility infection preventionist and MDH at 651-201-5414 and provide as much of the information below as possible. Calls will be directed to the MDH HCID Clinical Team who will then determine the need for HCID testing, including a consultation with CDC as needed. Testing decisions are based on epidemiological risk factors and a compatible clinical presentation. A clinical consultation with CDC can provide additional subject matter expertise as well as context and clarity on a patient's travel, activities, and other epidemiological risk factors, based on CDC's international contacts and on-the-ground presence for many significant outbreaks.

High consequence infectious disease syndromes

While there is no standardized list of high consequence infectious diseases (HCIDs) or special pathogens, expert consensus defines these as infectious agents that may be novel or re-emerging, easily transmitted from person-to-person, may have limited or no medical countermeasures (such as an effective vaccine, prophylaxis, or treatment), have a high mortality in otherwise healthy people, require prompt identification and implementation of infection control activities (for example, isolation, special personal protective equipment), and require rapid notification to public health authorities.[1]

Syndrome	Pathogen examples
Hemorrhagic fever	Ebola virus, Marburg virus, Lassa virus, Crimean-Congo virus
Fever and rash	Variola (smallpox) virus[2]
Fever and respiratory symptoms	MERS-CoV, SARS-CoV-1
Fever and neurologic and/or respiratory symptoms	Nipah virus, Hendra virus
Disease X	A novel highly fatal pathogen with person to person spread[3]

[1] Adapted from The Joint Commission Standards FAQs: High-consequence Infectious Diseases or Special Pathogens - Understanding The Requirements (IC.07.01.01) (www.jointcommission.org/standards/standard-faqs/critical-access-hospital/infection-prevention-and-control-ic/000002503/).

[2] Smallpox no longer occurs naturally, but it is possible that variola virus could be used in a biological attack.

[3] Could include a novel influenza, novel coronavirus, or other emerging or re-emerging pathogens of public health concern.

Selected HCIDs: At a glance

Note: **ALWAYS** check for travel health notices for up-to-date information on outbreaks (refer to Resources for providers section). Definitive animal or insect hosts, exposures, mode of transmission, and incubation period may not be known for all HCIDs.

Disease	Exposure	Location*	Incubation period (days)
Ebola, Marburg	Primates, bats, mines/caves, health care settings, funeral rites, ill contacts, bush meat.	Sub-Saharan Africa (recent outbreaks in DRC, Uganda, Tanzania, Rwanda).	2-21
Lassa fever	Rodents: direct contact with infected rodents, cleaning rat nests or droppings, breathing aerosolized urine or droppings, food contaminated with rodent urine or droppings. Ill contacts	West Africa (endemic in Guinea, Liberia, Sierra Leone, Nigeria, periodically identified in Benin, Togo, Ghana, Cote d'Ivoire, Burkina Faso and Mali).	6-21
South American VHFs**		Bolivia, Argentina, Venezuela, Brazil.	3-21
CCHF	Hard bodied tick bites, contact with blood or bodily fluids of infected livestock (sheep, goats, cattle, pigs).	Endemic to large parts of Africa, the Middle East, Central Asia, and southeastern Europe and the Mediterranean.	1-13
Smallpox	N/A	Worldwide prior to eradication. No longer occurs naturally but could be used in a biological attack.	7-19
MERS	Camels, ill contacts, health care settings.	Middle East: Arabian Peninsula (particularly Saudi Arabia, United Arab Emirates, Jordan, Quatar, Oman).	2-14
SARS-CoV-1	Bats, palm civet cats, health care settings.	Emerged in China. No known human cases since 2004.	2-14
Nipah	Bats, raw date palm sap contaminated with urine/saliva from infected bats.	Southeast Asia (Malaysia, Singapore, Bangladesh, India, Philippines).	4-14 (as long as 45 days reported)
Hendra	Horses	Australia	Unknown
Any HCID	**Working in a laboratory handling special pathogens.**	**Variable**	**Variable**

DRC = Democratic Republic of Congo. VHF = viral hemorrhagic fever. CCHF = Crimean-Congo hemorrhagic fever. MERS = Middle East Respiratory Syndrome. SARS = severe acute respiratory syndrome.

*Includes main countries where cases have been reported but is not definitive. Travel outside these countries does NOT necessarily rule out a HCID.

**Examples include Junin virus (Argentina), Chapare virus (Bolivia), Machupo virus (Bolivia), Guanarita virus (Venezuela), Sabia virus (Brazil).

Checklist for assessment

CLINICAL INFORMATION

- ☐ Symptoms, including date of onset, progression, and geographic location at time of symptom onset (e.g., if a returning traveler, did symptoms begin while away, in transit, or after return).
- ☐ Any relevant health care related to above symptoms received to date, including while traveling (e.g., medications, testing, hospitalizations).
- ☐ Past medical history, including all current medications (including over-the-counter medications or supplements) and vaccines.
- ☐ Current clinical status, vital signs, and physical examination and laboratory findings.
- ☐ Requirement for critical care support.
- ☐ Rapid malaria test result in travelers returning from malaria-endemic regions.

EXPOSURE HISTORY

General assessment for anyone with a suspected infectious disease

- ☐ **Create a timeline of exposure locations and activities (which can be compared with epidemiologically relevant pathogens and their incubation periods)**
- ☐ Occupation (particularly health care worker, laboratory worker, gardener/landscaper, or working with animals or birds).
- ☐ Close contact with other persons with signs/symptoms of illness (particularly household contacts or returned travelers).
- ☐ Food and water (raw milk/dairy products or raw or undercooked food).
- ☐ Insect bites (mosquitoes, ticks, flies) or animal or arthropod bites, stings, or scratches.
- ☐ Close contact with wild or domesticated animals, or livestock such as cattle or poultry, including any with signs of illness.
- ☐ Other wildlife exposures (particularly bats, birds, rodents, primates, camels, pigs).
- ☐ Sexual activity (new partner(s), condom use).
- ☐ Recent recreational activities (visiting caves, camping, hiking, boating/rafting, bathing/swimming/wading in lakes/rivers/streams, hot tubs, swimming pools).

For returning travelers

- ☐ Travel itinerary including destinations visited (including cities/towns, and if they spent time in rural areas) and dates of travel.
- ☐ Reason for travel (business, immigration, leisure, missionary/volunteer/humanitarian aid, providing or receiving medical care, research/education, visiting friends and relatives).
- ☐ Travel activities (e.g., safari, sightseeing, religious activities (e.g., Hajj, Umrah), hunting, bush meat ingestion, water activities such as swimming or boating).

- ☐ Accommodations (camping, hostel, hotel, private home) and transportation.
- ☐ Travel-related vaccines received (COVID-19, influenza, hepatitis A and B, Japanese encephalitis vaccine, MMR, polio, meningococcal disease, rabies, Tdap, typhoid, varicella, yellow fever).
- ☐ Malaria prophylaxis for malaria-endemic areas (atovaquone/proguanil (Malarone), chloroquine, doxycycline, mefloquine, primaquine, tafenoquine (Arakoda)), including ensuring appropriate adherence and duration to prophylactic regimen; for more information, refer to WHO: Malaria (www.who.int/data/gho/data/themes/malaria).
- ☐ Insect precautions (insect repellent, window screens, mosquito nets).
- ☐ Food and water (undercooked or raw food, bottled or tap water, raw date palm sap).
- ☐ Illness or death in travel companions or other contacts.

Specific exposures to consider for viral hemorrhagic fever (VHF)

- ☐ Contact with someone who was sick or died or with any object(s) contaminated by their body fluids, either in a home or health care setting.
- ☐ Attending or participating in funeral rituals or helping to prepare deceased bodies.
- ☐ Working in a laboratory where human specimens are handled.
- ☐ Worker or visitor to health care facility in an area with an active outbreak of a VHF or where these pathogens are endemic.
- ☐ Breach in infection prevention precautions that may have resulted in contact with the body fluids of a patient with suspected or confirmed disease due to VHF.
- ☐ Visit to a traditional healer (as visitor or patient) while in an area with an active outbreak of a VHF or where these pathogens are endemic.
- ☐ Handling or consuming wild animals or carcasses that may be infected with VHF (primates, fruit bats, duikers [a species of antelope]).
- ☐ Exposure to or consumption of rodents, or exposure to rodent feces, urine, and/or saliva (e.g., cleaning out rodent nests, cleaning rodent droppings, food contaminated with rodent droppings or urine).
- ☐ Working or spending time in a mine or cave in an area with an active outbreak of VHF or where these pathogens are endemic.
- ☐ Contact with the semen from a man who has recovered from Ebola virus disease (for example, oral, vaginal, or anal sex) (or possibly other viral hemorrhagic fevers).

PHYSICAL EXAMINATION

- ☐ Vital signs including temperature and oxygen saturation/oxygen requirement.
- ☐ Pulse-temperature dissociation (i.e., high fever with relative bradycardia) may be seen in certain infections, including dengue, VHF and typhoid fever.
    - ☐ Blood pressure and need for pressor support if shock is present.
- ☐ General appearance (e.g., well-appearing, lethargy, pallor, jaundice, cyanosis, moribund).

- ☐ In addition to a comprehensive physical examination, clinicians should note:
  - ☐ Presence or absence of bleeding, e.g., petechiae, ecchymoses, oozing from venipuncture sites, mucosal bleeding (conjunctivae, gums).
- ☐ If rash present, type and distribution of lesions (e.g., vesicular, pustular, crusted, ecchymoses, deep-seated or superficial, distribution on body, stage of development (e.g., lesions at same stage or different stages).
  - ☐ Presence or absence of lymphadenopathy.
- ☐ Any insect or animal bites or other wounds.
- ☐ Any neurologic findings, particularly altered mental status and presence or absence of meningeal signs (e.g., stiff neck, photophobia, hyperreflexia).
- ☐ Any hearing loss (acute hearing loss has been associated with Lassa fever).

Initial testing and isolation

Malaria is a common cause of travel-related hospitalization and death, and malaria testing should be performed in any febrile returned traveler from a malaria-endemic area. Even if a HCID is suspected, basic laboratory testing and malaria screening may be drawn at front line facilities with appropriate precautions (refer to CDC guidance on diagnostic testing below). See WHO resource below for guidance on the management of malaria. Do not overlook common infections such as pneumonia, gastroenteritis, or bacteremia/bacterial sepsis.

- ☐ Suggested testing: complete blood count including differential and platelet count, comprehensive metabolic panel including glucose and liver function tests, blood cultures.
- ☐ Malaria testing per your facility's availability (blood smear microscopy, rapid diagnostic tests).
- ☐ Consider according to clinical situation: stool cultures and ova and parasite screen, PT/PTT/INR, respiratory viral testing, urinalysis, testing for other travel-related infections (e.g., dengue, typhoid, Zika, chikungunya) chest X-ray, lumbar puncture.
- ☐ Place patient in private room or an airborne infection isolation room (AIIR) if available while assessment in progress. Refer to MDH: High Consequence Infectious Disease (HCID) Readiness Binder (www.health.state.mn.us/diseases/hcid/binder.html) for HCID screening guidance and resources with specific PPE recommendations.
- ☐ Infectious diseases consultation is highly recommended (if available) for any febrile illness in a returned traveler, particularly if severely ill or if concern for VHF.

Resources for providers

1. CDC Yellow Book: Post-Travel Evaluation of the Ill Traveler (www.cdc.gov/yellow-book/hcp/post-travel-evaluation/post-travel-evaluation-of-the-ill-traveler.html)
2. CDC: Guide for Clinicians Evaluating an Ill Person for VHF or other High-Consequence Disease (www.cdc.gov/viral-hemorrhagic-fevers/hcp/diagnosis-testing/evaluating-an-ill-person-for-vhf.html)
3. CDC Travelers' Health: Destinations (wwwnc.cdc.gov/travel/destinations/list)
4. CDC Travelers' Health: Travel Health Notices (wwwnc.cdc.gov/travel/notices)

5. New York State Department of Health: Global Health Update Report (https://globalhealthreports.health.ny.gov/) (updated every Friday)
6. WHO: Disease Outbreak News (www.who.int/emergencies/disease-outbreak-news)
7. WHO: Management of Severe Malaria (https://iris.who.int/server/api/core/bitstreams/b1327bf7-cf2e-45fe-9bef-1d65ce35fb44/content)
8. CDC: Evaluating Patients for Smallpox: Acute, Generalized Vesicular or Pustular Rash Illness Protocol (www.cdc.gov/smallpox/hcp/diagnosis-testing/evaluating-patients-rash-illness-protocol.html)
   Guidance for evaluating patients for smallpox and differentiating from other common conditions such as varicella.
9. CDC: Guidance on Performing Routine Diagnostic Testing for Patients with Suspected VHFs or Other High-Consequence Disease (www.cdc.gov/viral-hemorrhagic-fevers/php/laboratories/guidance-on-performing-routine-diagnostic-testing-for-patients-with-suspected-vhfs-or-other.html)
10. CDC: Guidance for Malaria Diagnosis in Patients with Suspected Orthoebolavirus or Orthomarburgvirus Infection in the United States (www.cdc.gov/dpdx/malaria/malaria_ebola.html)
    Guidance for a modified thin smear protocol to inactivate Ebola and Marburg viruses for the diagnosis of malaria.

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To obtain this information in a different format, call: 651-201-5414.