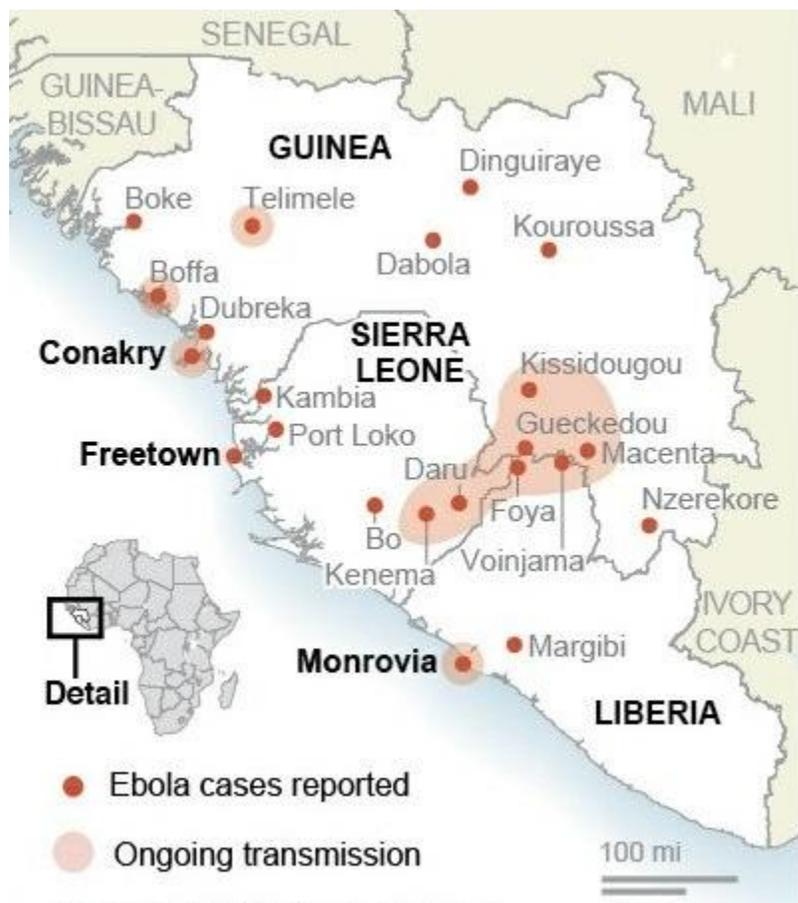
A transmission electron micrograph (TEM) of an Ebola virus particle. The virus is a long, thin, yellowish filament with a distinct outer envelope and a darker inner core. It is shown in a curved, S-like shape against a purple, granular background. The head of the virus is on the left, showing some surface projections.

Ebola Outbreak Advisory

The Virus



Ebola virus disease (EVD) is severe and often fatal. The disease is named after a river in the Democratic Republic of the Congo (formerly Zaire) in Africa where it was first recognized. Five species of Ebola virus have been identified: Côte d'Ivoire, Sudan, Zaire, Bundibugyo, and Reston. The disease is native to several African countries and is caused by infection with one of the Ebola viruses (Ebola, Sudan, Bundibugyo, or Tai Forest virus).

Although the disease is rare it can spread from person to person by means of direct contact with infected persons or their body fluids/secretions. The incubation period of EVD varies from 2 to 21 days. After an incubation period of 2 to 21 days the disease usually presents with sudden fever, chills and muscle aches.

Around the fifth day after onset of symptoms a skin rash can occur. Nausea, vomiting, chest pain, a sore throat, abdominal pain and diarrhea may follow. The patients become contagious once they begin to show symptoms. They are not contagious during the incubation period. There is no risk of transmission during the incubation period and only low risk of transmission in the early phase of symptomatic patients.

EVD outbreaks have a case fatality rate of up to 90%. During outbreaks the disease can spread quickly within health care settings (such as a clinic or hospital). Exposure to Ebola viruses can occur in health care settings where hospital staff are not wearing appropriate protective equipment such as masks, gowns and gloves.

The likelihood of contracting Ebola is extremely low unless a person has direct contact with the body fluids of a person or animal that is infected and showing symptoms. A fever in a person who has traveled to or lived in an area where Ebola is present is likely to be caused by a more common infectious disease but the person would need to be evaluated by a health care provider

to be sure. The risk of infection during transport of persons can be further reduced through use of infection control precautions.

Ebola is not a food borne illness. It is not a water borne illness. Ebola is not a respiratory disease like the flu so it is not transmitted through the air. In order for the virus to be transmitted, an individual should have direct contact with an individual who is experiencing symptoms.

The current Ebola outbreak is centered on three countries in West Africa: Liberia, Guinea and Sierra Leone although there is the potential for further spread to neighboring African countries. Ebola does not pose a significant risk to the Indian public.

Symptoms

- Fever
- Headache
- Joint and muscle aches
- Weakness
- Diarrhea
- Vomiting
- Stomach pain
- Lack of appetite
- A Rash
- Red Eyes
- Hiccups
- Cough
- Sore throat
- Chest pain
- Difficulty breathing
- Difficulty swallowing
- Bleeding inside and outside of the body

Symptoms may appear anywhere from 2 to 21 days after exposure to Ebola virus though 8 to 10 days is most common. The most common symptoms experienced by persons infected with the virus are the sudden onset of fever, intense weakness, muscle pain, headache and sore throat. This is followed by vomiting, diarrhea, rash, impaired kidney and liver function and at advanced stage both internal and external bleeding.

Risk Management

The prevention of Ebola presents many challenges but there are few established primary prevention measures. Mentioned below are the guidelines to help prevent and control the spread of Ebola.

- Recognize cases of EVD
- Prevent further transmission of the disease
- Wear protective clothing (such as masks, gloves, gowns, and goggles)
- Severely ill patients require intensive supportive care. They are frequently dehydrated and need intravenous fluids or oral rehydration with solutions that contain electrolytes.
- Raising awareness of the risk factors and measures people can protect themselves and are the only ways to reduce illness and deaths.
- Some patients will recover with the appropriate medical care.

- To help control further spread of the virus, people that are suspected or confirmed to have the disease should be isolated from other patients and treated using strict infection control measures.

Standard treatment for Ebola infection is still limited to supportive therapy. This consists of:

- balancing the patient's fluids and electrolytes
- maintaining their oxygen status and blood pressure
- treating them for any complicating infections

Timely treatment of EVD is important but challenging since the disease is difficult to diagnose in the early stages of infection. Because early symptoms such as headache and fever are nonspecific to Ebola viruses cases of Ebola may be initially misdiagnosed.

Travelers

Tourists and businessmen/women returning from affected areas in a country

The risk of a tourist or businessman/woman becoming infected with Ebola virus during a visit to the affected areas and developing disease after returning is extremely low even if the visit included travel to the local areas from which primary cases have been reported. Transmission requires direct contact with blood, secretions, organs or other body fluids of infected individuals all unlikely exposures for the average traveler. Tourists are in any event advised to avoid all such contacts.

Visiting families and relatives

The risk for travelers visiting friends and relatives in affected countries is similarly low, unless the traveler has direct physical contact with a person or animal infected with Ebola virus.

Patients travelling with symptoms and fellow travelers

There is a possibility that a person who had been exposed to Ebola virus and developed symptoms may board a commercial flight or other mode of transport without informing the transport company of his status. It is highly likely that such patients would seek immediate medical attention upon arrival especially if well informed. The patient should then be isolated to prevent further transmission. In such a case, contact tracing should confirm the exposure and prevent further spread of the disease through monitoring the exposed traveler. Risk to fellow travelers in such a situation is very low.

Risk for health care workers posted in affected areas

There is a risk for healthcare workers and volunteers especially if involved in caring for EVD patients. However if the recommended level of precaution for such settings is implemented

transmission of the disease should be prevented. The risk level can be considered very low to low unless these precautions are not followed.

Travelers leaving for or arriving in an area where EVD is occurring should be provided at points of entry (e.g. in airports or ports on boarding or arrival areas or at ground crossing points) with information on the potential risk of EVD. Information should also be spread among communities that may include cross border travelers and near all relevant international borders.

Travelers should be informed where to obtain medical assistance at the destination and who to inform (e.g. through hotline telephone numbers). Returning visitors from the affected areas should be alerted that if they develop infectious disease symptoms (such as fever, weakness, muscle pain, headache, sore throat, vomiting, diarrhea, rash or bleeding) within three weeks after return or if they suspect that they have been exposed to Ebola virus (e.g. volunteers who worked in health care settings) in the affected areas they should seek rapid medical attention and mention their recent travel to the attending physician.

Message for travelers

- Ebola Virus Disease is rare.
- Cases of Ebola have recently been confirmed in West Africa
- There is no licensed vaccine.
- Practice careful hygiene.

Raise the awareness and knowledge of health care providers

Health care providers managing returning travelers need to question them on travel history and consider the possibility of EVD in person coming back from affected areas. A person suspected of having been exposed to Ebola virus should be evaluated regarding the risk of exposure. If the risk of exposure is considered very low the person should be reassured asked to monitor his/her temperature and symptoms for 21 days and seek immediately care if developing symptoms. Other pathologies (e.g. malaria) should be investigated and the patient monitored regularly. Admission to hospital in these observation phases is not necessary. During an outbreak Riskpro recommends any travel or trade restrictions if necessary.

Country Advisories

In Africa confirmed cases of Ebola have been reported in four Countries

- Guinea
- Nigeria
- Liberia
- Sierra Leone

Riskpro urges all travelers to avoid non essential travel to Liberia, Nigeria, Guinea, and Sierra Leone because of an unprecedented outbreak of Ebola.

The West African Governments are working with national and international partners to investigate and respond to the outbreak. There have been a cumulative total of 1603 suspect and confirmed cases of Ebola virus disease (EVD) and 887 deaths. Of the 1603 clinical cases, 1009 cases have been laboratory confirmed for Ebola virus infection. At least three Americans have been infected; two are health care workers in an Ebola clinic. The public health infrastructure of Liberia, Sierra Leone and Guinea is severely strained as the outbreak grows.

Nigeria

In Lagos nine suspect and probable cases and one fatal probable case has been reported. The cases of Ebola in Nigeria are related to an ongoing Ebola outbreak that has been occurring in West Africa since May 2014. This outbreak affects Guinea, Liberia and Sierra Leone and is the largest outbreak of Ebola in history.

Liberia

An outbreak of Ebola has been ongoing in Liberia since March 2014. Affected districts include Bomi, Bong, Grand Bassa, Grand Cape Mount, Lofa, Margibi, Montserrado (including the capital city of Monrovia), Nimba, and River Cess.

Liberia has reported 516 Suspected and Confirmed Cases, 282 Suspected and Confirmed Case Deaths and 143 Laboratory Confirmed Cases. Suspect and confirmed cases have been reported from Lofa, Montserado, Margibi, Bomi, Bong, Nimba, River Cess, Grand Cape Mount, and Grand Bassa Counties.

The Liberian government has recently instituted enhanced measures to combat the spread of Ebola many of which will likely make travel to and from and within the country difficult. The government has taken the following steps:

- Closed all borders except major entry points (Roberts International Airport, James Spriggs Payne Airport, Foya Crossing, Bo Waterside Crossing, and Ganta Crossing).
- Instituted prevention and screening measures at entry points that remain open. This new travel policy will affect incoming and outgoing travelers.
- Instituted quarantine measures for communities heavily affected by Ebola; travel in and out of those communities will be restricted.
- Authorized military personnel to aid in enforcing these and other prevention and control measures.

Sierra Leone

Sierra Leone has reported a cumulative total of 691 suspect and confirmed cases, including 576 laboratory confirmations and 286 reported fatal cases. Cases have been reported from 12 Sierra Leone districts. Districts reporting clinical EVD patients include Kailahun, Kenema, Kambia, Port Loko, Bo and Western Area which includes the capital Freetown. More recently Tonkolili, Bambali, Moyamba, Bonthe, and Punjehun Districts have also reported confirmed cases of EVD. Reports, investigations and testing of suspect cases continue across the country.

Sierra Leone's government has recently instituted enhanced measures to combat the spread of Ebola, many of which will likely make travel to, from, and within the country difficult. The government has taken the following steps:

- Instituted new protocols for arriving and departing passengers at Lungi International Airport.
- Instituted quarantine measures for communities affected by Ebola; travel in and out of those communities will be restricted until a medical team clears them.
- Authorized police and military personnel to aid in enforcing these and other prevention and control measures.
- Requires local government officials to establish by-laws to support Ebola prevention efforts.

Guinea

An outbreak of Ebola has been ongoing in Guinea since March 2014. Affected areas include Boffa, Conakry, Dabola, Dinguiraye, Guékédou, Kissidougou, Kouroussa, Macenta, Pita, Siguiri, and Téliimélé prefectures.

In Guinea a total of 495 suspect and confirmed cases of Ebola virus disease (EVD) including 363 fatal cases were reported. Active surveillance continues in Conakry, Guékédou, Boffa, Pita, Siguiri, and Kouroussa Districts. Affected districts include Conakry, Guékédou, Macenta, Kissidougou, Dabola, Djingaraye, Téliimélé, Boffa, Kouroussa, Dubreka, Fria, Siguiri, Pita and

Nzerekore. In Guinea's capital city Conakry 95 suspect cases have been reported to meet the clinical definition for EVD including 42 fatal cases.

Riskpro recommends that all travelers avoid non essential travel to Nigeria, Sierra Leone, Guinea and Liberia. Travelers must adhere to protective measures if they plan to travel for business purposes or any other work. This recommendation to avoid non essential travel is intended to facilitate control of the outbreak and prevent continued spread in two ways: to protect travelers and to enable the governments to respond most effectively to contain this outbreak. There is a multinational effort to assist the affected countries in West Africa in controlling the outbreak.

Riskpro Recommendations

Persons living or visiting areas affected by Ebola should observe the following measures to help avoid illness.

- As with other infectious illnesses one of the most important preventive practices is careful and frequent hand washing. Cleaning your hands often, using soap and water (or waterless alcohol based hand rubs when soap is not available and hands are not visibly soiled with blood or body fluids) removes potentially infectious materials from your skin and helps prevent disease transmission. When wearing gloves wash the gloves with soap and water before removing them and then wash your hands
- Do not eat "bushmeat" (wild animals, including primates, sold for consumption as food in local markets)

When in close contact with a person or an animal suspected of having Ebola virus infection follow these precautions

- Wearing protective gowns, gloves, and masks, in addition to eye protection (e.g., eye glasses) or a face shield. Sterilization and proper disposal of needles and equipment, and proper disposal of patient excretions are also important to prevent the spread of infection.
- If you or your family members become ill with fever or develop other symptoms such as chills, muscle aches, nausea, vomiting, or rashes, visit a health care provider **immediately**. When traveling to a health care provider, limit your contact with others. All other travel should be avoided.

After your return

Persons returning from an affected area but have not had direct contact with the body fluids of symptomatic infected persons or animals, or objects that have been contaminated with body fluids, should monitor their health for 10 days. Those with a potential exposure should monitor their health for 21 days post exposure. Regardless any traveler who becomes ill while traveling, even if only a fever should consult a health care provider **immediately** and tell him or her about their recent travel and potential contacts.

What to do if you think you have been exposed

Any person who thinks he or she has been exposed to Ebola virus either through travel, assisting an ill traveler, handling a contaminated object, or cleaning a contaminated aircraft should take the following precautions:

- Notify your employer immediately.
- Anyone who has stayed in areas where cases were recently reported should be aware of the symptoms of infection and seek medical attention at the first sign of illness.
- Monitor your health for 21 days. Watch for fever (temperature of 101°F/38.3°C or higher), chills, muscle aches, severe diarrhea, vomiting, rash, and other symptoms consistent with Ebola.
- If a person has been in an area known to have Ebola virus disease or in contact with a person known or suspected to have Ebola and they begin to have symptoms they should seek medical care immediately.
- Any cases of persons who are suspected to have the disease should be reported to the nearest health unit without delay.

When to see a health care provider

- If you develop sudden fever, chills, muscle aches, severe diarrhea, vomiting, rash or other symptoms consistent with Ebola you should seek immediate medical attention.
- Before visiting a health care provider alert the clinic or emergency room in advance about your possible exposure to Ebola virus so that arrangements can be made to prevent spreading it to others.
- When traveling to a health care provider limit contact with other people. Avoid all other travel.

What can travelers do to prevent Ebola?

There is no vaccine or specific treatment for Ebola and many people who get the disease die. Therefore it is important to take steps to prevent Ebola. If you are traveling to West Africa, please make sure to do the following:

- Practice careful hygiene.
- If you stayed in the areas where Ebola cases have been recently reported seek medical attention if you feel sick (fever, headache, achiness, sore throat, diarrhea, vomiting, stomach pain, rash, or red eyes).
- Avoid contact with blood and body fluids.
- Do not handle items that may have come in contact with an infected person's blood or body fluids.
- Avoid contact with animals or with raw meat.
- Avoid hospitals where Ebola patients are being treated.

- Limit your contact with other people when you travel to the doctor. Do not travel anywhere else.
- Pay attention to your health after you return.
- Monitor your health for 21 days if you were in an area with an Ebola outbreak, especially if you were in contact with blood or body fluids, items that have come in contact with blood or body fluids, animals or raw meat, or hospitals where Ebola patients are being treated.
- Seek medical care immediately if you develop fever, headache, achiness, sore throat, diarrhea, vomiting, stomach pain, rash, or red eyes.
- Tell the doctor about your recent travel and your symptoms before you go to the office or emergency room. Advance notice will help the doctor care for you and protect other people who may be in the office.

Special Recommendation for Health Care Workers

Health care workers should follow these steps:

- Wear protective clothing, including masks, gloves, gowns, and eye protection.
- Practice proper infection control and sterilization measures.
- Isolate Ebola patients from unprotected people.
- Notify health officials if you have been exposed to someone with Ebola.

India Threat Advisory



about the outbreak. Health alert standees will be placed across the terminal and special 24/7 ambulance services have been readied.

None of the airlines Indian or foreign ones fly directly from India to any of these destinations. There are three airlines which indirectly connect that is they operate transit flights from some of these destinations to Mumbai and Delhi. Airlines have begun pulling out flights from affected countries. Emirates has suspended its flights to Conakry in Guinea. Other than Emirates, British Airways has pulled out all its flights to Liberia and Sierra Leone.

Airports across the world are on alert while the governments and organizations are meeting to decide whether Ebola should be declared an international crisis. Indian airports need to be on alert and screen passengers coming from affected parts of the world. These should include establishing diagnostic centers and testing facilities. Treatment centers and isolation wards too must be available. The patient should be isolated so as to minimize risk of spread of infection and to ensure that the public is protected.

Well established protocols should be implemented to ensure the safe transport and care of patients with infectious diseases. These include notification to the concerned authorities of ill passengers on a plane before arrival, investigation of ill travelers and if necessary isolation. The airlines will be responsible for managing ill passengers and crew and for disinfecting aircraft. Health care workers should report the patients to the concerned authorities. Hospitals should be appropriately equipped and staffed to handle such cases. Improved public health and sanitation will help India tackle not only distant threats such as Ebola but everyday killers such as malaria, dengue and diarrhea.

Ebola is a viral infection that has engulfed four African countries. There are nearly 44,700 Indians residing Guinea, Liberia, Sierra Leone and Nigeria. About 3,000 Indians reside in Liberia. Of this about 50 to 60 families will be returning to India in the coming weeks and will enter the country through Mumbai and Delhi airports. Containment measures have been implemented at the airports. At the Mumbai airport officials from the immigration and Customs have been briefed

Conclusion

This is the first outbreak with transmission in densely populated urban areas including the capitals of Freetown, Conakry and Monrovia. It is likely that in the coming months additional cases will continue to be reported in the three affected countries. Additional infected cases will likely travel to countries in the region and beyond as was observed in Nigeria. In the current outbreak infected travelers have crossed land borders with neighboring countries and there is a possibility that other cases might occur in neighboring countries. The actual rate of spread in the region will depend on the effectiveness of the control measures.

People infected with EVD may arrive in India by indirect flights from affected countries or on board freighter or passenger ships. EVD cases may travel while incubating the disease and therefore not present with symptoms at the time of arrival or arrive sick because they developed symptoms or their condition deteriorated while travelling. Ebola virus disease can develop quickly and cases are not always aware that they have been exposed to Ebola virus. Incubating cases do not show symptoms and cannot be detected through screening at points of entry.

Making returning travelers and physicians aware of the possibility of EVD infection and the need for appropriate infection control measures is essential. There is a possibility that persons who were exposed to Ebola virus and developed symptoms board a commercial flight to seek medical attention. It is highly likely that such patients would report to a healthcare facility upon arrival in India and then be isolated to prevent further transmission.

Governments and organizations have regional and global networks of experts to provide assistance if requested and mitigate potential international health effects and disruptions of travel and trade. Disease surveillance and information sharing across regions have been implemented. Experts are deployed and health supplies are being distributed. Organizations are providing technical advice to countries to prepare for and respond to Ebola outbreaks. The risk of importation to India is considered very low in particular if returning travelers and healthcare providers are properly informed and are aware of the risk.



Manoj Jain
Managing Director
Riskpro
Email: manoj.jain@riskpro.in

Mangesh Sawant
Senior Vice President
Security Consulting & Risk Management
Riskpro
Email: mangesh.sawant@riskpro.in

www.riskpro.in

Follow Proper Procedures