

Responding to Ebola Virus Disease on Commercial Airlines

The CDC Experience

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Objectives

- ❑ Describe the public health risk assessment used by CDC when a person with suspected Ebola is on a flight
- ❑ CDC process for use of passenger locator forms
- ❑ Messaging to passengers and partners
- ❑ Conducting an Ebola contact investigation involving exposure on a commercial flight

Ebola Public Health Risk Assessment

Exposure Questions

- ❑ **Don personal protective equipment right before interacting with ill passenger**
- ❑ **First, confirm travel history to a country with Ebola in past 21 days**
- ❑ **If yes, remove ill traveler from aircraft for further assessment**

PASSENGER LOCATOR FORM (PLF) AND TRAVEL HEALTH ALERT NOTICE (T-HAN)

- ❑ If Ebola is suspected during an onboard response, distribute PLFs and T-HANs to **all passengers and crew on board**.
- ❑ Ask flight attendant to read onboard script for SCENARIO 2: POSSIBLE PUBLIC HEALTH RISK and PLF instructions.

- ❑ Collect PLFs before passengers disembark.
- ❑ Organize the PLFs according to exposure and proximity to ill passenger.
- ❑ Mark with a check those passengers and crew considered contacts and place these PLFs on top of pile.

TRAVEL HEALTH ALERT NOTICE (yellow) October 13, 2014

**Illness on a Flight
What you need to do**

- You are being given this card because a sick person who came from a country with Ebola:
 - Was on a plane with you OR
 - had contact with you in an airport
- We don't know if the sick person has Ebola.
- Spread of Ebola on a plane or in an airport is NOT likely. However, CDC is being extra careful to ensure your safety.
- Ebola is a severe, often fatal disease that spreads through direct contact with an infected person's blood or body fluids (such as urine, saliva, sweat, feces, vomit, and semen).
- Symptoms appear within 21 days of exposure: fever, severe headache, muscle pain, vomiting, diarrhea, stomach pain, or unexplained bleeding or bruising.
- People exposed to Ebola are not contagious unless they have fever and other symptoms of Ebola.
- If the person is found to have Ebola and CDC believes you were possibly exposed, a public health official will contact you.
- When CDC has more information about this incident, we will post this information at www.cdc.gov/vhf/ebola/flightinfo.
- Until more information is available, please protect yourself and others by taking these steps:
 - Take your temperature every morning and evening, and watch for symptoms of Ebola.
 - Call a doctor if you get a **fever* and other symptoms**.
 - ***Fever: temperature of 100.4° F / 38° C or higher or feeling like you have a fever.**
 - Tell the doctor you might have been exposed to Ebola on a plane.
 - Do not travel anywhere except to the doctor's office or hospital. Limit your contact with other people when you travel to the doctor. Do not use public transport to get to the medical facility.
 - Bring this notice and give it to health care staff when you arrive.

For more information

- Information about this incident: www.cdc.gov/vhf/ebola/flightinfo
- CDC-INFO Hotline: 800-CDC-INFO (800-232-4636) or TTY: (888) 232-6348 or www.cdc.gov/info

Messaging to passengers and partners

- ❑ Website link on T-HAN for updates:
<http://www.cdc.gov/vhf/ebola/flightinfo/>

Three template entries for the different scenarios. Cities listed here are just examples.

- ❑ **Month DD, 2014**
 - XXXX Airlines flight #XXX from Brussels, Belgium to Newark, New Jersey: The sick passenger is under observation. Suspicion of Ebola is very low.
 - **Follow up/Action requested:** As we learn more about this sick passenger's status, we will update this site. Revisit this page at a later date for updated information.
- ❑ **Month DD, 2014**
 - XXXX Airlines flight XXXX from Brussels, Belgium to Newark, New Jersey: The sick passenger does not have Ebola. You were not exposed to Ebola or any other illness of public health concern.
 - **Follow up/Action requested:** No action is needed.
- ❑ **Month DD, 2014**
 - XXXX Airlines flight XXX from Brussels, Belgium to Newark, New Jersey: The sick passenger has been confirmed to have Ebola.
 - **Follow up/Action requested:** If you were on this flight, please call this number for further information: XXX-XXX-XXXX.

Messaging to passengers and partners

- ❑ Rapid contact with airline partners also a priority
- ❑ Guidance for cleaning and managing plane can be found here:
<http://www.cdc.gov/vhf/ebola/prevention/cleaning-commercial-passenger-aircraft.html>

Conducting an Ebola air contact investigation

- <http://www.cdc.gov/vhf/ebola/prevention/cleaning-commercial-passenger-aircraft.html>

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Public Health Response to Commercial Airline Travel of a Person with Ebola Virus Infection — United States, 2014

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Before the current Ebola epidemic in West Africa, there were few documented cases of symptomatic Ebola patients traveling by commercial airline (1,2), and no evidence of transmission to passengers or crew members during airline travel. In July 2014 two persons with confirmed Ebola virus infection who were infected early in the Nigeria outbreak traveled by commercial airline while symptomatic, involving a total of four flights (two international flights and two Nigeria domestic flights). It is not clear what symptoms either of these two passengers experienced during flight; however, one collapsed in the airport shortly after landing, and the other was documented to have fever, vomiting, and diarrhea on the day the flight arrived. Neither infected passenger transmitted Ebola to other passengers or

Investigation Protocols

On October 14, 2014, the health care worker, who was among those who had cared for a patient with confirmed Ebola in the United States (6), experienced fever and rash and sought medical care. On October 15, Ebola virus infection was confirmed in this health care worker, who had traveled by commercial airline from Dallas, Texas, to Cleveland, Ohio, on October 10, 2014, and from Ohio to Texas on October 13, 2014 (Figure). The date of symptom onset was uncertain; however, based on medical history and clinical and laboratory findings, CDC determined that a contact investigation should be performed for persons aboard either flight (5).

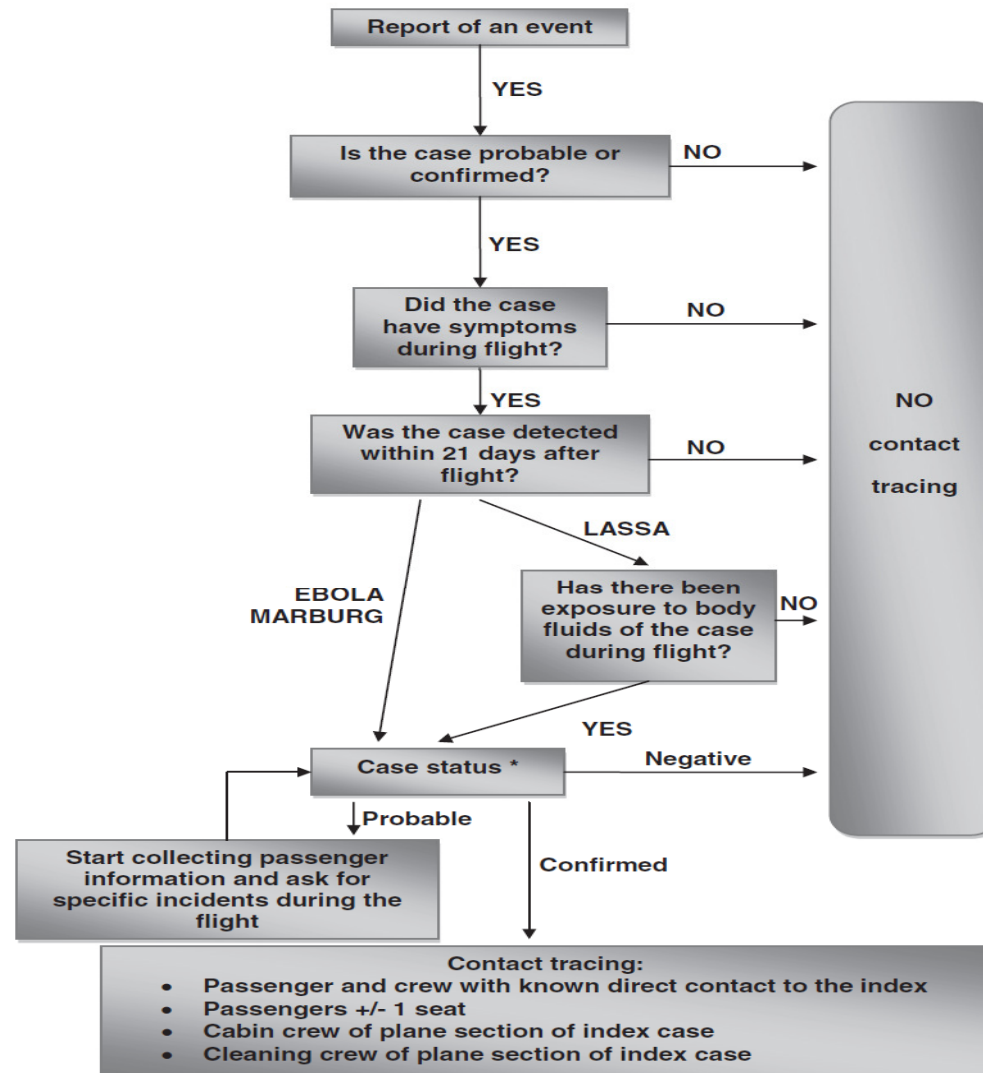
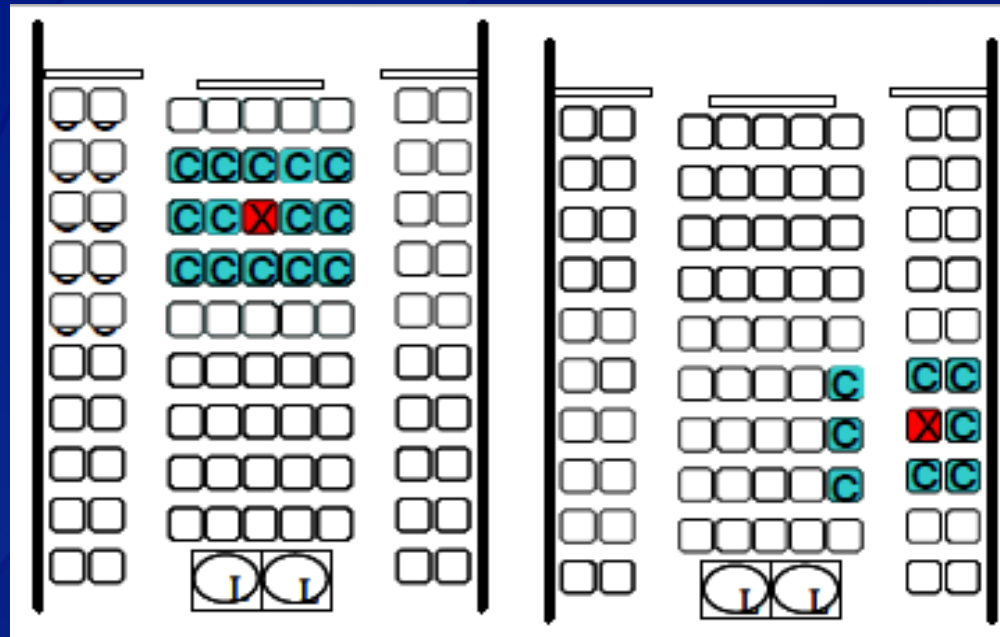


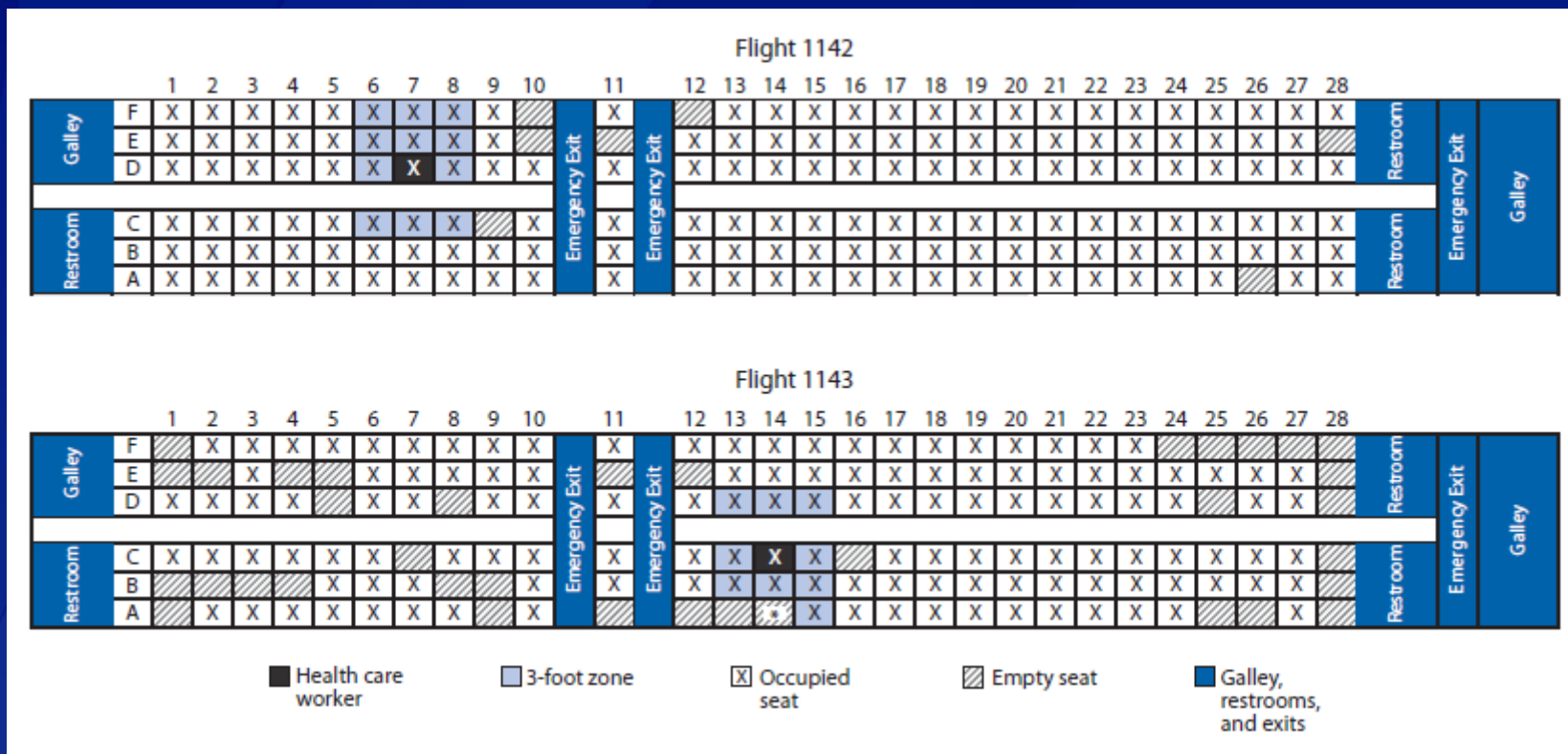
Figure 1 Risk assessment algorithm: Viral Haemorrhagic Fever (Lassa fever, Marburg or Ebola haemorrhagic fever). * If the diagnosis cannot be laboratory confirmed (e.g. if clinical samples are unavailable), contact tracing should be considered if the clinical and epidemiological picture is strongly suggestive of a VHF as the likely diagnosis.

Gilsdorf A, Morgan D, Leitmeyer K. Guidance for contact tracing of cases of Lassa fever, Ebola or Marburg haemorrhagic fever on an airplane: results of a European expert consultation. BMC public health. 2012;12:1014.

Conducting an Ebola air contact investigation



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TABLE 1. Number of contacts (N = 268) followed from two flights taken by a health care worker later diagnosed with Ebola, by flight role — United States, October 10 and 13, 2014

Flight role	Flight 1* (Oct 10, 2014)	Flight 2† (Oct 13, 2014)	Total contacts
Passengers	164	134	247 [§]
Flight crew	6	6	12
Cleaning crew	5	3	8
Airport staff	1	0	1
Total contacts	176	143	268

* Contacts by state of location on day 21 (Texas 122 persons, Ohio 46, Colorado 5, Illinois 1, Maryland 1, and North Carolina 1).

† Contacts by state or country of location at day 21 (Texas 93 persons, Ohio 36, Colorado 5, Ireland 2, Illinois 1, Maryland 1, Nevada 1, and North Carolina 1).

§ 51 passengers traveled on both flights.

Conducting an Ebola air contact investigation

TABLE 2. Symptoms reported by contacts (n = 32) from two flights within 21 days of exposure to a health care worker later diagnosed with Ebola — United States, 2014

Symptom*	Symptoms reported by 32 contacts	Symptoms reported by 21 contacts in 3-foot zone
Fever ($\geq 100.4^{\circ}\text{F}$ [$\geq 38^{\circ}\text{C}$])	1	0
Abdominal pain	3	0
Unusual bleeding	0	0
Body aches	6	2
Diarrhea	2	0
Headache	24	3
Hiccups	0	0
Rash	1	0
Sore throat	14	2
Vomiting	0	0
Weakness	2	0

* Contacts could report more than one type of symptom.

Conducting an Ebola air contact investigation Considerations

- ❑ **Recommendations vary from different organizations about contact radius**
- ❑ **Symptoms of the ill traveler play a role in multiple decision points**
- ❑ **If the incident takes place at an airport without CDC staff onsite, Emergency Medical Services can perform the assessment with telephone input from CDC**

CDC's "Monitoring and Movement" Guidance

The screenshot shows the CDC website interface. At the top left is the CDC logo and the text "Centers for Disease Control and Prevention CDC 24/7: Saving Lives. Protecting People.™". To the right is a search bar with the word "SEARCH" and a magnifying glass icon. Below the search bar is a blue button labeled "CDC A-Z INDEX" with a dropdown arrow. The main content area has a dark blue header with the text "Ebola (Ebola Virus Disease)". Below this is a sidebar with a table of contents for the page, including sections like "About Ebola", "2014 West Africa Outbreak", "Outbreaks", "Signs and Symptoms", "Transmission", "Risk of Exposure", "Epidemiologic Risk Factors to Consider when Evaluating a Person for Exposure to Ebola Virus", "Interim U.S. Guidance for Monitoring and Movement of Persons with Potential Ebola Virus Exposure", "Q&As about Monitoring and Movement Guidance", and "Monitoring Symptoms and Controlling Movement to Stop Spread of Ebola". The main content area displays the title "Interim U.S. Guidance for Monitoring and Movement of Persons with Potential Ebola Virus Exposure" and the update date "Updated: November 28, 2014". Below the title are social media sharing buttons for "Recommend", "Tweet", and "Share". A section titled "This guidance was updated November 16, 2014, to reflect the following:" contains two numbered points: "1. All healthcare workers who engaged in direct patient care in any healthcare setting in a country with widespread transmission or cases in urban settings with uncertain control measures are considered to be in the 'some risk' category." and "2. Laboratory workers in Biosafety Level 4 facilities are considered to have 'no identifiable risk'." Below this is another update notice: "The guidance was updated November 28, 2014, to incorporate language about countries with cases in urban settings with uncertain control measures." The main text begins with "The world is facing the biggest and most complex Ebola outbreak in history. On August 8, 2014, the Ebola outbreak in West Africa was declared by the World Health Organization (WHO) to be a Public Health Emergency of International Concern (PHEIC) because it was determined to be an 'extraordinary event' with public health risks to other countries. The possible consequences of further international spread are particularly serious considering the following factors:" followed by a numbered list starting with "1. The virulence (ability to cause serious disease or death) of the virus". On the right side of the page, there is a "Language:" dropdown menu set to "English" and a section titled "On this Page" with a list of links: "Definitions used in this document", "Early Recognition and Reporting of Suspected Ebola Virus Exposures", "Important Evaluation Factors", "Recommendations for Evaluating Ebola Exposure Risk to Determine Appropriate Public Health Actions", "Recommendations for specific groups and settings", and "Table: Summary of CDC Interim Guidance for Monitoring and Movement of People Exposed to Ebola".

Selected CDC Resources

- <http://www.cdc.gov/quarantine/air/managing-sick-travelers/ebola-guidance-airlines.html>
- <http://wwwnc.cdc.gov/travel/page/ebola-outbreak-communication-resources>
- <http://www.cdc.gov/quarantine/air/managing-sick-travelers/commercial-aircraft/infection-control-cabin-crew.html>
- <https://www.youtube.com/embed/DgOsEFtLDIU?autohide=0&enablejsapi=1&playerapiid=491822&modestbranding=1&rel=0&origin=http://www.cdc.gov&showinfo=0&wmode=opaque>
- <http://www.cdc.gov/vhf/ebola/prevention/cleaning-commercial-passenger-aircraft.html>

Conclusions

- ❑ Ebola public health assessment is very similar to all DGMQ responses to illnesses on commercial flights and a general set of principles can be used.
- ❑ The initial assessment is not a physical exam and can be conducted by non-medical staff.
- ❑ There are various approaches, risks and benefits of all approaches should be considered.

References

- ❑ Gilsdorf A, Morgan D, Leitmeyer K. Guidance for contact tracing of cases of Lassa fever, Ebola or Marburg haemorrhagic fever on an airplane: results of a European expert consultation. *BMC public health*. 2012;12:1014.
- ❑ Leitmeyer K. European risk assessment guidance for infectious diseases transmitted on aircraft--the RAGIDA project. *Euro surveillance : bulletin European sur les maladies transmissibles = European communicable disease bulletin*. 2011;16(16).
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- ❑ Fasina F, Shittu A, Lazarus D, Tomori O, Simonsen L, Viboud C, et al. Transmission dynamics and control of Ebola virus disease outbreak in Nigeria, July to September 2014. *Euro surveillance : bulletin European sur les maladies transmissibles = European communicable disease bulletin*. 2014;19(40).

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Questions?

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LEGAL AUTHORITIES

- To prevent the introduction, transmission, and spread of communicable disease from foreign countries into the States or possessions of the United States

CFR
Title 42

Public
Health

Part 71

Foreign
Quarantine

Subpart C
71.21(b)

Notice of
Communicable
Disease Prior
to Arrival
(radio report of
death or illness)

Subpart D
71.32

Health Measures
at U.S. Ports:
Communicable
Diseases
(persons,
carriers, things)