



# **Ebola virus – Where it came from, where it's going**

**Health Protection Surveillance Centre (HPSC) HSE  
Ireland**

# Outline

- What is Ebola?
- Where does it come from?
- How do humans get it?
- What is the current situation?
- What does the future hold?
- Are we prepared?

**Advice to returning humanitarian aid workers**  
Depending on the work that you undertook while providing humanitarian aid in an Ebola-affected country, there may be a requirement for you to be monitored for 21 days following your return home.  
Please contact your local Department of Public Health on your return.  
Details may be found on the HPSO website at [www.hpsc.ie](http://www.hpsc.ie)  
@hpscireland

**Returning from West Africa?**  
**EBOLA**  
Important information about Ebola

There is a large outbreak of Ebola in some countries of West Africa at the moment.

**What is Ebola?**  
Ebola is a severe infectious disease that is often fatal. It can also be spread by direct contact with the blood or other body fluids (like faeces, saliva, urine, vomit and sweat) of someone who is sick with Ebola. It can also spread by direct contact with objects contaminated with a sick person's blood or body fluids or by direct contact with infected animals.  
Unlike flu, it is not spread through the air.  
People with no symptoms of Ebola cannot spread the infection to others.  
The incubation period, that is the time between contact with the infected person and the time that symptoms appear, can range from 2 to 21 days.

**What are the symptoms of Ebola?**

- fever
- severe headache
- muscle pains
- vomiting
- diarrhoea
- stomach pain
- unexplained bruising or bleeding

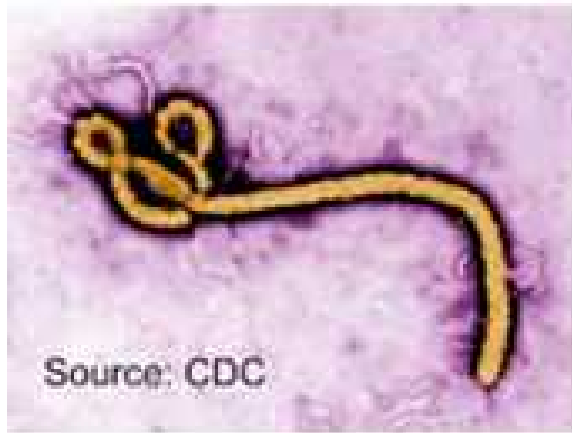
**Advice to travellers coming back from an Ebola-affected country in West Africa**  
The risk that you have been exposed to the Ebola virus is low.  
However, after leaving an Ebola-affected area, you should watch out for fever, severe headache, muscle pains, vomiting, diarrhoea, stomach pain, unexplained bruising or bleeding within 21 days (3 weeks) of leaving the affected area.

**If you have any of these symptoms:**

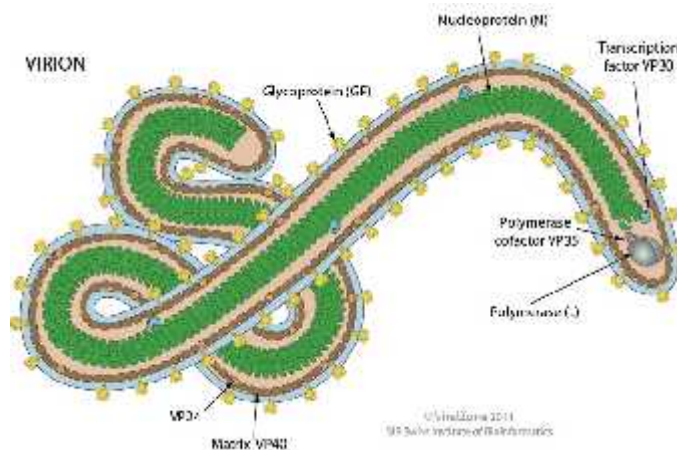
- Contact a doctor urgently BY PHONE
- Tell them that you have returned from an Ebola-affected country
- Tell them if you have had direct contact with sick or dead people while you were there
- Separate or isolate yourself from other people until you have been medically assessed

These symptoms may result from an infection such as malaria that also requires immediate investigation and treatment.

# What is Ebola?



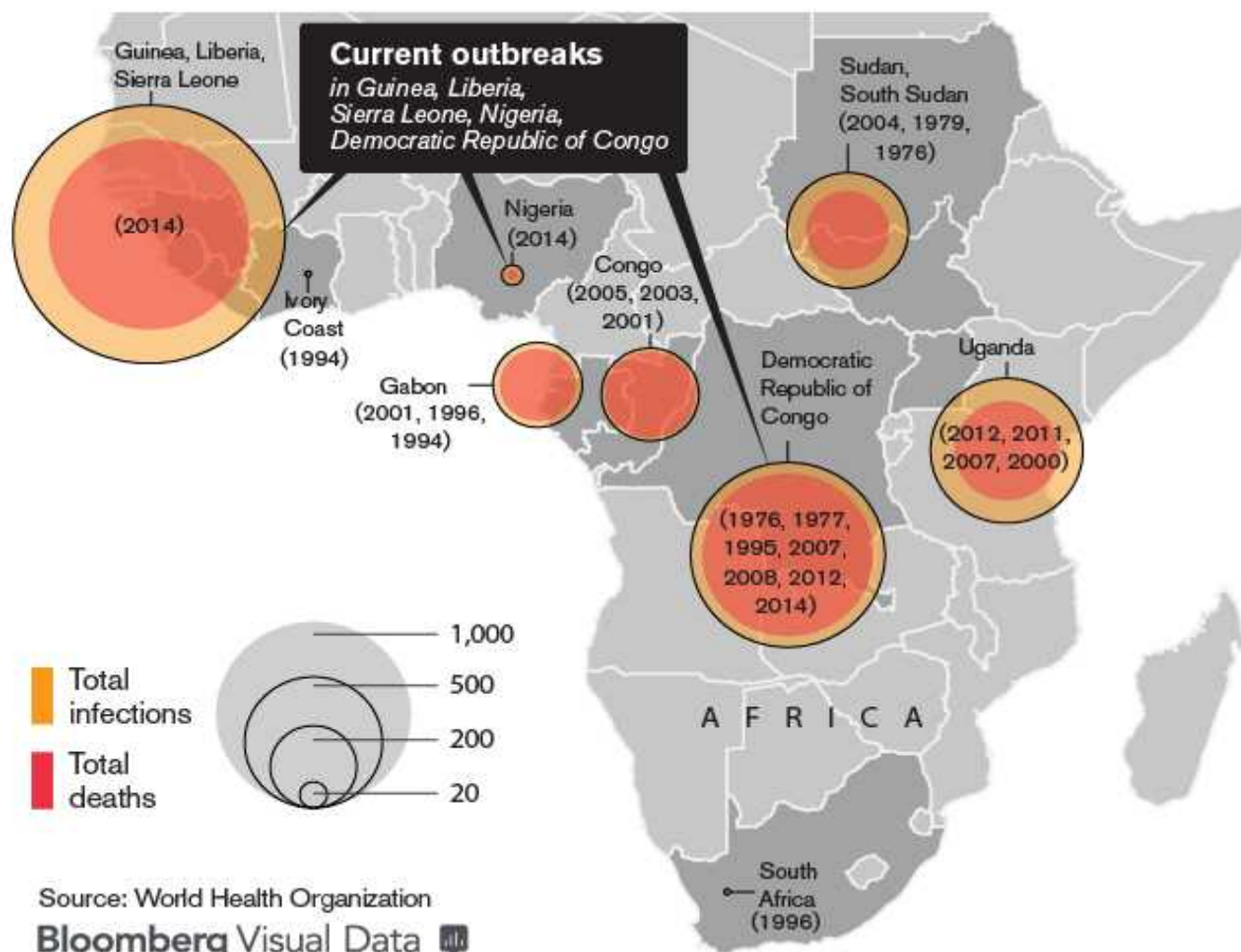
- An envelope virus
  - Easily killed by disinfectants
- Filoviridae family
  - *Marburgvirus*
  - *Ebolavirus*



1. Ebola Zaire
2. Ebola Sudan
3. Ebola Ivory Coast
4. Ebola Reston
5. Ebola Bundibugyo

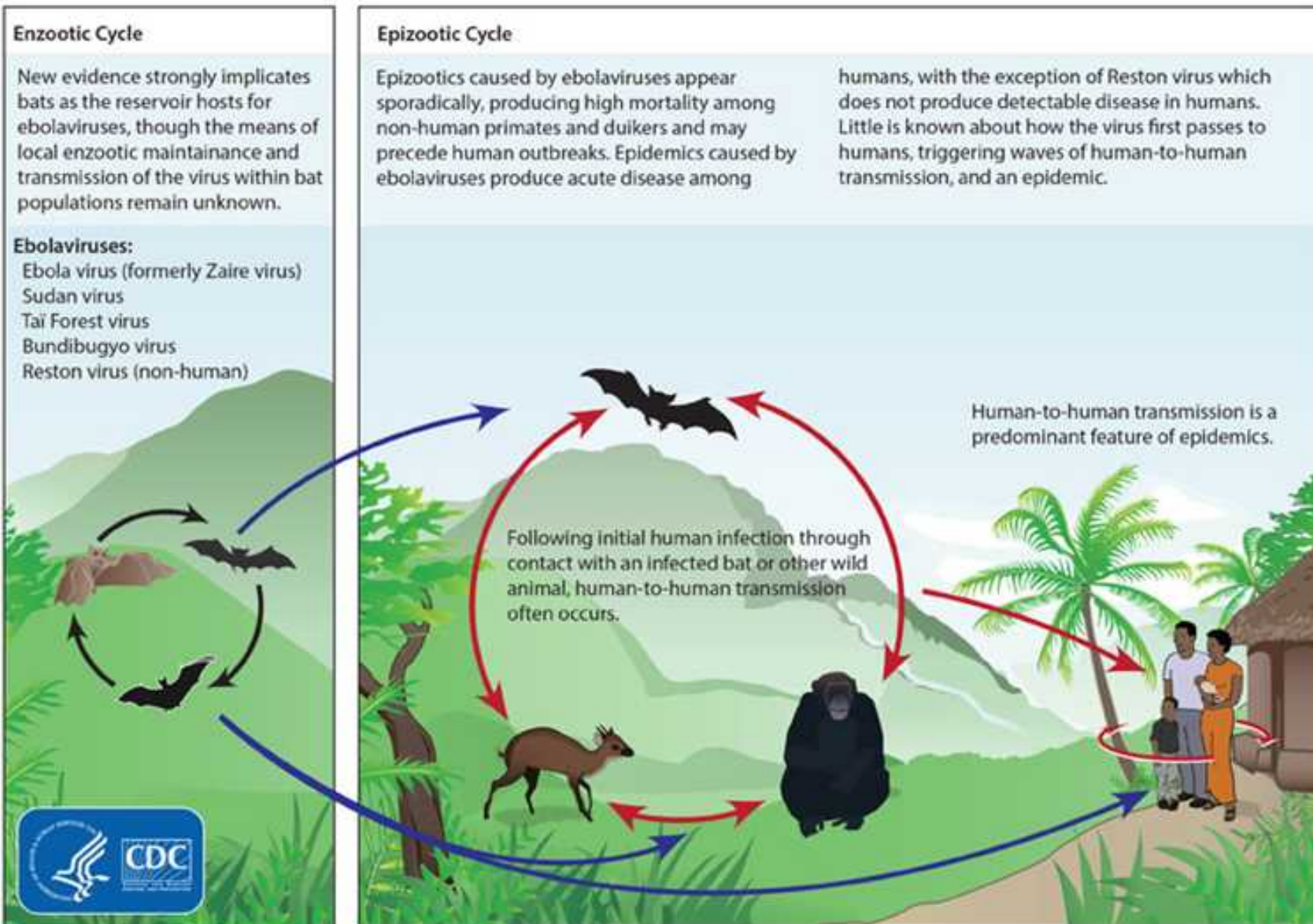
# Major Ebola Outbreaks

Confirmed cases and years, as of 25 August 2014





# Where does the virus come from?



# How are humans infected?



**Bat soup:**

<http://squathole.worldpress.com/>

- Bats have high titres in faeces
- Used as food
- Bush meat trade



**Bush meat:**

<http://www.telegraph.co.uk/news/worldnews/ebola/11006343/Ebola-crisis-why-is-there-bush-meat-in-the-UK.html>

# How are humans infected?



- Direct contact with:
  - blood or secretions
  - urine
  - faeces
  - Semen
  - breast milk



- Exposure to objects that have been contaminated with infected secretions
- Mucosal surface / breaks in skin / parenteral

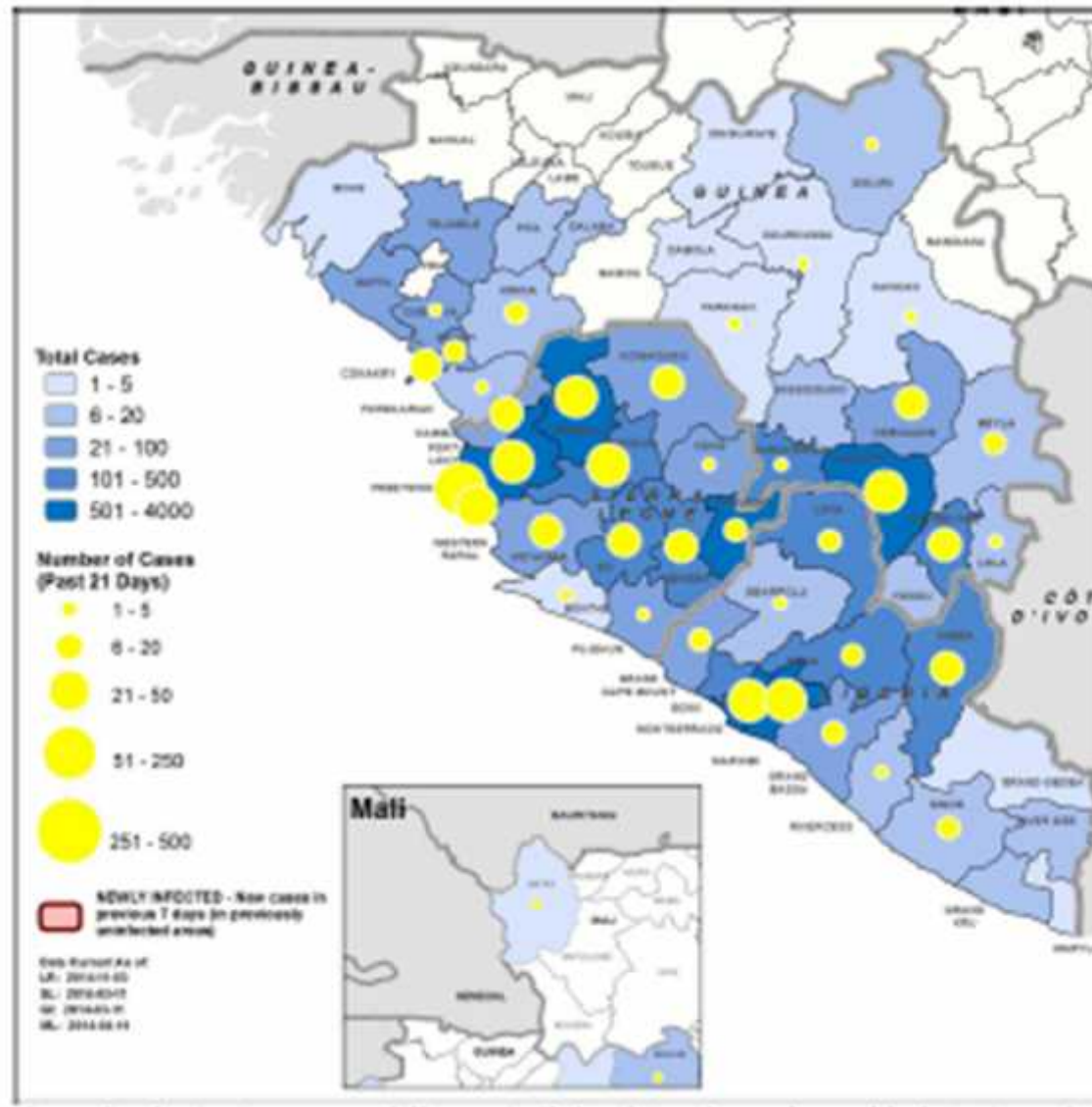
**What is the current situation re Ebola  
virus disease (EVD)?**



# Distribution of EVD cases in countries with intense transmission

## WHO Update 7 November 2014

Figure 1: Geographical distribution of cases in the past 21 days and total cases in Guinea, Liberia, Mali and Sierra Leone



# Cases of EVD by country

WHO Update 7 November 2014

Country	Cases*	Deaths*
Guinea	1760	1054
Liberia	6619	2766
Sierra Leone	4862	1130
Nigeria	20	8
Senegal	1	0
Spain	1	0
United States	4	1
Mali	1	1
<b>Total</b>	<b>13268</b>	<b>4960</b>

\*Confirmed, probable or suspected but not repatriations

# Health Care Workers

- 549 HCWs ,
  - 88 in Guinea, 318 in Liberia, 11 in Nigeria, 128 in Sierra Leone, 1 in Spain, 3 in US
- 311 HCWs have died



# EVD cases outside of West Africa

## Medically evacuated/repatriated cases

- As of 20<sup>th</sup> October 2014
  - 13 confirmed EVD cases medically evacuated
  - 9 recovered, 3 died and 1 still hospitalised
  - Recipient countries
    - 5 to USA
    - 3 to Germany
    - 2 to Spain
    - 1 each to UK, France and Norway
- Frequency of repatriation expected to increase in coming months although efforts are being made to provide facilities on site

Source: Public Health England EVD Epidemiological Update

# EVD cases outside of West Africa

## Non-repatriated cases (n=5)

Date of diagnosis	Country of diagnosis	Country acquired infection	Type	HCW	Status
30 Sep 2014	USA	Liberia	Imported	No	Died
06 Oct 2014	Spain	Spain	Local transmission	Yes	Alive
11 Oct 2014	USA	USA	Local transmission	Yes	Alive
15 Oct 2014	USA	USA	Local transmission	Yes	Alive
23 Oct 2014	USA	Guinea	Imported	Yes	Alive

Adapted from Public Health England EVD Epidemiological Update 29 October 2014



**Ongoing updates on the EVD situation  
available at:  
[www.hpsc.ie](http://www.hpsc.ie)**

# The risk to Ireland is low

## No direct flights to Ireland from West African countries

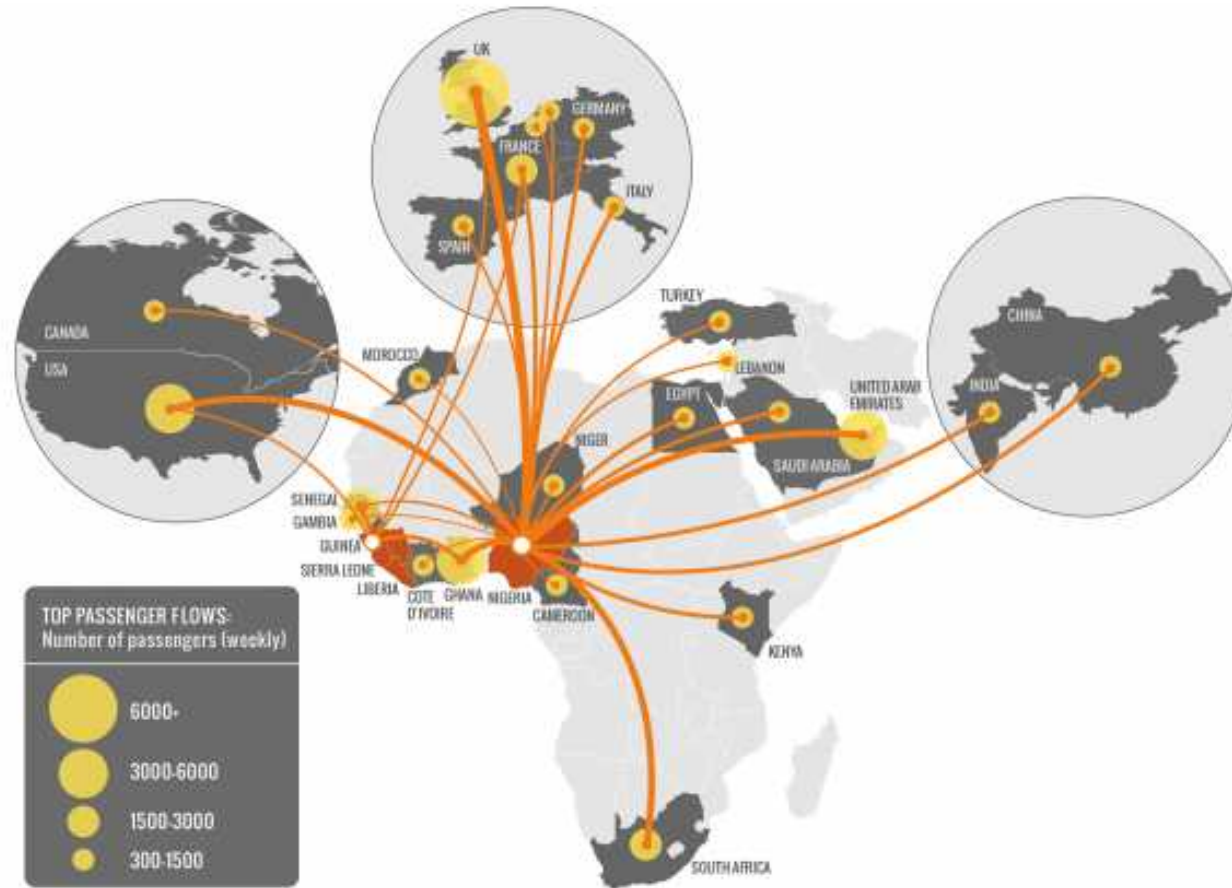
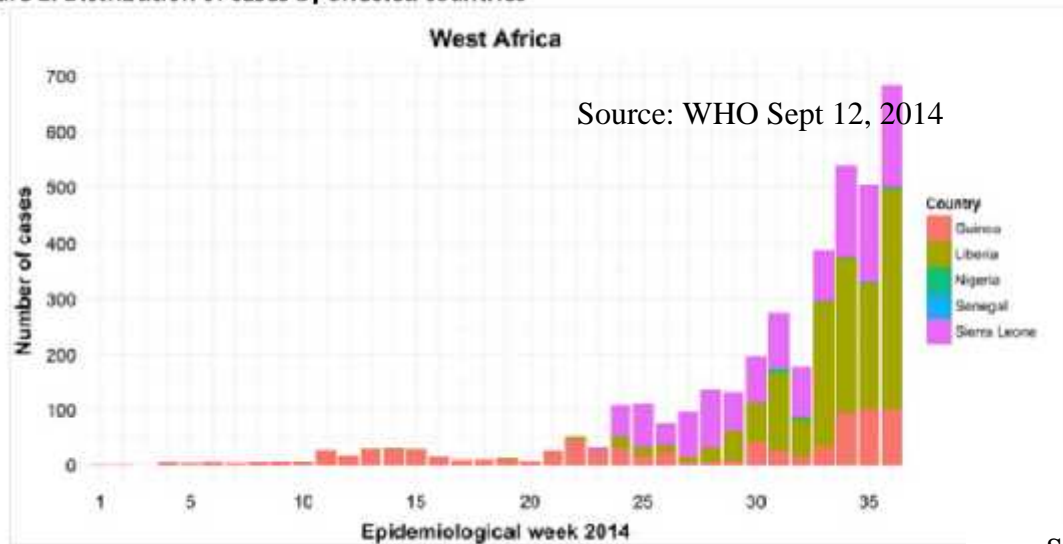


Fig. 1: Air traffic connections from West African countries to the rest of the world

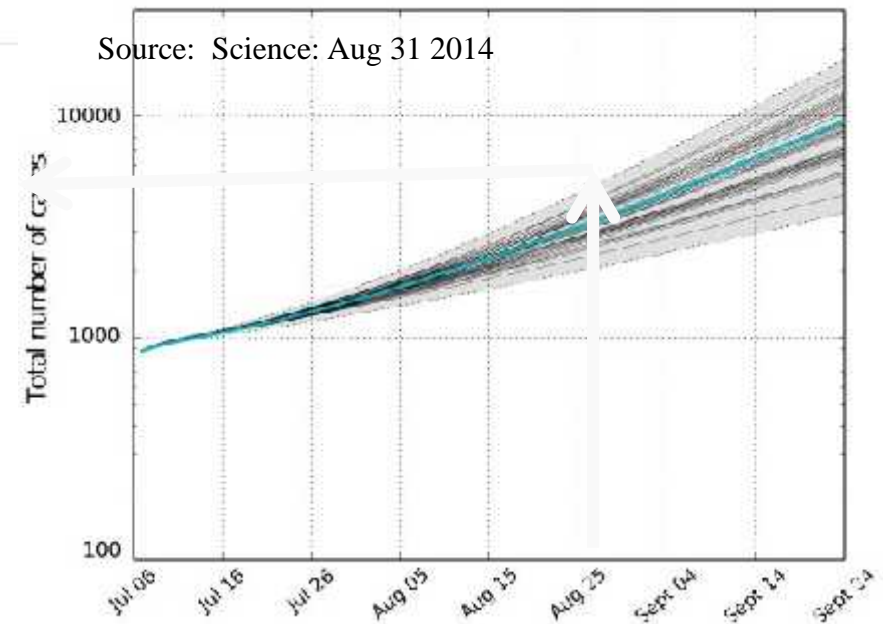
# Predictions - where are we headed

Figure 1: Distribution of cases by affected countries



Ebola Virus Disease in West Africa  
— The First 9 Months of the  
Epidemic and Forward Projections  
WHO Ebola Response Team  
N Engl J Med 2014; 371:1481-  
1495 [October 16, 2014](#) DOI:  
10.1056/NEJMoa1411100

Source: Science: Aug 31 2014



# US Marines Monrovia Liberia



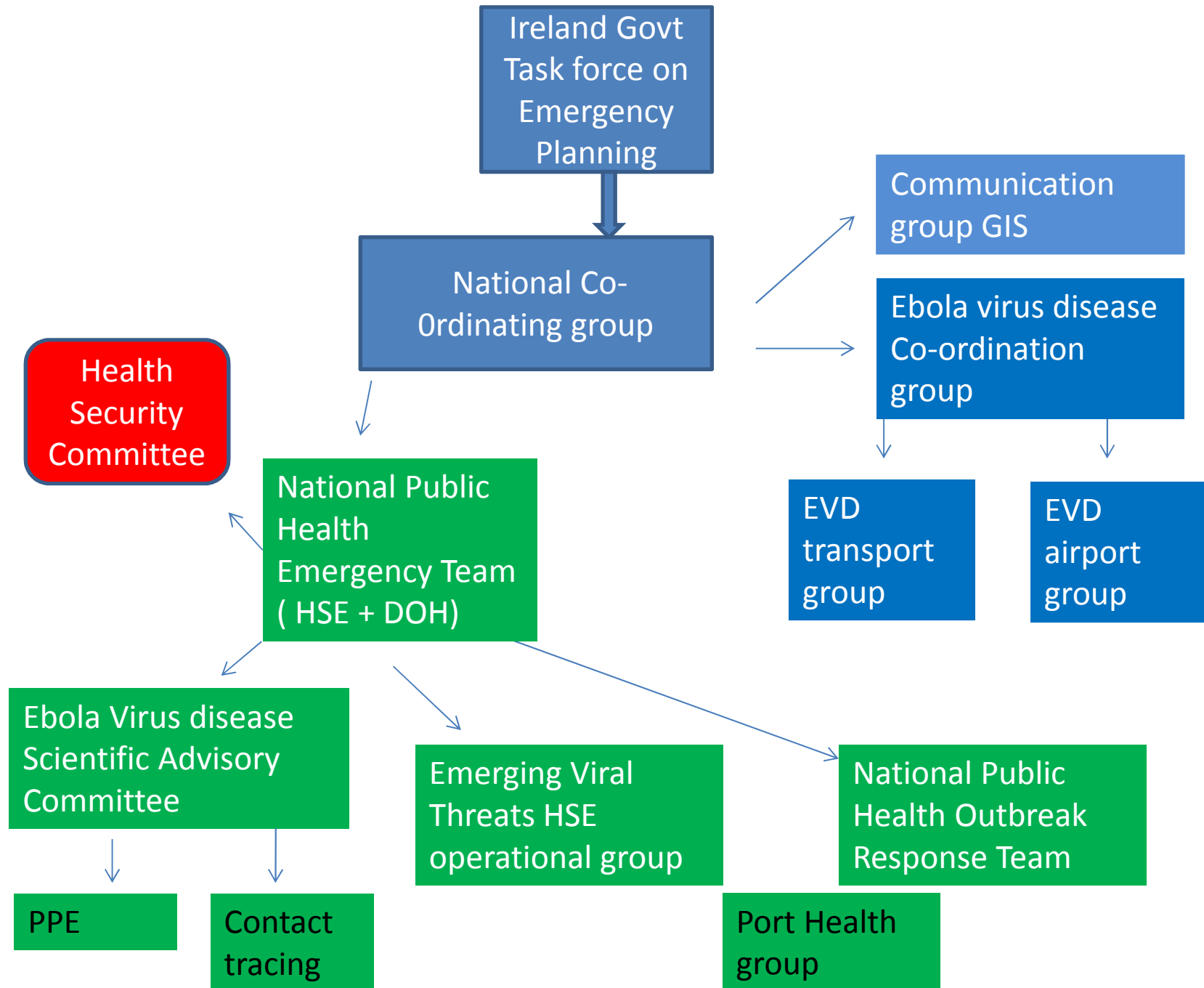
Picture: Getty Telegraph .co.uk

Lt Susan Jeffreys prepares equipment in the hospital clinic aboard RFA Argus as she prepares to take equipment and Marines to Sierra Leone to aid with the Ebola epidemic



**Picture: Julian Simmonds / Telegraph**





# From Window in Carlos III hospital in Madrid



Picture: Pedro  
Armestre/AFP/Getty Images  
Telegraph

# Conclusions



- Currently risk is low, Nigeria free
- Epidemic remains out of control with intense transmission in Guinea and Sierra Leone, Liberia recent decrease in some areas
  - Risk of spread to countries bordering Liberia and Guinea especially Ivory coast as cases now in the bordering district
- Increasing mobilization of international efforts but will take many months to reverse the trends
  - Vaccines hopefully come on stream in new year with new therapies
- Ask the travel history of all with fever

# Acknowledgements

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- CDC Ebola
- Acknowledge the huge efforts of all working on various committees at all levels to stop Ebola

