DELAYING THE INEVITABLE:
Lessons Learned From Ebola Airport Screening

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ACRP
Washington, DC

Aviation
Medical Services of Alaska

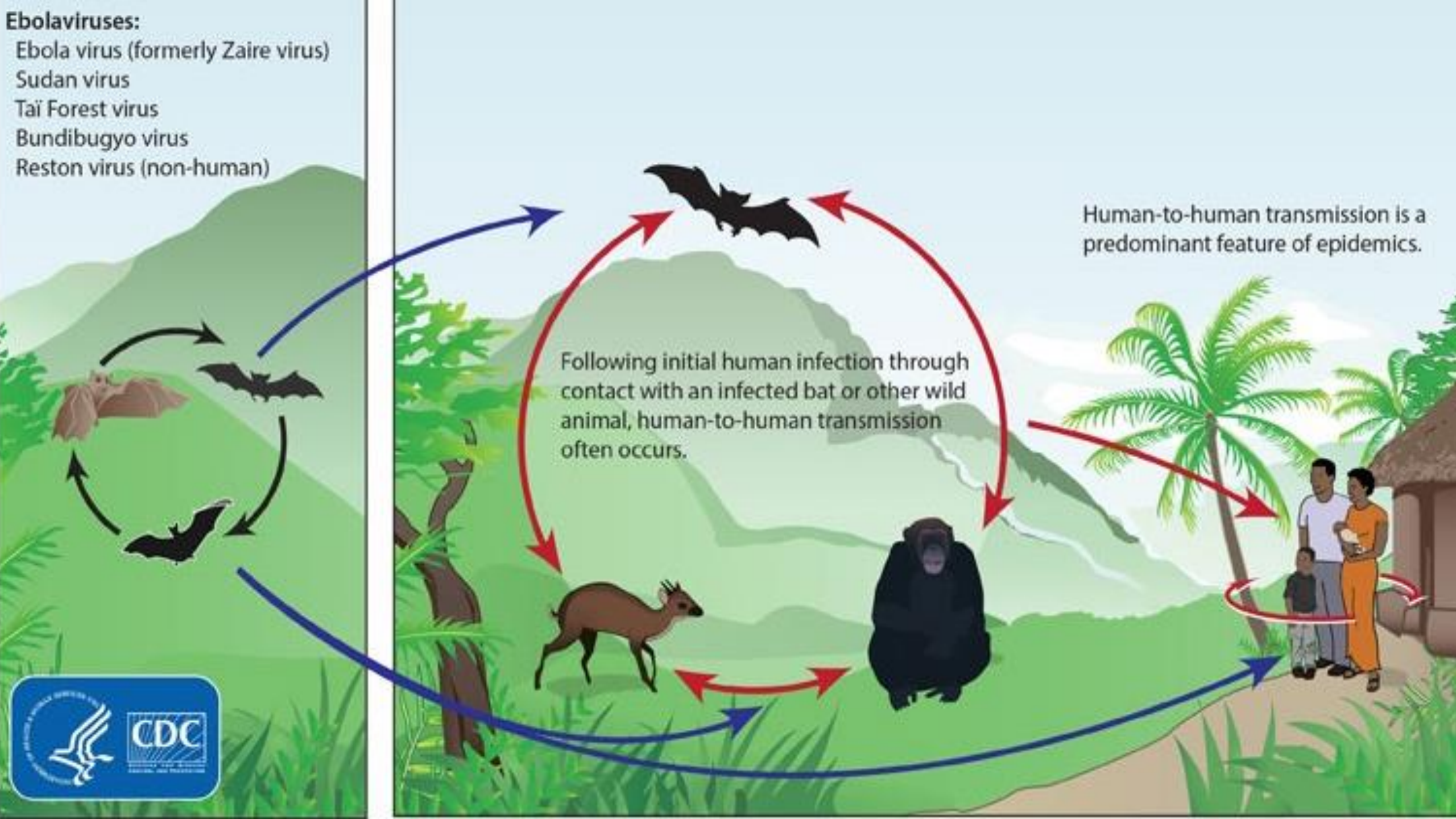
Conakry Gbessia International Airport, Guinea p.illig

DISCLOSURES

- I have no financial conflict of interest to disclose
- I am a former CDC DGMQ employee
- I was deployed to Guinea, West Africa in August 2014
- The views expressed here are my own and do not reflect CDC policy
- Fotos are my own

Ebolaviruses:

- Ebola virus (formerly Zaire virus)
- Sudan virus
- Taï Forest virus
- Bundibugyo virus
- Reston virus (non-human)



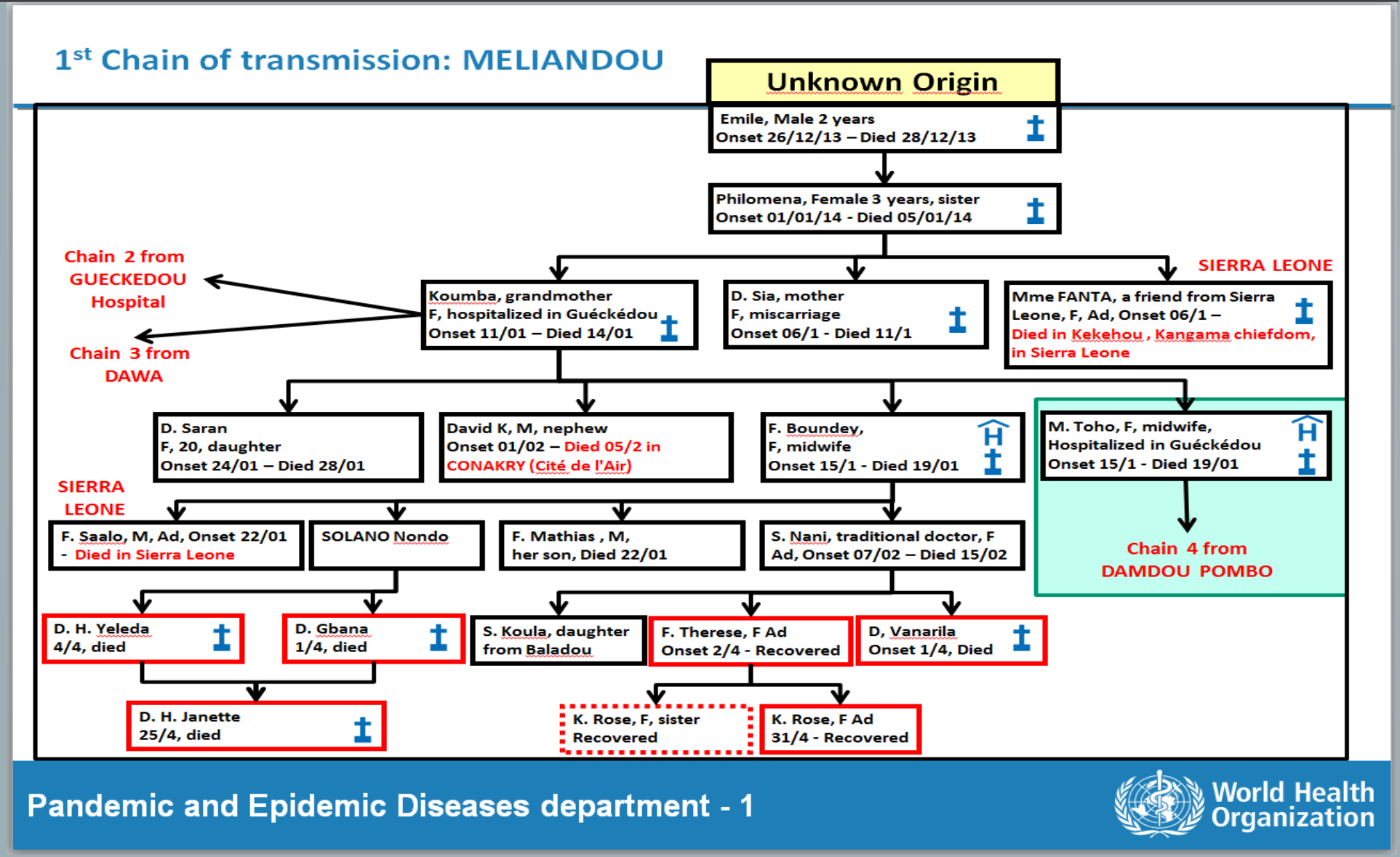
EARLY EBOLA OUTBREAK TIMELINE

A mysterious disease began spreading in a small village in Guinea on

December 26, 2013

but was not identified as Ebola until

March 21, 2014.



Within a few weeks, this highly infectious and deadly disease, previously confined to Central Africa and Gabon, cropped up in another distant part of the continent. And this strain, Ebola Zaire, was the most lethal in the family of five distinct Ebola species.

On March 23, 2014, the WHO published formal notification of an outbreak of Ebola virus disease in Guinea on its website. On 8 August, WHO declared the epidemic to be a "public health emergency of international concern".

The outbreak spread through porous borders to neighboring Sierra Leone and Liberia, overwhelming medical and emergency facilities.

Overall, over 11,000 people reportedly died, over 28,000 reportedly infected. Many cases were not reported.

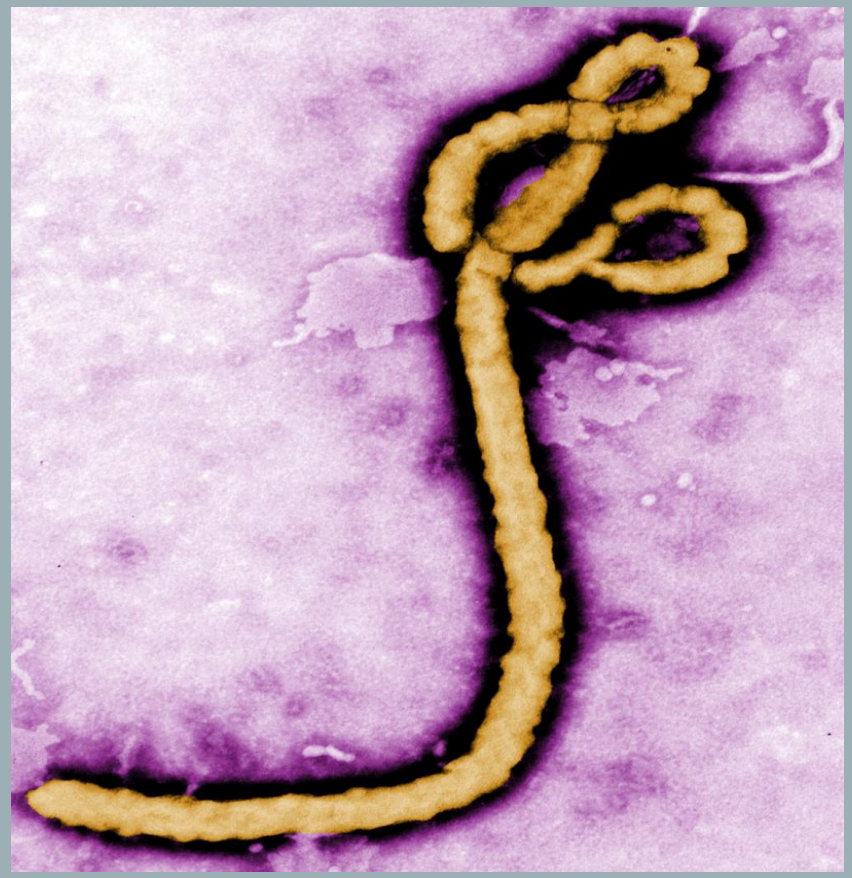
Considered officially over for the 3 countries in January 2016, there was a flare up in Sierra Leon that was quickly managed.

October 3, 2014

WHO Ebola Response Roadmap

EBOLA INFECTION

- Incubation period ranges from 2–21 days
- Not considered contagious until symptoms appear (fever)
- Virus is easily killed with standard hygiene and disinfection practices



EBOLA VIRUS DISEASE

Symptoms usually begin abruptly and include fever and:

- severe headache
- muscle pain
- vomiting
- diarrhea
- stomach pain
- unexplained bleeding or bruising

Rapid spread occurred when it entered highly urban areas and market places

EBOLA TRANSMISSION

- **Transmission by direct contact with**
  - **Body fluids of an infected person**
  - **Objects that have been contaminated with infected body fluids**
- **Often transmitted by preparation of dead body for burial**
- **Not transmitted through:**
  - **Air borne particles**
  - **Cooked food**
  - **Water supplies**

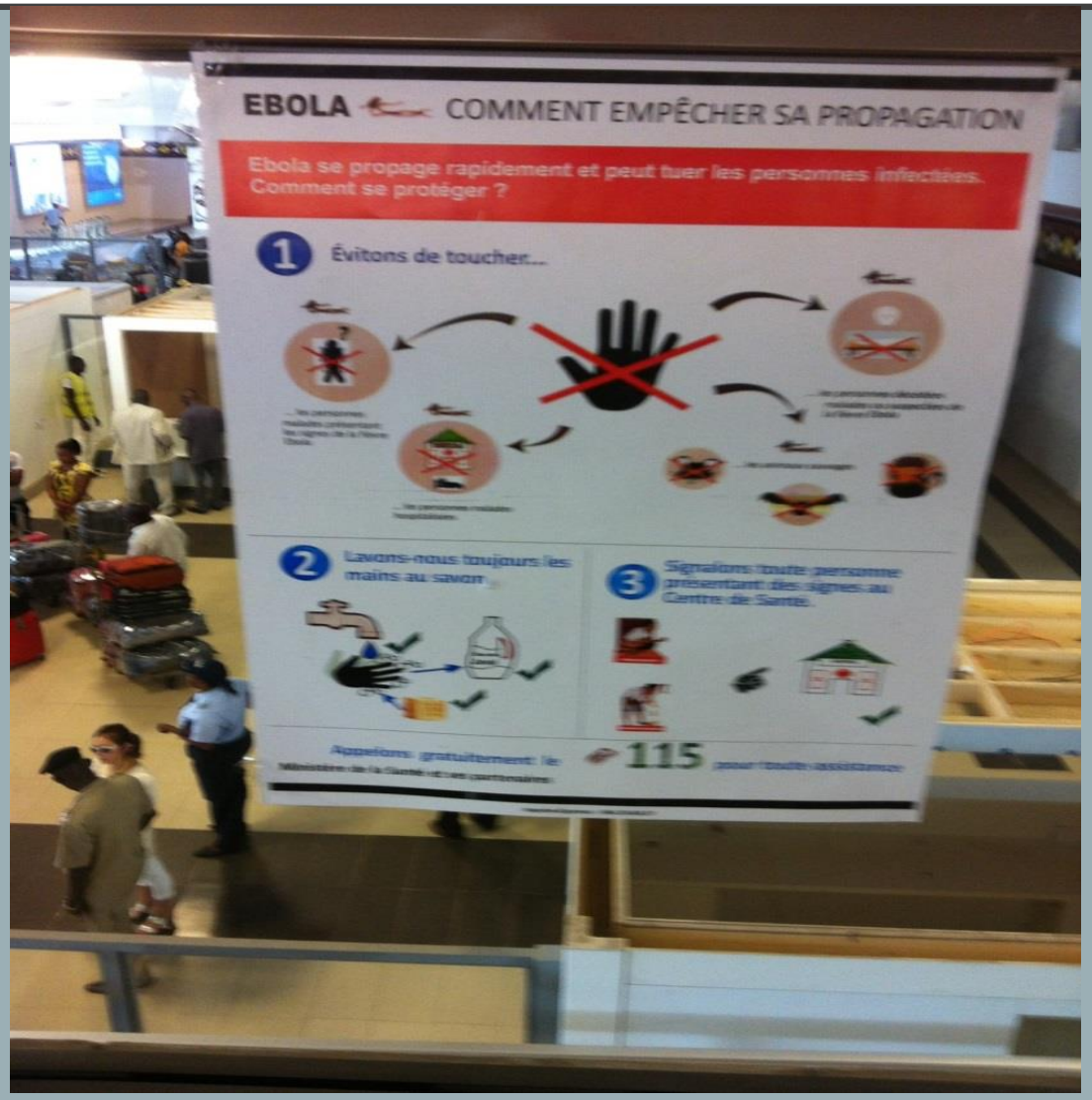
This is the first time in history with sustained human to human transmission

WHY NOT JUST CLOSE AIRPORTS TO PREVENT INTERNATIONAL SPREAD?

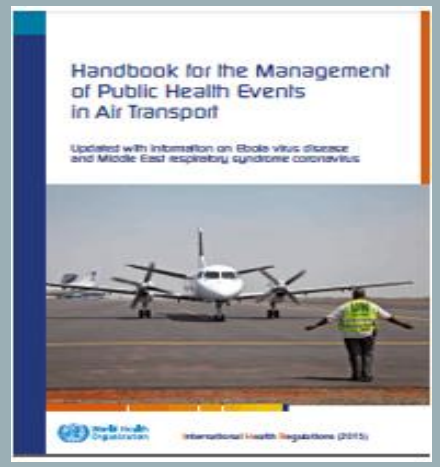
International and humanitarian assistance must continue and airlines are needed to transport teams and essential supplies to control the outbreak

ECONOMIC ISSUES

Serious economic disruption arises if commerce is stopped



WHO International Health Regulations
3rd Edition 2005



INTERNATIONAL HEALTH REGULATIONS (IHR)

– from policy to people's health security

What are the IHR?

The IHR are legally binding and help countries work together to protect lives threatened by the spread of diseases and other health risks, including radiation and chemical hazards

5 reasons why the IHR matter

HEALTH THREATS HAVE NO BORDERS

The IHR strengthen countries' abilities to control diseases that cross borders at ports, airports and ground crossings

TRAVEL AND TRADE ARE MADE SAFER

The IHR promote trade and tourism in countries and prevent economic damage

GLOBAL HEALTH SECURITY IS ENHANCED

The IHR establish an early warning system not only for diseases but for anything that threatens human health and livelihoods

DAILY THREATS ARE KEPT UNDER CONTROL

The IHR guide countries to detect, assess and respond to threats and inform other countries quickly

ALL SECTORS BENEFIT

The IHR prepare all sectors for potential emergencies through coordination and information sharing

World Health Organization
REGIONAL OFFICE FOR Europe

Until all sectors are on board with the IHR, no country is ready

www.euro.who.int/ihr

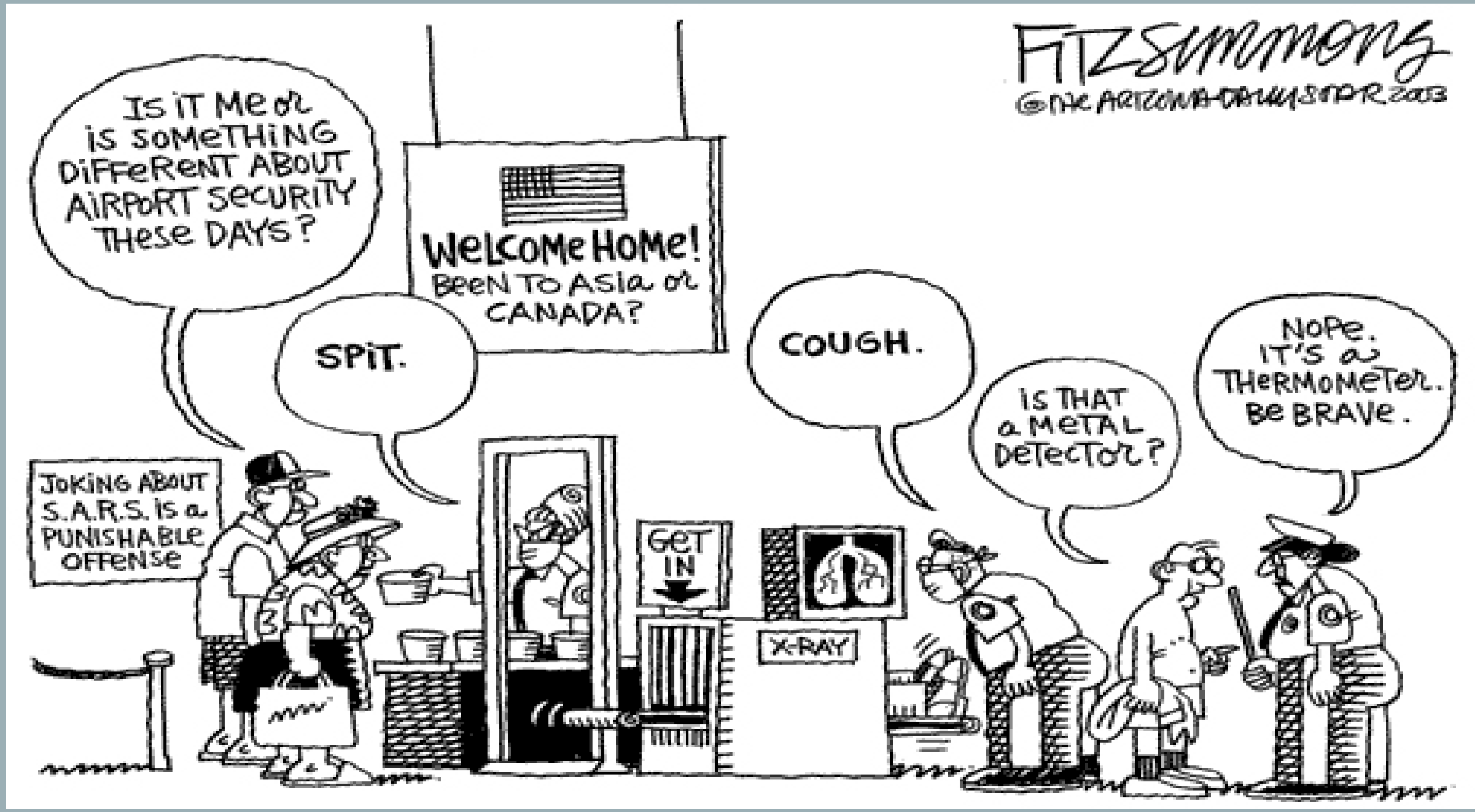
PUBLIC HEALTH PRIORITIES

- **Interrupt Ebola transmission in W. Africa**
  - **Case identification, isolation and care (MSF)**
  - **Contact identification and monitoring (MSF, MoH, CDC)**
  - **Transmission risk factor identification and mitigation**
    - **Health Care Worker protection and infection control (MoH)**
    - **Funeral and burial safe practices (Red Cross)**
- **Prevent Ebola transmission to other countries**
  - **Prevention of undiagnosed cases entering unaffected countries (MoH, CDC)**
  - **Prevention of transmission from diagnosed cases during and after repatriation (MoH, CDC)**

PASSENGER SCREENING
FIRST LINE OF DEFENSE

Exit and entry screening come with challenges and should

- not interfere any more than necessary with commerce & travel
- be able to provide services & personnel to areas of need
- properly assess criteria and implement plans
- be applied universally (no VIP exclusion)
- be reasonable & flexible – risk cannot be zero
- balance the needs of society with travel liberties
- alleviate fears of flight crews & airport workers
- have access to medical & public health care
- provide ongoing training at all levels
- include public & private health case sector


FITZSIMMONS
©THE ARIZONA DAILY STAR 2003
IS IT ME OR IS SOMETHING DIFFERENT ABOUT AIRPORT SECURITY THESE DAYS?
WELCOME HOME! BEEN TO ASIA OR CANADA?
SPIT.
COUGH.
IS THAT A METAL DETECTOR?
NOPE. IT'S A THERMOMETER. BE BRAVE.
JOKING ABOUT S.A.R.S. IS A PUNISHABLE OFFENSE
GET IN
X-RAY

WHEN I ARRIVED

- Medical students & nurses working 24 hour shifts under Guinea MoH
- TV cameras on arrival & departure
- Basic questionnaire only
- Non-contact thermometers
  - limited, not enough batteries
- No secondary screening
- No private areas
- No isolation areas
- No EMT or ambulance services
- Security outside checking ID and tickets
  - no gloves or PPE
- No drills or training available

EBOLA EXIT SCREENING TIMELINE

March

Ebola outbreak reported

April

- **MoH started screening**
  - Volunteer nurses and medical students
  - Non-contact thermometers

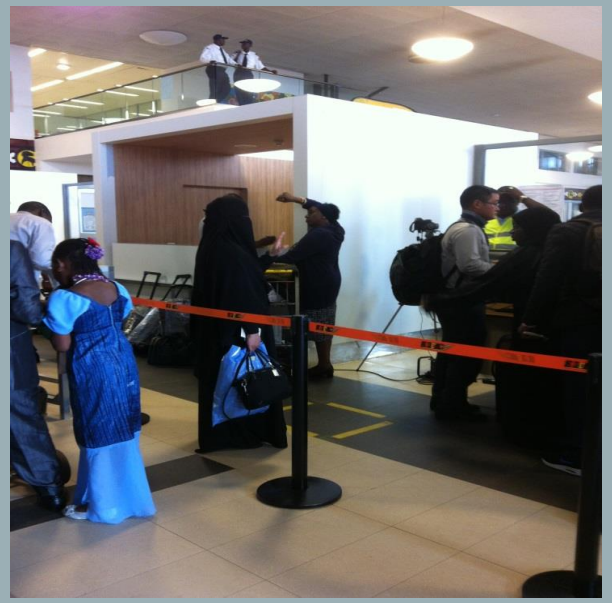
August

- **Enhanced screening process:**
  - Improved visual screening
  - Questionnaires
  - Secondary screening
  - PPE Training

Conakry Gbessia International Airport


POLICE

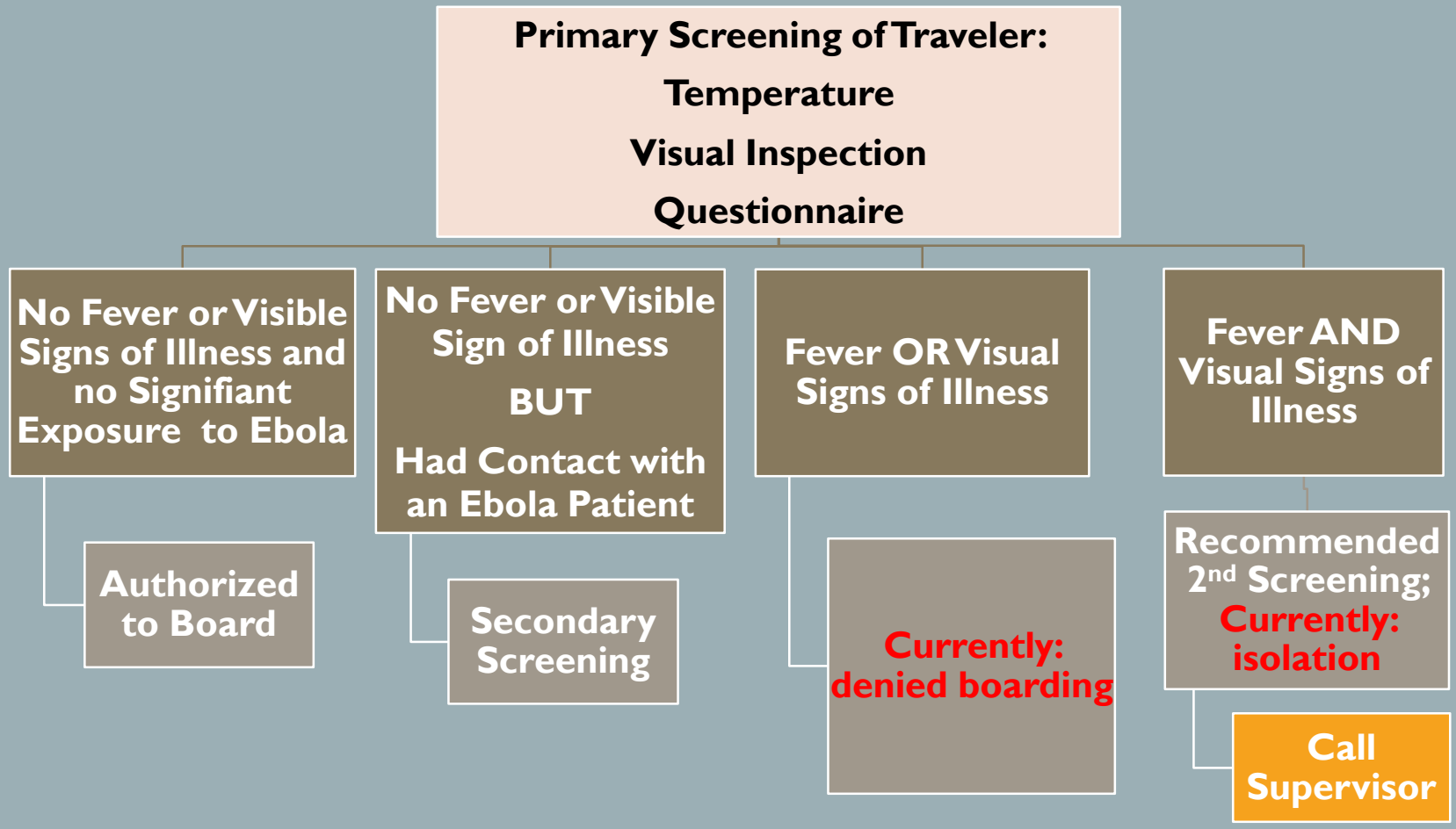

CONTROLE
SANITAIRE



ENHANCED SCREENING RECOMMENDATIONS

- Enhanced primary screening process (revise initial screening questionnaire)
  - Prevent people who have been infected but do not yet have signs or symptoms
  - Identify and categorize contact with Ebola victims
  - Improved visual assessments
- Develop secondary screening for passengers identified as possible Ebola contacts
- Build and supply isolation rooms at strategic locations
- Train proper personal protective equipment (PPE) use throughout airport employees

CDC'S ENHANCED EXIT SCREENING AT CONAKRY-GBESSIA INTERNATIONAL AIRPORT



CHALLENGES

- **Insufficient number of screeners**
  - Current volunteer screeners working 24/hour shifts
  - No room to take turns sleeping when there are no flights
  - Not enough staff available to perform entry screening, if implemented
- **Lack of Equipment (PPE, Non-contact thermometers)**
- **Airlines fearful**
  - Regional carriers had stopped flying
  - Air France relied on volunteer crews

CHALLENGES

- **Rapid Ebola testing not available**
  - Screening process includes turning people away based on fever which probably is not be related to Ebola (malaria)
  - Travelers may not have a local home to return to while awaiting testing or recovery from non-Ebola febrile illness
- **Airport and airlines being asked to take a large role in responding to outbreak**
  - Financially and operationally strained
  - Screeners are volunteers and are becoming exhausted

Airport Isolation Room

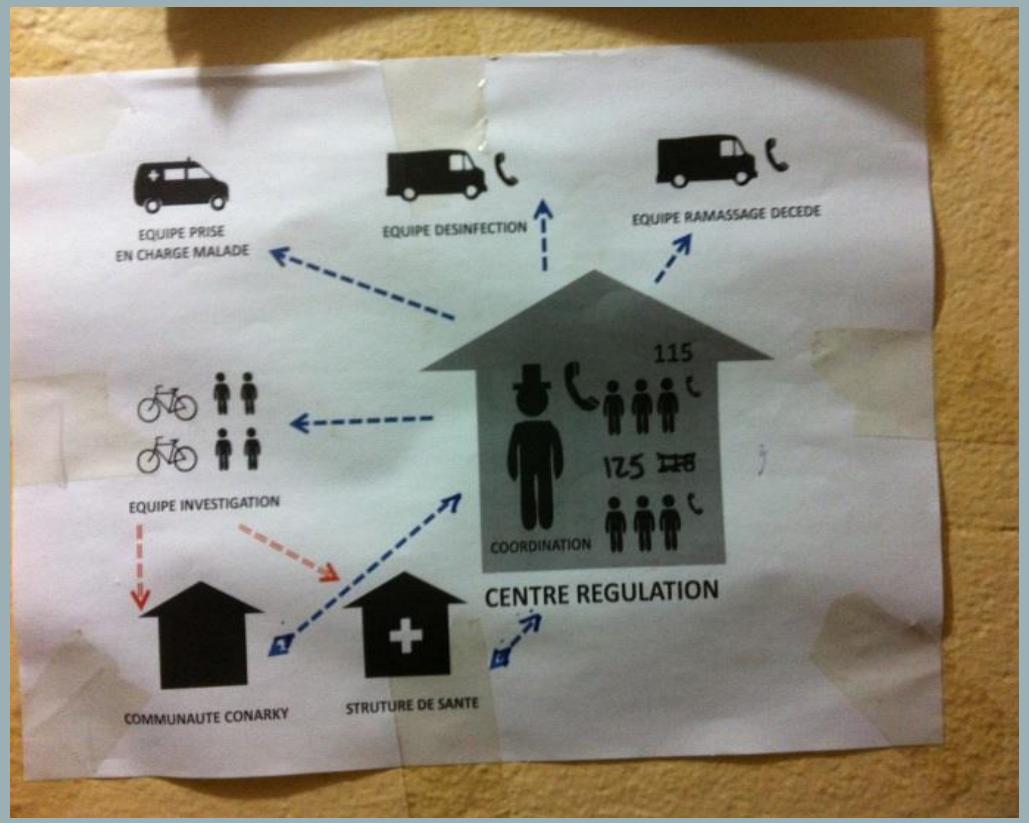
Built in 24 hours after unfortunate incident

But special supplies took weeks (toilet)

PPE TRAINING

115 National Ebola Hotline

- 4 doctors taking calls on cell phones
- IT & coverage problems
- Triage – deaths referred to Red Cross
- Severe illness to MSF
- No ambulance after 6 pm



PARTNERS: WHO

DIPLOMATIC COMMUNITY

DOCTORS WITHOUT BORDERS (MSF)


NS
ONTIERES


09.08.2014 03:11


09 08 2014 03:11

- Screener fatigue (med students 24x7), poor pay and rest facilities
- Reassurance of airline personnel: screeners of staff at hotel
- Interface with MoH, WHO in French
- Poor public health / medical infrastructure (worse in Sierra Leone and Liberia)
- Technical issues – 115 cell phones
- Red Cross – corpse removal - overwhelmed
- MSF – treatment – unable to assess after 6 pm
- Hospitals overwhelmed- other medical issues get ignored (MI at the airport)
- Health care workers dying
- High prevalence of fever in population (malaria)
- Lack of basic supplies (thermometers, gloves, PPE)
- Lack of training (screeners, airport staff)
- Lack of infrastructure – no place to house sick pax overnight at the airport

MANY LOCAL CHALLENGES


MAGIC
GOLD SEAL
sir
sir
sir
sir
sir
STOP
19 . 08 . 2014 04 : 31

EBOLA ENTERS THE US

September 30, 2014

CDC confirmed the first laboratory-confirmed case of Ebola to be diagnosed in the United States in a man who had traveled to Dallas, Texas from Liberia. He infected two nurses, one of whom traveled by commercial aircraft during incubation period.

U.S. AIRPORT ENTRY SCREENING BEGINS

October 8, 2014 Enhanced Ebola Screening began at five US airports and new tracking program for all people entering the US from Ebola-affected countries. Canada and England initiated similar measures.

1. John F. Kennedy International Airport (JFK)
2. Newark Liberty International Airport (EWR)
3. Washington-Dulles International Airport (IAD)
4. Chicago O'Hare International Airport (ORD)
5. Hartsfield-Jackson Atlanta International Airport (ATL)

December 28, 2014 All travelers departing Guinea, Sierra Leone and Liberia and entering the US are routed through one of these five airports to conduct enhanced entry screening.

CDCMMWR

TRAVEL AND BORDER HEALTH MEASURES TO PREVENT THE INTERNATIONAL SPREAD OF EBOLA

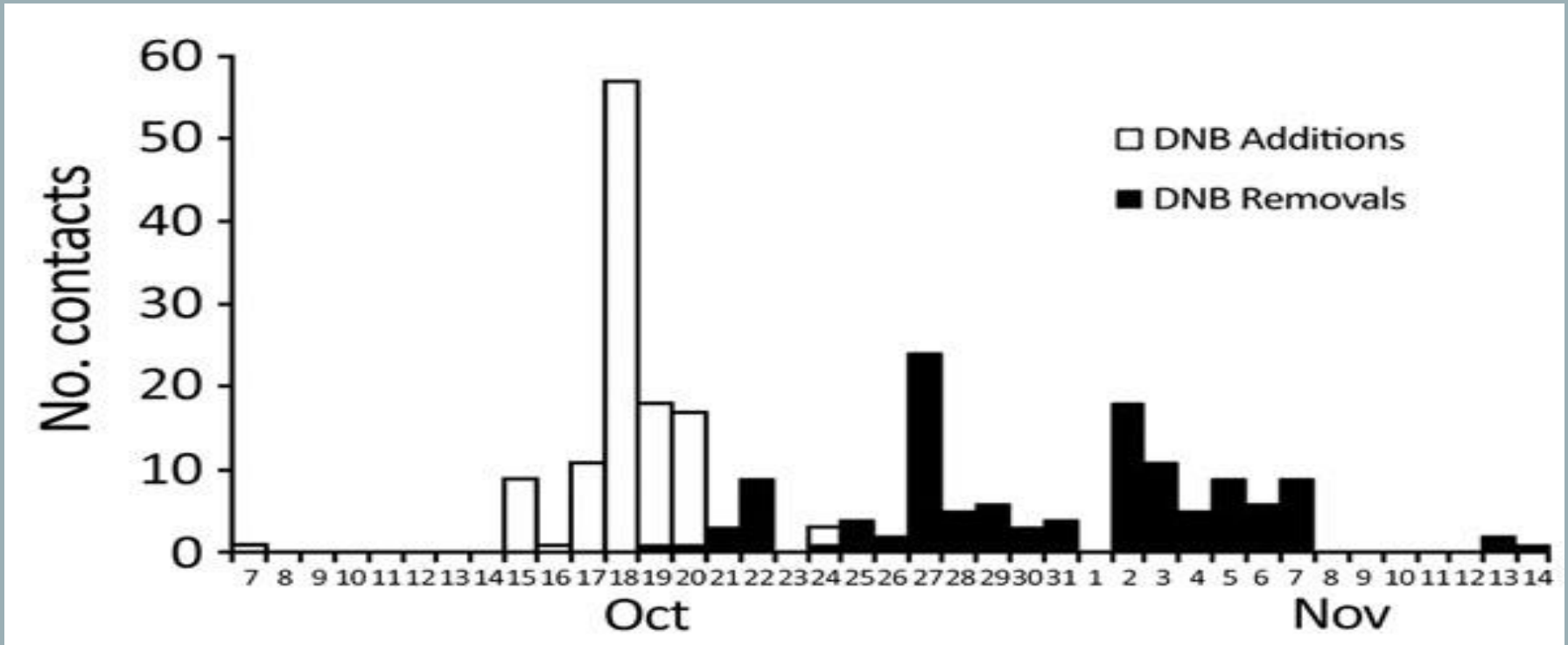
SUPPLEMENTS / JULY 8, 2016 / 65(3);57–67

During August 2014–January 2016, approximately 300,000 travelers were screened in Guinea, Liberia, and Sierra Leone.

Only four cases of Ebola were exported through air travel to other countries (United States [two cases], United Kingdom [one case], Italy [one case]) after exit screening was implemented; none of the infected travelers were overtly symptomatic at the time of travel. No Ebola cases were reported to have been detected during exit screening.

US FEDERAL TRAVEL RESTRICTIONS FOR PERSONS WITH HIGHER-RISK EXPOSURES TO COMMUNICABLE DISEASES OF PUBLIC HEALTH CONCERN

EMERGING INFECTIOUS DISEASES • WWW.CDC.GOV/EID • VOL. 23,



Timeline of federal public health travel restriction actions for 124 contacts of US case-patients with Ebola, October 7–November 14, 2014. DNB = Do Not Board.

LESSONS LEARNED FROM EBOLA AIRLINE PASSENGER SCREENING

- Ebola came into the US because exit screening does not work when people are motivated to hide exposure history
- The weak link in the US was at the level of primary care in a highly skilled urban medical facility (front line failed – we assumed our medical facilities were prepared to recognize Ebola and provide proper isolation)
- The strong link was due to self monitoring by a high risk individual (MSF doctor in NY - public health awareness worked)

QUESTIONS AND THANK YOU