Ebola Isolation Units in Health Care facilities. Experience Sierra Leone

EVD outbreak 2014-2016
ADVANTAGES OF EARLY ISOLATION IN EVD

Multiple contacts to follow
Multiple secondary cases

Fewer contacts to follow
Fewer secondary cases

EBOLA KEY MESSAGES

Signs & Symptoms

How is Ebola Spread?

- Direct contact with body fluids of sick person
- Contact with sick person's contaminated articles
- harbouring of infected mosquitoes

How can Ebola be Prevented?

- Use cloth masks
- Avoid touching sick person's body fluids
- Use bleach
- Wear protective clothing
- Use disposable gloves
- Wash hands
- Avoid contact with sick people
- Avoid contact with sick places

For more information call FREE 117
Isolation unit (EHU) patient pathway

1. Screening using case definition
2. Isolation unit (EHU) admission
3. Ebola virus testing
4. Test result: Ebola +
   - Death prior to transfer
   - Transfer to ETC
5. Test result: Ebola -
   - Discharge home or to other inpatient facility
6. Empiric Rx

Screen negative Admit to A&E/OPD

Discharge from EHU

Recovery prior to transfer

Transfer to ETC
HOW TO SET UP AN EVD ISOLATION UNIT for SUSPECTED CASES IN A HOSPITAL?

3.2 Plan How to Arrange the Isolation Area

Make use of the available space and design of the health facility to arrange the isolation area. The diagram below shows an ideal arrangement for an isolation area. The next page shows examples for a single patient’s room and for a ward with several patients.
MAY 2014
First case declared in the East of Sierra Leone
SET UP 7 ISOLATION UNITS IN WESTERN AREA

“KING’S MODEL”: small EHU attached to hospitals

A Guide for the Establishment & Supervision of Ebola Holding Units

King’s Sierra Leone Partnership

Version 1.0
November 2014
**EVD Case definition**

**March 2014**

*History of acute fever and signs of bleeding:*
- Bleeding of the gums
- Nosebleed
- Red eyes
- Rash
- Blood in / black stool
- Vomiting blood
- Other unexplained bleeding

A ND

*History within the previous 1 month of:*
- Travel to Guinea

*OR*
- Contact with a person from or that had been recently in Guinea who are or had been sick with a febrile disease

**April 2014**

*History of acute fever WITH signs of bleeding:*
- Sudden onset fever with signs of bleeding
  - Bleeding of the gums
  - Nosebleed
  - Red eyes
  - Rash
  - Blood in / black stool
  - Vomiting blood
  - Other unexplained bleeding

*OR*
- Sudden onset fever with 3 or more of:
  - Headache
  - vomiting/nausea
  - anorexia/loss of appetite
  - diarrhea
  - weakness/severe fatigue
  - abdominal pain
  - generalized muscular or articular pain
  - difficulty in swallowing
  - difficulty in breathing
  - hiccoughs

**PLUS**

*History within the previous one month of:*
- travel to Guinea or Liberia

*OR*
- contact with someone from Guinea or Liberia who has been sick with a febrile illness

**June 2014**

*Presentation with External Bleeding*

*Considering other symptoms Apart from bleeding*

*History of fever within this illness*
- WITH any of these signs of bleeding:
  - Bleeding of the gums
  - Nosebleed
  - Red eyes
  - Rash
  - Blood in / black stool
  - Vomiting blood
  - Other unexplained bleeding

*OR*

*History of fever within this illness*
- WITH 3 or more of:
  - Headache
  - vomiting/nausea
  - anorexia/loss of appetite
  - diarrhea
  - weakness/severe fatigue
  - abdominal pain
  - generalized muscular or articular pain
  - difficulty in swallowing or breathing

**PLUS**

*History within the previous one month of*
- Travel to:
  - Guinea
  - Liberia
  - Districts in Sierra Leone with confirmed cases

*OR*
- Contact with someone who has been sick with a febrile illness from:
  - Guinea
  - Liberia
  - Districts in Sierra Leone with confirmed cases
ALL COUNTRY A HOTSPOT!

Contact and epidemiological link not reliable

1. CASE ISOLATION:
   A suspected case is any person:
   - Having had contact with a clinical case AND
   - Presenting with acute fever (>38°C)
   OR
   - Having had contact with a clinical case (suspect, probable, or confirmed) AND
   - Presenting with 3 or more of the symptoms below:
   OR
   - Presenting with acute fever AND
   - Presenting with 3 or more of the symptoms: headache, vomiting, nausea, loss of appetite, diarrhea, intense fatigue, abdominal pain, general muscular or articular pain, difficulty in swallowing, difficulty in breathing, hiccups, miscarriage
   OR
   - Any person with unexplained bleeding

DEFINITION OF CONTACT:
Contact is any person who comes into contact with a case by:
1. Sleeping in the same household within one month
2. Direct physical contact with the case (dead or alive)
3. Touching his/her linens or body fluid
4. Attendance at a funeral of a confirmed or suspected case of Ebola
• **DECEMBER 2014**: 850 suspected cases (192 days) **464 (64.1%) EVD confirmed**
100 (21.6%) cases EVD with a contact risk factor of EVD:
- Travel to a hot spot
- Health Care worker
- Funeral
- Contact with a confirmed case

• **JUNE 2015**: 1624 suspected cases (370 days) **635 (40%) EVD Confirmed**

Lancet Infect Dis 2015; 15: 1024–33

**Clinical features of patients isolated for suspected Ebola virus disease at Connaught Hospital, Freetown, Sierra Leone: a retrospective cohort study**

Marta Lado, Noomi F Walker, Peter Baker, Shamil Haroon, Colin S Brown, Daniel Youkee, Neil Studd, Quaanan Kessete, Rishma Maini, Tom Boyles, Eva Hanciles, Alie Wurie, Thaim B Kamara, Oliver Johnson, Andrew J M Leather
SYMPTOMS
May-December 2014

Fever (82.7%)
Astenia (68.4%)
Vomiting (50.4%)
Diarrhoea (40.6%)
Anorexia (36.9%)
Abdominal pain (32.6%)

High probability EVD:
- Confusion
- Conjuntivitis
- Astenia
- Hiccuping
- Diarrhoea

Combination of 3 or more symptoms
Increase odds EVD 3.19%
(95% CI 2.29-4.44)

Sensitivity 57.8%
(95% CI 52.1-62.4)

28% de no cases with 3 or more symptoms,

Especificity 70.8%
(95% CI 64.7-76.4)

Connaught Hospital, Sierra Leone
May to December 2014.
- Fever absent in 15% cases of EVD
- No fever and unknown contact 7.4%

SEPTEMBER 2014
Capacity

- Connaught (18)
- Macauley St (7)
- PCMH (7)
- Newton (12)
- Jui (40)
- Police Training School (80)
- 34 Military (12)
- Lakka (20)
DECEMBER 2014
Capacity

- Police Hospital (10)
- Lumley (10)
- Connaught (18)
- PCMH (7)
- ODCH (20)
- Macauley St (7)
- Newton (30)
- AdDRA (30?)
- Emergency ETU (100)
- Hastings Airfield ETU (100)
- 34 Military (12)
- Hastings (100)
- Kerry Town (100)
- Newton (12)
- Newton (30)
CONSTRUCTION TIMES FOR ETU

Kerry Town:
- Design: 7 Days
- Resource / Construct: 46 Days

MAK, MOY, PL, GOD, HAS:
- Design: 7 Days
- PQQ: 5 Days
- Tender: 12 Days
- Resource / Construct: 39 - 56 Days

- Sep
- Oct
- Nov

# New cases Ebola (May 2014 – April 2015)
SET UP EVD TREATMENT CENTRES
DELAY IN INTERNATIONAL AID?

SAFETY
INTERNATIONAL EXPERTISE
SPEED
COST
EXAMPLE ETC
INTERNATIONAL MEDICAL CORPS (IMC)

EBOLA TREATMENT UNIT

GREEN ZONE:
Laundry, store, Pharmacy, etc

RED ZONE: patients

EBOLA TREATMENT CENTRE (ETC)

RED ZONE: patients
GREEN ZONE: Laundry, store, Pharmacy, etc.
BLUE ZONE: Offices, etc.
ALWAYS protect these areas!!!!

"We protect ourselves so we can save lives"
Variants of PPE
DECONTAMINATION
(Chlorine/Bleach)

Desinfección con soluciones cloradas

0.05%
(1:100)
- Piel
- Termómetros
- Platos o utensilios de comer
- Ropa

0.5%
(1:10)
- Fluidos corporales
- Cadáveres
- Baños y letrinas
- Suelos, paredes
- Camas, colchones
- Barreños para botas
Avoid procedures potentially aerosolizing the virus (Spray)

- e.g., aerosolized or nebulized medication administration, diagnostic sputum induction, bronchoscopy, airway suctioning, endotracheal intubation, positive pressure ventilation via face mask

With these procedures:

Use masks fluid-resistant particulate respirator (FFP2 or EN certified or US NIOSH-certified N95)
GOGGLES and FOG

Solutions:
• Anti fog spray
• Alcohol sanitizer
Assessment of Environmental Contamination and Environmental Decontamination Practices within an Ebola Holding Unit, Freetown, Sierra Leone

Daniel Youkee¹*, Colin S. Brown¹², Paul Lilburn¹, Nandini Shetty³, Tim Brooks³, Andrew Simpson³, Neil Bentley³, Marta Lado¹, Thaim B. Kamara⁴, Naomi F. Walker¹⁵⁶, Oliver Johnson¹

¹ King’s Sierra Leone Partnership, King’s Centre for Global Health, King’s College London, and King’s Health Partners, London, United Kingdom, ² The Hospital for Tropical Diseases, University College London Hospitals, London, United Kingdom, ³ Public Health England, Salisbury, United Kingdom, ⁴ Connaught Hospital, Freetown, Sierra Leone, ⁵ Department of Infectious Diseases and Immunity, Imperial College London, London, United Kingdom, ⁶ Clinical Infectious Diseases Research Initiative, Institute of Infectious Disease and Molecular Medicine, University of Cape Town, Cape Town, South Africa

* daniel.youkee@kcl.ac.uk
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<th>Location</th>
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<th>Swab Set 2</th>
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<td>30</td>
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</tbody>
</table>
**Swab 1**
Cleaning is effective
Careful with translocation of the virus during cleaning

**Swab 2**
Bedframe and floor not completely clean

**Swab 3**
Areas of higher contamination, the ones in contact with the patient.
Floor as a risk area, boots and feet bath important
Out of a total of 543 negative discharges, 
- 8 (1.5%) were confirmed positive readmissions, 
- 10 (1.8%) were possible positive re-admissions, 
- 525 (97%) had no positive follow-up tests. 
The overall (confirmed and possible) positive readmission ratio was therefore 18/543 (3.3%).
PERMANENT ISOLATION UNIT
CONNAUGHT HOSPITAL
AUGUST 2015

ENTRANCE
STAFF

ENTRANCE
PATIENTS

EXIT

INCINERATOR
Dr. Marta Lado
marta.lado@kcl.ac.uk
Infectious diseases Coordinator
King’s Sierra Leone partnership (KSLP)
Kings Global Health partners
Kings College London

http://kslp.org.uk