Health system strengthening during a health crisis: Lessons learned from Sierra Leone during the 2014-2016 Ebola epidemic

E-beth Barrera-Cancedda, MPH
amyeb@upenn.edu
February 14, 2018
What is a health system?

http://www.wpro.who.int/health_services/health_systems_framework/en/
A few statistics...
- Population:
  - 7.39 million
  - % < 14 years: 42.4%
  - % female: 49.5

- Life expectancy:
  - 51.3 years

- < 5 mortality:
  - 122 deaths per 1000 live births

https://knoema.com/atlas/Sierra-Leone/topics/Demographics/Mortality/Under-5-mortality-rate
<table>
<thead>
<tr>
<th>Health Expenditure</th>
<th>Sierra Leone</th>
<th>Switzerland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Capita ($)</td>
<td>86</td>
<td>9673</td>
</tr>
<tr>
<td>Total (% GDP)</td>
<td>11.1</td>
<td>11.7</td>
</tr>
</tbody>
</table>
## Health Professional Cadre

<table>
<thead>
<tr>
<th>Health Professional Cadre</th>
<th>Number of Health Professionals per 1000 people</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sierra Leone</td>
</tr>
<tr>
<td>Physicians</td>
<td>0.022</td>
</tr>
<tr>
<td>Nurses and Midwives</td>
<td>0.166</td>
</tr>
</tbody>
</table>
## Comparison of Surgical Care Deficiencies between US Civil War Hospitals and Present-Day Hospitals in Sierra Leone

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic suturing</td>
<td>Common</td>
<td>Common</td>
</tr>
<tr>
<td>Wound debridement</td>
<td>Common</td>
<td>Common</td>
</tr>
<tr>
<td>Closed fracture management</td>
<td>Common</td>
<td>Common</td>
</tr>
<tr>
<td>Open fracture management</td>
<td>Rare</td>
<td>Common</td>
</tr>
<tr>
<td>Limb dislocation management</td>
<td>Rare</td>
<td>Common</td>
</tr>
<tr>
<td>Amputation</td>
<td>Rare</td>
<td>Common</td>
</tr>
<tr>
<td>Foreign body removal</td>
<td>Rare</td>
<td>Common</td>
</tr>
<tr>
<td>Chest tube insertion</td>
<td>Rare</td>
<td>Common</td>
</tr>
<tr>
<td>Laparotomy</td>
<td>Rare</td>
<td>Rare</td>
</tr>
</tbody>
</table>

Ebola

What is Ebola?
Ebola is a killer disease caused by a virus. It spreads quickly from person to person, kills in a short time, BUT can be prevented.

Signs & Symptoms
- Fever
- Vomiting
- Diarrhoea
- Bleeding
- Muscle or joint pain
- Skin rash

How is Ebola Spread?
Transmission occurs through direct contact with body fluids like blood, saliva, vomitus, stool, urine of an infected person.
• The Ebola epidemic started in Guinea, where patient zero was an 18-month old toddler, who started to have a fever, dark stools, and vomiting on December 26, 2013. He died two days later.
• The toddler’s disease would not be officially identified as Ebola until February 2014.
• On March 21, 2014, the causative agent was identified as Zaire species, which is the most lethal virus in the Ebola family.
• On March 23, 2014, WHO officially announces the outbreak. At this time, 24 cases and 29 deaths had been linked to the epidemic.
• In January 2016, Sierra Leone reported 14,122 cases (including 8704 laboratory confirmed cases).
Impact of Ebola Epidemic on Maternal Mortality in West Africa


Weekly Admissions at Facilities Offering Basic Surgical Services in Sierra Leone, 2014

Healthcare Workers

- Total number of Ebola infections:
  - 815 confirmed and probable cases
  - 328 cases in Sierra Leone
  - Physicians: 3%
  - Nurses/Midwives: 61%
  - Lab: 8%
  - Ambulance driver: 3%
  - Janitors/Trade: 7%
  - CHW: 7%
  - Other: 11%

http://www.who.int/hrh/documents/21may2015_web_final.pdf
“Space”
“Stuff”
Ebola Virus Disease – West Africa Epidemic*

- Total Cases (Suspected, Probable, and Confirmed): 28,637
  - Sierra Leone - 14,122
  - Liberia - 10,675
  - Guinea 3,804
- Laboratory-Confirmed Cases: 15,249
  - Sierra Leone - 8,704
  - Liberia - 3,160
  - Guinea - 3,351
- Total Deaths: 11,314
  - Sierra Leone - 3,955
  - Liberia - 4,808
  - Guinea - 2,536

*As of November 27, 2015
How can a Health System in the Midst of a Health Crisis be Supported and Strengthened?
Establish a Partnership with the Public Health Sector and Other Implementing Partners
Be Nimble and Go Where the Need Is

**Strategy**
- Communication
- Coordination

**Tactics**
- Communication
- Coordination

**Implementation**
1. Child Protection
2. Case Management (Clinical Care, Diagnostics, Infection Control)
3. Logistics
4. Safe Burials
5. Social Mobilization
6. Surveillance

**Freetown**
- MOH
- NERC
- UNMEER
- WHO

**District Capital**
- DHMT
- DERC
- WHO
- UK Military

**Health Facilities and Communities**
- Implementing Partners - Expats
  - NGOs, Academic Institutions, WHO, UN Agencies, Foreign Governments

**Health Facilities and Communities**
- Implementing Partners - Local
  - MOH, Other Ministries, NGOs, Grass-Root Organizations

**Donors**
- World Bank
- USAID
- DFID
- Private Philanthropy
Strike the Balance between Quality, Scale, and Safety in Health Service Delivery
Deliver Integrated Health Services across All Levels of the Health System

- District Laboratory
- Ebola Treatment Unit
- Isolation Unit
- Community Care Center
- Community

Isolation
- “Intensive” Treatment
- “Supportive” Treatment

Referral
Community Health Workers

800 Community Health Workers
800 Ebola Survivors
Engage Community Leadership and Participation

- Social Mobilization
- Contact Tracing

- Active Case Finding
- Psychosocial Support
- Safe Burials
Ensure Continuity between Emergency Response and Long-Term Health System Strengthening Response
QUESTIONS:

Thank you to the people of Sierra Leone.