The consequences of a major pandemic would be world-changing.

The 1918 flu pandemic killed 50 million to 100 million people—at the top end, more than the combined total casualties of World Wars I and II.
Emerging and Re-Emerging Infections: Role of National Public Health Institutions
Africa CDC and Emerging and Re-Emerging Infections

Dr. John Nkengasong
Director
Africa Centres for Disease Control and Prevention
African Union, Addis Ababa, Ethiopia
OUTLINE

1. Trends in Emerging Infections
2. Public Health Workforce
3. NPHIs efforts
4. Regional Networks
Globally Outbreaks Continue to Increased Including Antimicrobial Resistance

Source: Smith et al. J. R. Soc. Interface 2014
Hemorrhagic Fever Viruses in Africa
Three Major African Initiatives: Integration

Free Trade

Open Sky

Free People Movement
The Next Pandemic

- Likely to be caused by a virus
- Respiratory, enteric, vector-borne transmission – in this sequence of priorities
- Influenza
How Can We Better Prepare for Emerging and Re-Emerging Infections

- **Prediction** requires a lot of biological knowledge in addition to sequences and phylogeny
- Biological knowledge is scarce for novel viruses
- **Early detection**: training, capacities, and resources
Public Health Work Force

Epidemic Intelligence Service (EIS)
Managed by U.S. CDC

European Epidemiology Training Programme
Overseen by European CDC

Who provides Oversight?
Africa CDC?
“The African Field Epidemiology Network (AFENET) and Eastern Mediterranean Public Health Network (EMPHNET) currently operate training programmes for field epidemiology in most AU Member States. As part of its new programme, Africa CDC will work with these partners to expand the numbers of people trained, increase the quality of training and create more professional opportunities for graduates”
Africa CDC Institute for Workforce Development

• Established to build pre-service and in-service public health workforce competencies in Member States

Yr-1 Objectives

• Develop and Conduct On-line Training Courses Covering …
  ➢ Transforming Public Health Surveillance
  ➢ Antimicrobial Resistance
  ➢ Proposal Writing
  ➢ Leadership and Management
ii) In collaboration with Member States and Development Partners to establish an African Volunteer Health Corps to be deployed during disease outbreaks and other health emergencies and to report regularly to the Assembly on progress made.
Africa’s Emergency Response Workforce: Rapid Response Team Directory
54 Rapid Responders from 22 Countries

A practice session with the trainee rapid response team members.

FIRST CALL RAPID RESPONSE TEAM FOR HEALTH EMERGENCIES IN AFRICA
## Africa CDC Respond to Ebola in North Kivu and Ituri

<table>
<thead>
<tr>
<th>Profession</th>
<th>Number Deployed</th>
</tr>
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<tbody>
<tr>
<td>Central Support team</td>
<td>7</td>
</tr>
<tr>
<td>National Coordination team</td>
<td>4</td>
</tr>
<tr>
<td>Epidemiologists</td>
<td>24</td>
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<tr>
<td>Infection Prevention and Control Specialists</td>
<td>14</td>
</tr>
<tr>
<td>Laboratory Scientists</td>
<td>4</td>
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<tr>
<td>Anthropologist</td>
<td>1</td>
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<tr>
<td>Communication Experts</td>
<td>3</td>
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<tr>
<td>Data Manager</td>
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<tr>
<td>Logistician</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>45</strong></td>
</tr>
</tbody>
</table>
Africa CDC support actions: Surveillance and Contact tracing

24 epidemiologist and 14 Infection Prevention experts

• Contact tracing and surveillance:
  • Active case and contact search and follow up in the villages
  • Support safe and dignified burials
  • Investigate alerts reports in the community
  • Develop reports and feedbacks
• Took full responsibility for surveillance and alert investigation in Butembo and Tshomia Health zones
Africa CDC support actions: Surveillance and Contact tracing

Community Death Investigation
Africa CDC support actions: Laboratory Testing

• Africa CDC Deployed four laboratory experts in Beni (2), Goma (1) and Butembo (1)

• Procure and support with 6 laboratory diagnostic machine (GeneXpert) with 3,000 testing Cartilages
  • The GeneXperts are being used in Goma (1), Butembo (1), Beni (2), Mangina (1) and Tshomia (1)
  • Laboratories in **Goma and Butembo** are entirely equipped and run by Africa CDC
    • Improved lab capacity at the field area
    • Improve the turn-around time of lab results
Africa CDC support actions: Infection Prevention and Control

- Evaluated the state of hygiene in several health centres, training health workers, supporting schools and churches by providing facilities of washing hands
- **Trained 469 health workers**, tradition healer and teachers
- Provide personal protection equipment (PPEs) to 13 health centres and hospital
- **A training video** on how to correctly wash hands was produced by both the IPC and communication team and was broadcasted on the national television and others national privat medias
Status of NPHIs in Africa

Legend
Countries NPHI establishment status
- Green: Established NPHI (N=14)
- Yellow: On process (N=20)
- Red: Need more engagement (N=21)
NPHIs Investment in “Smart” Surveillance
Africa CDC Surveillance and Disease Intelligence

**Goal**
Comprehensive, timely disease intelligence linked to action, built upon a foundation of highly functional national public health institutes, integrated at the regional level, coordinated at the continental level

**Major Challenges**
Most outbreaks never detected, because no medical visit, no tests performed, no investigation of case or detection of cluster
Many outbreaks detected by health agencies, media, individuals - but detected late and not vigorously acted upon

**Immediate Priority**
Close the gap between what’s detected and what’s done

**Long Term Priority**
Close the gap between what’s not detected and what’s detected

“Close the gap” = improve speed, completeness, effectiveness
Focus on building “event-based surveillance”

- Worked with Member States, NGOs, WHO
- Published first-ever international guidelines for implementing EBS within countries: media scanning; national hotlines; facility reporting; community reporting
Source: Siddle NEJM 2018
Africa CDC’s Approach to Strengthening Whole Genomic Sequencing Sites in Africa

WEST Africa

- Institut de Recherche en Santé, de Surveillance Epidémiologique et de Formation (IRESSEF), Dakar, Senegal

Southern Africa

- Noguchi Memorial Institute for Medical Research, Accra, Ghana

East Africa

- Ethiopian Public Health Institute (EPHI), Addis Ababa, Ethiopia

- 1. Uganda Medical Informatics Centre- (UVRI-MRC-Wellcome Sanger-Cambridge), Entebbe, Uganda
- 2. Makerere University, School of Health sciences, Kampala, Uganda

Countries and Institutes:

- Malaria, HIV, Ebola
- TB, Malaria, HIV
- HIV, TB

Regions and Institutes:

- 1. South African National Bioinformatics Institute, Cape Town
- 2. National Institute for Communicable Diseases, Johannesburg
- 3. South Africa Medical Research Council, Cape Town
- 4. H3Africa Bionet, University of Cape Town, Cape Town
Framework for Integrated Public Health Systems for Effective Disease Responses - Diagonal Approach?

Disease Drivers

Cholera  HIV  TB  Malaria  Emerging Infections  AMR  NCD

Systems

Surveillance & Disease Intelligence Systems
Laboratory Networks & Systems
Information & Data Systems
Preparedness and Response Systems
NPHIs
Public Health Research
Workforce Development Systems

Source: Nkengasong et al 2018
Regional Integrated Laboratory Surveillance Network

Harnessing the full public health assets in each Region

*= P4 lab
©=P4 lab Under development
Representatives of nine Central Africa Member Countries – Burundi, Central African Republic, Congo Brazzaville, Cameroon, Democratic Republic of Congo, Equatorial Guinea, Gabon, Sao Tome and Principe, and Chad – have reviewed and approved governance documents for the Central Africa chapter of the Regional Integrated Surveillance and Laboratory Network (RISLNET). This followed the official launch of the network by the Minister of Health of the Republic of Congo during a workshop in Congo Brazzaville on 7-9 November 2018.

Next three years: Republic of Congo (Presidency), Cameroon (Vice Presidency), Gabon (General Secretary), Burundi (Deputy General Secretary), and Chad (Treasury). They also reviewed the wireframe for the proposed network website and suggested amendments where necessary.

Other activities to strengthen the impact of the network were proposed, including the production and piloting of laboratory manuals for use in the region, setting up of a secretariat with operational staff and training of reference laboratories staff in the region.
Reviews

The Ubuntu concept, sexual behaviours and stigmatisation of persons living with HIV in Africa: A review article
Elvis Enowbeyang Tarkang, Lilian Belole Pencille, Joyce Komesuor

DOI: https://doi.org/10.4081/jpha.2018.677

Original Articles

Effect of health education intervention conducted by Primary Health Care workers on oral health knowledge and practices of nursing mothers in Lagos State
Abiola Adetokunbo Adeniyi, Afolabi Oyapero, Victor Ajieroh, Oyinkansola Sofola, Oladapo Asiyi
Safeguarding Africa’s Health

THANK YOU!