One Health Governance in west African

Bassirou Bonfoh, Director CSRS/ Afrique One-ASPIRE
170 collaborators from 27 nations  
(CSRS has diplomatic status in Côte d’Ivoire)

CSRS – Abidjan, Côte d’Ivoire

6 (Switzerland, France, Germany, Belgium, Italy, Norway, UK, Kyrgyzstan)

3 (Vietnam, Thailand, Japan, Australia)

16 (Benin, Burkina Faso, Mali, Mauritania, Chad, Cameroun, Uganda, Tanzania, Senegal, Ghana, Liberia, Togo, Gabon, Kenya, Nigeria, Ethiopia)

2 (Canada, USA)
Outline

1. Addressing priorities/ intervention design
2. Struggles
   - Capacity, institutional set ups and partnerships
   - Local and national determinants of One Health intervention
3. Regional dynamics
4. Take home message
Adressing priorities/ intervention design
Infectious diseases “Global vs Local”

- Emerging….high resource allocation
- Endemic….neglected, vulnerability, equity

Non communicable diseases

- Chronic/ AMR
- Mental health ➞ capital loss & trauma (pastoralists)

Livelihood/ determinant of well-being

- Food/ nutrition ➞ life style, under/overweight
- Impact of agriculture disasters ➞ mortality
Livestock system trajectories

Cold spots
- Severely constrained rural economy
- Limited feed and health input resources
- Multiple endemic diseases
- Inadequate / absent animal health services
- Limited or no control of livestock movement
- High vulnerability to droughts, floods, zoonotic disease

Hot spots
- Increasing intensification, widening marketing partnerships; risk takers; corner-cutters
- Continued presence of several major endemic and epidemic infectious diseases
- Weakness of veterinary infrastructure
- Carefree with antimicrobials
Struggle with priorities in Africa

Sustainable Development Goals (SDGs)
Science, Technology and Innovation Strategy for Africa (STISA-2024)

- Food security
- Disease prevention

Shifting the center of gravity to Africa

- Alliance for Accelerating Excellence in Science in Africa (AESA)
- National research funds (e.g. Tanzania, Côte d’Ivoire, Kenya...)

African leadership in global health research
Designing intervention
Struggles in capacity, institutional set ups and partnerships
### Transboundary Research Partnerships

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Set the agenda together</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Interact with stakeholders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Clarify responsibilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Account to beneficiaries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Promote mutual learning</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Basic principles

- Build on mutual trust
- Take societal responsibility
- From field site to strong and sustainable institutions

[https://naturalsciences.ch/organisations/kfpe/11_principles_7_questions](https://naturalsciences.ch/organisations/kfpe/11_principles_7_questions)
Disciplinary diversity and training needs

Basic and advanced molecular biology, Advanced statistics, Bioinformatics, Risk analysis, Modelling (e.g. Social science)

Curricula adjustment in Academia for the next generation to better respond to societal needs (e.g. One Health)

Retaining expertise in local institutions (e.g. poaching)

http://aes.ac.ke/#
Position of new institutions/initiatives/programmes?

- African One ASPIRE
- AHEAD
- Berry College Center for One Health
- Brazilian Field Epidemiology Professionals Association (Pcepi)
- Calvin Schowebe One Health Project
- Centers for Disease Control and Prevention (CDC)
- Center for One Health Illinois
- Center for One Health Research, University of Washington
- Centre for One Health Education, Advocacy, Research and T
- Centre for Viral Zoonoses (UP CVZ)
- Chatham House Centre Global Health Security (CHGS)
- Cnt Health Orgs Rgl Disease Surveillance (CHORDS)
- Critical Ecosystem Partnership Fund (CEPF)
- DISCONTROLS
- Drivers of Disease in Africa- STEPS Center, UK
- Duke One Health
- EcoHealth
- EcoHealth Alliance
- Emerging Pandemic Threats (EPT)
- Environmental Genomics, Inc. (EGI)
- Epizoon
- Farm Foundation (NFP)

- Federation ofVeterinarians of Europe (FVE)
- Food and Agriculture Organization of the UN (FAO)
- Georgia Aquarium
- Global Alliance Livestock Vet Medicine (GALVmed)
- Global Alliance for Rabies Control (GARC)
- Global Early Warning System Animal Disease (GELWS)
- Global Environmental Institute - China (GEIC)
- Health & EcoSustainability, Analysis of Linkages (HEAL)
- Health Affairs Linkage Improvements (HALI)
- Integrated Control of Neglected Zoonoses (ICONZ)
- International Journal of One Health
- International Livestock Research Institute (ILRI)
- Int’l Society for Infectious Diseases (ISID)
- Kansas State University Public Health Dept
- Kenya EcoHealth Project
- Livestock Livelihoods, Health - Tanzania
- London International Development Centre (LIDC)
- Medical Veterinary Typhus
- Medical Veterinary Typhus
- National Health Disease Surveillance Network (NEDS)
- Midwestern University One Health Center
- The Minnesota Model (MM model)
- National Center of Competence in Research N3S
- National Center Foreign Animal Zoonotic Disease Defense (FAZD)
- National Center for Foreign Animal Disease Defense (FAZD)
- National Environmental Health Association (NEHA)
- National Environmental Health Association (NEHA)
- Network for the Elimination of Zoonoses
- North Carolina One Health Collaborative
- OH-NEXTGEN
- One Health Academy
- One Health Academy
- One Health Alliance of South Asia (OHASA)
- One Health Awareness Kentucky (OHA-KY)
- One Health@UGA, The University of Georgia
- One Health Bangladesh
- One Health Central and East Africa (OHCEA)
- One Health Commission
- One Health Initiative
- One Health Nepal
- One Health Nigeria
- One Health, One Caribbean, One Love, Pro’s
- One Health Research Group, James Cook
- One Health Romania
- One Health Talk
- One Health University of Peradeniya
- One Health University of Pennsylvania

WHO's WHO in One Health ➔ 95 institutions

www.onehealthcommission.org
Local struggles and national determinants of One Health intervention
Beyond diagnostics/ drugs/ vaccines...

Effectiveness = technology + (infrastructures, culture, community health workers)

Neglected tropical diseases

“Effective Preventive Chemotherapy”

After deworming

... rapid reworming
Beyond free treatment

- Real cost 2’600 US$
- But….

- ➔ Only 495 US$ covered by the DOTS
- Nutrition program
**Food safety and incentives**

- **Economics**
  - Quality based payment is possible
  - Financial « incentives » reduces health risks

- **Public health and risk mitigation**
  - Emerging diseases threaten informal market
  - Malaria symptoms are mistaken for brucellosis

- **Risk mitigation**
  - Hand washing turn products into safety and competitiveness
  - Access to safe water is crucial

- **Social norms**
  - Most consumers are well informed
  - Boiling unclean milk is non-negotiable
  - Boiling milk disrupt social order
  - Traditional processing reduces risk in milk

**12.8% (25/188) have been ill and 261 consumers/day are susceptible to contract gastro-enteritis after consuming milk**
## Iterative process

<table>
<thead>
<tr>
<th>Healthy Milk for the Sahel (SDC/SNSF)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Id research</strong>&lt;br&gt;2000-2004&lt;br&gt;(Mali)</td>
</tr>
<tr>
<td>• Hazard-based approach&lt;br&gt;• Public health oriented (quality vs quantity)</td>
</tr>
<tr>
<td><strong>Intervention research</strong>&lt;br&gt;2005-2015&lt;br&gt;(Mali)</td>
</tr>
<tr>
<td>• Incentive-based approach&lt;br&gt;• Socio-economic oriented (Cost-effectiveness)</td>
</tr>
<tr>
<td><strong>Td research</strong>&lt;br&gt;2007-2015&lt;br&gt;(Mali, Côte d’Ivoire, Ethiopia, Ghana)</td>
</tr>
<tr>
<td>• Risk-based approach&lt;br&gt;• Situational analysis of market vs public health (capacity &amp; policy)</td>
</tr>
</tbody>
</table>

Safe Food Fair Food (GIZ/BMZ)/ Afrique One (WT)
Added value: e.g. Kassela milk belt (Mali)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>2005</th>
<th>2015</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total milk collected</td>
<td>1’500</td>
<td>7’000</td>
<td>Litre/day</td>
</tr>
<tr>
<td>Collecting sites</td>
<td>1</td>
<td>17</td>
<td>sites</td>
</tr>
<tr>
<td>Livestock owners membership</td>
<td>35</td>
<td>776</td>
<td>households</td>
</tr>
<tr>
<td>Animal supplemented feed</td>
<td>50</td>
<td>1’000</td>
<td>tons</td>
</tr>
<tr>
<td>Selling points</td>
<td>1</td>
<td>53</td>
<td>sites</td>
</tr>
<tr>
<td>Jobs created</td>
<td>50</td>
<td>2’000</td>
<td>people</td>
</tr>
<tr>
<td>Gross revenue</td>
<td>50’000</td>
<td>1’760’000</td>
<td>Euros</td>
</tr>
</tbody>
</table>
Rabies diagnostic established in Liberia (July 2017)

Effectiveness of vaccination campaigns depend heavily on factors related to dog owner’s behaviour and decision on funding.
Response to the Ebola-related bushmeat consumption ban in rural Côte d’Ivoire

The ban on bush meat has led to a reduction in its consumption

Repression by the government has been driving this reduction in consumption but not the fear of the disease
Potential Risk of Regional Disease Spread in West Africa through Cross-Border Cattle Trade

Anna S. Dean, Guillaume Fournié, Abalo E. Kulo, G. Aboudou Boukaya, Esther Schelling, Bassirou Bonfoh

Figure 4. Probability of a disease invading the cattle population of the Savannah Region in Togo through cattle trade from Burkina Faso. The probability of a disease invading the cattle.

Figure 5. Probability of a disease invading at least three other countries through cattle trade from Savannah herds. The

Conclusions: By stochastically simulating data collected by interviewing cattle traders in northern Togo, this study identifies potential risks for regional disease spread in West Africa through cross-border cattle trade. The findings highlight that surveillance for emerging infectious diseases as well as control activities targeting endemic diseases in West Africa are likely to be ineffective if only conducted at a national level. A regional approach to disease surveillance, prevention and control is essential.
Dynamics
Funders collaboration/ coordination

AII ➔ DELTAS
Afrique One-ASPIRE
38 fellows 2009-2015
52 fellows (2016-2021)…. 

Building Pan-African Research Capacity in One Health

Developing Excellence in Leadership Training and Science (DELTAS Africa) funded programmes

MALI
- Developing Excellence in Leadership and Genetic Training for Malaria Elimination in Sub-Saharan Africa (DELGEME)

SENEGAL
- Malaria Research Capacity Development in West and Central Africa (MARGAD)

COTE D’IVOIRE
- Afrique One-African Science Partnership for Intervention Research Excellence (Afrique One-ASPIRE)

GHANA
- West African Centre for Cell Biology of Infectious Pathogens-Wellcome Trust DELTAS Programme (WACCBIP)

SOUTH AFRICA
- Sub-Saharan Africa Network for TB/HIV research Excellence (SANThE)
- Sub-Saharan Africa Advanced Training Programme for Leadership and Excellence in Biosecurity (SADAPT)

UGANDA
- Makerere University UVRI Centre of Excellence for Infection & Immunity Research and Training (MULI-plus)
- THRIVE to Research Excellence (THRIVE-2)

KENYA
- Initiative to Develop African Research Leaders (IDeAL)
- Consortium for Advanced Research Training in Africa (CARTA)

ZIMBABWE
- African Mental Health Research Initiative (AMARI)

Funders

AFRETRA
African Academy of Sciences
NEPAD Office
Wellcome
UK Aid
Aspiration of Afrique One-ASPIRE

Building Pan-African Research Capacity in One Health

Adapted from Utzinger, 2013, Plus NTDs
Pan-African research capacity in One Health

http://www.futurelearn.com/courses/one-health/2/
Dynamics in diseases management in Africa

Working group on One health

- Leadership (involvement)
- Layer/ scale
- Community involvement
- Training & capacity building
- Information system
- Research question
- Ethics and data sharing
- Resources sharing mechanism
- Evidence on value added
Regional dynamics with ECOWAS

Role of existing institution
Global Health Security Agenda
  - Donor driven/ Government ownership
Institutional overlapping (WHO, FAO, OIE, WAHO, Africa CDC, ...) on the ground
  - Leadership and coordination
  - Top-down approaches

OHCEA
Take home message
1. Countries priorities and global health
2. Resources allocation/ sharing between sectors
3. Leadership and ownership
4. Capacity building of institutions
5. Local disease threats and global responsibility in Detection-Prevent-Response
6. Avoid funding allocation bias with One Health and emerging disease “pathogen discovery…”
Acknowledgement