The Role of Public Health Institutes and WHO CCs in health system strengthening and essential public health functions in Africa

Findings from a mixed-methods review (scoping and systematic)

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Health Service Resilience Team, WHO HQ Geneva
Outline

• What is health system resilience?
• Essential Public Health Functions (EPHFs), Health System Strengthening (HSS) and International Health Regulations (IHR 2005) core capacities
• Research questions/ objectives and methods
• The role of public health and academic/ research institutes, and WCCs
• Current level of involvement
• Liberia/ NPHIL case study
• Developing institutes and WCC network in Africa
What is health systems resilience?

The capacity of health actors, institutions, and populations to prepare for and effectively respond to crises; maintain core functions when a crisis hits; and, informed by lessons learned during the crisis, reorganise if conditions require it (Kruk et al. 2015).

Functions:
- Maintain quality routine health services (promotion to palliation) in all contexts;
- Capacity for emergency specific health care;
- Public health response to emergency/crisis;
- Respond to evolving epidemiology e.g. NCD prevention, promotion & public health
Conceptual linkage between public health institutes’ typical functions, EPHFs, IHR (2005) and Health Systems Building Blocks
## Linkages between relevant frameworks

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<td>Assuring effective health governance, regulation and public health legislation</td>
<td>Political commitment and leadership</td>
<td>Coordination and national focal point communications</td>
<td>Policies, Strategies and Legislation</td>
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<td>Social mobilization and participation</td>
<td>Digital technologies</td>
<td>Points of Entry</td>
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<td></td>
<td>Preparation and response to health hazards and emergencies</td>
<td>Engagement of community and other stakeholders to jointly define problems and solutions and prioritize actions</td>
<td>Risk communication</td>
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<td>Health protection (environmental, occupational, water, food safety)</td>
<td>Models of care that prioritize primary care and public health functions</td>
<td>Immunization</td>
<td>Community Capacities</td>
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<td>Public health research</td>
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<td>Emergency preparedness</td>
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<td>Purchasing and payment systems</td>
<td>Emergency response operations</td>
<td>Health Infrastructure and Logistics</td>
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<td>Physical infrastructure and appropriate medicines, products and technologies</td>
<td>Chemical events and Radiation emergencies</td>
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<td>PHC oriented research</td>
<td>Food safety</td>
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<td>Biosafety and biosecurity</td>
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<td>Medical countermeasures and personnel deployment</td>
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<td>Antimicrobial Resistance</td>
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Research Questions/ Objectives

• What is the role of NPHIs and WCCs in contemporary health systems strengthening needs in Africa?

• Objectives:
  – To map the nature and scale of NPHI and academic institutes in Africa;
  – To review of the existing evidence on the role of NPHIs and WCCs on IHR (2005) capacity development and health systems strengthening;
  – To analyse country case studies on current capacity of NPHI on EPHFs and HSS;
  – To identify the key gaps that the WHO, MoHs and partners need to prioritise and address.
Methodology
Literature review

- Landscape scan and scoping review
- Keywords generated
- 4 bibliographic databases systematically searched (IBSS, Scopus, Web of Science, Medline/Pubmed)

- Grey literature
  - WHO’s Institutional Repository (Iris), WHO, World Bank, IANPHI, World Federation of Public Health Association (WFPHA), US CDC, African CDC, African MoH (Ministry of Health)/NPHI and Google Scholar
Search Terms

("public health institute" OR "public health institutes" OR "public health institution" OR "public health institutions" OR "public health agency" OR "national public health institute" OR "national public health institutes" OR "national public health institution" OR "national public health institutions" OR "institut national de santé publique" OR "centre for disease control") OR ("academic institute" OR "academic institutes" OR "academic institution" OR "academic institutions" OR "public health school" OR "public health schools" OR "university" OR "universities" OR "research institute" OR "research institutes" OR "research institution" OR "research institutions")

AND

("health system strengthening" OR "health system resilience" OR "global health security" OR "health security" OR "six building blocks" OR "emergency preparedness and response" OR "emergency preparedness" OR "essential public health functions" OR "essential public health operations" OR "essential public health services" OR "outbreaks" OR "pandemics" OR "epidemics" OR "public health emergency" OR "international health regulations" OR "international health regulations 2005")

AND

("Africa" OR "African country" OR "West Africa" OR "Sub-Saharan Africa" OR "Northern Africa" OR "Africa South of the Sahara" OR "Central Africa" OR "Eastern Africa" OR "Southern Africa" OR "Western Africa")
Literature review

- **Inclusion criteria:**
  - contained data, information or analysis relating to the role of public health institutes in EPHFs and/or HSS; and
  - related to one or more low- and middle-income countries in Africa.

- **Exclusion criteria:**
  - focused on a single disease or vertical programme* without reference to public health institutes;
  - related to single clinical/pharmaceutical/health product/biomedical interventions; or
  - related to a non-African country.

*did not apply during institute mapping exercise
The PRISMA flow diagram (left) represents the search strategy and outcomes deployed in the literature review underpinned by systematic and replicable methods (Moher et al., 2009).
Global Findings from the Literature
Typical role of National Public Health Institutes (NPHI)

- Science/evidence-based organisations, or groups of organisations
- Offer national coordination and expertise towards long-term population health improvement
- Sometimes underpinned by national legislation
- Serve cross-cutting interdisciplinary functions
- Comprehensiveness determined by resource allocation
- Focal point for inter-ministerial, intersectoral and regional/international collaboration
- Play a central role during public health emergencies
## Core elements / functions of NPHIs

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<th>Multidisciplinary</th>
<th>Comprehensive</th>
<th>Multifunctional</th>
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<td>• Country-wide</td>
<td>• Public Health</td>
<td>• Infectious diseases</td>
<td>• Research</td>
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<td>• May have local and regional units</td>
<td>• Medicine</td>
<td>• Non-communicable diseases</td>
<td>• Monitoring and surveillance</td>
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<td>• International collaboration and partnerships</td>
<td>• Nutrition</td>
<td>• Environmental health</td>
<td>• Training</td>
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<td>• Laboratory Sciences</td>
<td>• Occupational health</td>
<td>• Public health services</td>
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<td>• Social Sciences</td>
<td>• Disaster and emergency preparedness</td>
<td>• Health promotion and communication</td>
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<td></td>
<td>• Health Economics</td>
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<td>• Essential health product development and regulation</td>
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The role of academia in public health

• Health research; and
• Training of health workforce.
• High priority, important functions.
• Scope for increasing involvement in other EPHFs such as health promotion, equity, community engagement, etc
The role of WCCs

• WCC defined as “…an institution designated by the Director-General to form part of an international collaborative network carrying out activities in support of the Organization’s programme at all levels.”

• WCCs support the WHO in achieving strategic objectives (e.g. resilience, GHS, UHC)

• They are typically a part of a NPHI, university or research institute

• Require 2 years of prior work with WHO before formal recognition
Functional scope of WCCs

- Collection, collation and dissemination of information
- Standardisation of terminology, nomenclature, of technology, diagnostic, therapeutic and prophylactic substances, and methods and procedures
- Development of evidence-based technical guidance and resource materials
- Development and application of appropriate technology
- Provision of reference substances and other services
- Participation of collaborative research
- Workforce training and research training
- Coordination of activities in multi-institute situations
- Capacity-building work at country level
- Provision of monitoring, preparedness and response during emergencies
Strengths of WCC network

- 800 institutes in over 80 countries
- Can, in effect, establish collaborating centres as national leaders in research and international collaboration (though not a formal endorsement)
- Facilitates development of WHO’s goals through:
  - Delivery of lower cost research;
  - Strengthening scientific validity; and
  - Delivering on mandated work.
- Recognised by WHO as a win-win situation
  - Establishes institutes as national leaders and allows use of “WHO brand”
  - Allows WHO to guide work without funding it
Current Involvement of Institutes in Africa
The extent of WCCs network in Africa?

• Out of 800 WCCs globally, only 35 are in Africa
  ▪ 14 are in South Africa and 9 are in African EMRO Member States
  ▪ 12 in AFRO countries excl. South Africa
• WCCs do not receive funding from WHO, i.e. must source their own funding
• Weak institutional ability to attract funding in terms of:
  ▪ Proposal development and presentation;
  ▪ Grant management;
  ▪ Access to international initiatives; and
  ▪ Absence of skilled personnel.
• Research quality and output lower in AFRO than other WHO regions
Institute mapping exercise findings

- 15 countries do not have readily discernible NPHI
- 28 countries have NPHIs that are IANPHI members
- Lack of interventional and empirical evidence
- Not all evidence of involvement in EPHFs/HSS is available online/published/reported
The map on the left shows African countries that have established a dedicated readily discernible NPHI signifying gaps in participation of public health provision and infrastructure strengthening activities. The map on the right shows African countries which have NPHIs with IANPHI membership as an indicator of capacity for involvement in EPHFs and HSS using regional and international networks and partnerships.

(Y=Yes; N=No; Pending=NPHI is currently being established)
The map on the left shows countries in Africa that have established WCCs (Y=Yes, country has a WCC; N=No, country does not have a WCC). The map on the right shows the distribution of WCCs across the countries (the darker the colour the greater the number of WCCs present within country; 0=lightest shade of blue, 14=darkest shade of blue).
Indicative contribution of NPHIs
Indicative contribution of WCCs
Methodological Limitations

- Conducted by single researcher
  - Bias in literature selection
  - Mitigated through continuous consultation with experts
- Restricted timeframe
  - Pragmatic and informed rather than comprehensive in truest sense
  - Mitigated by selecting most reputable and authoritative sources
- Desk-based
  - Possible that paradigms/entities exist out with this study’s scope
  - E.g. offline/unpublished/informal public health organisations/schools
Limitations of study findings

• Self-reported data (i.e. institute websites, figures, etc)
• Lack of interventional and empirical evidence
• Not all evidence of involvement in EPHFs/HSS is available online/published/reported
• Next steps – qualitative and quantitative data collection to ascertain weaknesses and inform future policy.
Liberia - Case Study
Ebola – cost to economy, 2014-15

28,616 cases reported in Guinea, Liberia and Sierra Leone, with 11,310 deaths.
Ebola – Cost to Health Systems, 2014-15

- Liberia: 61% decline in outpatient visits.
- Sierra Leone: 39% drop in children treated for malaria & 21% drop in children immunizations.
- Guinea: primary medical consultations and hospitalizations dropped by > half and vaccinations by one-third compared to 2013.

By May 2015, over 500 health workers died; over 10,000 survivors of EVD - Stigma and uncertainty stalk

Developing NPHI in Liberia

April 2015: WHO meeting and calls for NPHI establishment

October-December 2015: Study missions

September-December 2016: Bill passed by legislative bodies

February 2017: Board of Directors and Executives assigned

January 2017: Bill signed into law

February 2018: Surveillance capacity building

Summer/Autumn 2015: Planning meeting

September 2016: NPHIL Act of 2016 drafted

2019: Review meeting with international partners including the WHO
NPHIL Scope and Functions

• National
  – Emergency preparedness
  – Improved surveillance
  – Reduced morbidity and mortality
  – Reduced interventionalist treatment costs
  – Prevention and health promotion prioritized
  – Improved health innovation and technology
  – Strong PH Laboratory System, Integrated Disease Surveillance and Response, detection
  – Improved research capacity
NPHIL Benefits

• Regional
  – Academic and research opportunities for African scientists
  – Integration of laboratory and diagnosis
  – Partnerships with Africa CDC, WHO AFRO, other NPHIs/WCCs

• Global
  – Reduced dependency on international aid
  – Improved global study of tropical/neglected disease
  – Development of novel solutions, technology, etc
  – Contributions to global health security agenda
NPHIL Sustainability

- Alignment with partners
  - WCC Network, Universities, Donors (WHO, World Bank, CDC, etc)
- Establishment of NPHIL Foundation
  - Modeled after CDC Foundation
- Linking with the Universities of Liberia
  - Joint appointments
  - Support training and creation of Masters programs
  - Establish additional WCCs
- Develop national plans and strategies
Developing Institutes for Resilience in Africa
Integrated Approach – still in its beginning

- IHR Capacity building
- Response & Recovery
- Vertical Diseases & Life Course Health Programs
- Health Systems Strengthening
Reflections

• Inadequately prepared to emergencies and health care access to all
• Fragmented approach and institutions – good practice ad-hoc;
• Health systems are still weak across all 6 building blocks;
• Greater global awareness of preparedness and higher investment post-Ebola 2014-15;
• One Health Approach (FAO, OIE & WHO) is gaining momentum;
• Advocacy to non-health policy makers is limited;
• Lack of clarity on roles and responsibilities between stakeholders;
• Domestic funding remains limited and funding is still siloed.
Special focus on research and workforce training

• Evidence that lack of research and inadequate health human resource development leads to:
  • Reduced evidence generation and dissemination of new knowledge and technology;
  • Lack of oversight of health system performance;
  • Poor drug and medicinal product development;
  • Barriers in access to health promotive, preventive, curative, rehabilitative and palliative services; and
  • A deficient health workforce.
Health systems preparedness – key roles that wider health sector can play?

- Advocacy for health as underpinning requirement for SDGs;
- Advocacy within national authorities (MoH, MoE, MoP, MoA and security sectors) for increased domestic resources and health systems approach;
- Health literacy and multi-disciplinary health workforce development;
- Joint research with global and national authorities to further shape global policy agenda;
- Pooling of resources and expertise would be highly beneficial, should the capacities – and gaps – in each sector and at the interface be assessed.
- Enhanced academic partnership between institutions of countries of different income levels and capacities in public health.
Recommendations

- Develop legal mandates for NPHIs and related public health institutes

- Prioritise most impactful functions (research and workforce training)
  - Based on national context and local stewardship
  - Greater involvement in leadership and collaboration functions

- Develop national research, investment and health plans, and policies
- Reform and utilise WCC and existing networks (e.g. GOARN)

- Seek linkages in NPHI, EPHF, JEE and other national assessment tools
Acknowledgements

• A joint activity with AFRO HSS under TDDAP funded by DFID
• Saqif Mustafa conducted the study - supervised by Sohel Saikat and Mark Hallowell (University of Edinburgh)
• HQ Health Systems: Zandile Zibwowa, Redda Seifeldin, Yu Zhang, Sara Nasr, Haroon Khan, Dirk Horemans, Monica Lamonge, Shams Syed, Ed Kelley
• AFRO HSS: Benson Droty, Prosper Tumusiime
• WHE in HQ: Raj Sreedharan
Thank you... Any questions?
<table>
<thead>
<tr>
<th>Country</th>
<th>Code</th>
<th>WHO Region</th>
<th>NPHI Establishes (Y/N/Pending)</th>
<th>Years Active</th>
<th>Institute</th>
<th>Type</th>
<th>City</th>
<th>Population (Pop)</th>
<th>Web</th>
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<td>Algeria</td>
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<td>1964</td>
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<td>42</td>
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The NPHI is a public administrative institution with legal personality and financial autonomy placed under the supervision of the Ministry of Health.

The National Institute of Public Health (NPHI), the national public health institute in Benin, is responsible for establishing and maintaining an integrated system of health information, health surveillance and health emergency management and training of the country’s national-level Public Health Emergency Operations Center (HOPECO).

Objectives of the institute are to conduct research on major health problems of the population, train researchers and health workers who can use public health evidence by providing relevant analysis and research capacity on health outcomes.

Production of health workforce who are committed to improving the health status of the population.

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## NPHI datasheet against HSS building blocks and EPHFs

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<th>Areas of involvement (WHO Health System Building Blocks/NPHI-defined core functions):</th>
<th>Areas of involvement (Essential Public Health Functions):</th>
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<td>1. Service Delivery</td>
<td>1. Surveillance and Monitoring</td>
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<td>2. Health Workforce/human resource development and training</td>
<td>2. Assurance of access to health workforce</td>
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<td>3. Health Information Systems/research, surveillance and control of threats to public health</td>
<td>3. Assuring effective health governance, regulation and public health legislation</td>
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<td>4. Access to Essential Medicines/regulations, enforcement</td>
<td>4. Public health system planning and management</td>
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<td>5. Financing</td>
<td>5. Public Health Research</td>
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### WCC datasheet against HSS building blocks and EPHFs

#### Areas of involvement (WHO Health Systems Building Blocks):

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#### Areas of involvement (Essential Public Health Functions):

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