**SUPPLEMENTARY MATERIALS**

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| **Table A:** Participants’ perceptions of the role of US Centers for Disease Control and Prevention (CDC) in supporting the development of National Public Health Institutes (NPHIs) and strengthening of public health functions in the seven countries included in the NPHI evaluation, August 2019–January 2020 | | | | | | | | | |
| **Perception** | NPHI Staff  (N=43) | | Non-NPHI Government Staff (N=29) | | | Non-Government Partner Staff (N=24) | | | **Examples** |
| **n\*** | **%** | **n\*** | **%** | | | **n\*** | **%** |
| 42 | 98 | 13 | 45 | | | 10 | 42 |
| CDC enhances countries’ public health workforce by building capacity of NPHI and government staff |  |  |  |  |  | | |  | “CDC provided us with tools and gave us technical support. They donated equipment and products as well. Currently, the technical skills that we have for doing diagnostics work have been provided by CDC.” [NPHI Staff (9), Colombia]  “When Ebola started, we were sending samples to Guinea for testing, but today we can test for all the biological diseases. This is because of CDC. [NPHI Staff (01), Liberia]  “The CDC has a representative in Liberia who I consult with when I’m having some challenges…we recently collaborated on a policy document that was distributed to the counties.” [Ministry of Health Staff (3), Liberia]  “Basically, the entire organizational structure of National Public Health Institute of Liberia (NPHIL) is based on the support that CDC provides to NPHIL. The trainings of field epidemiologist and all other capacities are have sprung out from the role CDC plays in Liberia.” [Ministry of Health Staff (9), Liberia]  “The one activity that has had the most profound long-term impact in Nigeria is CDC’s support to the Field Epidemiology Training Program (FETP). Those are the building blocks from which we’ve built this institute. Institutes are built on people. I think we now have over 20 graduates working at Nigeria Center for Disease Control (NCDC) in fairly important middle-level leadership roles. Graduates are also working across the country because we made it a requirement in Nigeria that everyone recruited into the program would be public servants. [NPHI Staff (6), Nigeria]  “The mentoring they [CDC] provided to us helped us develop the institute so that it can become a credible and science-based institution…when we talk, the whole country listens.” [NPHI Staff (1), Zambia] |
| CDC strengthens public health systems by providing technical assistance for key functions |  |  |  |  |  | | |  | “You cannot increase the testing and the quality of test results without improving the quality of the laboratory. So, CDC agreed to support us get International Standard for Organization (ISO) accreditation.” [NPHI Staff (01) Cambodia]  “We invite experts from the CDC, and they provide technical assistance and help our department conduct joint investigation in the field.” [Communicable Disease of Cambodia (CCDC) Staff (11), Cambodia]  “CDC helped increase our laboratory capacity because a lot of the diagnostics were not available in the country and establish surveillance systems so we could respond effectively to public health threats.” [NPHI Staff (1), Colombia]  “The US government is the main funder for our institute. In terms of the infrastructure, staff that work here, and capacity building efforts. We get support from other countries that supervise some initiatives, but they are not at the level of the CDC.” [NPHI Staff (5), Mozambique]  “Most of the work that we’ve done at NCDC is through opportunities provided by the CDC. The most important one is the molecular diagnosis for influenza. Many years ago, the CDC, with a relatively small grant, supported the beginning of Polymerase chain reaction (PCR) for influenza. We now have PCR capacity for almost all of the important epidemic-prone diseases.” [NPHI Staff (6), Nigeria]  “Most impactful CDC support has building the capacity of laboratory technicians and increasing the capacity of our laboratories.” [Ministry of Health (9), Liberia]  “We recognize that the CDC has played a key role in a number of countries regarding laboratory strengthening…we are working with other partners to ensure that the surveillance systems especially with WHO through Integrated Disease Surveillance and Response (IDSR) is strengthened.” [World Bank (10), Zambia] |
| CDC used various tools and technologies to help NPHIs identify priorities and gaps |  |  |  |  |  | | |  | “CDC helped us close gaps. They also helped us bring the institute back to the 21st century and that meant having the necessary resources in place, but more importantly the experts. Through the maturity framework exercise, CDC helped us understand the areas where we need to close gaps to get to the forefront. When we most needed the support, CDC came.” [NPHI Staff (5), Colombia]  “CDC’s NPHI program team evaluated our strengths and weakness and supported the enhancement of our monitoring and evaluation (M&E) work through trainings on internal management systems.” [NPHI Staff (1), Liberia]  “The CDC has been there supporting and looking at all of the areas where we had the lowest scores for the Joint External Evaluation. They tried to see how best they could provide support to help us improve in these areas. [NPHI Staff (10), Liberia]  “They [CDC] are supporting us in the application of the Staged Development Tool and how to identify our priority work. We put together a list of activities, and then we had to prioritize them based on need. For me, that’s good, and it’s in line with our strategic plan.” [NPHI Staff (7), Nigeria]  “CDC helped Rwanda Biomedical Center (RBC) to implement HIV case-based surveillance. This new approach was implemented using the technical assistance and the financial support from CDC. There are many components like partner notification. Instead of testing a crowd of people…with case-based surveillance, we follow-up only the cases. [NPHI Staff (1), Rwanda] |
| CDC’s NPHI program provides funding that allows countries to prioritize their needs |  |  |  |  |  | | |  | “Funding we get through the NPHI program is established by discussion between our teams. What I really like about that is it allows us to focus on what we think our priorities are.” [NPHI Staff (4), Mozambique]  “Funds from the NPHI program have been fairly flexible. They’ve been able to sit down with us to say “okay, what are your priorities?” and then we find a balance.” [NPHI Staff (06), Nigeria]  “Funds from the NPHI program has supported programs that were not well established, like non-communicable diseases.” [NPHI Staff (2), Rwanda]    “Something that has been very impactful for us is working collaboratively with the [NPHI program] team to build small projects based on a list of priorities that we provided. [NPHI Staff (1), Colombia]  “We got direct [NPHI program] support for M&E, and for training of our internal management system so that we can evaluate our strengths and weaknesses. [NPHI Staff (1), Liberia]  “When the Cyclone Idai happened, nobody was prepared, and we were not expecting the big impact it had. We didn’t have funds because money from the state was not available. So, we relied on support from CDC’s NPHI program” [NPHI Staff (2), Mozambique] |

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| **Table B**: Recommendations by participants on how the US Centers for Disease Control and Prevention (CDC) can better support National Public Health Institutes (NPHIs) that were included in the NPHI evaluation, August 2019–January 2020 | | | | | | | |
| **Perception** | NPHI Staff  (N=43) | | Non-NPHI Government Staff (N=29) | | Non-Government Partner staff  (N=24) | | **Examples** |
| **n\*** | **%** | **n\*** | **%** | **n\*** | **%** |
| 39 | 91 | 20 | 69 | 14 | 58 |
| CDC should continue to build NPHIs’ staff capacity and support platforms for experience sharing |  |  |  |  |  |  | “[CDC’s] support for the public health capacity building component is very critical. But our capacity is limited. We need support, but we cannot absorb a lot of it, and we need to do things based on our capacity.” [NPHI Staff (5), Cambodia]  “CDC could support us to become a reference point at a national and international level and get to a forefront level where I imagine only a few institutes are—and in the region that is probably less.” [NPHI Staff (2), Colombia]  “We want to make the FETP more formal, and for the program to get academic recognition, which it currently doesn’t have in the country. CDC could support us based on their experience with the Epidemic Intelligence Service (EIS) program.” [NPHI Staff (7), Colombia]  “It would be good if new technologies and innovations are shared with us so that we can also share with NPHIL staff at the institution.” [NPHI Staff (2), Liberia]  “Continue supporting capacity building efforts. I think every other thing will fall into place if you [CDC] support[s] this.” [NPHI Staff (4), Liberia]  “I would encourage the CDC to get very involved with NCDC and help them get to a global standard…I’ve been able to work with a few CDC staff at the international and local level, and I think the trainings they have are superb. [Public Health International (4) Nigeria]    “I would probably say, continue support and continue mentoring. In Africa we use the word ‘parenting.’ We are a small institute, and we have yet to learn.” [NPHI Staff (4), Zambia]  “I think one key area that I would propose is to continue the technical assistance. Financial assistance would be welcomed when it is possible and available. Opportunities to exchange and to learn would be areas that I think would be beneficial for us.” [NPHI Staff (5), Zambia]  “I would like for the Instituto Nacional de Saúde (INS) to be more engaged in some of the areas that I’ve been seeing at the CDC and in other countries. Areas around healthy lifestyle…the work needs to shift from infectious disease to non-infectious diseases, which are becoming a bigger concern for countries like Mozambique. [World Health Organization (9), Mozambique]  “One of the initiatives that the CDC had on scientific communication was a very interesting program. I think we need to collaborate more because CDC might have some good initiatives that we can showcase.” [NPHI Staff (9), Rwanda]  “Continuous feedback on NPHIs and having a platform to share experiences should continue. The framework also allows us to build bridges with partners. And a good way to do that is developing and looking at different models so that we can learn from others.” [NPHI Staff (1), Liberia] |
| CDC should consider having more support towards NPHIs’ priorities |  |  |  |  |  |  | “I think CDC has to open their scope of support…they should make it more flexible, especially at this stage. We should focus on system and institution strengthening. Find a mechanism to strengthen NIPH, not just the programs we offer…” [NPHI Staff (1), Cambodia]  “It is hard to get CDC’s support in certain areas due to previously established project definitions, especially in issues related to infrastructure, laboratory capacity, and other areas of work. This also happens because of the financial policies put in place. They could give us more flexibility in those areas where the financial resources have been decreasing. [NPHI Staff (4), Colombia]  “…the level of integration is key in moving forward when we are looking at new universal health coverage… I don’t know the flexibility that they [CDC] have with the resources or the extent to which the integration can be accommodated.” [World Health Organization (8), Rwanda]  “We would like support in the latest technological developments. Science and technology keeps advancing, and we wish we could update our systems on an on-going basis. For example, there are malaria tests specifically for asymptomatic patients, but we do not have that the technology to detect this.” [Cauca Department Staff (16), Colombia]  “We had to improve the capacity of the laboratory first, then CDC started having discussions on changing the approach because of PEPFAR funding restrictions. The money spent had to be directly linked to AIDS. We had to find a way to link our work to AIDS.” [NPHI Staff (1), Cambodia]  “We are not allowed to invest those [disease specific] funds on building systems or for institutional strengthening because these areas don’t have a scope of disease.” [NPHI Staff (5), Mozambique] |
| CDC should consider countries’ priority needs during planning and implementation |  |  |  |  |  |  | “I think they can support us in preparedness when we are addressing emerging and reemerging diseases. I think it is something useful. Also, maybe, they could support the implementation of surveillance for other diseases that are important to us” NPHI Staff (7), Colombia]  “Whenever the CDC sends EIS Fellows to the field in Africa, it’s great when I see pictures of colleagues from the US or WHO in the frontline of the different responses. But to me, every time I see that, we have failed as a country. You will never see a Nigerian in the New Yorker for their efforts in managing an outbreak in the US So, an ideal picture would be for the US colleagues standing behind our African colleagues leading the response. This would be a successful partnership.” [NPHI Staff (6), Nigeria]    “What I would like from CDC? In this moment, with Ebola’s alert, we need personal protection gear. However, we are not buying a lot because of financial limitations. I would like to have additional funding support to make a national purchase and place biosecurity kits at the border in order to secure our border. [NPHI Staff (5), Colombia]  “The support has been imbalanced. Most of it goes to technical and not so much to the administrative area. That makes the system vulnerable in terms of sustainability because the technical program is not dealing with procurement issues and does not understand procurement implications on our human resources for responding to outbreaks. We would like for CDC, Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET) and others to continue supporting us in that direction. [NPHI Staff (2), Liberia]  “CDC could help its NPHI program become more visible within the CDC. When we need the assistance to do work or an activity, it can be complicated since CDC is a huge organization and getting the right people and finding a mechanism of cooperation is not always easy. [NPHI Staff (4), Mozambique]  “It is important for Nigeria CDC to expand the local One Health approach, especially at state level. They will also benefit from improving the collaboration at the federal level. I think there will be a need for a central coordination among the different partners [including CDC]. We need to centralize this within the country. [Ministry of Agriculture and Rural Development (10), Nigeria] |

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