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Contribution of WHO

to the CSTD 2018-19 priority theme on ‘The role of science, technology and innovation in building resilient communities, including through the contribution of citizen science’

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Questions and Answers

21st Session of UNCSTD

Priority Theme 2: The role of science, technology and innovation in building resilient communities, including through the contribution of citizen science

World Health Organization

1. Can you give examples of projects/policies carried out by your organization aimed at using science, technology and innovation (STI) to build resilient communities? What are the main challenges confronted while trying to implement these projects/policies?

WHO has embraced the concept on using science, technology and innovation (STI) to identify new or improved health policies, systems, products and technologies, and services and delivery methods that improve people's health and wellbeing, and build the resilience of communities and countries. It seeks to respond to unmet public health needs by creating new ways of thinking and working with a focus on the needs of vulnerable populations. It aims to add value in the form of improved efficiency, effectiveness, quality, sustainability, safety and/or affordability. The spectrum of work can be preventive, promotive, curative and rehabilitative and/or assistive care to achieve universal health coverage within the context of the Sustainable Development Goals (SDGs) and the implementation of other global frameworks related to building resilient communities such as the Sendai Framework for Disaster Risk Reduction, the International Health Regulations (2005) and the Paris Agreement on Climate Change.

1.1. Pandemic Influenza Preparedness Framework. The Pandemic Influenza Preparedness Framework or 'PIP Framework' (<http://www.who.int/influenza/pip/en/>) is a partnership between all the major players able to make the international response to pandemic influenza nimble, flexible, effective and equitable. The PIP Framework has two objectives:

- improve the sharing of influenza viruses with the potential to cause a human pandemic; and
- establish more predictable, efficient, and equitable access to the benefits that result from the sharing of such viruses, notably vaccines and antiviral medicines.

WHO coordinates the sharing of influenza viruses through an international network of public health laboratories called the 'Global Influenza Surveillance and Response System' (GISRS). This network has been collecting and monitoring influenza viruses for more than 65 years.

Vaccination is a critically important intervention to prevent infection and severe outcomes caused by influenza viruses – notably pandemic viruses. Following the re-emergence of A(H5N1) in 2004, it became clear to Member States that a formal arrangement was needed:

- to increase the access of developing countries to vaccines and other pandemic influenza response supplies; and
- to improve and strengthen the sharing of influenza viruses with human pandemic potential ('IVPP') for global monitoring, risk assessment and the development of safe and effective pandemic influenza vaccines.

The PIP Framework was unanimously adopted by the 194 Member States of the WHO during the World Health Assembly on 24 May 2011.

More than 140 National Influenza Centres (NICs) in the GISRS, collaborate on a continuous basis to collect and test specimens for influenza viruses – both seasonal viruses and IVPP. Under the PIP Framework, countries are expected to support their NICs and ensure that they share IVPP in a rapid, systematic, and timely manner with a small number of specialized laboratories within GISRS.

These specialized laboratories perform molecular testing and other advanced analyses. GISRS laboratories use the viruses to develop candidate vaccine viruses, testing kits and different types of reagents. Laboratory, clinical and epidemiological data are used to assess the risk that IVPP might evolve into pandemic viruses. An electronic, internet-based tool called the Influenza Virus Traceability Mechanism (IVTM) is used to track the sharing of IVPP and other materials, collectively known as PIP Biological Materials or 'PIPBM' into GISRS and out of GISRS to external entities, such as manufacturers of vaccines.

The results of molecular analyses and tests on IVPP are recorded in the IVTM. The IVTM helps increase the transparency of GISRS's work with IVPP – a key principle of the Framework. The Framework has established two mechanisms to facilitate access to the benefits that result from the sharing of viruses with human pandemic potential:

- the Partnership Contribution
- the Standard Material Transfer Agreements

The Partnership Contribution is an annual contribution to WHO from influenza vaccine, pharmaceutical and diagnostic manufacturers that use the WHO GISRS. Manufacturers 'use GISRS', for example, by using data and information generated by GISRS or by requesting PIPBM to make pandemic-related products, such as vaccines.

A Standard Material Transfer Agreement 1 (SMTA 1) is a binding contract that establishes the conditions under which laboratories *within* GISRS exchange IVPP and other PIPBM among themselves. An SMTA 1 covers many matters including:

- handling of PIPBM in accordance with WHO guidelines and national bio-safety standards
- transfers of PIPBM to entities outside GISRS
- use of the IVTM
- research and publications
- intellectual property rights
- dispute resolution

A Standard Material Transfer Agreement 2 (SMTA 2) is a legally binding agreement between WHO and non-GISRS entities (including manufacturers, biotechnology firms, and academic and research institutions) that receive PIPBM from GISRS. Recipient entities commit to provide specific benefits based on the nature of their work and their capacities. Benefits include pandemic influenza vaccines, antiviral medicines or other pandemic-related products or technologies. The agreements specify that the products will be provided to WHO, as they are produced at the time of the next pandemic, so that all countries in need, irrespective of economic or development status, have access to some pandemic vaccine at the same time.

The PIP Framework contributes to resilient communities in 2 ways:

- by increasing the equity of access by all countries in need to pandemic response supplies such as antivirals and vaccines;
- by strengthening preparedness capacities in countries where they are weak. From 2014-2017, WHO invested US\$ 64M of the Partnership Contribution to support 72 countries to improve their pandemic influenza preparedness capacities. Some examples of the success include:
- 35 countries are now able to detect unusual respiratory disease events: this represents a five-fold increase from seven countries in 2014.

- 34 countries have functioning inpatient influenza surveillance: this doubled from 16 countries in 2014.
- 29 countries have a human-animal interagency coordination mechanism: this is four-times more compared to seven countries in 2014.
- 8 countries estimated the influenza disease burden, of which three have published their findings in peer-review journals.
- World's first vaccine deployment simulation portal 'PIP Deploy' was launched.

Ultimately, improving public health systems/capacities provides for more resilient communities.

A number of challenges remain and these are being addressed by WHO through its new Partnership Contribution implementation plan for 2018-2023. This includes the ongoing need for advocacy to Member States and other stakeholders (including Industry and Civil Society Organizations) to maximize commitment to the Framework and its implementation. As countries face competing challenges from priorities other than public health, WHO will continue to work with countries to ensure the sustainability of the capacities that are strengthened.

1.2 Surveillance in Post Extreme Emergencies and Disasters (SPEED). SPEED is a mobile-based early warning system to detect common health conditions in an emergency. It was developed by the Department of Health, Philippines through the support of the Australian Agency for International Development (AusAID), the United States Agency for International Development (USAID) and the Government of Finland through the technical guidance of the World Health Organization (WHO). A strong health information system is crucial to an effective health emergency response in order to detect trends in diseases and provision of health services. In addition to an effective information system, a well-functioning health system is essential to save lives and respond to the magnitude of people who need care. SPEED uses mobile phone technology to send reports on more than 20 disease syndromes and health events commonly seen during a health emergency. Information from first line health workers and volunteers are sent to a central portal/ databank that can be immediately accessed by health authorities at different levels. Subsequently SPEED has been adapted by Japan to establish J-SPEED.

SPEED has been used in several emergencies in the Philippines and there have been no significant challenges. An effective information system has to be matched with a well-functioning health system that is essential to save lives and respond to the magnitude of people who need care.

1.3 Emergency Dashboard. A recent example of a WHO STI project is WHO's Emergency Dashboard project. The Emergency Dashboard is currently intended for the internal use of WHO staff for the purpose of monitoring and viewing WHO's activities related to public health emergencies – both emerging events of concern and current emergencies are available. Although in-house at the moment, the project aim is for staff to be able to visualize activity globally in terms of health emergencies to enable them to give proper attention and action, inclusive of risk communication and community engagement to be able to prevent and control disease outbreaks. This implies utilizing available resources in communities to prevent, prepare for, respond to and recover from health emergencies (e.g., current Ebola Virus Disease outbreak at the Democratic Republic of the Congo, cholera in Zimbabwe, etc.).

Aside from the main challenge that the Emergency Dashboard project is currently internal, due to the nature of data sources and contents, there is no warranty that the information is complete and/or correct at all times.

2. Can you provide examples of projects/policies/initiatives aimed at using/promoting citizen science to build resilient communities? Do these projects incorporate a gender approach? What are the main challenges confronted in implementing these projects?

2.1 Engaging communities from the beginning of a health emergency. One of the major lessons learnt from the Ebola response in West Africa (2014-2015) was that often communities were involved too little, too late. Communities need to be engaged from the very beginning of a health emergency, and included in all aspects of the response (Community engagement framework for quality, people-centred and resilient health services and communities, WHO, 2017).

Particular attention must be given to involving groups within communities that are often not visible or marginalized and not represented by institutions such as youth groups, etc. In terms of community engagement methods, it is important to employ participatory approaches, and to give communities the power to decide on how best to be involved. One such example is to implement focus group discussions to empower groups and communities to influence decision processes (e.g., when policy interventions are needed or concrete public health decisions are to be made). It is equally important to provide the necessary resources (tools, knowledge, finances) and build community capacity outside of emergencies. Community engagement also means building democratic institutions in a community. Best practice examples were those that involved communities and helped them deal with trauma, stigma and other psychosocial side-effects of the disaster such as “community healing dialogues” in highly affected areas.

The project incorporated a gender approach but the main challenge was that this was the output of a 3-day technical workshop to examine the links between community engagement, quality, people-centred and resilient health services and communities. Thus, a retrospective approach the lessons of which must be learned and applied in future emergencies.

2.2 World Health Day. An example of a long-standing programme aimed at using/promoting science to build resilient communities is WHO’s annual holding of a World Health Day (WHD), every 7th of April each year marking WHO’s anniversary to highlight one particular health issue for that day. This year the topic was “Universal Health Coverage (UHC): Everyone, Everywhere”; and everybody had a part to play - stimulating conversations and contributing to structured dialogue towards policies that help a country and communities achieve and maintain UHC. WHO is focusing on integrating our work on health emergency risk management with health system strengthening to achieve UHC, health security and resilience.

In particular, individuals, civil society and health workers were encouraged to:

- Communicate needs, opinions and expectations to local policy-makers, politicians, ministers and other people representatives;
- Make the necessary noise to ensure your community health needs are taken into account and prioritized at the local level, including through social media;
- Invite civil society organizations to help raise community needs to policy-makers;
- Share stories as affected communities and patients with the media; and
- Organize activities like discussion fora, policy debates, concerts, marches and interviews to provide people an opportunity to interact with their representatives on the topic of UHC via media and social media.

The WHD 2018 campaign was communicated via social media channels such as Facebook, Twitter, YouTube and Instagram. There were key messages, speeches, resolutions, publications, e-learning courses, UHC posters, infographics, videos, data portal, etc. combining and integrating science, technology and innovation to build resilient communities with a focus on ensuring that people can access the health services they need, without facing financial hardship.

The programme incorporates an inclusive approach that shows key issues health for different country and community contexts, and the from the perspective gender, disability, diverse socio-economic conditions etc .

As the topic varies from year to year, the main challenge is follow-up of the topic and what communities can do to sustain the momentum of the campaign in their day-to-day lives.

3. What are the actions that the international community including CSTD can take to leverage the potential of STI in building resilient societies, including through the contribution of citizen science? Can you give any success stories in this regard?

The international community, including CSTD, needs to continue investing in STI and citizen science in building the human/social capital building up on what communities have already achieved as baseline and sustaining the work of community leaders, managers and champions on the ground; and ensuring documentation of these community-based level work so that these are published and available in the public domain to facilitate community learning in other settings. WHO is also advancing collaboration with professional associations of community-based health professionals, including WONCA (the global organization for family doctors) and ICN (the International Council of Nurses), to recognise and strengthen their role in health emergency and disaster risk management.

3.1 Emergency Medical Teams. A relatively recent success story is the standardization of a formal process of quality control for the training and verification of emergency medical teams that can strengthen the global health emergency workforce, offering vetted surge capacity during outbreaks and emergencies arising from natural hazards (e.g., earthquakes) bringing order to a situation historically prone to chaos. The county/community teams have to be trained and be properly equipped and, then, verified and registered by WHO as qualified and fully self-sufficient, responsible for bringing their own equipment and supplies – relieving the pressure on local health systems and officials when they go on missions.

3.2 Safe Hospitals Programme. Another success story is to safeguard health facilities and ensure they are functional at all times including in emergency situations. If a health facility is assessed as being unsafe, posing a threat to health or liable not to function in an emergency based on WHO's Hospital Safety Index, retrofitting, for example, should be considered to improve its resilience. In Nepal, a study found that spending US\$150,000 on non-structural mitigation measures in nine hospitals – securing equipment and medicines – made them better able to function post-earthquake. This is the reason why in the April and May 2015 Nepal earthquakes, when the first earthquake struck on 25 April 2015 measuring 7.8 on the Richter scale and the second earthquake hit on 12 May 2015 measuring 7.3, both failed to disrupt services at Kathmandu's largest public hospitals, including Tribhuvan University Teaching Hospital (TUTH), Patan Hospital, Civil Service Hospital, Birendra Army Hospital and the trauma centre at Bir Hospital. The Ministry of Health and Population, Nepal and WHO have had in place for more than a decade interventions to ensure that key hospitals, health facilities and health workers would be able to withstand earthquakes, ready and able to function well in an emergency.

3.3 Community-directed delivery of interventions. In addition to the above, in 2009, TDR published the results of a three-year multicentre experimental study designed to test whether community-directed distribution, which had successfully delivered Ivermectin (a medicine that is effective against many types of parasites) to 75 million rural Africans at risk of Onchocerciasis, could also distribute other priority interventions, including insecticidal nets and medicines for the home-based management of malaria. When malaria interventions were delivered using the community-directed strategy, coverage with both nets and treatments more than doubled, at lower costs than with conventional delivery systems. The results further showed that 77% of children in the seven study sites received Artemisinin-combination therapy within 24 hours following the onset of fever. Moving forward, the approach holds great promise as a platform for the integrated delivery of services, aligned with the core principles of primary health care and the universal health coverage.

4. Could you suggest some contact persons at WHO for projects/policies related to resilient communities, STI, and the citizen science as well as any experts (from academia, private sector, civil society, or government) dealing with projects in this area? We might contact them directly for further inputs or invite some of them as speakers for the CSTD inter-sessional panel and annual session

WHO has health specialists, medical doctors, scientists, epidemiologists and also people with expertise in administration and finance, information systems, economics, health statistics as well as emergency preparedness and response staff who can be contacted for projects/policies related to resilient communities, STI and the citizen science. WHO also has an extensive network of WHO Collaborating, institutions such as research institutes, parts of universities or academies, which are designated by the Director-General to carry out activities in support of the Organization's programmes. Currently there are over 800 WHO collaborating centres in over 80 Member States working with WHO on areas such as health emergencies, nursing, occupational health, communicable diseases, nutrition, mental health, chronic diseases and health technologies.

Focal Points:

- Overall coordination - Safe Hospitals/SPEED/Emergency Dashboard: Mr Jonathan Abrahams, abrahamsj@who.int
- Risk communications/community engagement: Dr Aphaluck Bhatiasevi, bhatiaseviap@who.int
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