

SURVEILLANCE, RESPONSE, AND MANAGEMENT: TESTING AND CONTACT TRACING

COVID-19 IMPROVEMENT STRATEGIES

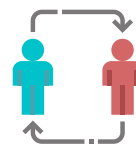
WHAT IS SURVEILLANCE, RESPONSE, AND MANAGEMENT?

As a person's first entry point into the health system, Primary Health Care (PHC) not only provides a platform for ensuring access to essential and routine healthcare but is also a critical foundation for the direct surveillance, response and management of outbreaks. PHC, with its strong community ties and coordinating function, allows for the multi-sectoral action needed to reduce vulnerability and build resilience of communities. Leveraging PHC for outbreak response is particularly important in low- and middle-income countries where there is often limited access to healthcare overall. Drawing from [PHCPI's Improvement Strategies](#) we identified three core strategies for how PHC systems can be leveraged for COVID-19 surveillance, response and management as shown in the graphic to the right. This document focuses specifically on the role of PHC in COVID-19 testing and contact tracing.

WHAT IS TESTING AND CONTACT TRACING?

Surveillance is a key element in the global pandemic response efforts. Specifically, COVID-19 surveillance employs different strategies such as case reporting, testing, and contact tracing to draw an accurate picture of the pandemic's spread and inform decision-making both locally and globally (1). COVID-19 testing is the process of identifying the presence of the SARS-CoV-2 virus in a suspected case. The two most common forms of testing are RT-PCR and serologic testing, which have their respective diagnostic characteristics and advantages (2). Contact tracing, is the process of identifying, assessing, and managing people who have been exposed to the SARS-CoV-2 virus. Both of these surveillance measures aim to provide the necessary information to disrupt the disease transmission chain, and control infectious disease outbreaks in the population (3).

CORE STRATEGIES



**RISK
COMMUNICATION**



**TESTING AND
CONTACT TRACING**



CASE MANAGEMENT

COVID-19 PROMISING PRACTICES

GHANA



Testing and contact tracing rest at the center of Ghana's response to COVID-19. Ghana has demonstrated rapid response to COVID-19 through anchoring these efforts in existing PHC infrastructure. The country has also utilized the strength in rapid innovation and learning to enhance both testing and contact tracing through the iterative development of mobile applications, partial transition to electronic health records, and pool testing to address resource limitations.

Learn more about Ghana's experience [here](#).

OPPORTUNITIES & CHALLENGES

Leveraging PHC for COVID-19 testing and contact tracing will be challenging no matter the context, however adopting this approach may offer several opportunities for health systems strengthening beyond the COVID-19 time period. These challenges and opportunities may include:



TESTING AND
CONTACT TRACING

KEY OPPORTUNITIES AND CHALLENGES:

RESILIENCE OF HEALTH SYSTEMS

The COVID-19 pandemic has tested the resilience of countries on their capacity to adequately respond to health system threats. By utilizing PHC systems to support the implementation of COVID-19 testing and contact tracing, national authorities are able to solicit community input and respond to local health needs to provide a strong foundation for rebuilding the health system during the COVID-19 recovery phase, thus **supporting risk management** and long-term resilience. (4). Beyond the pandemic, lessons from COVID-19 testing and contact tracing can also inform the development of new national and local surveillance approaches--for example, case identification processes, workforce reallocation, information sharing platforms, and/or referral systems-- that may help in preparedness for future public health events.

EQUITABLE ACCESS

Countries are being pushed to reprogram their existing budgetary allocations toward the pandemic response, shifting the burden of direct and indirect health care costs to the patients (32). Furthermore, some COVID-19 testing strategies such as drive-through testing, aimed to promote social distancing, have exacerbated existing geographic and socio-economic disparities in access to healthcare (33). To address these inequities, testing strategies should be tailored based on specific local contextual factors, and additional efforts made to reach underserved populations. In the long term, social safety nets **anchored in human rights frameworks** must be put into place to ensure the protection of these marginalized populations for future outbreak events, and ensure continued access to essential health care services (34).

HIGH-QUALITY PHC:

Community-based testing and contact tracing through PHC capitalizes on and reinforces the role of PHC as the **first point of contact** with the health system. Efficient screening of patients at the community-level allows for the shortening of ongoing community transmissions, and reduces unnecessary utilization of an already overburdened health system during the COVID-19 pandemic (18). In addition, community-based surveillance promotes **patient-centered care** by enabling the adaptation of testing and contact-tracing strategies to the specific needs of local populations (11).

Effective COVID-19 testing and contact tracing will require leveraging and perhaps expanding information systems and communication structures between team members, across levels of the health system, and across sectors, which may offer opportunities to permanently strengthen care **coordination**. Finally, the methods necessary for effective COVID-19 testing and tracing are similar to those used for other disease areas such as tuberculosis, malaria, and HIV. Building on and optimizing these systems--and integrating them into PHC service delivery models beyond the COVID pandemic--may offer opportunities to increase the **comprehensiveness** of such activities and increase effective service coverage (35).

HOW CAN PHC BE LEVERAGED?



Globally, countries have adopted various strategies for responding to the COVID-19 pandemic. Because of its community-orientation, PHC is naturally set-up as the **first point of contact** for both COVID-19 and non-COVID concerns. Strong PHC systems depend on multi-sectoral and people-centered approaches to governance, planning, and service delivery, making various elements of PHC systems well positioned to help in the implementation of these COVID-19 strategies (4,5).

Testing and contact tracing strategies at the PHC level are important both because surveillance efforts go beyond the walls of hospitals and clinics, **and such efforts are highly dependent on trust** (6,7). Community surveillance strategies provide the needed information to predict local COVID-19 transmission, which is crucial for containment and treatment. Leveraging PHC for these strategies can also help in identifying specific populations that are of higher risk for COVID-19 morbidity and mortality as well as their specific needs associated with health care and safety (8). Following testing and contact tracing, PHC systems can also be leveraged to support effective transmission control and case management of known and suspected COVID-19 patients--more information can be found here. Potential pathways for leveraging PHC for testing and contact tracing **will depend on local context** (9), but may include:



TESTING AND CONTACT TRACING

POTENTIAL PATHWAYS:

SURVEILLANCE, DATA MANAGEMENT AND INFORMATION SYSTEMS

COVID-19 testing and contact tracing aim to inform both national and local risk assessment and decision making for pandemic preparedness, response and recovery. This requires strategic health **information systems use** for data generation, compilation, and analysis of trends (4). Implementing protocols and procedures for provider communication, reporting, and coordination will be critical to ensure closed feedback loops for effective surveillance and referrals (28).

Leveraging on existing PHC disease **surveillance** systems and databases will allow for a rapid and cost-effective transition towards COVID-19 surveillance. Such community and PHC-based information systems--for example, the Global Influenza Surveillance and Response System and new **DHIS2 package for COVID-19**--could be utilized to identify populations for active case finding and contact tracing, analyze the distribution of identified cases, and facilitate the referral of patients to linked facilities (29,30). Utilizing PHC information systems would also promote opportunities for participatory research that will bring in localized insights to the complex problems coming from this pandemic (31).

POPULATION HEALTH MANAGEMENT

Community engagement and **proactive population outreach** mechanisms are crucial for effective COVID-19 testing and contact tracing efforts. For example, proactive population outreach mechanisms may be leveraged to support community-by-community, door-to-door case finding, and initiate targeted testing for identified high-risk populations. For countries where mass laboratory testing is not feasible, **participatory surveillance** through voluntary community reporting via existing community engagement mechanisms can provide decision makers with data to analyze disease trends and community health seeking behavior (1,8,18). Additionally, in these settings, engaging the PHC system might allow for contact tracing by identifying and tracking suspected cases through symptom-based diagnosis and/or other laboratory and imaging results where available (19).

Given the limited resources for COVID-19 testing in most countries, it is important to identify specific populations that would benefit the most from testing (20). By utilizing existing PHC strategies like **empanelment**, pre-identified populations in the community that are at higher risk for COVID-19 morbidity and mortality can be prioritized for immediate testing. Empanelment can also help categorize potentially exposed segments of the community as high- or low-priority for contact-tracing. These panels can also provide insight on the wider impact of COVID-19 on the population, and support **local priority setting** for further screening, response, and risk communication strategies (3,18,21).



FINANCING AND PROCUREMENT

Effective implementation of testing and contact tracing for COVID-19 will entail harnessing public [health financing](#) resources for purchasing test kits, setting-up testing centers, and procurement of personnel protective equipment (PPE). Local health [procurement and disbursement processes](#) may need to be accelerated to address immediate appropriation and payment needs (22,23). Understanding relevant local-level regulatory systems and public financial management (PFM) mechanisms such as procurement schemes, capacity to reallocate funds, and necessary approval processes can allow for more rapid identification of budgetary flexibility opportunities and reallocation of resources (22,24).

This shift in spending priorities may lead to PHC resources being redirected to COVID-19 efforts. In this context, it will be critical to secure continuous funding for PHC services by exploring alternate financing mechanisms (for example social health insurance, health equity funds, and/or external sources of funding from development partners), and ensuring transparency in financial management (25). In addition, measures should be put into place to address a potential increase in out-of-pocket spending for testing services that will not be covered through current public schemes to ensure continued [financial access](#) for all (26).

FACILITY INFRASTRUCTURE

Implementing COVID-19 testing at PHC facilities is likely to require reconfiguring facility operations. [National guidelines on biosafety in handling and testing specimens](#) must be put into place, to avoid unwanted transmissions in the community during testing (2). Additionally, facilities that have been utilized for COVID-19 response should also be integrated into contact tracing systems to enable rapid and appropriate follow-up of positive cases (3). More of these changes in [facility organization and management](#) are discussed in the module on Safety & Facility Operations.

LEADERSHIP & GOVERNANCE

Rapid, system-wide decision making is essential for implementation of urgent surveillance measures for immediate case detection and containment (10). A coordinated national surveillance strategy that is adapted and reinforced at different levels of care is important for facilitating effective testing and contact tracing efforts for COVID-19 (1). However, such top-down decision-making should be accompanied by [social accountability](#) measures at the PHC level to ensure transparency and accountability of government actions as well as address potential concerns such as privacy protection and civil liberties (11). These measures can eventually support building and sustaining trust in the health system as a whole (12).

Testing and contact tracing strategies must be embedded within a [quality management infrastructure](#) to ascertain the accuracy of the data being generated from the community, and ensure the safety of both patients and the providers carrying out these activities (13). Bringing quality management infrastructure to bear might include actions such as adopting local regulatory statutes for testing kits and procedures, establishing [standards for setting-up facility infrastructure](#) and referral systems, and setting policies to ensure that patient privacy is protected (2).

Aligning surveillance strategies with [PHC Policies](#), including those on financing, inputs, and service delivery, is important for taking into account population health needs and PHC system capacities linked to the implementation of COVID-19 efforts. Countries with strong PHC systems will be able to urgently mobilize and adapt human and logistical resources to confront challenges brought about by the pandemic. Existing protocols for community health assessment can be used to activate immediate COVID-19 contact tracing efforts (14). In turn, the accurate identification of community needs enabled by effective surveillance can support strategic efforts to maximize available resources. As with PHC policies more generally, a ["Health in All Policies"](#) approach to surveillance can promote synergies between multiple stakeholders-- both health and non-health-- involved in care and address contextual factors that may affect equitable access to testing. By ensuring the involvement of communities, civil society, and the private sector (e.g. community testing, risk communication, production of PPE), efforts to monitor and slow down the spread of COVID-19 could be ramped-up. (15-17)



WORKFORCE

Ramping-up COVID-19 testing and contact tracing will require the activation of well-coordinated and effectively led national rapid-response teams, which may entail shifting the roles of the existing PHC **workforce** through task-shifting, re-assignment, and changes to workforce rostering (e.g. staggering shifts, integration of quarantine schedules) (24,27). In some cases, the existing health workforce may need to be augmented by the hiring of new cadres of workers to support COVID-19 testing and contact tracing efforts. To maximize the capacity for community-based surveillance, both the existing and new health workforce must be trained on **proper testing, case investigation and contact tracing protocols**, as well as equipped with the necessary supplies and PPE to safely carry out these new tasks (18). Given that COVID-19 testing procedures may be invasive, and contact tracing requires disclosure of some sensitive information, building and/or maintaining and capitalizing on an environment of **patient-provider respect and trust**--ideally fostered by the role of the PHC workforce as the first point of contact for continuous care over the lifecourse--will be essential. Additionally, efforts must be made to promote this shift to COVID-19 will require the promotion of safety and the psychological well-being of the health care providers (24).

Community-based testing and contact tracing will also benefit from a **team-based care organization** which maximizes the diverse capacities of the PHC workforce to provide coordinated and efficient health services. For example, physicians and nurses may be assigned for sample collection and clinical assessment, while community health workers could be tasked to do patient education and complementary contact tracing interviews. Particular efforts should be made to ensure that any new workforce hired to support COVID-19 activities are integrated into care teams to maximize coordination and continuity of care.



RELEVANT RESOURCES

PHCPI RESOURCES

- Primary Sources
 - [COVID-19 in Malawi: Innovating New Approaches in Resource-Limited Settings](#)
 - [Early Focus on PHC Improves COVID-19 Response in San Luis, Argentina](#)
- Improvement Strategies Modules

GLOBAL LEARNING PLATFORMS

- JLN COVID Response Platform (coming soon)
- [OpenWHO](#)
- [UNICEF COVID-19 Information Center](#)
- [PHCPI Community of Practice - online forum for resilient PHC](#)
- [Exemplars in Global Health](#)

GLOBAL TOOLS & RESOURCES

- WHO, 2020 - [Coronavirus disease \(COVID-19\) technical guidance: Surveillance and case definitions](#)
- WHO, 2020 - [Operational considerations for case management of COVID-19 in health facility and community](#)
- WHO, 2020 - [Considerations in the investigation of cases and clusters of COVID-19](#)
- WHO, 2020 - [Contact Tracing in the Context of COVID-19](#)
- WHO, 2020 - [Strengthening Preparedness for COVID-19 in Cities and Urban Settings](#)
- WHO, 2020 - [Considerations in adjusting public health and social measures in the context of COVID-19](#)
- WHO, 2020 [Addressing Human Rights as Key to the COVID-19 Response](#)
- WHO, 2018 [Primary Health Care and Health Emergencies](#)
- UNICEF, 2020 - [Digital contact tracing and surveillance during COVID-19](#)
- CHW Coalition, 2020 - [Role of CHWs in COVID-19](#)
- Path, 2020 - [Resources to support COVID-19 response in LMICs](#)
- CDC, 2020 - [Case Investigation and Contact Tracing : Part of a Multipronged Approach to Fight the COVID-19 Pandemic](#)

PHCPI is a partnership dedicated to transforming the global state of primary health care, beginning with better measurement. While the content on this website represents the position of the partnership as a whole, it does not necessarily reflect the official policy or position of any partner organization.

REFERENCES

1. WHO. Surveillance strategies for COVID-19 human infection: interim guidance, 10 May 2020. Geneva: World Health Organization; 2020 May.
2. WHO. Laboratory testing for 2019 novel coronavirus (2019-nCoV) in suspected human cases. Geneva: World Health Organization; 2020 Mar.
3. WHO. Contact tracing in the context of COVID-19. World Health Organization; 2020 May.
4. WHO. Primary health care and health emergencies [Internet]. World Health Organization; 2018 [cited 2020 May 28]. Report No.: WHO/HIS/SDS/2018.51. Available from: <https://apps.who.int/iris/handle/10665/328105>
5. WHO & UNICEF. A Vision for Primary Health Care in the 21st Century: towards universal health coverage and the Sustainable Development Goals. . World Health Organization; 2018.
6. Olu OO, Lamunu M, Nanyunja M, Dafee F, Samba T, Sempira N, et al. Contact Tracing during an Outbreak of Ebola Virus Disease in the Western Area Districts of Sierra Leone: Lessons for Future Ebola Outbreak Response. *Front Public Health*. 2016 Jun 22;4:130.
7. Chen C. You Don't Need Invasive Tech for Successful Contact Tracing. Here's How It Works. — ProPublica [Internet]. ProPublica. 2020 [cited 2020 Jun 9]. Available from: <https://www.propublica.org/article/you-dont-need-invasive-tech-for-successful-contact-tracing-heres-how-it-works>
8. ECDC. Strategies for the surveillance of COVID-19. Stockholm: European Centre for Disease Control; 2020 Apr.
9. Hirschhorn L, Smith JD, Frisch MF, Binagwaho A. Integrating implementation science into covid-19 response and recovery. *BMJ*. 2020 May 14;369:m1888.
10. WHO. 2019 Novel Coronavirus (2019-nCoV): Strategic preparedness and response plan . Geneva: World Health Organization; 2020 Apr.
11. The Lancet. COVID-19: remaking the social contract. *Lancet*. 2020 May 2;395(10234):1401.
12. Ryan MJ, Giles-Vernick T, Graham JE. Technologies of trust in epidemic response: openness, reflexivity and accountability during the 2014-2016 Ebola outbreak in West Africa. *BMJ Glob Health*. 2019 Feb 13;4(1):e001272.
13. WHO. Communicable disease surveillance and response systems: guide to monitoring and evaluating. World Health Organization; 2006.
14. Aguilar-Guerra TL, Reed G. Mobilizing Primary Health Care: Cuba's Powerful Weapon against COVID-19. *MEDICC Rev*. 2020 Jan;22(2):53-7.
15. WHO. WHO | Health in All Policies Helsinki Statement: Framework for Country Action [Internet]. 2014 [cited 2020 May 29]. Available from: <https://www.who.int/healthpromotion/frameworkforcountryaction/en/>
16. Ford CL. Commentary: Addressing Inequities in the Era of COVID-19: The Pandemic and the Urgent Need for Critical Race Theory. *Fam Community Health*. 2020;43(3):184-6.
17. Chen Z, Cao C, Yang G. Coordinated multi-sectoral efforts needed to address the COVID-19 pandemic: lessons from China and the United States. *glob health res policy*. 2020 May 7;5:22.
18. ECDC. Contact tracing: public health management of persons, including healthcare workers, having had contact with COVID-19 cases in the European Union – second update. Stockholm: European Centre for Disease Control; 2020 Apr.
19. Clemency BM, Varughese R, Scheafer DK, Ludwig B, Welch JV, McCormack RF, et al. Symptom Criteria for COVID-19 Testing of Health Care Workers. *Acad Emerg Med*. 2020 May 12;
20. Huff HV, Singh A. Asymptomatic transmission during the COVID-19 pandemic and implications for public health strategies. *Clin Infect Dis*. 2020 May 28;
21. Kent DM, Paulus JK, Sharp RR, Hajizadeh N. When predictions are used to allocate scarce health care resources: three considerations for models in the era of Covid-19. *Diagn Progn Res*. 2020 May 20;4:11.
22. WHO. How to budget for COVID-19 response? A rapid scan of budgetary mechanisms in highly affected countries. World Health Organization; 2020 Mar.
23. The Global Fund. Health Product Supply - COVID-19 [Internet]. The Global Fund to Fight AIDS, Tuberculosis and Malaria. 2020 [cited 2020 Jun 10]. Available from: <https://www.theglobalfund.org/en/covid-19/health-product-supply/#products>
24. WHO. Strengthening Preparedness for COVID-19 in Cities and Urban Settings [Internet]. 2020 [cited 2020 May 29]. Available from: <https://www.who.int/publications-detail/strengthening-preparedness-for-covid-19-in-cities-and-urban-settings>
25. Oladele TT, Olakunde BO, Oladele EA, Ogbuaji O, Yamey G. The impact of COVID-19 on HIV financing in Nigeria: a call for proactive measures. *BMJ Glob Health*. 2020;5(5).
26. Bachireddy C, Chen C, Dar M. Securing the Safety Net and Protecting Public Health During a Pandemic: Medicaid's Response to COVID-19. *JAMA*. 2020 Mar 19;
27. Chua WLT, Quah LJJ, Shen Y, Zakaria D, Wan PW, Tan K, et al. Emergency department "outbreak rostering" to meet challenges of COVID-19. *Emerg Med J*. 2020 May 28;
28. Esquivel A, Sittig DF, Murphy DR, Singh H. Improving the effectiveness of electronic health record-based referral processes. *BMC Med Inform Decis Mak*. 2012 Sep 13;12:107.
29. WHO. Operational considerations for COVID-19 surveillance using GISRS: interim guidance, 26 March 2020. Geneva: World Health Organization; 2020 Mar.
30. Health Information Systems Programme. COVID-19 Surveillance Digital Data Package | DHIS2 [Internet]. DHIS2. [cited 2020 Jun 5]. Available from: <https://www.dhis2.org/covid-19>
31. Jull J, Giles A, Graham ID. Community-based participatory research and integrated knowledge translation: advancing the co-creation of knowledge. *Implement Sci*. 2017 Dec 19;12(1):150.
32. Fendrick AM, Shrosbree B. Expanding coverage for essential care during COVID-19. *Am J Manag Care*. 2020 May;26(5):195-6.
33. Shippee TP, Akosionu O, Ng W, Woodhouse M, Duan Y, Thao MS, et al. COVID-19 Pandemic: Exacerbating Racial/Ethnic Disparities in Long-Term Services and Supports. *J Aging Soc Policy*. 2020 May 31;1-11.
34. WHO. Addressing Human Rights as Key to the COVID-19 Response. WHO; 2020.
35. Nosyk B, Armstrong WS, Del Rio C. Contact tracing for COVID-19: An opportunity to reduce health disparities and End the HIV/AIDS Epidemic in the US. *Clin Infect Dis*. 2020 Apr 27;