

Frontline health workers in COVID-19 prevention and control: rapid evidence synthesis

Key Policy Considerations

COVID-19 is a respiratory illness caused by a newly discovered coronavirus. It has now become a pandemic affecting 187 countries. Apart from hospital preparedness, it is essential to ensure frontline health workers (FLHWs) are prepared too, considering all possible scenarios. FLHWs like Accredited Social Health Activists (ASHA) can potentially play a role in COVID-19 prevention and control. Key policy considerations are:

1. FLHWs will be at an increased risk of COVID-19, even in the course of their normal activities. It is essential to provide personal protective equipment (gloves, surgical masks, hand sanitisers; N95 masks if involved in contact tracing) in adequate quantity. This should be accompanied by training on proper usage in the early phase itself.
2. Disruption in supply-chain, logistics and supportive supervision might be expected and this would impact routine service delivery. Advice should be given on which activities are to continue and which might be postponed. Guidelines and protocols for conducting additional activities and training is required.
3. Engaging FLHWs who continue to perform routine service delivery in additional contact identification and listing, is not without its risk including that of transmission of COVID-19. A role focussed on creating awareness and support for prevention and countering social stigma is recommended for FLHWs.
4. FLHWs might experience stigmatisation, isolation and been socially ostracised. Providing psychosocial support, non-performance-based incentives, additional transport allowance, child-care support should be planned. Awards and recognition are required for motivation.
5. Social distancing related measures might not be appropriate in many contexts like urban slums, large/joint families, those living in small houses and the homeless.

What is a rapid evidence synthesis?

A rapid evidence synthesis is a rapid review of global evidence in a **systematic manner to inform decision-making contextualised to context**. These are on-demand and with reference to a specific health policy and systems decision. This **rapid evidence synthesis goes beyond research evidence and integrates multiple types and levels of evidence**.

Why was this rapid evidence synthesis conducted?

This was prepared on request from the National Health Systems Resource Centre to **inform development of plans and resources to ensure preparedness of frontline health workers (ASHAs) for COVID-19**. The review was conducted in a period of 3 days.

Suggested citation

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Frontline health workers in COVID-19 prevention and control: rapid evidence synthesis

COVID-19 is a respiratory illness caused by a newly discovered coronavirus. The first reported case was in Wuhan, China in December 2019. Subsequently it has spread to 187 countries. Countries across the world are introducing measures to prevent its spread, increasing capacity for quarantine and building capacity of hospitals (particularly intensive care units) to manage positive cases. With efforts to prevent community transmission of COVID-19 being a top priority, ensuring preparedness of frontline health workers (FLHWs) is essential. The rapid evidence synthesis team received a request to support the planning and development of resources for ensuring preparedness of FLHWs for COVID-19. Based on discussions and a brief provided by the requester, the rapid evidence synthesis aimed to:

- understand key roles, issues, barriers and enablers for FLHWs in the prevention and control of COVID-19.
- develop an inventory of resources that could be used to develop guidance, training manuals and IEC (information, education and communication) related to COVID-19 for FLHWs.

Methodology

The rapid evidence synthesis goes beyond research evidence and integrates multiple types and levels of evidence to inform decision making to plan and develop resources and prepare FLWs (i.e. ASHAs) in the prevention and control of COVID-19. A timeline of three days was provided for its conduct. Based on an initial scoping of the literature and the fact that COVID-19 is a recent onset, we expanded the scope to understand what can be learnt from previous pandemics, mainly SARS, Swine Flu, Ebola Virus Disease (EVD) and Middle East Respiratory Syndrome Coronavirus (MERS-CoV). A search strategy was developed in PubMed database to identify studies of interest. No language or date filter was used (apart from English, two French studies were detected, and they were translated and included). Additional studies were included by screening references of included studies and thorough handsearching of 15 websites of different government, multinational agencies and COVID-19 resource aggregators. More details on search strategies and list of websites searched are available in Appendices 1 and 2. We used an existing framework to assess community health worker (CHW) to guide data collection¹. The findings from this rapid evidence synthesis may be used for other low and middle-income countries (LMICs) with similar contexts and roles of FLHWs.

¹ Agarwal S, Sripad P, Johnson C, et al. A conceptual framework for measuring community health workforce performance within primary health care systems. *Hum Resour Health* 2019;17(1):86. doi: 10.1186/s12960-019-0422-0 [published Online First: 2019/11/22]

Key roles, issues, enablers and barriers for prevention and control of COVID-19 by FLHWs

Thirty-six documents were identified, which provided information specific to FLHWs in recent pandemics. The study selection process is presented in Appendix 3. Studies were conducted in Democratic Republic of Congo (DRC), Ghana, Guinea, Nigeria, Sierra Leone, Southern Sudan, Uganda, Bangladesh, Cambodia, Iceland, Laos, Thailand, UK, and Vietnam. Studies examined the role of FLHWs in disease outbreak situations, in addition to exploring the challenges and experiences of working in pandemic situations. Most of the included studies were conducted within the context of Ebola Virus Disease (EVD) in sub-Saharan Africa. In most countries, FLHWs had a role with respect to engaging with the communities, especially in rural areas, in pandemic (during and post outbreaks) situations. More details for included records including full data extraction is provided in Appendix 4 and a list of included records is provided in reference section. A summary of potential roles, key issues, barriers and enablers relevant to FLHWs in prevention and control of COVID-19 is provided below:

1. Frontline health workers (FLHWs) like ASHA can potentially play an important role in COVID-19 prevention and control. In previous pandemic several type FLHWs and community health workers working with NGOs, deployed for several activities, with community sensitization, awareness and promotion of appropriate preventive practices, being the most common. Other activities like contact tracing and data collection were also done through community-based health agents but not FLHWs. The World Health Organization (WHO) in its guidance for contact tracing during EVD recommended "that contact identification and listing, including the process of informing contacts of their status, should not be done by the by the local surveillance staff or a CHW performing the daily follow-up. Instead this should be conducted by an epidemiologist or a surveillance officer." Even in pandemics where FLHWs were not involved in contact tracing they had been at higher risk.
2. With an increased risk for FLHWs, it is essential to provide personal protective equipment (PPE) (gloves, surgical masks, hand sanitisers) in appropriate quantity. This should be accompanied by training on proper usage in the early phase of the disease outbreak itself. Involving FLHWs in contact identification, listing or accompanying COVID-19 suspects increases exposure risk leading to a need for provision of additional PPE (like N95 masks etc), which might be a scarce commodity. As such engaging FLHWs who continue to perform routine service delivery in additional contact identification and listing, (including for the process of informing suspected

contacts of their status), is not without its risk including that of transmission of COVID-19.

3. Disruption in supply-chain, logistics and supportive supervision has been noted in all previous pandemics and this has impacted routine service delivery by FLHWs. As such, this might be expected for COVID-19 too. There is a need for government to provide clear advice on which activities are to continue and which might be postponed. Guidelines for conducting additional activities is required along with training for community sensitisation, awareness and risk communication for COVID-19.
4. In most contexts, FLHWS experienced stigmatisation, isolation and had been socially ostracised. During previous pandemics, many health workers were not being allowed to use the village well for their water, asked to leave their rented accommodation, and not being allowed to use taxis. Health workers often isolate from their families to protect them from infection to respond to their call for duty.

Death or disease of fellow health workers and the consequent economic hardships to their families led to stress and overload. Like the general public and owing to disruption of supply chain and logistics they continued to struggle to get their own supplies.

5. Providing psychosocial support (individual and peer-group as for example by creating a WhatsApp group which was used as a platform to share supportive and encouraging messages only), non-performance-based incentives, additional transport allowance, child-care support were found to be enablers in the process along with awards and recognition to maintain motivation. Common coping strategies of FLHWs included renewed purpose in continuing to serve their community or country, peer and family support (in some cases), and religion.

Resources for developing guidance, training manuals and IEC materials related to COVID-19 for FLHWs.

This section provides an inventory of different resources that could be used to develop guidance, training materials and IEC materials for COVID-19 for use by FLHWs.

Basics of COVID-19 inventory

A detailed inventory for resources for COVID-19 guidelines which are relevant to FLHWs is presented in Appendix 5 and Appendix 6.

Key points to note are:

- The symptoms of COVID-19 are pretty broad and generic (fever, cough, shortness of breath, sore throat, fatigue, headache, pains being common). It is important to communicate risk properly to prevent panic and health systems burdening but at the same time being vigilant. A relative symptomatology chart might be useful.
- These symptoms are usually mild and begin gradually. Some people become infected but remain asymptomatic and don't develop any symptoms. Important to convey that even with COVID-19 about 80% recover from the disease but some irrespective of age would become seriously ill and develop difficulty in breathing.
- The virus spreads mainly from person-to-person through two modalities:
 - Droplet: Between people who are in close contact with one another (within about 6 feet), through respiratory droplets produced when an infected person coughs or sneezes. These droplets could land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs.
 - Surface: Transmission can occur through touching a surface or an object that has the virus on it and then touching their own mouth, nose, or possibly their eyes. Virus could survive in droplets for up to three hours after being coughed out into the air. Fine droplets between 1-5 micrometres in size – about 30 times smaller than the width of a human hair – can remain airborne for several hours in still air.
- High risk groups for COVID-19 : older people aged 65 years and above, people of any age with underlying medical problems like high blood pressure, heart disease, diabetes, renal failure, immunocompromised including cancer treatment, are at a higher risk for severe illness from COVID-19. Pregnant females should be monitored since they are known to be at risk with severe viral illness, however, to date data on COVID-19 has not shown increased risk.

Some of these groups are target groups for FLHWs and as such any training should focus on specific advice for these high-risk groups.

COVID-19: Self isolation guidelines inventory

The detailed inventory for self-isolation guidelines is provided in Appendix 7. However, most of them are written from a high-income country perspective (even if they are sourced from low-and-middle-income country settings and would be challenging to implement for those living in small houses, urban slums or are homeless).

COVID-19: Information Education and Communication Materials Inventory

An inventory for IEC resources for COVID-19 is provided in Appendix 8. However, it is important to realise that prevention measures like social distancing might be impractical for a large population in India. There is a need for developing in situ guidance for specific population groups which are relevant, practical and feasible to implement. This is particularly true for urban slums, those with large family sizes, those living in small houses and the homeless.

A comprehensive strategy for risk communication based on WHO guidance for the same in public health emergencies is required, instead of just providing IEC materials². The key pillars of the risk communication strategy are:

- Building trust and engaging with affected populations
- Integrating risk communication into health and emergency response systems
- Risk communication practice

COVID-19: Myths and facts inventory

An inventory for myths and regarding COVID-19 is provided in Appendix 9. A summary is provided below. Myths are often contextual in nature and FLHWs can be the “ears” for the purpose. Ongoing support to managed myths and facts are required.

<i>Myths</i>	<i>Facts</i>
Everyone should wear a mask	Masks should not be used by healthy persons without any symptoms. Masks should be worn by <ul style="list-style-type: none"> • People who are taking care of a suspected COVID-19 patient • If you are coughing or sneezing. • Masks alone are not protective. They should be used in combination with frequent hand-cleaning with soap and water. • If you wear a mask, then know how to use and dispose it properly.
One can get infected by eating certain foods like eggs, chicken and meat	There is currently NO evidence for COVID-19 transmission due to eating eggs, chicken and meat. However, like always, it is

² WHO. Communicating risk in public health emergencies: a WHO guideline for emergency risk communication (ERC) policy and practice. World Health Organisation 2017. Available online at : <https://apps.who.int/iris/bitstream/handle/10665/259807/9789241550208-eng.pdf;jsessionid=60B09409C06A6D8AA47721B042455713?sequence=2>

	important to follow good hygiene practices (i.e. wash hands and surfaces often, separate raw meat from other foods, cook to the right temperature) when handling or preparing foods.
The disease is spread from pets	There is NO evidence that companion animals/pets such as dogs or cats are spreading disease to humans. However, if you are sick, avoid them just as you will avoid other humans.
The novel corona virus cannot survive in high temperature	Novel Corona virus can be transmitted in ALL areas including areas with hot and humid climate
Taking hot bath can prevent from getting infected	Taking a hot bath will not prevent you from catching COVID-19. Your normal body temperature remains around 36.5°C to 37°C, regardless of the temperature of your bath or shower.
The new corona virus can be transmitted through mosquito	Corona virus infection CANNOT be transmitted by mosquito bite
Eating garlic can help prevent infection with novel corona virus	There is NO evidence that eating garlic can protect from COVID-19.
The new corona virus affects older people and not the younger ones	People of all ages can be infected by the COVID-19.
Consuming alcohol can protect from corona virus infection	Use alcohol for sanitising and not for drinking. Drinking alcohol doesn't kill the virus.
It's a disease of affluence	Anyone can be infected with new corona virus irrespective of their social status
Antibiotics effective in preventing and treating the new coronavirus	NO , antibiotics do not work against viruses.

References

1. Ameme DK, Nyarko KM, Afari EA, et al. Training Ghanaian frontline healthcare workers in public health surveillance and disease outbreak investigation and response. *Pan Afr Med J* 2016;25:2.
2. Armstrong-Mensah EA, Ndiaye SM. Global Health Security Agenda Implementation: A Case for Community Engagement. *Health Secur*;16(4):217-23.
3. Attinsounon CA, Hounnankan CA, Dovonou CA, et al. [Knowledge and attitudes of community volunteers on Lassa and Ebola viral haemorrhagic fevers in the Donga Department (North Benin)]. *Pan Afr Med J* 2017;26:229.
4. Bower H, Grass JE, Veltus E, et al. Delivery of an Ebola Virus-Positive Stillborn Infant in a Rural Community Health Center, Sierra Leone, 2015. *Am J Trop Med Hyg*;94(2):417-9.
5. Boyce MR, Katz R. Community Health Workers and Pandemic Preparedness: Current and Prospective Roles. *Front Public Health* 2019;7:62.
6. Caballero P, Tuells J, Duro-Torrijos JL, et al. Acceptability of pandemic A(H1N1) influenza vaccination by Essential Community Workers in 2010 Alicante (Spain), perceived seriousness and sources of information. *Prev Med*;57(5):725-8.
7. Dallatomasina S, Crestani R, Sylvester Squire J, et al. Ebola outbreak in rural West Africa: epidemiology, clinical features and outcomes. *Trop Med Int Health*;20(4):448-54.
8. de Vries DH, Rwemisisi JT, Musinguzi LK, et al. The first mile: community experience of outbreak control during an Ebola outbreak in Luwero District, Uganda. *BMC Public Health*;16:161.
9. Delamou A, Sidibe S, El Ayadi AM, et al. Maternal and Child Health Services in the Context of the Ebola Virus Disease: Health Care Workers' Knowledge, Attitudes and Practices in Rural Guinea. *Afr J Reprod Health*;21(1):104-13.
10. Dickmann P, Kitua A, Apfel F, et al. Kampala manifesto: Building community-based One Health approaches to disease surveillance and response-The Ebola Legacy-Lessons from a peer-led capacity-building initiative. *PLoS Negl Trop Dis*;12(4):e0006292.
11. Englert EG, Kiwanuka R, Neubauer LC. 'When I die, let me be the last.' Community health worker perspectives on past Ebola and Marburg outbreaks in Uganda. *Glob Public Health*;14(8):1182-92.
12. Farrell PC, Hunter C, Truong B, et al. Control of highly pathogenic avian influenza in Quang Tri province, Vietnam: voices from the human-animal interface. *Rural Remote Health*;15(3):3044.
13. Gray N, Stringer B, Bark G, et al. 'When Ebola enters a home, a family, a community': A qualitative study of population perspectives on Ebola control measures in rural and urban areas of Sierra Leone. *PLoS Negl Trop Dis*;12(6):e0006461.

14. Green A. West African countries focus on post-Ebola recovery plans. *Lancet*;388(10059):2463-65.
15. Gunnlaugsson G, Hauksdottir IE, Bygbjerg IC, et al. 'Tiny Iceland' preparing for Ebola in a globalized world. *Glob Health Action* 2019;12(1):1597451.
16. Hemingway-Foday JJ, Ngoyi BF, Tunda C, et al. Lessons Learned from Reinforcing Epidemiologic Surveillance During the 2017 Ebola Outbreak in the Likati District, Democratic Republic of the Congo. *Health Secur*;18:S81-s91.
17. Hickey J, Gagnon AJ, Jitthai N. Pandemic preparedness: perceptions of vulnerable migrants in Thailand towards WHO-recommended non-pharmaceutical interventions: a cross-sectional study. *BMC Public Health*;14:665.
18. i MA, van Griensven J, Chan AK, et al. Ebola and community health worker services in Kenema District, Sierra Leone: please mind the gap! *Public Health Action*;7:S55-s61.
19. Jinadu KA, Adebisi AO, Sekoni OO, et al. Integrated disease surveillance and response strategy for epidemic prone diseases at the primary health care (PHC) level in Oyo State, Nigeria: what do health care workers know and feel? *Pan Afr Med J* 2018;31:19.
20. Mc Kenna P, Babughirana G, Amponsah M, et al. Mobile training and support (MOTS) service-using technology to increase Ebola preparedness of remotely-located community health workers (CHWs) in Sierra Leone. *Mhealth* 2019;5:35.
21. McMahon SA, Ho LS, Brown H, et al. Healthcare providers on the frontlines: a qualitative investigation of the social and emotional impact of delivering health services during Sierra Leone's Ebola epidemic. *Health Policy Plan*;31(9):1232-9.
22. Miller NP, Milsom P, Johnson G, et al. Community health workers during the Ebola outbreak in Guinea, Liberia, and Sierra Leone. *J Glob Health*;8(2):020601.
23. Nassar AF, Alemi F, Hetmyer A, et al. Automated monitoring to detect H1N1 symptoms among urban, Medicaid-eligible, pregnant women: a community-partnered randomized controlled trial. *J Community Health*;39(1):159-66.
24. Otu A, Ebenso B, Okuzu O, et al. Using a mHealth tutorial application to change knowledge and attitude of frontline health workers to Ebola virus disease in Nigeria: a before-and-after study. *Hum Resour Health*;14:5.
25. Patel U, Pharr JR, Ihesiaba C, et al. Ebola Outbreak in Nigeria: Increasing Ebola Knowledge of Volunteer Health Advisors. *Glob J Health Sci*;8(1):72-8.
26. Perry HB, Dhillon RS, Liu A, et al. Community health worker programmes after the 2013-2016 Ebola outbreak. *Bull World Health Organ*;94(7):551-3.
27. Plucinski MM, Guilavogui T, Sidikiba S, et al. Effect of the Ebola-virus-disease epidemic on malaria case management in Guinea, 2014: a cross-sectional survey of health facilities. *Lancet Infect Dis*;15(9):1017-23.
28. Quinn SC, Kumar S. Health inequalities and infectious disease epidemics: a challenge for global health security. *Biosecur Bioterror*;12(5):263-73.

29. Raven J, Baral S, Wurie H, et al. What adaptation to research is needed following crises: a comparative, qualitative study of the health workforce in Sierra Leone and Nepal. *Health Res Policy Syst*;16(1):6.
30. Reques L, Bolibar I, Chazelle E, et al. Evaluation of contact tracing activities during the Ebola virus disease outbreak in Guinea, 2015. *Int Health*;9(2):131-33.
31. Selvaraj SA, Lee KE, Harrell M, et al. Infection Rates and Risk Factors for Infection Among Health Workers During Ebola and Marburg Virus Outbreaks: A Systematic Review. *The Journal of Infectious Diseases* 2018;218(suppl_5):S679-S89. doi: 10.1093/infdis/jiy435
32. Sidibe S, Camara BS, Delamou A, et al. [Knowledge, attitudes and practices of healthcare providers on suspected Ebola cases in Guinea]. *Rev Epidemiol Sante Publique* 2018;66(6):369-74. doi: 10.1016/j.respe.2018.09.006 [published Online First: 2018/10/16]
33. Siekmans K, Sohani S, Boima T, et al. Community-based health care is an essential component of a resilient health system: evidence from Ebola outbreak in Liberia. *BMC Public Health*;17(1):84.
34. Stehling-Ariza T, Rosewell A, Moiba SA, et al. The impact of active surveillance and health education on an Ebola virus disease cluster - Kono District, Sierra Leone, 2014-2015. *BMC Infect Dis*;16(1):611.
35. Tippet VC, Watt K, Raven SG, et al. Anticipated behaviors of emergency prehospital medical care providers during an influenza pandemic. *Prehosp Disaster Med*;25(1):20-5.
36. Wurie HR, Samai M, Witter S. Retention of health workers in rural Sierra Leone: findings from life histories. *Hum Resour Health*;14:3.

Published Notes

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