Rapid Response Brief
March 2020

What can research evidence tell us about:

What measures can district health authorities take to prevent and control Covid-19 in the community?

Key messages

- Any measures to be implemented at the district level should be selected on the basis of their potential to build trust from the community and thus increase its willingness to cooperate.

- The measures that can be used by district authorities to prevent and control Covid-19 can be categorised into;
  (i)   Well formulated Communication strategies
  (ii)   Identification, Isolation and quarantine for cases and their contacts
  (iii) Social distancing measures
  (iv)   Community members embracing Personal protective practices
  (v)   Exploiting opportunities at strategic points of community first contact with the health system
  (vi)   Community disinfection
  (vii) Use of augmented intelligence

- No measure can be used in isolation to achieve prevention and control of Covid-19.

- Implementing of these strategies has to be timely and of the right duration if prevention and control is to be achieved.

- District leaders have to regularly update the community and the teams implementing Covid-19 prevention and control measures about the epidemic at global, national and local levels and emerging evidence that can further be used to combat the pandemic.

ACRES — THE CENTER FOR RAPID EVIDENCE SYNTHESIS

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Regional East African Community
Health Policy Initiative

Summary

Background:

While discussing the dynamics of the spread of Covid-19 disease and the global trend of the disease morbidity and mortality, District Health Officers (DHOs) have raised a need to explore different measures to augment and implement current central government measures to prevent and control Covid-19 in their respective communities.

Rapid Response Question: What measures can district health authorities take to prevent and control Covid-19 within their communities?

Findings:

The different measures for preventing and controlling Covid-19 in a community should be:

- Targeted
- Non-coercive
- Transparent
- Involve public engagement
- Implemented rapidly and urgently
- Well timed
- Of appropriate duration
- Maximise benefits and minimise harms

The measures to be considered in controlling and preventing Covid-19 in the community are;

- Isolation
    - Identification and isolation of cases
    - Voluntary home quarantine
    - Involuntary home quarantine
    - Institutional quarantine
      Community quarantine

- Social Distancing
    - Suspension of events
    - Closure of academic institutions
    - Closure of religious services and entertainment places
    - Changes to funeral arrangements
    - Adjustments to office work
    - Suspending public markets
    - Exploring e-commerce platforms

- Personal protective measures
    - Hand hygiene
    - Face masks
    - Temperature scanning

- First contact with health system
    - Exploit community pharmacists for information, early identification and referral
    - Information to patients
    - Symptoms screening
    - Contact tracing
    - Laboratory surveillance

- Communication
    - General information to the public
    - Risk of disease
    - Measures to implement
    - Public health policy to health workers

- Other measures
    - Community disinfection
    - Augmented intelligence

No single measure for preventing community spread of Covid-19 can be used in isolation. These have to be combined and timely. These measures are based on lessons learnt from the previous outbreaks of Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MARS) in addition to lessons from the countries that are currently battling with the outbreak of Covid-19. The impact of these strategies is not reported in figures, but is assumed from observations of implementing them.

Conclusion:

Measures for preventing and controlling the spread of Covid-19 in the community should be targeted, transparent, non-coercive and involve public engagement so as to build trust from the community which increases the community's responsiveness and adherence. The measures have to be combined as no single option implemented in isolation can result in effective control and prevention of Covid-19 in the community.

Background

The World Health Organization (WHO) declared coronavirus disease 2019 (Covid-19) a pandemic on March 11, 2020 [1]. Over 600,000 confirmed cases and 28000 deaths had been reported by March 29, 2020 [2]. An individual infected with Covid-19 is expected to infect about 2 to 3 others if not isolated and managed in time. Symptoms of infection are expected to manifest from day 2 of exposure to approximately day 14, with most individuals showing symptoms around day 5. However, approximately 80 % of individuals infected with Covid-19 have mild disease and 40% of these exhibit few to no symptoms of the disease. Both symptomatic and asymptomatic individuals have the potential to spread the virus in the community [3, 4]. Covid-19 infections that are not prevented or controlled with in the community have been a cause of a high and fast infection rate in many countries exerting a strain on health systems. These and other facts about Covid-19 have formed a big part of many District Health Officers' (DHOs) concerns about the disease's ability to spread from one person to next in an exponential way, leading to a catastrophic strain on district health services. With and in addition to guidance from the central government mainly through the ministry of health, and exploiting opportunities available to them within their environment, district health authorities have sought to understand different implementation *measures they can use to prevent and control Covid-19 within their communities.*

Summary of findings

The evidence on the measures for the prevention and control of Covid-19 in the community presented in this Rapid Response Brief is informed by among other things, lessons learned from strategies implemented in other countries to counter the Covid-19 pandemic as well as from previous similar epidemics of Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS). There are several measures that advised in the prevention and control the spread of Covid-19 in a community:

1. Communication
2. Isolation
3. social Distancing
4. Personal protective measures
5. first point of contact with the health facilities.

None of these measures can be used in isolation to achieve the prevention and control of spread of Covid-19 in a community. The impact of these measures is not reported in figures, but is assumed from observations of their implementation in other countries.

Measures for the prevention and control of Covid-19 in a community

All community measures that can be used to prevent and control Covid-19 have to be targeted and non-coercive, with sufficient transparency and public engagement to build public trust [5]. The measures have to be implemented rapidly and urgently to achieve control in the community [5]. Transparency and trust are important in creating and preserving calmness and promoting a compliant response to different mitigation advise among the community members. Clear communication of the strategies and ongoing progress from the authorities is important to keep the population calm and informed [5]. Furthermore, timing of the interventions is key in achieving impact. Appropriate timing of interventions can slow down the spread of Covid-19 to manageable levels. This is helpful for medical staff to adequately provide care to the sick as well as for authorities to maintain social order [5, 6].

The implementation of community mitigation measures requires careful evaluation for when to start the implementation and the duration of the intervention. The considerations have to aim at maximising the beneficial epidemiologic effects of the interventions while minimising the potential social and economic harms [6]. Community mitigation measures combine aspects of facility-based interventions and population-based interventions [7].

The table below summarises the measures for the control and prevention of Covid-19 in the community. These measures draw from among other sources, lessons learned from SARS and MERS outbreaks as well as what is currently being implemented in countries that have been affected by Covid-19. These measures may help delay the exponential increase and spread of the outbreak [5]. These measures are not meant to be used in isolation to achieve prevention and control of spread of Cvid-19. They should be combined appropriately in order to maximise their impact.

Table 1: Measures for prevention and control of Covid-19 in the community

Measures	Aspects	Details
Isolation (*Confirmed and suspected cases isolated to reduce shedding of viral particles in the community – current advise is for two individuals to maintain at least 2 metres between each other*)	Isolation [3, 5, 6, 10, 14-17]	There is urgent need to identify and isolate cases from the general public by the health workers. For this to be effective, isolation has to be done early before onset of shedding and establishment of clusters.
	Voluntary home quarantine [5, 6, 14]	This is especially for individuals who have had contact with a confirmed case of Covid-19 but have a negative test result. This reduces the potential stress on emergence healthcare system. Home quarantine is likely to lead to family clusters but such numbers are likely to be fewer than in the case of institutional quarantine. Some researchers argue that quarantining uninfected contacts offers no benefit assuming that the potential infector has been identified. They advocate for effective contact tracing so as to reach already infected but previously unidentified contacts in time to achieve a meaningful reduction in the risk of disease transmission.
	Involuntary home quarantine [11, 14]	This is applicable to individuals who have tested positive but are asymptomatic or mildly symptomatic. These individuals can be put under home quarantine and monitored to full recovery to avoid overcrowding of the health facilities.
	Institutional quarantine[3, 6, 11, 16, 18]	This is majorly for the confirmed cases. It is unrealistic for all individuals who have been in contact with a case of Covid-19 as it can overwhelm the system and may lead to more infections. This option is costly, challenging to enforce, and has location-specific ethical and legal challenges. This however might not be directly applicable to the subnational level in Uganda as management is under the central government.
	Community quarantine [3, 15]	Total shut down of the community with movement limited to only essential movements. This strategy aims at reducing spread as much as possible as the existing clusters are identified and managed accordingly.
Social distancing (*Reducing the frequency and duration of social contact to minimise risk of spread of disease*)	Suspension of events with super spread potential [3, 5]	Events such as music shows, campaigns, and other ad hoc events are a harbinger for super spreaders and these have to be suspended. These events bring individuals together, and with Covid-19's potential of spreading to at least two people from one infected person, provide a potential for spread of the disease.
	Closure of schools, universities and childcare facilities [3, 5, 6, 8, 9, 15]	Although current evidence indicates that the disease is more severe in the elderly than the young population, this population is susceptible to the virus, making them asymptomatic carriers of the virus. Teachers can spread the disease to the learners who in turn can spread the disease to other people.
	Closure of religious services and entertainment venues [5, 8]	These are places where people congregate increasing the frequency and duration of contact.
	Travel restrictions [3, 5, 6, 8]	Public transport is a risk for spread of the disease. Restricting public transport and movement however can compromise essential services provision in a community and this has to be considered in the restrictions.
	Funeral services [5]	There is need to make changes to funeral services to minimise the size of the crowd and exposure to diseased body fluids. If an individual was ill within the house, the house has to be disinfected and minimise access to premises by the mourners.
	Office space [5, 6]	Office space is an enabling environment for respiratory diseases transmission. Use of rotation schedules to reduce office density at any one given time is a possible option where work-from-home is not possible and working in split teams.
	Work-from-home [3, 5, 8]	This is an effective social distancing strategy. Telemedicine, video conferencing, telecommunication, and expanded leave policies may help staff adhere to social distancing policies.

	Closure of workplaces [3, 6]	In some instances, work-from-home is not possible, and the work places have to be closed. However low-income earners are then faced with challenges of survival because of failure to purchase food and meet costs of different household utilities. Local authorities should consider different innovate ways to motivate individuals to stay at home for the success of this strategy.
	Suspending public markets [3]	Markets bring community members together increasing the frequency and duration of social contact. Suspending them would reduce the this and help achieve social distancing.
	e-commerce platforms [8]	Direct exchange of money for goods and services increases the risk of social contact. To minimise this and maintain social distancing, e-commerce platforms can be used. Such platforms can be for ordering for goods and services or for making payments after purchasing of goods and services.
Personal protective measures	Hand hygiene [6, 15]	There are guidelines to hand hygiene that have been put forward by World Health Organisation and United States Centres for Disease Control. The community is advised to wash hands using soap and running water for at least twenty seconds. This applicable for hands which have or do not have dirt. Use of alcohol-based sanitizers and disinfectants for at least a minute such as bleach is another alternative for hand hygiene. This however applies for hands which have no dirt. If the hands are dirty, then handwashing is the best option.
	Face masks [3, 6, 17]	The efficacy of masks among healthy individuals is still unclear. They however are recommended for ill persons, uninfected persons who are caring for the ill, and for those interacting in highly crowded places or settings. Wide recommendation of face masks is likely to increase their demand and thus quickly exhaust the available limited supply, yet these are critical for infection control in high exposure settings such as health facilities.
	Temperature screening [15]	This was implemented in Singapore during the MARS outbreak. The citizens are encouraged to screen for fever several times a day, and in the event of a spike in temperature, contact the responsible authorities.
First contact with health system	Community pharmacists [19]	Community pharmacists are typically the first point of contact with a health system in many developing countries. It is crucial to work with the community pharmacists in supporting local health emergency preparedness and response arrangements by the district. Community pharmacists can ensure a stable supply of medicines and personal protective gear, ensure that medicines and personal protective gear such as face masks remain within reasonable price range, act as an information hub to the public, aid in early detection and appropriate referral of suspects and educate people about personal and environmental hygiene.
	Symptoms screening [7, 15, 20]	Symptoms screening help increase the sensitivity of capturing potential Covid-19 cases. This however has its challenges unique to Covid-19 which wasn't the case for SARS and MERS. Covid-19 incubation period ranges from 2 days to about 28 days, however cases can spread the virus even when asymptomatic. For this reason, even under the best-case assumptions, screening will likely miss more than half of the infected people because they are still asymptomatic and also are unaware that they are exposed. In addition, imperfect performance of screening equipment makes some cases slip through undetected. Much as there are the above shortcomings, screening will be effective in reducing peak incidence of Covid-19 in the community.
	Visiting isolated cases in the health facilities [18]	There should be limited access to the isolation units set up in the health facilities to the general public. Isolated suspected individuals might stay at the lower health facility for a limited period of time till they are transferred to the designated centres for diagnosis and management. During this period, visitations should not be allowed, and all personnel who have access to the suspected cases need to have personal protective gear.
	Laboratory surveillance [6]	There is need for excellent and efficient laboratory services to detect Covid-19 cases and identify transmission clusters in the community for prompt isolation.
	Contact tracing by the responsible authorities [11]	For any confirmed case of Covid-19, it is key to do an extensive contact tracing exercise, to identify the individual who is shedding the virus, but as well to identify those who have come into contact with confirmed case. An extensive and

		comprehensive contact tracing is one of the most important elements in breaking the virus transmission in the community.
Community disinfection	Environmental disinfection [17]	Covid-19 viral particles have the capacity of remaining viable for a long duration of time after being shed by an infected person. There is thus a need for disinfection of the environment at large, periodically, to reduce the load of viable viral particles in the community.
Augmented Intelligence	Compiling and use of information for public health [21]	Augmented Intelligence (AI) does not replace epidemiologists and public health officials but serves to augment their activities in the control of epidemics. AI aggregates information from social media, news media, rapidly evolving health reports, and any other disparate data. Such compiled data can assist in developing predictions for the likelihood of outbreaks and infections, and thus play a key role in early detection of geographical containment. It can also help in development of more accurate symptoms checking, and reveal more effective techniques for containment of outbreaks through near real-time detection of differences in practice.
Communication *(fundamental aspects of outbreak communication are; trust, announcing early, transparency, understanding the public andplanning)*	General information [5, 7-11]	Epidemics are fuelled by rate and extent of misinformation and misconceptions within communities, which also hinder different efforts aimed at controlling the epidemic. They can trigger panic and irrational behaviour in the community and thus undermine efforts from the authorities to control the spread of Covid-19. Authorities have to ensure that everyone in the public stays up-to-date from reliable information sources such as World Health Organisation and Ministry of Health. Good communication strategies to keep the community informed during the 2001 SARS outbreak lead to a reduction in time from onset of symptoms to hospital admission which reduced the persons a case had contact with before admission.
	Risk of disease [5, 9]	Communicating risks for disease at an early stage of an epidemic may help improve adherence to control and prevention interventions among the population.
	Measures implemented [5, 6, 9, 11]	Put in place mechanisms of public health messaging so as individuals in the community know and appreciate the importance of different measures implemented to control the spread of Covid-19 such as isolation and quarantine. This helps build trust in the community and thus improve community responsiveness to the instituted measures.
	Sensitising health workers and district officials about the public health act [12]	The public health act mandates the government to protect the citizens against diseases and epidemics, and gives the government authority to act accordingly. Having health workers equipped with knowledge about the public health act would enable them appropriately handle individuals who are being non-compliant.
	Addressing misinformation [13]	Fear and misinformation have surfaced on many platforms and these are leading to discrimination and prejudice. These are a hindrance to different efforts the authorities might put in place and these have to be addressed. The authorities therefore need to directly respond to misinformation and fear if they are to curb prejudice and discrimination.

Conclusion

Measures for preventing and controlling the spread of Covid-19 in the community should be targeted, transparent, non-coercive and involve public engagement so as to build trust from the community which increases the community's responsiveness and adherence. The measures have to be combined as no single option implemented in isolation can result in effective control and prevention of Covid-19 in the community.

References

1. The, L., *COVID-19: protecting health-care workers.* The Lancet, 2020. **395**(10228): p. 922.
2. Center for Systems Science and Engineering. *Coronavirus COVID-19 Global cases by the Center for Systems science.* 2020 March 2020 [cited 2020 28 March 2020]; Available from: https://coronavirus.tghn.org/resources-dashboard/case-location-map/.
3. Wilder-Smith, A. and D.O. Freedman, *Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak.* Journal of Travel Medicine, 2020. **27**(2).
4. Cheng, Z.J. and J. Shan, *2019 Novel coronavirus: where we are and what we know.* Infection, 2020. **48**(2): p. 155-163.
5. Ebrahim, S.H., et al., *Covid-19 and community mitigation strategies in a pandemic.* BMJ, 2020. **368**: p. m1066.
6. Cowling, B.J. and A. Aiello, *Public health measures to slow community spread of COVID-19.* The Journal of Infectious Diseases, 2020.
7. Thomas, R.F. and T.L. Christopher, *Identifying and Interrupting Superspreading Events—Implications for Control of Severe Acute Respiratory Syndrome Coronavirus 2.* Emerging Infectious Disease journal, 2020. **26**(6).
8. Koh GC-H and H. H, *How Should the Rehabilitation Community Prepare for 2019-nCoV?* ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION, 2020.
9. Adalja, A.A., E. Toner, and T.V. Inglesby, *Priorities for the US Health Community Responding to COVID-19.* JAMA, 2020.
10. Ng, Y., et al., *Evaluation of the Effectiveness of Surveillance and Containment Measures for the First 100 Patients with COVID-19 in Singapore - January 2-February 29, 2020.* MMWR Morb Mortal Wkly Rep, 2020. **69**(11): p. 307-311.
11. Yang, Y., et al., *The deadly coronaviruses: The 2003 SARS pandemic and the 2020 novel coronavirus epidemic in China.* Journal of Autoimmunity, 2020: p. 102434.
12. Griffith, R., *Using public health law to contain the spread of COVID-19.* British Journal of Nursing, 2020. **29**(5): p. 326-327.
13. Ren, S.-Y., R.-D. Gao, and Y.-L. Chen, *Fear can be more harmful than the severe acute respiratory syndrome coronavirus 2 in controlling the corona virus disease 2019 epidemic.* World journal of clinical cases, 2020. **8**(4): p. 652-657.

What is a Rapid Response?

Rapid Responses address the needs of policymakers and managers for research evidence that has been appraised and contextualised in a matter of hours or days, if it is going to be of value to them. The Responses address questions about arrangements for organising, financing and governing health systems, and strategies for implementing changes.

What is ACRES?

ACRES – The Center for Rapid Evidence Synthesis (ACRES) is a center of excellence at Makerere University- in delivering timely evidence, building capacity and improving the understanding the effective, efficient and sustainable use of the rapid evidence syntheses for policy making in Africa. ACRES builds on and supports the Evidence-Informed Policy Network **(EVIPNet) in** Africa and the Regional East African Community Health **(REACH)** Policy Initiative (see back page). ACRES is funded by the Hewlett and Flora foundation. http://bit.do/eNQG6

ACRES' collaborators:

Regional East African Community Health Policy Initiative

EVIPnet

Glossary
of terms used in this report:
www.evipnet.org/sure/rr/glossary

14. Kaplan, E.H., *Containing 2019-nCoV (Wuhan) coronavirus.* Health Care Management Science, 2020.

15. Wilder-Smith, A., C.J. Chiew, and V.J. Lee, *Can we contain the COVID-19 outbreak with the same measures as for SARS?* The Lancet Infectious Diseases, 2020.

16. Fisher, D. and A. Wilder-Smith, *The global community needs to swiftly ramp up the response to contain COVID-19.* The Lancet, 2020.

17. Adhikari, S.P., et al., *Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: a scoping review.* Infectious Diseases of Poverty, 2020. **9**(1): p. 29.

18. Jiaye, L., et al., *Community Transmission of Severe Acute Respiratory Syndrome Coronavirus 2, Shenzhen, China, 2020.* Emerging Infectious Disease journal, 2020. **26**(6).

19. Ung, C.O.L., *Community pharmacist in public health emergencies: Quick to action against the coronavirus 2019-nCoV outbreak.* Research in Social and Administrative Pharmacy, 2020. **16**(4): p. 583-586.

20. Gostic, K., et al., *Estimated effectiveness of symptom and risk screening to prevent the spread of COVID-19.* eLife, 2020. **9**: p. e55570.

21. Long, J.B. and J.M. Ehrenfeld, *The Role of Augmented Intelligence (AI) in Detecting and Preventing the Spread of Novel Coronavirus.* Journal of Medical Systems, 2020. **44**(3): p. 59.