



Smart Containment with Active Learning (SCALE): Operational Plan

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Updated versions are available at <https://www.cerp.org.pk/pages/covid-19-response>

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For comments, please reach out to us at covidrapidresponse@cerp.org.pk.



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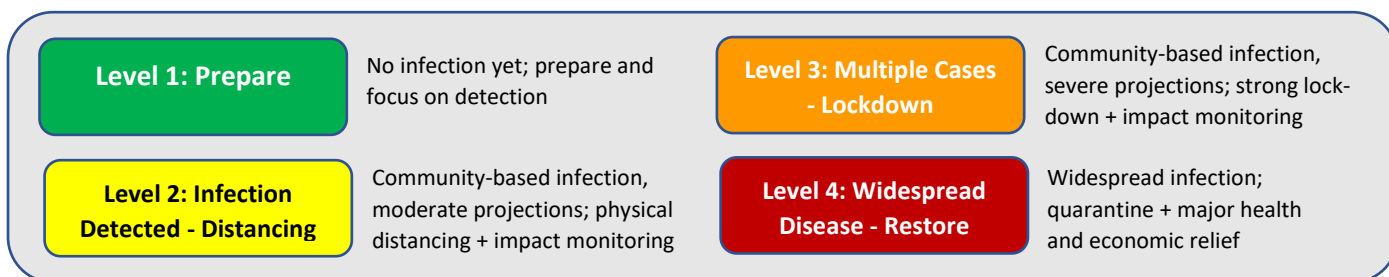
Governments around the world face two incredibly hard choices in responding to the COVID-19 pandemic: **Lockdown** and prevent spread, but risk economic collapse and potentially many dying from non-COVID reasons – *OR* – **start opening up** to minimize the socio-economic fallout, but risk COVID-19 resurgence. We propose a plan that helps make these choices in the most informed, feasible and timely way.

The problem we face is there is little data on potential health & economic impacts to figure out tradeoffs between choices and to design a real-time, effective, & evidence-based response

We propose an Active Learning & Refined Response Approach

The key principles underlying our approach are: 🌀 Data is Critical 🌀 Policy Responses Must Be Data-Driven & Data-Responsive 🌀 Policy Responses Must Vary with Local Conditions 🌀 Community Messaging is Key to Ensuring Voluntary Compliance 🌀 Response must be both Immediate and Sustained 🌀 Partner with on the Ground Implementers to Leverage Existing Capacity

Based on these principles, we have developed a standardized COVID-19 alert system and operational plan which allows for a staged time-varying response with rapid learning and refinement



Depending on which alert Level is declared in a given area, specific measures are outlined for smart testing & data collection, distancing, community messaging & strategic decisions



Smart Testing: Testing strategy & sampling should evolve with the stage as needs vary from symptomatic testing, to contact tracing and testing, to therapeutic & antigen testing



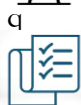
Data Collection: An evidence-based response requires collecting relevant socio-economic and health outcomes data to inform strategy and policies at each stage



Physical Distancing Measures: Blanket lockdowns may not be feasible – adapt distancing strategy to the current situation to contain the virus while minimizing economic & health impacts of lockdown



Community Messaging: Community messaging which is designed with behavioral principles and is responsive to the evolving situation can help promote compliance and trust, and ensure calm



Strategic Decisions: At each stage, decision-makers must plan smartly, leverage existing capacity and build it where & when needed, gather evidence, evaluate impact, and regularly refine their response

This operational plan lays out a district evidence-responsive response strategy that seeks to minimize disease spread and limit adverse socio-economic impact by targeting response to the current & projected level of prevalence in the smallest feasible [area \(S\) within the District \(D\)](#). Each set of actions is associated with a set of [agents](#).

Stages	<p style="text-align: center;">Level 1 – PREPARE <i>No infection identified in District (D)</i></p>	<p style="text-align: center;">Level 2 – INFECTION DETECTED in S</p> <ul style="list-style-type: none"> ● <i>First case identified in area (S) in the District (D)</i> ● <i>Population has low impact and/or low health risk vectors</i> 	<p style="text-align: center;">Level 3 – MULTIPLE CASES in S</p> <ul style="list-style-type: none"> ● <i>Multiple cases identified in area (S) in the District (D)</i> ● <i>Population has high impact and/or high health risk vectors</i> 	<p style="text-align: center;">Level 4 – WIDESPREAD DISEASE in S <i>Widespread disease in area (S) in the District (D)</i></p>
Smart Testing & Data	<ul style="list-style-type: none"> ● Sentinel surveillance ● Syndromic surveillance to screen & test symptomatic patients and people with high impact & health risk vectors ● Establish baseline data on standardized set of key health (service) indicators & mortality 	<p>Level 1 plus:</p> <ul style="list-style-type: none"> ● Contact tracing & testing (required data) ● Testing of front-line workers and high impact individuals ● Syndromic Surveillance Robocalls to focus on infected S's ● Follow-up Phone surveys of infected ● Social mobility data to monitor compliance ● Monitor changes in health indicators 	<p>Level 2 plus:</p> <ul style="list-style-type: none"> ● Expand contact tracing ● Start syndromic surveillance robocalls in adjacent S's ● Survey of recovered 	<ul style="list-style-type: none"> ● Test primarily for therapeutic purposes in infected S ● Surveillance using seroprevalence surveys ● Collect additional data on impact of morbidity and health sector constraints to meet Level 4 needs ● Continue monitoring changes in health indicators, broaden set of health indicators
Physical Distancing Measures	<ul style="list-style-type: none"> ● Standard health practices (washing, masks) ● Protective Organizational & Management practices ● Light physical distancing measures ● District distancing 	<p>Enhance physical distancing by additional measures (on top of level 1):</p> <ul style="list-style-type: none"> ● S-unit distancing ● Isolate confirmed cases, move severe to ICU ● Quarantine contacts ● Enact enforcement & protection 	<p>Implement stronger measures & lockdown with additional measures (on top of level 2):</p> <ul style="list-style-type: none"> ● Move infected S's into full lockdown ● Declare adjacent S's to be in Level 2 ● District Quarantine 	<ul style="list-style-type: none"> ● Consider easing lockdown in S based on seroprevalence survey data (continue physical distancing & self-quarantine for high-risk people) ● Declare Level 3 in adjacent S's
Community Messaging	<ul style="list-style-type: none"> ● Consistent with Physical Distancing measures and Community Messaging principles 	<p>Level 1 plus:</p> <ul style="list-style-type: none"> ● Public Information on Prevalence ● Public Information on Support ● Based on data, communicate messages to support appropriate healthcare seeking behavior 	<ul style="list-style-type: none"> ● Same as Level 2 and expand to entire D 	<ul style="list-style-type: none"> ● Same as Level 3, but emphasize severity ● Emphasize health & relief response ● Special expedited helpline for Level 4 S's
Actionable Decisions	<ul style="list-style-type: none"> ● Regularly monitor the situation & determine alert level ● Prepare contingency plans ● Prepare for changes in healthcare service delivery 	<p>Monitor the situation and refine response:</p> <ul style="list-style-type: none"> ● Based on social mobility data, increase messaging and enforcement if needed ● Use testing data to monitor infection rate & determine alert level ● Use data to assess adverse impacts, including wider health impacts, & target health & socio-economic support ● Adapt healthcare service delivery as needed 	<ul style="list-style-type: none"> ● Same as Level 2, but expand to entire D ● Prepare for expanded medical, food and other needs ● Draw on dedicated external and internal support - e.g. army, volunteers 	<p>Level 3 plus:</p> <ul style="list-style-type: none"> ● Scale up support resources and welfare measures to address morbidity impact ● Ensure Level 4 S's needs are being heard and met

Overall Approach: Target differential, staggered and staged policy response based on three steps:

Gather relevant information/evidence → **Respond** accordingly → **Refine** the response, based on data and evidence on the impact of policy response

The [Smart Containment with Active Learning Policy Proposal](#) describes this approach in detail.

Glossary of Terms Used & Further Details

D = District & S = Smallest geographical unit within district where SOPs can be effectively enforced: The unit of decision making is assumed to be the district (D) and within that we hope to work at the smallest unit, S, where one can effectively quarantine people. S can be Union Council/Village/along natural boundaries in rural areas and separate cities/neighborhoods/societies in urban areas—this should be determined by D officials given their context.

Agents & Partners at District:

Smart Testing & Data		Physical Distancing	Community Messaging, Support	Strategic and Operational Decisions
Public Health & Testing	Data Collection & Analysis			
Health Department	Government IT and Health Departments	District Task Force led by district administration	Local Organizations – Community Organizations, NGOs, Volunteers	Overall leadership and coordination by District Administration supported by Law Enforcement Authorities
Private health clinics, hospitals, labs	Universities, Think tanks, Research Centers, others	Law Enforcement Authorities including Police, Rangers, Army	Citizens	
Existing capacity may be insufficient: draw on other resources (call centers, polio workers, community health workers, students, volunteers e.g. COVID tigers) to meet health sector needs		Government agents at the local level – e.g. Village Health Workers	Government Agencies – PHED, Education, Food, others	
		Community Orgs and Volunteers		Businesses – Essential Services, Economic Activity, etc.

Roles and Responsibilities at tiers of government to support policy response:

- **National:** Provide overall leadership; ensure national level messaging and coordination; enable big data analytics while enacting privacy protection measures; ensure provision of social safety net.
- **Provincial:** Provide leadership and direct management of districts; empower districts and delegate appropriate authority as policy response needs to vary with local conditions, and timely action by decision-makers closest to local information is central to formulating an effective response; build partnerships for data analytics and where possible release data publicly for analysis; declare alert levels across districts; resource health authorities; ensure provision of testing labs, treatment and quarantine facilities at district level, ensure smooth running of essential supplies and functions
- **District:** This is the key unit for decision-making and implementation. Plan, stress-test, implement and refine district contingency plans for each alert level; define and set up smallest feasible local S areas using the criteria and local information, and enable/ensure functioning of S areas; set up testing labs, treatment and quarantine facilities at district level; ensure smooth running of essential supplies and functions
- **Local:** Implement and monitor physical distancing at S under different alert levels.

District Preparation and Implementation Plan: District administration should develop a district plan to prepare for and undertake the actions in the operational plan under each level. This should cover the following: ■ Identify agents and assign responsibilities and authorities ■ Identify what data must be collected and analyzed for decision making ■ Identify gaps in capacity and address those; develop the required support structures and assess what support other players can provide ■ Develop mechanisms to implement, monitor, and enforce compliance with administrative measures such as, physical distancing or organizational and management practices ■ Take actions to mitigate adverse economic impact and supply chain disruptions; plan for social protection and other mitigating measures to monitor and minimize harm from unintended consequences.

Impact and Health Risk Vectors: Impact vector provides a sense of how likely a person is to become infected/infect others. High impact vector individuals are those with a higher number of contacts during the day, with each contact of longer duration and of the kind where infection risk is high. Health risk vector determines the health risk if a person is infected. This is high for the elderly and those with pre-existing health conditions - the simplest measures for these two vectors would be population density (for impact vector) and elderly fraction (for health risk vector). Both measures can use population census - Table 39 - along with a measure of the physical area with Census Block/Mauza as the basic unit but can complement this with cell phone data and qualitative information from local agents like Village Health Workers.

Testing: ■ For testing we are suggesting drive-through testing or remote testing centers where people can call a central helpline and someone from the center then comes to their location. This also requires that logistics have been planned through trained teams (maybe use the "COVID Tigers" task force) and that teams have sufficient PPE. ■ High impact vector individuals (those who interact with many people during the day) are likely to get infected earlier. With limited testing capacity, tests should be allocated in such a way that there are more tests for such groups, allowing for advanced detection and lead time. ■ Wherever feasible, we suggest pooled testing with ideally not more than 5-10 individuals being pooled (this can be revised based on the internal validation results from each lab). The idea is to test people in groups — that is, examine samples drawn from multiple people at the same time. If the test is negative, everyone in the group is considered negative; if it returns positive, then at least one individual has COVID-19. Individuals living in the same household/physical space can have their samples pooled and tested together. If it is determined that the degree of correlation of infection is high within a household, then multiple households may also be pooled together with the highest impact vector individual in each household selected. ■ In Level 4, seroprevalence surveys should begin with serology/antibody testing. A serology/antibody test looks for the presence of antibodies in the blood, which are specific proteins made in response to infections. Antibodies show that people have had an immune response to the infection. ■ Here is the detailed [smart testing strategy](#).

Seroprevalence Surveys: Seroprevalence surveys provide important information on cumulative infection rate in a community (meaning how many people have had the infection to date) and provide key data to forecast the course of the disease. They help answer how many COVID-19 cases may have gone undetected as they were either asymptomatic or too mild, and how quickly the virus will continue to spread in the community. This data can inform practical issues such as when and how to reopen schools and businesses that have been closed. They, however, should not be used as immunity passport currently as we do not have enough information on correlates of protection.

Sentinel Surveillance: Sewage monitoring for COVID-19, by testing sewage samples to detect COVID-19 prevalence. May use the polio network for this since sentinel surveillance is already being done for polio. Identify 2-3 spatially spread out sewage collection points in S area and collect sample by using protocols similar to those for polio environmental surveillance through sewage sampling. This is an experimental approach and will require a pilot before being rolled out on a broader scale. Areas where grid maps of sewerage are available would be required. Take samples and note the GPS location where the sample was taken

Frontline Workers: Individuals who have high likelihood of being infected because they are directly working with infected individuals. These include health workers in public and private (formal and informal) facilities including drug shops, staff in quarantine facilities, exposed bureaucratic staff, emergency response teams, enforcement officials, supply-chain logistics providers, immigration/border officials, public transport workers, retailers, etc.). Frontline workers (FW) can be stratified based on their risk of exposure:

- High-risk exposures refer to FW who have had prolonged close contact (>10 mins) with patients with COVID-19 (beginning 48 hours before onset of symptoms) who were not wearing a cloth face covering or facemask while FW nose and mouth were exposed to material potentially infectious with the virus causing COVID-19.
- Medium-risk exposures: as above, but who were wearing a cloth face covering or facemask while FW nose and mouth were exposed to material potentially infectious with the virus causing COVID-19. Follow up with symptom screen and should only be tested if they develop symptoms.
- Low-risk exposures generally refer to brief interactions (<10 mins) with patients with COVID-19 (beginning 48 hours before onset of symptoms) or prolonged close contact (>10 mins) with patients (beginning 48 hours before onset of symptoms) who were wearing a cloth face covering or facemask for source control while FW were wearing a facemask or respirator. Use of eye protection in addition to a facemask or respirator would further lower the risk of exposure. FW not treating COVID-19 patients will also fall in this category. Follow up with symptom screening and should only be tested if they develop symptoms.

Contact Tracing and Testing for contacts of confirmed cases: Test contacts of confirmed cases in each S in circles of increasing radius, starting with closest/direct contacts. Radius 1: those with whom a person has had extended contact during the past 2 weeks (could be family members or co-workers). Moving outwards in increasing radius, start with Radius 1 and test all; then to one degree removed and test. If there is no infection there, then contact testing may stop; if there is infection, then go to the next radius of contact. In each stage prioritize those who have had the most contact (as determined by frequency and duration of each interaction). An effective [data strategy](#) will be required for contact tracing and, where in-person contact tracing is required, workers must be provided PPE. Conversely, if contact tracing data is easily available (for example using cellphone records) then can start by immediately having all contacts self-quarantine even before testing has started. Start by testing the outer-most radius of contacts and move outwards-in. If the outer radius *has* infection that suggests informational value of testing inner radius contacts is low (since they are likely also infected) so should ask all to continue to self-quarantine. If outermost radius contacts test negative, then move one radius in and repeat the process.

Physical Distancing Measures:

- **Level 1:** Avoid large gatherings > 100 people; Schools open but plan for distance learning, avoid gatherings, assemblies, events; Businesses and shops remain open but emphasize standard health practices and physical distancing; work from home for high health risk/high impact people
- **Level 2:** Avoid large gatherings > 50 people; Close schools, implement distance learning; Restrict all non-essential businesses and shops and production to those that both (i) have small groupings of people (i.e., workers can be put in smaller sub-groups with minimized interaction between them) and (ii) can allow for 6 feet physical distancing; Consider de-densifying industries where feasible (by restricting number and proximity of employees onsite); Implement tele-work wherever feasible for workplaces; Lockdown high risk clusters; discourage movement in and out of S; **NOTE:** Monitor closely and If infection in S starts spreading despite these measures then tighten them all and bring closer to Level 3 measures
- **Level 3:** More towards full lockdown – ban all large gatherings, schools remain closed, all non-essential businesses, shops closed (only basic needs groceries and pharmacies open, encourage deliveries through trained personnel), all non-essential production activity shutdown (some sectors may be directed towards producing medical equipment, e.g., textile, auto); Quarantine District – allow movement in and out only with proper permission and quarantining
- **Level 4:** Continue Level 3 measures but consider easing the lockdown based on results from antigen testing – those who are vulnerable/high risk continue to practice physical distancing.

Protective Organizational & Management Practices:

- **Organizational Safety Protocols:** Develop detailed safety protocols tailored to different occupations/sectors.
- **Working Remotely & Physical Distancing:** Encourage remote work where possible. Avoid large meetings with officers/managers from different agencies present. For unavoidable in-person meetings, ensure that its always the same people going to each meeting. Avoid bringing deputies to meetings to take notes for senior officials. Adopt ROTA system where only certain groups of people come to the office at one time and they never overlap with other groups.

- **Working in Teams:** If working in teams is important, pre-define teams formed at the smallest possible size. Partner people based on specialization and complementarity but also social factors and solidarity. Allow interaction within teams but minimize it across teams. If one member gets infected, the entire team should self-quarantine. Do not re-form teams. Have supervisors only interact physically with each other and front-line workers only with each other.
- **Rewarding Workers and Boosting Morale:** Adopt measures that make workers more productive and less stressed. Delegate as much authority as is feasible but adopt measures for coordination in real time. Celebrate and reward the bravery of workers confronting the crisis on the front lines and those in the background ensuring things keep running. Provide special access to their families to food and essential services. Announce family package for frontline workers.
- **Promoting Efficiency:** Reduce non-essential paperwork and monitoring of frontline staff. Reduce file work in offices. Scan as much paperwork as possible and make it (securely) accessible online. Allow digital signatures to carry legal weight.
- **Redefine Job Descriptions:** Where essential, redefine job descriptions to encourage remote work and online delivery and redefine the new rules and standards by which essential tasks will have to be conducted. Share information packs with the staff on doing their job while staying safe.
- **Maintain Data on High Impact Vector Individuals:** Develop and update lists of staff members with high and low contacts and mobility. Adopt special measures for high impact vector individuals since they face greater risks of getting infected first and infecting others – these include revising team formation and job descriptions, prioritizing use of PPE, contact tracing, limiting physical access and testing.

Quarantine Mechanism: Quarantine is used to restrict the movement of people who may have been exposed to the virus – if they then test positive, they should be isolated; if they test negative, they can be released from quarantine. Quarantine people in immediate radius of infected person immediately; if testing reveals no infection within this group then remove the quarantine restriction; next quarantine people in wider circle of contacts of the infected person; again if testing reveals no infection, remove the quarantine restriction. Whenever possible, encourage patients to quarantine within their homes to prevent draining limited hospital resources. While at home, patients should stay in a private room and use a separate bathroom for 10-14 days. Where families are large and homes are small, to protect family members, put up a screen, or hang a thick cotton curtain from the ceiling to divide the room. If patients walk around, they must do so while wearing a facemask.

Isolation Protocols: Isolation is used to separate sick people from healthy people. In isolation stay at home and separate from all family members by using separate bedroom and bathroom facilities. For large families in small homes, to protect family members, put up a screen, or hang a thick cotton curtain from the ceiling to divide the room. If patients walk around, they must do so while wearing a facemask. Take other measures to prevent home-based transmission: avoid sharing personal items with the infected person, clean all surfaces that are touched often using a detergent and water, the caregiver should not be a high-risk person and should limit their interaction with other household members. If ability to isolate is inadequate at home, provide acceptable and comfortable options for infected individuals to move to isolation facilities should they so desire. If the case becomes severe move the patient to hospital/ICU. Those who fall sick must continue their isolation unless they receive two negative tests in a row, 24 hours apart or they have had no fever for at least 72 hours without the use of medicine, other symptoms have improved, and at least 14 days have passed since their symptoms first appeared.

District Distancing Measures: People within District are not to travel to other Districts with known cases of infection; People entering from other Districts are to self-quarantine for 2 weeks and request a test if they become symptomatic.

District Quarantine: Once a district is quarantined, people can only move into or out of the district with proper permissions. Those doing inter-district travel must self-quarantine for 2 weeks and request a test if they become symptomatic. Supply of goods and services (including abatement goods such as soap and sanitizers) must be ensured.

S-Unit Distancing Measures: In S's where cases have been discovered, add stronger measures which discourage movement into and out of the infected S's; ensure supply of goods & services into infected S places and any issues citizens raise are addressed in a timely manner. Trained teams should be put in place.

Full Lockdown Mechanism: Curfew-like situation, people are not allowed to leave homes unless for emergency situations, household and logistics needs are supplied by approved personnel, trained to take precautions.

Compassionate Enforcement & Protection Mechanisms: ■ Attempt to (lightly) enforce policies by having officials check that these policies are being followed and impose possible sanctions if they are not. ■ Need to ensure that police/enforcement teams are trained to (A) form groups that do not mix, and the moment one person in the group falls sick, everyone is isolated and (B) they are not overly harsh or physically reprimanding people; this is abusive, undermines trust, is not required and may further increase spread of the infection as virus becomes aerosol. ■ The identity of infected persons must not be revealed as they may be at risk. It should also be emphasized that infected people are victims and they are blameless. Make sure there is no law & order situation or threats to infected person or their family. This will also improve policy compliance and self-reporting. This is also important for protecting groups of infected persons from vulnerable groups, for instance the poor and minority groups, which may be subject to being socially ostracized. ■ Reinforce trust in enforcement authorities and the government and maintain popular support by acting, and being seen to act, fairly, transparently and rationally. ■ Forcing people to move against their will may undermine trust and may lead to under-reporting. Therefore, if adequate quarantine/isolation facilities are available in the individual's home, do not force them to leave. If facilities are inadequate, see if they can be supplanted. If this cannot be done, then explain health risks to individual for themselves and others and provide comfortable and acceptable facilities so they willingly relocate.

Scale-up of Medical Resources and Welfare Measures: At Level 4, there needs to be a massive surge in the availability of treatment resources (medical staff, respirators etc. for treatment, perhaps through mobile treatment units) and support measures (welfare, food, economic relief, supply chain logistics) so that people in infected S's are well taken care of and don't have an incentive to try and leave.

Preparation and Contingency Plans: Ensure all relevant actors within and outside government prepare contingency plans; Test preparedness through simulations; Check how effective different communication channels are for sharing information and coordinating within government agencies, across government agencies, between agencies and key players/citizens, etc.; Prepare health and quarantine facilities and ensure PPE and other equipment is readily available; prepare infrastructure and mobilize resources for contact tracing and testing; Prepare plans for continuing essential health facility-based and community-based health services. Engage with the technology sector to find creative solutions for problems such as physical distancing and contact tracing.

Preparation for Changes in Healthcare Service Delivery: In Level 1, prepare plans for continuing essential health facility-based and community-based health services. In Levels 2 and 3, prepare for changes in health service delivery to maintain essential services. For example, more remote or home-based care or primary care facilities can take cases usually treated in hospitals. In Level 4, consider suspension of non-emergency health-facility based care while ensuring minimum resources are maintained for essential health services.

Data to be Collected in addition to Testing data:

- **Levels 1-4 – Syndromic Surveillance through Robocalls/Chatbot:** Call randomly selected numbers (if possible prioritize numbers that show high mobility or physical contact in past 2-3 weeks) and administer survey of symptoms on the phone (this can also be done through robocalls). Here is a [sample survey instrument](#) which will be regularly updated.
 - Are you experiencing any symptoms?
 - Impact vectors questions, such as, how many people live in your household, how many people do you come in contact with on a daily basis and for how long?
 - Health Risk vectors questions, such as, how old are you, do you have any underlying health conditions?
 - Are you aware of your closest testing center?
 - Do you know anyone who has tested positive or is showing symptoms?

- Additional Questions for Levels 2-4:
 - Do you understand the physical distancing regulations and the benefits of those? How are you complying with the restrictions?
 - Other Health/Economic Outcomes that may be impacted by isolation: infant/maternal mortality, employment/income
- **Levels 1-4 – Establish Baseline Data and Monitor Health Indicators:** The set of indicators should provide a snapshot of changes in health service utilization, or delivery of health needs; it should be easy to collate from existing data sources that are considered of high quality and it should be available at the district level. These indicators should capture experiences of different population subgroups such as women, children, migrants, etc. They can be selected based on a rapid review of health issues that were impacted during outbreaks in other countries (for example, Ebola impact on sexual and reproductive health).
- **Levels 2-4 – Follow-up Phone Surveys:** Surveys of confirmed cases as well as random sample in S units with survey questionnaire (economic vulnerability + food insecurity).
- **Levels 2-4 – Social Mobility Data:** Cellphone records, WhatsApp traces, Google’s [mobility data](#), etc., on infected people and infected S’s should be used to monitor compliance with physical distancing rules and should show decreased mobility. For example, cellphone data can [monitor](#) the time spent at home or distance travelled on a given day. Data should, whenever possible, be masked/aggregated to preserve privacy and information about data sources and usage should be transparent.
- **Levels 2-4 – Identifying High impact vector people:** High impact vector individuals are those who interact with many people during the day or have high mobility and are therefore more at risk of being infected/spreading infection.
 - Using CDR Data: (i) People with a lot of interactions per day can be identified by running an algorithm for each phone number by seeing in one week (can use the most recent full week, making sure weekend and weekdays are included) what is the total number of OTHER phone numbers that were in the same physical location as they were in an overlapping 15-30 minute time window – list (phone number & location) of the top 5% percentile in this measure. Can do recursively by giving higher weightage to contacts with higher impact vectors. (ii) High mobility individuals can be identified by running an algorithm to count how many unique towers (i.e., different locations) the person has been at – can refine this over time to possibly weigh locations that are hot spots – provide list (phone & location) of the top 5% percentile in this measure
 - If CDR data is not available, use screening question in surveys to ask who in an area has (i) high contact and/or (ii) high mobility
- **Levels 2-4 – Contact Tracing Data:**
 - **First preference: Through call detail records (CDR) and/or cell phone tower data:**
 - Provide telecom operators with cell phone numbers of infected patients
 - Identify exposed people - identify individuals that were in the same physical location (same tower) during the span of 15 minutes and/or 30 minutes overlapping window in the past 14 days (ideally 3 weeks If this number is not too large; If it is too large, narrow it down further to exposed contacts)
 - Narrow down to exposed *contacts* (if exposed people set too large): In order to do this define contact list (all numbers called by the infected person’s number for the past month); Narrow down list of exposed people to exposed contacts by excluding everyone from exposed people list who are not in contact list
 - **Second Preference:** Actual contact tracing done through in-person surveys/phone calls/robocalls (will capture contact details and work/home location of contacts)
- **Levels 3-4 – Follow-up survey of the recovered to ensure no re-infection or mutation**
- **Level 4 – Focus on impact of morbidity on households; Differential data at S/D level of morbidity – mortality; Hospital / patient data to understand health sector constraints, resource allocation**

Community Messaging & Engagement: Work with key players (public sector, community organizations/NGOs, media houses, social influencers) to develop & disseminate

- **Evidence-based community messaging is key** to keep people informed, promote compliance, encourage good behaviors, and prevent panic
- **Effective Community Messaging:** Maintain trust, promote self-efficacy, share successes, promote social norms, model desirable behavior

- **Educate** people on and operationalize safety: encourage people to wear facemasks, wash their hands frequently, keep distance from others and **ensure safety and calm**, re-assure people that patients will not be punished or held against their will and that they are victims. Celebrate and reward local heroes - public employees, private/NGO workers and citizens who have delivered special services.
- **Destigmatize infected individuals and groups**: Emphasize that infected individuals are victims who should not be blamed. Promote social cohesion and guard against any tendency to blame any specific communities like “outsiders”, “travelers”, the poor and minorities for being disease vectors.
- **Celebrate public service**: Acknowledge those in government and communities who are on the frontlines of dealing with the crisis. Celebrate anyone who has performed valuable service to the society.
- **Levels 2-4: Public Information on Prevalence**: Keep people informed of the prevalence of infection but do not reveal the identities of infected people, to ensure their safety. Reinforce that infected people are victims and should not be blamed. Inform people not to travel to infected S’s.
- **Levels 2-4: Public Information on Support**: Emphasize government preparedness, support and welfare, and mitigation measures being taken. If people feel they are taken care of, they will not panic or have the incentive to leave.
- **Levels 2-4: Public information on healthcare seeking**: Provide clear messages to optimize healthcare seeking behavior. For example, if data shows that people are avoiding vaccination unnecessarily, or seeking emergency care too late, reassure them and provide guidance on where they can seek care with minimum risk of infection. If people are visiting health facilities unnecessarily, provide information about alternative ways to access information.

SCALE Resources

The documents described below have been produced as part of SCALE. These documents describe the SCALE approach and serve as implementation guides. They are living documents which are updated periodically based on our learnings.

CORE Documents that describe the overall approach:

- [SCALE Operational Plan](#)
- [SCALE Policy Proposal](#)

ANCILLARY Documents that provide additional details on specific topics:

- [Smart Testing Strategy](#)
- [Testing & Tracing Survey Instrument](#)

SCALE Operational Plan

The SCALE operational plan lays out an evidence-responsive COVID-19 response strategy that seeks to minimize disease spread and limit adverse socio-economic impact by targeting response to the current & projected level of prevalence in the smallest feasible geographical units. This plan outlines, with color-coded levels/grades, policy responses which vary with level of disease prevalence.

Dr Tahir Andrabi (LUMS / Pomona), Dr Matt Andrews (Harvard), Dr Ali Cheema (LUMS), Dr Jishnu Das (Georgetown / Center for Policy Research), Dr Adnan Q. Khan (LSE), Dr Mishal S. Khan (LSHTM), Dr Asim I. Khwaja (Harvard), Dr Farhan Majid (University of Georgia), Dr Aryn A. Malik (Yale), Anum Malkani (CERP), Dr Tyler McCormick (University of Washington), Dr Saad B. Omer (Yale), and Maroof A. Syed (CERP).

- Version 1: 16 April 2020
- Version 2: 5 May 2020
- Version 3: 28 May 2020

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SCALE Policy Proposal

The SCALE policy proposal describes the overall Smart Containment with Active Learning policy approach. This is intended as a sustained policy framework that adapts to the changing nature of the infection in a given area.

Dr Tahir Andrabi (LUMS / Pomona), Dr Matt Andrews (Harvard), Dr Ali Cheema (LUMS), Dr Jishnu Das (Georgetown / Center for Policy Research), Dr Adnan Q. Khan (LSE), Dr Mishal S. Khan (LSHTM), Dr Asim I. Khwaja (Harvard), Dr Farhan Majid (University of Georgia), Dr. Aryn A. Malik (Yale), Anum Malkani (CERP), Dr Tyler McCormick (University of Washington), Dr Saad B. Omer (Yale), and Maroof A. Syed (CERP).

- Version 1: 16 April 2020
- Version 2: 5 May 2020
- Version 3: 28 May 2020

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Smart Testing Strategy

The Smart Testing Strategy document lays out the SCALE testing strategy, which is designed to establish the level of prevalence in each identified geographical unit. The strategy includes syndromic and sentinel surveillance, contact tracing and testing, and frontline worker testing.

Dr Ali Cheema (LUMS), Dr Jishnu Das (Georgetown / Centre for Policy Research), Dr Adnan Q. Khan (LSE), Dr Asim I. Khwaja (Harvard), Dr Farhan Majid (University of Georgia), Dr Aryn A. Malik (Yale), Dr Tyler McCormick (University of Washington), Dr Saad B. Omer (Yale), Omer Qasim (CERP), Maroof Syed (CERP).

- Version 1: 28 April 2020
- Version 2: 19 May 2020

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Testing & Tracing Survey Instrument

The testing and tracing survey is designed to implement the testing strategy. It comprises the following modules: s-grid identification, respondent identification and testing, travel history, clinical history, pool testing follow-up, confirmed positive case(s) follow-up and contact tracing.

Dr Ali Cheema (LUMS), Dr Jishnu Das (Georgetown / Centre for Policy Research), Dr Adnan Q. Khan (LSE), Dr Asim I. Khwaja (Harvard), Dr Farhan Majid (University of Georgia), Dr Aryn A. Malik (Yale), Dr Tyler McCormick (University of Washington), Dr Saad B. Omer (Yale), Omer Qasim (CERP), Maroof Syed (CERP).

- Version 1: 20 May 2020

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