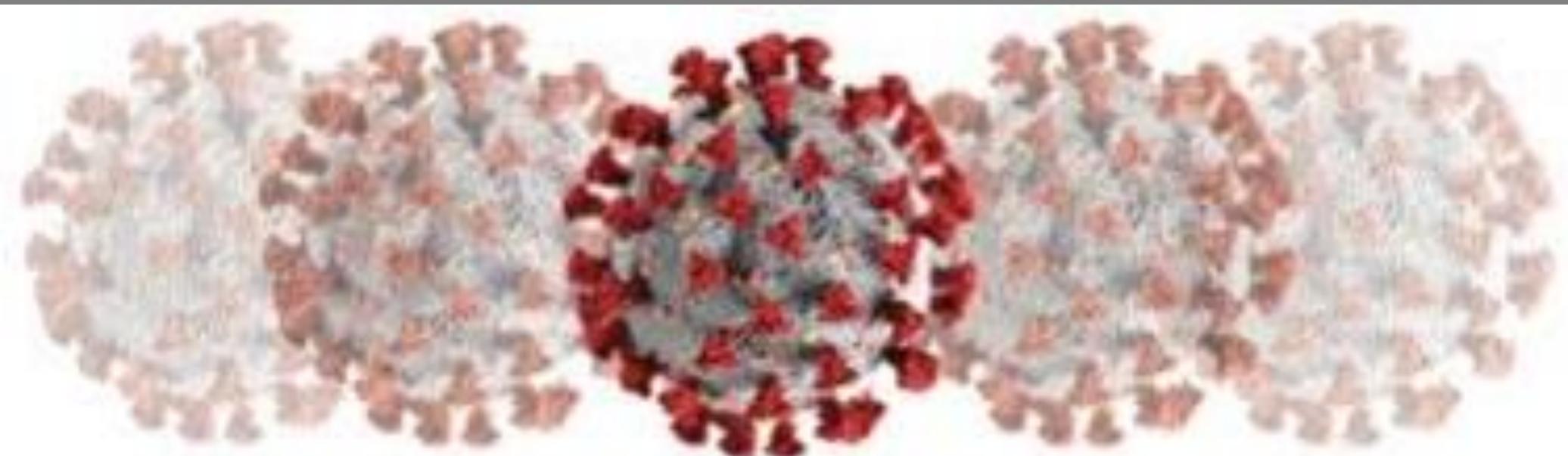




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COVID-19: Economic Considerations for Moving Beyond Lockdowns in Developing Countries

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Indicators can help leaders measure performance of their Covid-19 response efforts



Strategic objectives

- ✓ Contain the spread of the virus – **save lives**.
- ✓ Minimise the economic impact on the country and within a wider systemic crisis precipitated by the global pandemic – **save livelihoods**.

... require situational awareness

- ✓ Leaders at all levels of the response need to know what the scale, trajectory and impact of the virus is on lives and livelihoods.

... to make informed decisions

- ✓ This will help identify what to prioritise at each stage of transmission; what interventions could/should be devised to address these priorities; and the resources required, gaps and factors within or outside the government's control.

.. that are properly implemented and evaluated against success.

- ✓ This equips leaders to ensure the right actions are being taken at the required speed and quality of delivery they need to **save lives** and **livelihoods**.
- ✓ ... And to monitor whether objectives are being achieved – including when to change priorities and focus on new ones as the epidemic changes.



Heads of state should have a DAILY dashboard tracking key indicators to inform crisis decision making, in addition to more detailed tracking conducted by crisis management teams.

Key signals that overall transmission and effects of Covid-19 can be brought under control include:

Key

-  Disease outcome
-  Response capacity/effectiveness

Steadily decreasing number of new cases*



Sufficient numbers of trained staff and PPE, even if cases double



Decreasing numbers of cases from unknown chains of transmission



Decline in deaths for at least 14 days



Hospital capacity could manage doubling of cases



Non-Covid health services are able to deliver usual service levels safely



Decreasing health care worker infections



Contacts are identified for all positive cases with at least 90% follow-up



Adequate socio-economic measures are in place to mitigate the initial shock or to promote the stimulus



Key indicator dashboard and targets for heads of state

These indicators can be adapted to country-specific policies and stages of the outbreak



INDICATOR		TARGET
1 Epidemiological	 <ul style="list-style-type: none"> # of new cases by location (e.g. district), age and gender Current epidemiological modelling projections Other data sources on # suspected cases 	All reducing towards zero
2 Surveillance	 <ul style="list-style-type: none"> % of cases that have come from contact lists % of cases that have a probable known transmission source 	<ul style="list-style-type: none"> 100% 100%
3 Isolation	 <ul style="list-style-type: none"> % of contacts/high-risk cases that are isolating for 14 days 	<ul style="list-style-type: none"> 100%
4 Diagnostics	 <ul style="list-style-type: none"> % of people who need to be tested being tested # Test kits (including reagent) available, by facility 	<ul style="list-style-type: none"> 100% within 24hrs minimum <i>Depends on needs assessment</i>
5 Case management/ treatment	 <ul style="list-style-type: none"> % of medical facilities with adequate PPE, plus seven-day projections Treatment capacity (ICU beds, ventilators) expansion plan on track 	<ul style="list-style-type: none"> 100% <i>On track per national plan</i>
6 Comms and social mobilisation	 <ul style="list-style-type: none"> Survey results on community willingness to social distance 	<ul style="list-style-type: none"> Trending towards 100% understanding and acceptance
7 Psychosocial support	 <ul style="list-style-type: none"> % of target population receiving psychosocial support 	<ul style="list-style-type: none"> 100%
8 Recovered patients	 <ul style="list-style-type: none"> % of survivors registered 	<ul style="list-style-type: none"> 100%
9 Socio-economic measures	 <ul style="list-style-type: none"> % of quarantine households that have essential supplies delivered % of announced social protection measures implemented 	<ul style="list-style-type: none"> 100% 100%
10 Logistics for frontline responders*	 <ul style="list-style-type: none"> # of frontline responders (HCW, surveillance, etc) receiving pay and benefits on time (transportation, phone top-up, housing, etc.) 	<ul style="list-style-type: none"> <i>Depends on needs assessment</i>

*Crosscutting; addressed in the different pillars in the CM indicators

These key guiding questions must be tracked across input, output and outcome indicators by crisis teams and fed into leaders' dashboards



- 1 **Epidemiological:** How is the disease spreading?
- 2 **Surveillance:** Are we tracking each case and keeping track of the chains of transmission?
- 3 **Isolation:** Are those at high risk of having contracted the disease being isolated from others?
- 4 **Diagnostic capacity:** Are we able to test cases quickly so we know who is positive or negative?
- 5 **Case management and treatment:** Are we able to give hospital care to all that need it, and protect health workers?
- 6 **Communications and social mobilisation:** Are communities following the correct measures to prevent the spread? Are certain measures/messages proving effective?
- 7 **Psychosocial support:** Are we providing sufficient psychosocial and legal support to target communities, including those in quarantine/isolation, children, HCWs?
- 8 **Recovered patients:** Are we keeping track of recovered patients so we can find them for medical and support purposes in the future?
- 9 **Socio-economic measures:** Are we implementing adequate socio-economic measures to mitigate the initial shock or to promote the stimulus?

a. **Input indicators** represent the resources and activities which the response deploys. The response has full control over these.

b. **Output indicators** represent the direct results of those activities and resources. The response has reasonable control over these.

c. **Outcome indicators** represent the extent to which the outbreak is being controlled. The response only has limited control over these due to many external factors and unknowns remaining on Covid-19.

List of indicators mapped against the key guiding questions to be tracked by crisis management teams (1/3)



	Input indicators	Output indicators	Outcome indicators
1. How is the disease spreading?	<ul style="list-style-type: none"> N/A (This is an outcome only question) 	<ul style="list-style-type: none"> N/A (This is an outcome only question) 	<ul style="list-style-type: none"> # of new cases by location (e.g. district), age and gender # of new deaths by location Death rate: Confirmed cases -> death; Hospitalised cases -> death; ICU/intubated cases -> death Current epidemiological modelling projections High-risk areas for increased transmission (based on data around population mobility, e.g. mobile data) Other data sources that supplement unreliable confirmed cases data, e.g. national hotline alerts, health facility alerts, community surveillance/CHWs
2. Are we tracking each case and keeping track of the chains of transmission?	<ul style="list-style-type: none"> Number of trained contact tracers, by geography (e.g. district) Number of vehicles/transport means for contact tracers Number of surveillance workers trained and active # of contact tracers receiving pay and benefits on time 	<ul style="list-style-type: none"> % of confirmed cases that have had all contacts traced % of contacts on contact lists who are traced (contacted, given instructions, etc) % of communities covered by surveillance activities 	<ul style="list-style-type: none"> % of cases that have come from contact lists % of cases that come from response surveillance activities in the community % of cases that have a probable known transmission source % of new cases that are imported vs local transmission
3. Are those at high risk of having contracted the disease being isolated from others?	<ul style="list-style-type: none"> Are national isolation rules in place and communicated? Health screening in place at land, sea and air borders/ports # of equipped and staffed isolation beds/facility capacity Utilisation of isolation beds % of isolation beds established compared with national bed plan 	<ul style="list-style-type: none"> % of new arrivals at ports/borders with suspected high-risk of having Covid-19 that are isolated % of contacts of known cases/high-risk people that are in isolation % of total isolation in supervised vs self-isolation 	<ul style="list-style-type: none"> % of cases coming from contact lists/isolated people

Note: Indicators need to be adapted to the specifics of the response policy in each country, and they should be consulted on with relevant technical experts.

List of indicators mapped against the key guiding questions to be tracked by crisis management teams (2/3)



	Input indicators	Output indicators	Outcome indicators
4. Are we able to test cases quickly so we know who is positive or negative?	<ul style="list-style-type: none"> ▪ % of required test kits (including reagent) ordered ▪ # test kits (including reagent) available, by facility ▪ Number of vehicles for delivering test kits ▪ % of lab capacity expansion on track compared with national target (over certain time period) ▪ # trained lab technicians ▪ # of lab technicians receiving pay/benefits on time 	<ul style="list-style-type: none"> ▪ # of tests deployed per 100,000 of population (per day, in total) ▪ % of samples that provide a result back to the issuers (e.g. medical facility) ▪ % of people who need to be tested being tested (based on country policy) ▪ % of suspected cases that are tested ▪ Laboratory capacity utilisation ▪ Future lab utilisation based on epidemic projections and plan to ramp up capacity ▪ Speed of lab result turn around time 	<ul style="list-style-type: none"> ▪ # number of beds occupied due to delayed test results beyond result turnaround time* (<i>Depends on national policy. If national policy is for people to be isolating and getting tested at home, then they won't be taking up beds.</i>) ▪ Average # of days between testing and returning to work for HCW who tested negative
5. Are we able to give hospital care to all that need it, and protect health workers?	<ul style="list-style-type: none"> ▪ # of ambulance vehicles available ▪ # of ambulance crews trained in IPC and equipped ▪ # of treatment beds ▪ # of oxygen tanks/ventilators compared to national targets (or % ICU bed capacity compared to national target) ▪ % of HCWs trained in coronavirus care – especially oxygen therapy ▪ % of medical facilities that have had IPC training and SOPs in place ▪ % of medical staff that have had IPC training ▪ # of PPE available per health care worker ▪ % of PPE procured against national plan and projections ▪ # of HCWs receiving pay/benefits on time 	<ul style="list-style-type: none"> ▪ % treatment bed utilisation, plus three-week projections ▪ % of ventilators used/ICU bed utilisation, plus three-week projections ▪ % of medical facilities with adequate PPE, plus seven-day projections ▪ Treatment capacity (ICU beds, ventilators) expansion plan on track 	<ul style="list-style-type: none"> ▪ # of health-care worker infections ▪ % of cases that needed ventilation/oxygen that received it

Note: Indicators need to be adapted to the specifics of the response policy in each country, and they should be consulted on with relevant technical experts.

List of indicators mapped against the key guiding questions to be tracked by crisis management teams (3/3)



	Input indicators	Output indicators	Outcome indicators
6. Are communities following the correct measures to prevent the spread?	<ul style="list-style-type: none"> National social distancing policies in place Communication activities to share news on the outbreak and response Community mobilisation strategy Baseline survey of knowledge, attitudes and behaviours 	<ul style="list-style-type: none"> Survey results on community understanding of means of preventions of the disease Survey results on community willingness to social distance Other feedback mechanisms on community behavioural change 	<ul style="list-style-type: none"> Rate of use of public transport/mobility % of people whose mobile phone data shows them moving more than permitted by national policies % of cases in an isolation/quarantine/treatment facility that report having isolated from contact/socially distanced in the past week
7. Are we providing sufficient psychosocial and legal support to target communities, including those in quarantine/isolation, children, HCWs?	<ul style="list-style-type: none"> % of target groups covered by psychosocial and legal support 	<ul style="list-style-type: none"> Legal support to abused women/children in isolation % of affected children receiving psychosocial support % of frontline responders with access to psychosocial support 	<ul style="list-style-type: none"> # of incidents related to lack of access to adequate support
8. Are we keeping track of recovered patients?	<ul style="list-style-type: none"> National survivor register established with proper data protection 	<ul style="list-style-type: none"> % of survivors registered 	
9. Are we implementing adequate socio-economic measures?	<ul style="list-style-type: none"> % of quarantine/isolated communities/households covered by a food and essentials distribution plan Resource available to implement socio-economic measures (amount needed/secured) 	<ul style="list-style-type: none"> % of quarantine/isolated households that have essential supplies delivered % of announced social protection measures implemented % of announced fiscal policy measures implemented 	<ul style="list-style-type: none"> # of incidents related to lack of access to essential food, water etc

Note: Indicators need to be adapted to the specifics of the response policy in each country, and they should be consulted on with relevant technical experts.

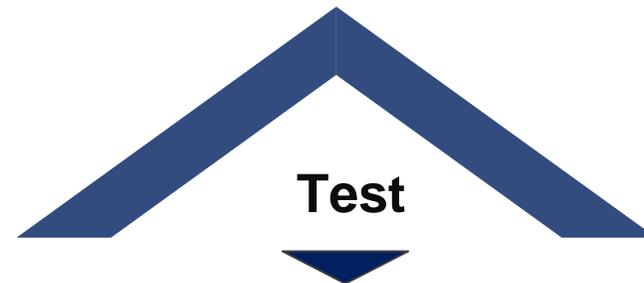
The indicators in this document are suited to the suppression phase of the response but can be adjusted to each country's particular circumstances



Cushion peak pressure on the health care system



Stop the contagion



Key questions to answer

Early detection

- How good are your early warning and systems? (Screening, mandatory quarantines etc.)
- Are you isolating and monitoring index cases and testing their contacts?
- Is the public educated of the risks?
- Are hospitals and staff trained and equipped?

Containment

- How good is your contact tracing?
- Are you testing and isolating contacts?
- How well-informed is your public and how prepared are your general health-care facilities?
- Are you ramping up quickly enough?

Control and mitigate

- Are you finding and treating enough cases before they die?
- Are people changing their behaviours?
- How well are you able to cope with rising numbers?
- Have you introduced lockdowns or stay-at-home measures?
- What are the effects and how are you mitigating them?
- How is the country coping with the non-medical impact of coronavirus?

Vigilance

- Are all your cases from known lists or sources?
- Is every contact being tested?
- Are 'silent' areas of your response still performing and ready for surprises?
- Is the public becoming complacent?
- What is your recovery/normalisation plan?

Common pitfalls in selecting and tracking indicators



Too many in number

- Each level of leadership, implementing agency and command needs different sets or combinations of indicators.
- Unnecessary indicators can overburden response staff and overwhelm decision makers.

Complicated indicators

- Some basic indicators are crucial and cannot be ignored, e.g. number of confirmed cases or turnover of basic but essential medical kit.
- Not everyone needs every indicator, but each area has a set of basic ones they cannot do without.
- If something is crucial for your success, keep an eye on it. Don't assume it is fixed.

Rigid indicators

- Each stage of the response presents a number of questions leaders must seek to answer in order to meet their objectives.
- This should determine the indicators they collect or report against.
- Indicators must change as the stages of the response change.

Focusing on information that no longer matters

- As the needs of the response change, so must the indicators used to answer the questions they pose.
- Some may still be recorded, but reported less frequently or not at all.

No “ground truth on data”

- Each area of the response – technical, coordination or support – will own (agree and collect) some indicators.
- But they must all agree who collects what, and how their data is reported and shared.

Relying too much on the usual data sources

- You need to be inventive in deciding *where* to get the inputs you need. Maybe the alert centre had a glitch and you've lost death calls, but can funeral directors or cemetery managers help?
- It also important to cross reference sources of inputs for your indicators so you know when there is misreporting.



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Annex: Data Collation Tools/SOP and Case Study



WhatsApp API

- Allows users to deploy two-way semi-automated conversations at scale.
- Engaging, rich content and real-time conversations with large groups of users via mobile.
- Solutions available include WHO Covid-19 HealthAlert, a service by Turn.io (built on WhatsApp API)
- Works on any phone that can use WhatsApp, including some feature phones

Unstructured Supplementary Service Data (USSD)

- Two-way, real-time, interactive conversations with users without access to internet. USSD is affordable and easy to deploy at scale.
- Governments could partner with an MNO or existing digital health service provider to quickly develop a solution.

Surveying tools: Commcare, SurveyCTO, KoBoToolbox

- Mobile surveying tools can collect and track more sophisticated, highly interactive data sets over longer periods of time.
- Governments could use such tools to quickly deploy communications around behavioural change or knowledge, attitude and perception surveys; allowing them to collect rich data which could be used in evaluating when to start or stop quarantine measures.



Radio-frequency identification (RFID) tagging

- RFID devices can be used in health centres to track patient and equipment movement and monitor much-needed inventory.
- Relatively low tech; easily allow health centres to forecast consumption and support the deployment of resources in a timely manner.

IoT Sensor Systems

- Potential to support tremendous growth in life-changing innovations; connected devices allow for huge advances in automation and monitoring in health-care, reducing operational costs, waste and errors, through real-time data.
- Sensor systems in high-risk medical environments can collect data to help understand movement, equipment conditions and user experience.
- Proven to improve operational efficiency. Governments could monitor health-system capacity across countries, giving real-time access to information on conditions, people flow, inventory storage conditions and even allow for predictive maintenance of life-saving equipment.

Case study from Turkey: Using RFID technology to monitor and manage over 200,000 assets at a health centre



Case study: Using RFID technology to manage over 200,000 hospital assets

Implementing partners: CISPER, Turkish Ministry of Health, Borda Technology.

- ❑ Mersin Healthcare Campus has a huge asset inventory; over 200,000 items spanning across a 230,000m2 site in multiple zones and on multiple floors. The use of IoT and RFID tracking has made this inventory manageable, improving operational efficiency, enhancing asset utilisation and increasing knowledge on inventory numbers of disposable items.
- ❑ To manage these assets, RFID tags were used. RFID is radio-frequency identification technology which is used to automatically identify and track the objects that are 'tagged'. RFID tags can come in the form of cheap, single-use stickers, or more robust 'active' devices that are powered and can last for years. This meant that there were suitable tracking solutions for a variety of assets, whether it was for keeping track of the number of disposable gloves left in storage, or the real-time location and condition of life-saving apparatus. The tracking solution deployed included heavy-duty UHF RFID tags, as well as fixed (passive) readers, handheld (active) readers and mobile computers; when a tag moved past either a passive or active reader, item details were recorded and information was sent to a central database to be visualised on the mobile computers, allowing for real-time updates of inventory status and location.
- ❑ Zonal movement data was used to track and alert on the movement of high-value assets, people and access to secure locations. To do this, passive RFID readers were placed at different zone entry and exit points, creating 150 zones in the hospital. With tags and readers in place, the hospital deployed Borda Technology's Lighthouse software platform; registering the location of all readers and tagged assets, for easy visualisation and alerting of hospital staff.
- ❑ By using IoT and RFID asset tracking, the once almost impossible task of monitoring hospital asset inventory can now be done accurately, in less than a day. This helps with forecasting orders of drugs and disposable items, as well as real-time locating of equipment in emergency situations.
- ❑ While IoT can sound complex and costly, proven and affordable solutions are available in a number of African markets; it would not be unfeasible to deploy a similar system to the one above, saving lives and helping predict health-care capacity.



Sample (Manual) Report Gathering and Analysis SOP:

Structure and flow of information between the district/region response leaders and the national command centre/EOC situation room



- **Each district and partner organisation is asked to nominate a data lead**, who will serve as the point of contact for the situation room.
- **The data gathering team at the situation room will consist of four groups of people:** district liaison officers, pillar/cluster liaison officers, data analysts and data entry.
- **The district and pillar/cluster liaison officers will circulate a template for daily reporting to the data leads** in the districts, partner organisations and the national call centre. The template contains a number of key performance indicators (KPIs) which need to be updated daily.
- **The data leads are asked to send the completed template to the situation room by xx:xx hrs every day.** If there is no reliable email connection, data leads are asked to call their liaison officer at the situation room and report the numbers by telephone but will be required to still send the update electronically at a later time to enhance accountability.
- Where information is received by telephone or in hard copy, **the liaison officer receiving the information will enter the data electronically.**
- **The district or pillar liaison officer in the situation room will review the data received, and send requests for clarifications and corrections to the data lead by xx:xx hrs the following day.** The data lead should reply to those requests by xx:xx hrs that day.
- **Some data, especially from partners, will be gathered weekly, rather than daily.** The liaison officer in the situation room will circulate separate templates for these data. The deadline for returning them is xx:xx hrs on a specific day of each week, covering the last seven days.
- **For weekly data, the liaison officer in the situation room will review the data received, and send requests for clarifications and corrections to the data lead by xx:xx hrs on Saturday,** the day after the data is received. The data lead should reply to those requests by xx:xx hrs that day.
- **Large amounts of manual data entry (for example, in setting up a new system) will be carried out by a data entry clerk.** The data entry clerk will make a note on the file when the data entry is completed to prevent duplication.
- **The situation room should seek to develop a web-based tool that will replace the data-gathering procedures explained above.** Until this tool is in operation, the system described above will remain in place.