EXITING THE COVID-19 LOCKDOWN: A ROAD MAP FOR ACTION
After weeks of strict social distancing measures and lockdown, governments and citizens around the world are eager to relieve their communities of the restrictive measures in place. The main concern is the risk of resurgence of the epidemic. Observational and modelling evidence reveal that premature and sudden lifting of interventions could lead to an earlier secondary peak, which would probably incur both marginally higher health and economic loss, compared to pre-relaxation level (Prem et al., 2020; Leung et al., 2020). A modelling study conducted in Harvard found that lifting social distancing measures all at once could just delay the peak and make a second surge in infections more severe. The study concluded that a single period of social distancing measures will not be sufficient, and that sporadic periods of social distancing may be needed until 2022 to prevent new surges in infections (in the absence of vaccines) (Kissler et al., 2020). Another modelling study conducted in India found that a three-week lockdown is insufficient to prevent a resurgence, instead, suggesting protocols of sustained lockdown with periodic relaxation (Singh et al., 2020).

**PREAMBLE**

The world is currently witnessing the worst public health crisis in recent history, with COVID-19 pandemic affecting 2,405,325 people, and resulting in 164,930 deaths around the world (as of April 20th 2020) (WorldOMeter, 2020). With no pharmaceutical treatments available, many countries have implemented strict social distancing measures and introduced lockdowns to control COVID-19. These measures have been necessary in substantially reducing the epidemic growth and transmissibility of the virus (Leung et al., 2020; Prem et al., 2020) and have saved thousands of lives (ECDC, 2020). However, they come at a high economic and social economic cost, creating huge shocks to the economy and disrupting the functioning of society and people’s daily lives (Anderson et al., 2020).

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The guidance document is divided into three interrelated phases:

- **READINESS PHASE**
  What needs to be in place before restrictions can be lifted?

- **INITIATION PHASE**
  What are the requirements for an effective exit strategy?

- **IMPLEMENTATION PHASE**
  Road map to easing lockdown

THE DOCUMENT CAN BE ADAPTED BY COUNTRIES TO DEVELOP AND REVISE THEIR EXIT STRATEGIES INCLUDING IMPLEMENTATION PLANS.

These are presented below in the form of a checklist. It is worth pointing out there is no consensus or golden standard when it comes to the threshold level.

**EPIDEMIOLOGICAL CONTROL**
- Countries are beyond the “peak” of infections (spread of disease has significantly decreased and stabilized)
- Effective reproduction number (i.e., how many people the average infected person infects), $R_0 < 1$
- Sustained decline in documented cases for at least 14 days (without decreasing testing capacity)
- Downward trajectory of positive tests as a % of total tests within a 14-day period (flat or increasing volume of tests)
- Slower doubling rate over time (i.e., how many days it takes for the number of cases to double).
- Sustained decrease in number of new infections, hospitalizations and patients in intensive care

**SUFFICIENT CAPACITY IN HEALTH CARE FACILITIES**
- Hospitals are capable of safely treating all patients who need hospitalization without resorting to crisis standards of care (areas with hospital bed capacity near 100% are not yet ready to reduce lockdown restrictions)
- Risk of importing new cases can be managed
- Number of hospital beds (including intensive care unit (ICU) beds are adequate
- Occupancy rate for ICU does not affect ability to surge ICU capacity
- Sufficient stocking of medical and personal protective equipment, such as ventilators, testing kits and face masks (for primary and secondary care workers)
- Availability of primary care structures as well as adequate staff with appropriate skills to extend service delivery to the community (including caring for patients discharged from hospitals or maintained at home) and to engage in efforts to lift restrictions
- Guaranteed access of vulnerable populations (poor, refugees, under-privileged) to care for COVID-related conditions (prevention, management, etc...)
Actions to relax confinement should only be taken if the following conditions are met:

- Spread of the disease has significantly decreased and stabilized
- Health care facilities have sufficient capacity to safely respond to future surges
- Appropriate testing and tracing capacity
- Preventive measures could be sustained at scale

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**MASSIVE TESTING AND CONTACT TRACING CAPACITY**

- Ability to conduct widespread diagnostic testing for all people with COVID-19 symptoms including health care workers and workers in essential roles as well as those at higher risks of exposures contracting or transmitting the virus. While there is no gold standard when it comes to the number of tests per population, Harvard experts recommended a minimum of 152 tests per 100,000 people each day (Collins, 2020)
- Ability to deliver quick turnaround of test results for all suspected cases (ideally within 24 hours)
- Ability to conduct active monitoring of confirmed cases
- Ability to swiftly trace, test and quarantine every contact of confirmed cases
- Ability to isolate and treat every case effectively (at hospital or home)
- Ability to minimize hot spot risks in vulnerable places (e.g. nursing homes, crowded camps)
- Availability of secure data sharing to support surveillance and enable rapid case-based interventions
- Availability of a robust sentinel surveillance system that routinely monitors for infection among samples of the population (asymptomatic cases) to enable early identification of small outbreaks

**SUSTAINED PREVENTIVE MEASURES AT SCALE**

- Adequate protective items are available for the general public
- Preventive measures are in place in workplaces, schools and other essential places.
- Communities are fully educated, engaged and empowered to transition and adapt to a new normal
ALTHOUGH MANY ASPECTS OF COVID-19 INFECTION ARE STILL UNCLEAR AND REQUIRE ACTIVE RESEARCH, INFORMATION ON THE NUMBER OF CASES AS WELL AS THE TRANSMISSION AND SEVERITY OF THE VIRUS WITHIN A GIVEN COMMUNITY IS IMPORTANT TO ASSESS CURRENT AND FUTURE IMPACT OF THE VIRUS, HENCE, INFORM AN APPROPRIATE SET OF RESPONSE TO THE EXIT STRATEGY.
DEFINITIONS

**Number**
- Number of people infected and or/unwell in communities across the country

**Transmission**
- Basic reproduction number (R0) in the country
- Extent of asymptomatic transmission
- Extent to which children are transmitting infection
- Positivity rate (i.e., proportion of all samples tested that are positive).
- Doubling rate (i.e., how many days it takes for the number of cases to double).

**Severity**
- Case fatality risk (CFR) in the country
- Severity risk factors: extent to which CFR may be higher for older people and for persons with multi-morbidity
FOR A MORE EFFECTIVE EXIT STRATEGY, COUNTRIES SHOULD ALSO STRIVE TO ENSURE THE FOLLOWING ELEMENTS

→ Establish an exit lockdown task force

→ Improve infrastructure and capability for testing:
  
  • Develop and scale up COVID-19 diagnostic capacity, accessible for all symptomatic people or those in close contact with confirmed cases as well as all risk groups and caregivers of vulnerable populations

  • Activate community-based care approach, leveraging the vast network of primary healthcare centers, public dispensaries and decentralized testing facilities as nodes for rapid testing, surveillance, isolation and clinical management of mild cases while referring more critical cases to designated hospital facilities

  • Set up adequate testing schemes, specifying which combination of tests should be carried out at what stage and prioritizing test application (e.g. health workers, people who return to their workplace, elderly at care homes, etc.). The tests applied should be of an acceptable quality.

  • Create a framework for contact tracing and warning with the help of mobile apps that warn citizens of an increased risk due to contact with a person tested positive for COVID-19

  • Build data infrastructure for rapid sharing of results

→ Conduct mass testing to assess the extent of transmission rate in the community

→ Develop an exit lockdown strategy, discussed and agreed with all key stakeholders including governments, private sector, businesses, municipalities and the general public
Put in place a clearly coordinated system to implement and monitor the exit strategy, that involves all concerned stakeholders from both public and private sector within and beyond health sector.

Establish mechanisms to collaborate with municipalities and community leaders to:

- Support translating high-level exit strategy into practical measures that can be implemented and monitored at the local community level as well as reinforce compliance among community members.
- Map who has the capacity to meet which basic needs of vulnerable populations (food, health, shelter, water, sanitation and/or mental health support), coordinate, and clarify roles and responsibilities.
- Develop community support mechanisms so that people who are asked to remain at home or are sick during the pandemic can have food, medicines, childcare, and emotional support.

Develop a well-coordinated communication strategy to:

- Educate, engage and inform the public and media about the exit lockdown strategy; manage expectations; and reinforce the importance of solidarity including the need to comply with the exit strategy.
- Communicate government plan to ease economic losses on affected populations and sectors, revive the economy, and support the country as it gradually exits the lockdown.
Once countries fulfill the above conditions, they can proceed to ease certain restrictions. In the absence of scientific consensus on how best to proceed with exiting the COVID-19 lockdown, countries need to implement their own exit strategies, using a step-wise and phased approach to ease restrictions on movement, travel and work (European Commission, 2020; WHO 2020).

Action should be gradual, as measures should be lifted in different steps. Surveillance will be essential to quickly identify any increase in cases in the country following the lifting of measures. Governments will need to constantly reevaluate the implementation of these measures based on available surveillance data, and be ready to adjust their approach over time according to the epidemiology of local, national, and global spread.

We present a road map for easing lockdown that builds on reports studies and experiences of other countries (European Commission, 2020; WHO General Director, 2020; Gottlieb et al., 2020; Barcelona Institute for Global Health, 2020; Wain et al., 2020; Opening up America Again, 2020; Heath, 2020; Ministry of Health, 2017; Woods and Batniji, 2020). Countries can adopt and tailor the road map to their own contexts, taking into consideration their lockdown phase, existing capacity and degree of preparedness for exiting the lockdown.
Lockdown exit principles

- Lift strict social distancing measures in a concerted and careful fashion, informed by real-time evidence and data
- Allow gradual reopening of the economy and society at large, giving precedence to public health over economic considerations
- Continue to control COVID-19 transmission and prevent reverting back to strict lockdown

ADOPT GRADUAL AND STAGED LIFTING OF MEASURES WITH EXPERIMENTATION AND RE-ASSESSMENT, IN CYCLES OF SEVERAL WEEKS EACH

→ Conduct mass testing to assess the extent of transmission rate in the community; if tests show infection rates are low enough, proceed with gradual lifting of measures
→ Prioritize lifting those measures with a local impact and gradually extend to measures with a broader geographic coverage, taking into account local specificities
→ Lift a number of restrictions and then actively test the public and conduct contact tracing. If there is no significant increase in numbers with those restrictions being lifted or the doubling time does not accelerate significantly, further easing of measures can be then implemented.
→ Ensure sufficient time is left between the phases/cycles (e.g. one month), as the effect of lifting measures can only be measured over time.
→ Repeat testing before proceeding to the next phase/cycle
PROGRESSIVELY REPLACE GENERAL MEASURES BY MORE TARGETED ONES

→ Protect the most vulnerable populations while lifting restrictions for other groups:
  • Ensure the most vulnerable populations (individuals over the age of 60 and those with compromised immune systems or serious underlying health conditions) continue to practice social distancing as much as possible until a vaccine or a treatment is available, or there is no longer community transmission
  • Maintain high levels of infection prevention and control efforts and limit visitors in vulnerable places like long-term care facilities and nursing homes to prevent outbreaks
→ Implement case-based interventions:
  • Isolate every confirmed case either at home, in a hospital, or in a local isolation facility (depending on the level of care required) for at least seven days, or according to latest CDC guidance.
  • Quarantine individuals waiting for test result until their results are out
  • Trace close contacts of confirmed cases and place them under home or central quarantine, with active daily monitoring for at least 14 days
  • Quarantine and treat diagnosed people or people with mild symptoms
  • Release recovered immune patients from confinement measures
→ Replace existing general prohibitive measures with safe alternative to enable the targeting of risk sources while facilitating gradual return of necessary economic activities:
  • Intensified and regular cleaning and disinfection of transport hubs and vehicles, shops and workplaces, instead of entirely prohibiting services
  • Reinforcement of hygienic measures (handwashing), respiratory etiquette, and facilitate hand sanitizer gel in public and private places (work centers, sports centers, etc.).
  • Provision of adequate measures or equipment to protect workers and customers

GENERAL PHYSICAL DISTANCING PRECAUTIONS SHOULD STILL BE THE NORM

→ Continue to suspend events that gather a high number of people (including sporting, cultural and leisure events).
→ Recommend the general population to avoid trips that are not essential
→ Reinforce hygienic measures (handwashing), respiratory etiquette, and facilitate hand sanitizer gel in public and private places (work centers, sports centers, etc.).
→ Regularly disinfect high-touch surfaces
→ Continue to recommend measures of social distancing at the individual level, including self-quarantine for people potentially exposed to the virus, avoid shaking hands/kisses, try to keep at least one-meter distance (and ideally two) from other people, and avoid public transportation at peak times, as far as possible.
RE-OPEN GRADUALLY THE MOST IMPORTANT SERVICES AND BUSINESSES FIRST

→ Ensure population does not return to the workplace at the same time, with an initial focus on less vulnerable groups (young, strong, and/or recovered people with immunity) and sectors that are essential to facilitate economic activity (without significantly risking spread of virus)

→ Give priority to relaunching the economy by lifting restrictions on work, followed by slowly authorizing public gatherings

→ Decide on the essential services— those services essential to preserving life, health, public safety and basic societal functioning, and which are not suitable for teleworking
  · Place a primary focus on reinstating services such as health care services as well as services which provide the basic necessities of life (e.g. food and clean water)
  · Place a secondary focus on reinstating law and order, banking services, and financial assistance services (welfare support)

→ Ensure selected businesses have the ability to adjust to increasing activities in a safe way, as well as return to stricter containment measures as necessary

→ Mandate establishment of preventive measures and public health guidelines in workplaces and other essential places
EXAMPLE OF ESSENTIAL HEALTH SERVICES IDENTIFIED BY BRITISH COLUMBIA PROVINCE, CANADA (CBC NEWS, 2020)

→ **Health and health services:** All health-care services, including acute care (hospitals), secondary/long-term care, as well as health-care providers working within and outside an acute-care setting and other health services (pharmacy, rehabilitation, mental health)

→ **Law enforcement, public safety:** these include first responders, e.g. police, fire and those services providing for public safety, e.g. commercial vehicle safety enforcement, corrections and detainment facilities, court services

→ **Vulnerable population service providers:** these include businesses and non-profits that provide food, shelter, social and support services, and other necessities of life for economically disadvantaged or otherwise vulnerable individuals.

→ **Critical infrastructure service providers:** these include infrastructure, drilling and production, refineries, processing, completion facilities, utilities, transportation, transmission, stations and storage facilities- critical in supporting daily essential electricity needs, drinking water, waste water, electricity (including associated infrastructure), steam, alternative energy production, waste and hazardous management, industrial recycling, oil and natural and propane gas, fuel and other fuel sources, such as heating oil and wood pellets, as well as operating staff. This also encompasses manufacturing of goods necessary for the continued and immediate operation of other essential infrastructure and businesses.

→ **Food and agriculture service providers:** these include food cultivation (farming, livestock, aquaculture and fishing) and businesses that support the food supply chain, as well as community gardens and subsistence agriculture; food processing, manufacturing, storage and distribution of foods, feed products and beverages; and grocery stores, convenience stores, farmers’ markets and other establishments engaged in the retail sale or provision of food, pet or livestock supply,

→ **Transportation, infrastructure and vital manufacturing:** these include supply chain services needed to supply goods for societal functioning, including cooling, storing, packaging, transportation, warehousing and distribution; as well as local, regional, and provincial delivery services, including but not limited to businesses that ship or deliver groceries, food, goods or services directly to business and residences and mailing and shipping services.

→ **Sanitation:** these include cleaning services necessary to provide and maintain disinfection as well as manufacturing of sanitary products, household paper products, chemicals, etc.

→ **Communications, information sharing and information technology (IT):** these include workers maintaining IT and communications infrastructure for medical facilities, governments facilities, emergency response and command agencies, energy and utilities, banks and financial institutions, employees working from home, and other critical infrastructure categories and personnel, including managing information and cyber-security incidents.
**05 EXPLORE DIFFERENT WORK MODALITIES/SCHEDULES TO CONTROL SPREAD OF INFECTION**

→ Consider, when possible, the possibility of teleworking and performing video meetings  
→ Facilitate work and schedule flexibility to prevent resurgence:  
  • Have all essential staff or those serving in mission critical functions return first (consider either maintaining any staggered or adjusted scheduling that may have been in place during the pandemic or return to normal schedules)—where staff who are asymptomatic and conduct a self-screening/temperature check daily, can return to the office on alternating days while maintaining adequate social distancing (Scafidi and Natarajan, 2020)  
  • Have all staff return in shifts, where staff who are asymptomatic and conduct a self-screening/temperature check daily, can return to the office on alternating days while maintaining adequate social distancing.  
  • Consider a cyclic schedule of 4-day work and 10-day lockdown, or similar variants. The cycle reduces the reproduction number (R0) by a combination of reduced exposure time and an anti-phasing effect in which those infected during workdays reach peak infectiousness during lockdown days. The number of workdays can be adapted in response to observations (Karin et al., 2020)  
  • Alternatively, consider a staggered cyclic strategy in which the population is divided into two sets of households that work on alternating weeks each with a ‘k-work:(14-k)-lockdown’ schedule. This strategy has the advantage that production lines can work throughout the month and transmission during workdays is reduced due to lower density (Meidan et al., 2020)

**06 RE-INTRODUCE TRANSPORT SERVICES GRADUALLY**

→ Allow lower-risk, individualized transport (e.g. private cars) as soon as possible  
→ Gradually phase in collective means of transport while necessitating public health measures (e.g. reducing the number of passengers in vehicles, higher service frequency for public buses, issuing personal protective equipment to transport personnel and/or passengers, using protective barriers, making sanitizing/disinfecting gel available at transport hubs and in vehicles, etc.)  
→ Consider re-opening of borders and access of nonresidents to the country in a second stage, taking account of the spread of the virus outside the county, and of the dangers of reintroduction including degree to which risk of importing new cases “can be managed”.
SCALE-UP DIAGNOSTIC AND MONITORING FOR DETECTION OF VIRUS AND IDENTIFICATION OF IMMUNE PEOPLE

→ Expand same-day, point-of-care diagnostic testing (leveraging service delivery in communities, including primary healthcare centers and public dispensaries) for identifying cases, including those with asymptomatic and mild infections
  • RT-PCR and rapid antigen tests would quantify ongoing infections and inform contact tracing, isolations and quarantine.
  • Roll out of accurate serological testing would help assess population acquired immunity and quantify the fraction of the population contributing to ‘herd immunity’
→ Conduct sentinel surveillance of workforce
  • Tests could be first targeted at healthcare professionals and holders of essential jobs (food service, public safety, public transportation, etc.).
  • With upscaling of diagnostic capacity, tests could support progressive de-confinement of population groups based on their expected contribution to the transmission and risk profile and the results of both RNA tests and serology tests
→ Test random samples of the population to get a better understanding of the proportion of asymptomatic individuals in the population
→ Develop comprehensive COVID-19 surveillance systems to monitor trends in incidence that leverages:
  • Widespread and rapid testing at the point of care
  • Serological testing to gauge background rates of exposure and immunity to inform public-health decision-making about required population-based mitigation measures
  • National sentinel surveillance system, supported by and coordinated with local public health systems and health care providers, to track background rate of infection across the country and identify community spread while an outbreak is still small.
→ Scale-up swift contact tracing and isolation and quarantine, leveraging technology and mobile phone for contact tracing and monitoring of quarantine. A recent study conducted by University of Oxford suggests that tracing apps can be effective in reducing infection rates, even when just 60% of the population adopts them (Ferretti et al., 2020)
ENFORCE AND SUSTAIN PUBLIC HEALTH AND PREVENTIVE MEASURES TO PREVENT THE SPREAD OF THE VIRUS

→ Continue with awareness campaigns to encourage the population to maintain strong hygiene practices (use of sanitizers, handwashing, cleaning high-contact surfaces, coughing/sneezing etiquette, avoiding touching the face, nose, eyes and mouth, etc.).
→ Continue to apply social distancing guidelines (e.g. keeping at least two meters from other people, avoiding public transportation at peak times, etc.)
→ Continue to ban large social events
→ Strongly encourage people to wear face masks (as part of applying precautionary principle) (CDC, 2020; Howard et al., 2020; BMJ, 2020):
  • Consider use of facemasks in community, especially when visiting crowded, confined spaces, such as grocery stores, shopping centers, or when using public transport.
  • If medical facemasks are not available for the public, consider use of non-medical facemasks made of various textiles or public cloth mask wearing
  • Always give precedence to use of medical facemasks by healthcare workers over the use in the community

PROGRESSIVELY AUTHORIZE PUBLIC GATHERINGS

→ Sequence authorization of public gatherings, firstly, schools and universities, then shops, restaurants and cafes, and at the last stage, festivals, cultural and sports events:
→ Schools and universities (while there are no specific criteria to guide timing for opening of educational sector, consider specific measures such as different lunch times, enhanced cleaning, smaller classrooms, increased reliance on e-learning, etc.). In Lebanon, the prevalence of intergenerational households and asymptomatic transmission from children should be taken into consideration when deciding on re-opening of educational institutions. Care should be taken to minimize the risk of transmission to the teaching staff and students’ families, with the help of high-priority testing and personal protective equipment
→ Commercial activity (retail) with possible gradation (e.g. maximum number of people allowed);
→ Social activity measures (restaurants, cafes, etc.) with possible gradation (e.g. restricted opening hours, maximum number of people allowed);
→ Mass gatherings (e.g. festivals, concerts, spectator sports events etc. at the last stage).
ENSURE CONTINUOUS (AND REAL-TIME) MONITORING

→ Continuously monitor action taken and develop preparedness for returning to stricter containment measures as necessary, in case of an excessive rise in infection rates, including the evolution of the spread internationally.
→ Establish a plan with explicit criteria to determine whether or when to reinstate stricter measures.
→ Use quantitative mathematical modeling to ensure the proposed sets of actions would be safe, to check that the level of transmission and severe cases remain below the health system’s capacity, to refine the timing and phasing of actions, and to inform the groups and sectors that will be gradually released from confinement on key decisions.
→ Maintain a system for transparent reporting of progress including, spread of the virus, characteristics of infected and recovered persons and their potential direct contacts to better manage the lifting of measures.

Triggers to re-instate stricter measures:

• A substantial number of cases cannot be traced back to known cases.
• A sustained rise in new cases for five days.
• Hospitals are no longer able to safely treat all patients requiring hospitalization.
EDUCATE, EMPOWER, BUILD PUBLIC TRUST AND MANAGE PUBLIC EXPECTATIONS IN THE NEW REALITY

→ Present to the public the rationale and justification behind the implemented lockdown exit measures.
→ Educate the public, manage their expectations and address their concerns as they adapt to a new reality
→ Clarify to the public that the measures could be extended if circumstances require it; and that some measures may be removed or reduced while others remain in place, and the possibility of re-imposing large-scale social distancing measures if there is a resurgence of transmission following the lifting of measures.
→ Establish a communication platform/monitoring system to observe public perceptions and opinions of both the outbreak and the response to the exit strategy
12 PROVIDE A “BRIDGE” TO ASSIST POOR PEOPLE AND STRUGGLING BUSINESSES AND ENHANCE THEIR COMPLIANCE WITH THE LOCKDOWN EXIT STRATEGY

→ Provide financial compensations and financial/social assistance schemes for families, communities and businesses affected by social distancing measures
→ Put in place regulation to protect the employment of people in isolation or quarantine or not released from confinement as part of the exit strategy

13 PROVIDE SOCIAL SUPPORT FOR REFUGEES AND VULNERABLE POPULATIONS (ESPECIALLY IF MEASURES ARE NOT YET LIFTED OFF THEM IN THE INITIAL PHASES)

→ Vulnerable individuals such as the elderly, those with underlying health conditions, disabled people, people with mental health problems, homeless people, refugees, and undocumented migrants – will require extra support
→ Coordinate with, and support, nongovernmental organizations, civil society and religious groups that already work with vulnerable populations
→ Establish a support center – for providing communities with a variety of support services delivered through government departments, non-governmental organizations, community representative groups and other agencies
As countries worldwide are attempting to exit the lockdown at different pace, they should strive to balance public health, population freedom and economic considerations. The road to recovery could be long and winding, but it should not be marked by return to “business as usual”. When this pandemic is over – and it will end – countries must learn their lessons, and rebuild their readiness for the next pandemic. COVID-19 experience is an opportunity to re-imagine public health system and preparedness response by reshaping efforts and making the right investment at the public health sector level, broader health system level, countrywide level, and globally. Importantly, unless COVID-19 is controlled in all countries, no country will be safe no matter the exit strategy in place.

There is a need for more cooperation, coordination, solidarity and support between countries to effectively control COVID-19.
REFERENCES


