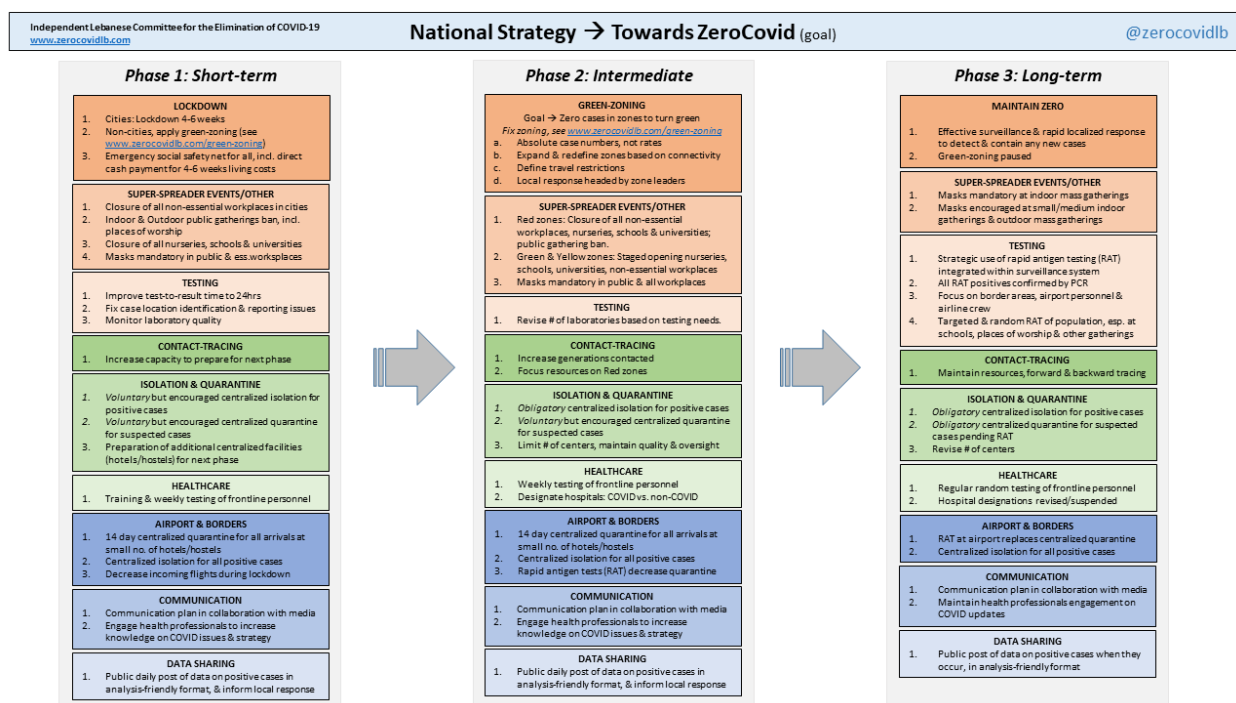


A National Strategy for a Lebanon without COVID-19

The march towards the elimination of COVID-19 **requires three phases**, each determined by the level of disease in the country: a short, intermediate and long-term.



Phase 1: Short-term

The outbreak is currently uncontrolled and widespread throughout the country. Once COVID-19 reaches such a stage, the only effective measure is a **lockdown**. All other measures would not be sufficient to reverse the increasing trend. This is what numerous countries have had to endure once losing control of the outbreak, and what is almost always inevitable unless a strong containment strategy is in place. Lebanon was warned not to trap itself into repetitive lockdown cycles, and only an effective strategy would avoid this in the future.

However, a lockdown may be only necessary in cities and large towns, but not in rural areas and villages where the population density, and consequently the disease transmission, is far lower. If we are to avoid lockdown in rural areas, then the design and implementation of **green-zoning** requires urgent revision (see www.zerocovidlb.com/green-zoning), particularly regarding use of absolute cases instead of rates, corrected zone definitions, travel restrictions and role of local response. In effect, cities would function as red zones, with travel restricted to the rest of the country. The lockdown would be in place for 4-6 weeks (i.e. 2-3 transmission cycles), after which case levels should be sufficiently low within cities, to allow the implementation of green-zoning across city districts. Authorities would have also used the

time gained during lockdown to prepare for green-zoning of cities, which requires greater precision and localized response. Importantly, green-zoning may not be effective in Lebanon unless central authorities thoroughly implement travel restrictions across zones; otherwise, a full country lockdown, including rural areas, is the only path.

An emergency social safety net is vital for all residents in Lebanon, both within lockdown areas and outside of them. The majority of the population struggles for earning a daily wage, with many being dependent on commutes to cities for work. The first phase of the strategy must include the rapid and direct support payment to all residents at its start, to cover living costs for 4-6 weeks.

In **cities under lockdown**, all non-essential workplaces would be **closed**, indoor and outdoor public gatherings would be banned, including places of worship. All nurseries, schools and universities would be similarly closed, and masks would be made mandatory in all public places and essential workplaces.

The turnaround time from COVID PCR **testing** to result should be reduced to within 24 hours, to allow subsequent action to be meaningful. With the current test lags we lose many opportunities to limit disease transmission. It is also necessary to resolve the location identification of COVID-19 cases that had been raised in recent weeks. Specifically, testing laboratories should ensure that residence is reported in their records, rather than place of origin. Oversight efforts are also needed to ensure the quality of testing considering that reports of fraud have been made, which is to be anticipated when an incentive structure exists.

Contact-tracing capacity should be increased, particularly the hiring and training of contact-tracers at central and local levels. In the next phase once lockdown is removed and green-zoning is applied nationwide, contact-tracing will have to be effective and sufficient to inform localized response.

Isolation of positive cases and quarantine of suspected cases at centralized facilities (e.g. hospital, hotel, hostel) would be voluntary but encouraged by local and central authorities. Preparation of additional facilities for the next phase is necessary, to ensure there would be adequate high-quality facilities within or nearby all zones.

Weekly testing of all frontline personnel that come in contact with COVID-19 cases is necessary to protect both the personnel and all persons they come in contact with (including non-COVID patients). Such testing would include hospital personnel as well as others such as ambulance personnel. Training regarding treatment and care approaches for COVID-19 patients is important, including the use of personal protective equipment (PPE).

All arrivals at the airport and border crossings should be quarantined for 14-days at a central facility (e.g. hotel, hostel). Persons confirmed to have COVID-19 on arrival should be isolated at similar dedicated facilities. To allow these facilities to cope with the load as well as avoid additional disease transmission, a decrease of flights into Lebanon is necessary. If centralized quarantine and isolation is unavailable for all arrivals, then all incoming flights and border crossings should be suspended until such facilities are available.

A communication plan is necessary to emphasize the individual and community measures to counter COVID-19, as well as inform the public on the strategic path the country is following. Such a plan should be implemented in collaboration with media agencies and outlets, who share a joint responsibility in sharing with the public such critical information. **Engaging health professionals** is also necessary, to

align knowledge and approaches with real-world evidence regarding the crisis and counter disinformation. This should include effectiveness of individual measures in daily life and during hospitalization, as well as broad public health interventions.

The Ministry of Public Health (MoPH) should **publicly share on a daily basis updated information on COVID-19 positive cases**, at a minimum beginning with a line-list including **age and location/municipality**. This should be in an analysis-friendly format (e.g. excel/csv, not .pdf), to enable rapid analysis and response. The MoPH should also transfer this and other relevant information (e.g. on case clusters) to local authorities to inform localized response. Communication and data sharing measures would be maintained throughout all three phases of this strategy.

Phase 2: Intermediate

The decrease of case levels resulting from the lockdown and phase 1 measures would allow **the entire country to transition into green-zoning**, which in phase 1 may have been limited to rural areas only (if not included under lockdown). Central authorities would have used the time gained during lockdown to prepare for more precise monitoring and implementation of zoning within cities. The most important aspect would be to have travel restrictions out of and into red zones, with the exception of pre-defined essential cases (e.g. food and healthcare supplies, ambulance services).

A zone is defined based on how many COVID-19 cases it has had in the past 14 days. A red zone has one or more cases; a green zone has zero; a yellow zone has zero but has a geographical border with a red zone. See more at

Red zones would maintain lockdown-similar measures including closures of all non-essential workplaces, nurseries, schools and universities. Green and yellow zones would have staged opening of workplaces, ideally geographically rather than by sector. A zone does not change its status to red if a case is detected and rapidly isolated with all contacts centrally quarantined. In other words, yellow and green zones maintain their status so long as centralized isolation and centralized quarantine are rapidly applied to any new cases and avoiding unknown community transmission. Masks would remain mandatory in all zones in all public places and workplaces.

The **number of laboratories** allowed to conduct PCR testing for COVID-19 can be decreased depending on current needs, to allow better oversight into testing quality and facilitate data sharing with the MoPH. This is particularly relevant in green zones. However, the capability to reactivate certain laboratories in the event of an outbreak should be retained. The extent of contact-tracing would be increased to the second or third generation of contacts, with additional focus to assist red zones. In the third phase (long-term) this would additionally include the adoption of backward tracing to increase effectiveness.

In this phase, local cases of COVID-19 would have **obligatory isolation in central facilities** (e.g. hospitals, hotels, hostels), similar to that applied with arrivals who are positive. This not only benefits the community and household members of COVID-19 positive persons, but would also allow closer monitoring of their own health status to allow early treatment where needed, and thus improving their likelihood of survival and avoiding chronic injuries. This would exclude children and vulnerable adults, which may home-isolate with all household members included, but with local monitoring (in all three

phases). Efforts would be necessary to maintain **high quality at isolation and quarantine centers, including oversight for example by a UN agency**. Ensuring this is a **high priority**, as isolation and quarantine centers should be recognized as favorable places to be, and have increasing public acceptability.

Weekly testing of frontline personnel in healthcare would be maintained. **Hospitals may be designated** to receive either COVID-19 or non-COVID-19 cases, as such separation would allow the prevention of COVID-19 transmission among patients hospitalized for various conditions. Such designation would also allow the concentration of testing and monitoring of personnel to COVID-19 designated hospitals.

Measures at the airport and border crossings would remain the same as in the previous phase. In the case that Rapid Antigen Tests (RAT) are available in sufficient quantities for strategic use in Lebanon, then these may be used to considerably decrease quarantine periods. The use of RAT should be combined with PCR use in certain pathways, determined by specific protocols.

Phase 3: Long-term

The strategic goal of reaching zero cases is achieved, with the purpose of this phase being to maintain the elimination of COVID-19 in Lebanon. Green-zoning is paused. The role of **effective surveillance and rapid localized response** is critical. Occasional cases may occur, particularly those imported through the airport or border crossings; however, these would have to be rapidly detected with subsequent centralized isolation and centralized quarantine of all contacts. If this is not maintained and untraceable community spread occurs, then green-zoning is **reactivated**.

Masks would remain mandatory in all indoor mass gatherings (of a defined size), and strongly encouraged at small or medium-sized gatherings. **All local and imported COVID-19 cases would be centrally isolated and all contacts centrally quarantined**, pending testing and evaluation. The number of centers may be revised downward according to capacity required, and to maintain high quality and oversight.

The widespread use of **rapid antigen testing** in a strategic manner would include **integrating this within the surveillance system**. Such regular testing would include random sampling, as well as targeted approaches in schools, places of worship and other locations of gatherings. All positive RAT results would necessarily require confirmation by PCR testing. Particularly high **concentration of testing** would be necessary in all border areas, airport personnel and airline crew.

Rapid antigen testing would be conducted on all persons incoming into Lebanese **borders**, whether through sea or land crossings or the airport. This would help decrease or remove the need for centralized quarantine of arrivals. Hospital designation for COVID/non-COVID cases may be revised or suspended, depending on level of occasional cases and other factors.

The long phase of this strategy would be developed further if and when vaccination becomes a reality, and depending on new developments in the global efforts against COVID-19.