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RESUMPTION OF WORK AFTER THE COVID-19 LOCKDOWN PERIOD AND AN APPROACH TO ATTAINING HERD IMMUNITY WHILE SUPPRESSING THE EPI CURVE- IN THE PHILIPPINES

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INTRODUCTION

The COVID-19 lockdown and transmission suppression strategies that many countries are implementing would either have to be repeatedly done or sustained until such time that new and effective interventions (e.g. vaccination and therapeutics) could stop virus transmission, prevent infection or lessen disease severity. The economy will continue to suffer, severely or moderately, for as long as lockdown and suppression measures are in place.

Therefore, while testing and isolation of cases and recommended public health measures are sustained, a workable system for balancing COVID-19 transmission suppression strategies and gradual resumption of work and economic activities have to be formulated and implemented, to save the country from total economic peril. A proposed immuno-prophylactic approach to attain herd immunity while the epidemic curve is being suppressed will be briefly described here.

Considerations and Prevailing COVID-19 Transmission Risks

In the Philippines, lockdown and massive social distancing has decreased the epi curve through decreasing people contacts and virus transmission among the population.¹ While the curve has decreased, there remains a significant number of cases in pockets all over Luzon. It took China 11 weeks before they lifted their full lockdown in Wuhan. The Philippines is planning to lift its lockdown on May 15th, which would have been about 9 weeks of lockdown for Luzon. The essence of successful lockdowns is getting the number of new cases to as close to ZERO. The number of cases could suddenly increase again whenever lockdown is lifted—it could increase from 100 to 300 in 1-2 weeks; and from 100 to 1,000 cases in about one month. Without mitigation, COVID-19 spreads from 1 person to about 2.5 people.² As people and families were locked-down, these same people who were not infected during the lockdown remain susceptible to infection in the event they get in contact with infected persons. For as long as there is an opportunity for close contact, SARS-CoV-2 virus will not stop infecting susceptible people

Resumption of Work After the COVID-19 Lockdown Period and an Approach to Attaining Herd Immunity While Suppressing the Epi Curve- in the Philippines

until 70-80% of the population has acquired immunity; or until nature will overcome its ability to spread. Because of the likelihood of infection resurgence, lifting of lockdown must immediately be followed by the below measures:

1. Massive targeted testing of people who will likely come in contact with the general public. And applying isolation and contact-tracing measures as necessary.
2. More strict implementation of social distancing and personal hygiene (wearing mask under high-risk circumstances, washing hands, avoiding touching objects, etc.) for these people who will likely come in contact with the general public
3. More strict control and rules related to indoor or enclosed spaces where people who will likely come in contact with the general public shall be spending time in (e.g. public transport, work spaces, elevators, restaurants, groceries, etc.). These rules focus on social distancing, hygiene, personal protection, cough etiquette, and maintenance of ventilation systems.
4. More strict control and disinfection of materials, supplies, and objects that are likely to be touched or contaminated by people.

In the absence of an effective and safe vaccine that can be produced in large quantities for global use, social distancing is our best weapon to overcome this epidemic.^{2,3} Similar to vaccinating >70% of the susceptible population, social distancing can achieve “herd immunity or protection” by preventing close contact among >70% of the population. It is, therefore, our “vaccine” at this critical moment. If we want to fully control the spread of COVID-19, at least 70-80 percent of Filipinos must comply with strict social distancing measures for at least 3 months. If less than 70% of the population comply with social distancing practices, the pandemic cannot be suppressed. Social distancing would be ineffective if not practiced by a large enough number of people.⁴

Despite these effective suppression measures, there are emerging challenges to be reckoned with. For SARS-CoV-2, there is yet limited data to determine if recovered persons are sufficiently protected from repeat infections, or if immunity will last.⁵ Insufficient and short-term immunity will make herd immunity nearly impossible to reach through natural infections. Right now, this picture can change only if we have a reliable means to reach herd immunity while keeping the curve suppressed. Vaccine R&D initiatives are mostly in preclinical or Phase I stages. At this time, there is no guarantee that scientists will be able to find a successful [coronavirus vaccine](#).⁶ Second waves of COVID-19 transmissions are to be expected after lockdown or suppression is relaxed.^{7,8} There are also a great number of asymptomatic spreaders that escape detection, unless they can be tested at the right time for virus antigen and IgM antibodies.^{9,10} But the accuracy of antigen and antibody testing systems are limited by technical issues (e.g. missed swabbing) and the delayed onset of antibody response (i.e. IgM from >5th day of disease).¹¹ Effective COVID-19 suppression measures such as social distancing are impacted by the percentage of the population that respects the rules, as well as implementation difficulties in workplaces; these difficulties relate to:

1. Social distancing workers within small spaces, such as offices, elevators, canteens, transport vehicles, toilets, etc.

Resumption of Work After the COVID-19 Lockdown Period and an Approach to Attaining Herd Immunity While Suppressing the Epi Curve- in the Philippines

2. Workers having to be tested and for the test to have to be repeated; and considering that a certain percentage of results could be false negative.
3. Early and effective detection of the sick and asymptomatic among workers
4. Workers are forced to contact with other members of their households
5. Workers have to touch or use common materials/objects/instruments/tools, etc.
6. Maintaining good personal hygiene throughout the day (i.e. to properly wear a mask, wash or disinfect hands often, etc.)

Age is a strong risk factor for severe illness, complications, and death. The risk for serious disease and death in confirmed COVID-19 cases increases with age.^{12,13} There are distinct age groups of people who are more resistant to COVID-19 infection and who are able to present with milder infections with no or milder symptoms. These are apparently people in the younger age groups, particularly below 45 years old. The data from China and the United States, suggest that a majority of COVID-19 deaths have occurred among adults aged ≥ 65 years and among persons with serious underlying health conditions, with more severe outcomes observed among persons aged ≥ 85 years (USA).^{12,13}

It is important for decision-makers to recognize these prevailing risks during and after the lockdown. And that long term implementation of suppression measures is still necessary. The duration of this COVID-19 epidemic could last up to 2022.⁷ This means we should be constantly suppressing and flattening the curve for that entire duration. Hopefully, we would have better preventive and curative approaches that can modulate COVID-19 disease or enable herd immunity to be achieved sooner. This would reduce risk of severe disease and deaths, or eradicate the disease. Right now our living a “normal life” is still far away. These initial lockdown measures have managed to only buy us more time to establish broader mitigation systems and ease the burden on our healthcare system. We would have a New Opportunity, and we should continue to use this bought time for us to really defeat COVID-19.

Key Approaches to Support Effective Resumption of Work From the Time Lockdown is Lifted

Government must carefully determine the essential economic and business activities to be restarted and the minimal workforce assignments for conservative level of business/service operations. We should not restart all operations at the same time, but consider methodical phasing. This approach will not be risk-free, so it takes careful and very well calculated moves. Foremost would be to ensure the enabling material resources, programs/campaigns, and effective whole-of-society cooperation and support. Working from home must be better enabled by technology and industry support.

The reliance on our more resistant workers can be the temporary arrangement, where the central approach is about having the younger (as young as 15-18 years old) and stronger segment of our population to precede those in the older age group in gradually returning to our places of work. This age group will be our nation's emergency lifeblood, even as COVID-19 gets entrenched in our environment; and as we protect our elderly population. These young workers are to be maximally shielded from COVID-19 infection or disease, and encouraged and driven by all people as they serve as the beacon of hope. The strength and dynamism of the younger segments of society, combined with the wisdom and experience of those older, may bring about a new model of productivity. Generally, all healthy people within the age

Resumption of Work After the COVID-19 Lockdown Period and an Approach to Attaining Herd Immunity While Suppressing the Epi Curve- in the Philippines

group of below 65 years old may be allowed to resume normal activity while still sustaining COVID-19 suppression strategies. However, these younger people must be totally separated from the elderly age group of >65 years old. People age >50-65 years old should be encouraged to work from home. The elderly and people with underlying comorbidities must stay home and be protected from contact with sick members of their household. It may be better that they are housed in special buildings, or that the young workers in the family are best housed separately.

The workforce, as well as the general population, should be strongly encouraged and supported to adhere to presumably advantageous nutritional and lifestyle practices, including eating a balanced diet (e.g. lots of nutritious vegetables and fish high in omega 3 essential oils) and consuming suitable supplements such as vitamin C, B complex, D3, zinc and selenium.^{14,15} As well as avoiding food that are proven to be harmful to health- e.g. high fructose and high salt diets, and some unhealthy oils, etc.. Nutritional intervention to increase population immunity must become a comprehensive program of government. Industry/private sector/establishments/social media/schools/civil society organizations (whole-of-society) should promote healthy nutritional and lifestyle practices.

Government must quickly, without hesitation, implement the use of the identified pharmaceutical/biological approaches to COVID-19 infection prevention and disease severity modulation- e.g. BCG vaccine and specific convalescent plasma/hyperimmune globulins, and various drugs now being identified and passing clinical trials.^{16,17,18} These substances become essential resources and must be made available to meet demands. Government and Industry must collaborate to meet demands.

An Immuno-prophylactic Strategy to Attain Herd Immunity While the Epidemic Curve is Being Suppressed

In the Philippines, a passive immunization strategy for its frontline healthcare and essential workforce has been proposed.¹⁹ The same approach is also being considered as a means to attain herd immunity while the epidemic curve is being suppressed; as well as in relation to the proposed “Immunity Passport” concept. It is hypothesized that COVID-19 immunoglobulin (COVID-19 IgG) prophylaxis and concurrent natural exposure of subjects to SARS-CoV-2 infection should result in IgG-modulated disease, with acquired immunity being imparted to the exposed workforce. This presents an opportunity to interrupt virus transmission through the resulting cumulative population immunization. At 60-80% level, ‘herd Immunity’ is obtained and will break virus transmission.^{20,21} This is based on the recognition that convalescent plasma from COVID-19 survivors is a potentially effective treatment for COVID-19 patients.^{18,22,23,24} The feasibility of this approach will further be strengthened as we accumulate results from ongoing clinical trials with convalescent plasma taking place in several countries.²² COVID-19 IgG obtained from convalescent plasma or through other means (e.g. equine or monoclonal-derived) shall be extracted and concentrated to generate a safer product (>95% IgG, devoid of pathogens, and of less volume) that can be easily administered intramuscularly (e.g. in 1-5 ml dose).^{24,25,26} The Philippines needs to be ready with large volumes of doses of specific COVID-19 IgG for this approach to work.

Since effective vaccines and fully-tested antiviral drugs are still unavailable, there is an urgent need to develop alternative strategies for COVID-19 prophylaxis and treatment. COVID-19 vaccine may not be available in the next 12 months or more⁶; and even if a vaccine is developed, distribution prioritization would add an additional layer of delay.

Critical Points for Sustained Suppression of the Epidemic Curve:

1. It is always a given that social/physical distancing and good personal hygiene and protection are to be sustained. Avoid getting in spaces (especially in public/common areas) where social distancing and protection are likely to be compromised.
2. Arrange for effective infection control procedures and distancing, especially in spaces where movement is limited and where common objects are used- such as food preparation areas, common spaces such as offices, toilets, dining tables, sleeping quarters, and vehicles, etc. Keep touched objects and surfaces disinfected often.
3. Keep work spaces properly ventilated. Avoid rooms with recirculating air-conditioning.
4. Arrange for workers to avoid using public/mass transport systems. If necessary to take public transport, it must be on an officially “authorized system” that adheres to social distancing its passengers and is naturally ventilated. Passengers are temperature checked before getting on. A COVID-19 testing certification (may) be required of each passenger (under a well-planned workforce testing system).
5. Arrange for workers living in known infected areas, or living with others coming from infected areas to avoid exposure to their family members and neighbors (the only way for this is to house such workers in special confinements)
6. Massive targeted-testing and contact tracing will be necessary to catch and isolate new cases as they appear, stopping localized outbreaks from spreading. There is still uncertainty on how massive testing is to be effectively implemented (which accurate test system? who will shoulder the costs? How often will testing be done?, etc). We will need screening in workplaces so that no person comes into any space with the disease without being diagnosed and isolated. An accurate rapid antibody test that can identify those that have been infected and have already recovered is needed; as this will inform on the level of immunity (seroprevalence) in the region (Luzon or per Province).
 - a. Test and quarantine workers that test antibody negative. These people are still susceptible to infection and should be protected from contacts (keep them in controlled confinement)
 - b. Workers that test antibody (IgG) positive means that these people might have immunity and may be less likely to spread infection, as long as they practice good personal hygiene and report their conditions.
 - c. Workers that test antibody (IgM) positive means that these people might be asymptomatic and may spread infection. RTPCR testing may be done to confirm presence of virus. These persons should be prevented from resuming work and should be isolated for 14 days ASAP.
7. Detect sick and COVID-19 suspects as soon as possible (by fever and clinical signs), and have these people tested and isolated. A positive case in the workplace may be a basis for suspending the entire operation.

Resumption of Work After the COVID-19 Lockdown Period and an Approach to Attaining Herd Immunity While Suppressing the Epi Curve- in the Philippines

8. Arrange work according to fixed and identified batches of healthy workers in controlled confinement, rotated on a 14-day interval. And tested as they resume work.

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Resumption of Work After the COVID-19 Lockdown Period and an Approach to Attaining Herd Immunity While Suppressing the Epi Curve- in the Philippines

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