Summary of Technical Recommendations

Editor:

John Q. Wong MD, MSc

I.   Each LGU should respond proportionately to the scale of its own epidemic.

A. The Inter-Agency Task Force (IATF) should de-link the pandemic response of the National Capital Region (NCR) from the rest of Luzon. As the pandemic is at different stages in each province, their responses should match their pandemic stage (Fig 1).

B. The provinces should use the Centers for Disease Control and Prevention (CDC) Pandemic Interval Framework to prepare their responses to the pandemic (Fig 2). It allows the provinces to calibrate their response according to the magnitude of their own outbreak and to local transmission dynamics rather than to the NCR's epidemiologic characteristics.

C. The Technical Advisory Group (TAG) should utilize a COVID-19 systems dynamics model to understand how the Philippine health system will respond to this pandemic (Fig 3). Systems dynamics modeling is a tool for understanding how complex adaptive systems behave under stress. It can be used to describe the resiliency of health systems during a pandemic.

COVID-19 UPDATE
CONFIRMED CASES BY RESIDENCE
As of March 20, 2020

ABRA: 1
TARLAC: 1
PAMPANGA: 3
BATAAN: 1
CAVITE: 4
BATANGAS: 3
NCR: 115
BULACAN: 4
RIZAL & ANTIPOLO: 7
LAGUNA: 1
LUCENA: 1
CAMSUR: 1
NEGROS ORIENTAL: 2
LANAO DEL SUR: 2
DAVAO DE ORO: 1
FOR VALIDATION: 79
FOREIGN: 4
TOTAL: 230

SOURCE: ncovtracker.doh.gov.ph

Figure 1. Philippine COVID-19 case tally

D. Provinces should utilize a COVID-19 simulation game, based on the systems dynamics model, to anticipate the effects of the outbreak in their own context, to assess their readiness, and to prepare accordingly.
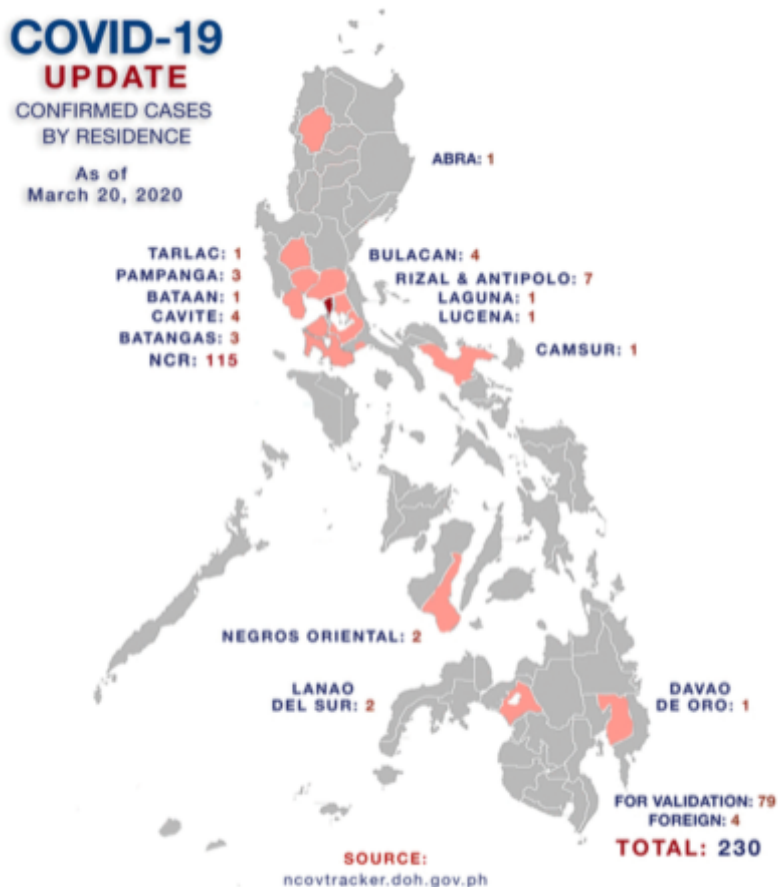
II. After the current month of the ECQ, the Luzon-wide ECQ should be scaled down to cover only the NCR and to be in effect only 5-6 days a week.

A. Restrict the application of Enhanced Community Quarantine (ECQ) only to areas where it is needed. The outbreak is not synchronized nationwide. Mitigation measures should be calibrated according to the stage of the pandemic in which a local government unit (LGU) is in rather than applied to entire island groups.

B. Step down the community quarantine from daily to 5-6 days per week. Modeling shows that it is just as effective as a total lockdown.

C. Economic relief should be provided to the poor. In spite of its effectiveness, the ECQ also has adverse health effects on the population. It reduces income and, consequently, reduces people's ability to purchase health care.

D. Containment measures need to be improved for mitigation measures to be effective.

    1. Rapidly scale up testing from just hospitalized patients to (1) patients who are close contacts, (2) patients presenting with pneumonia, (3) intensive care unit (ICU) patients with fever of unknown etiology, and (4) frontline health care workers.

    2. Large-scale isolation and quarantine facilities should be established to keep the infected away from their family members as the outbreaks tend to occur in clusters.

    3. Contact tracing and quarantine need to be more comprehensive rather than selective. This can be done more effectively through GPS tracking.
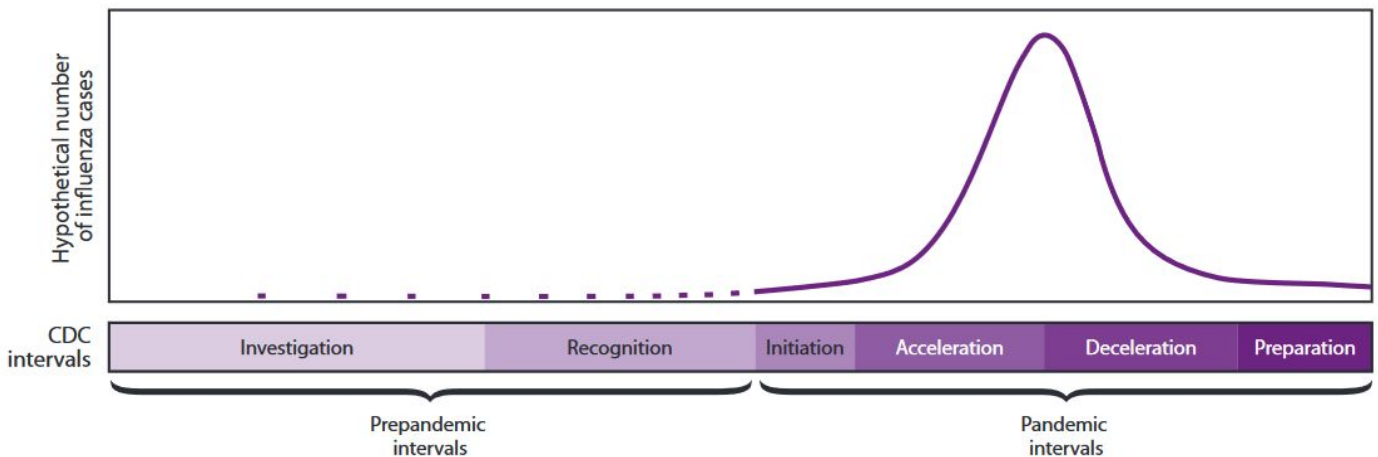

Figure 2. Preparedness and response framework for novel influenza A virus pandemics: CDC intervals

III. The ECQ should be switched 'ON' and 'OFF' on a rolling basis, at a regional or provincial level, depending on the ratio of severe and critical COVID-19 19 patients to the number of critical care unit beds per 100,000 population.

A. To determine the timing and duration for switching the Resolution #11 interventions 'on' and 'off', the IATF should use the number of critical care uni (CCU) beds per 100,000 population as set points (Fig 4).

B. As it responds to the outbreak, the DOH should identify, measure, and reduce the components of the actual reproductive ratio (R):

1. Duration of infectiousness or D - Number of days between the onset of symptoms and confirmation (7-day moving average)

2. Transmission rate or β - % practicing specific non-pharmaceutical intervention behaviors (e.g., hand hygiene, cough etiquette, etc.)

3. Contact rate or γ - % time spent inside the house (effectiveness of home quarantine)
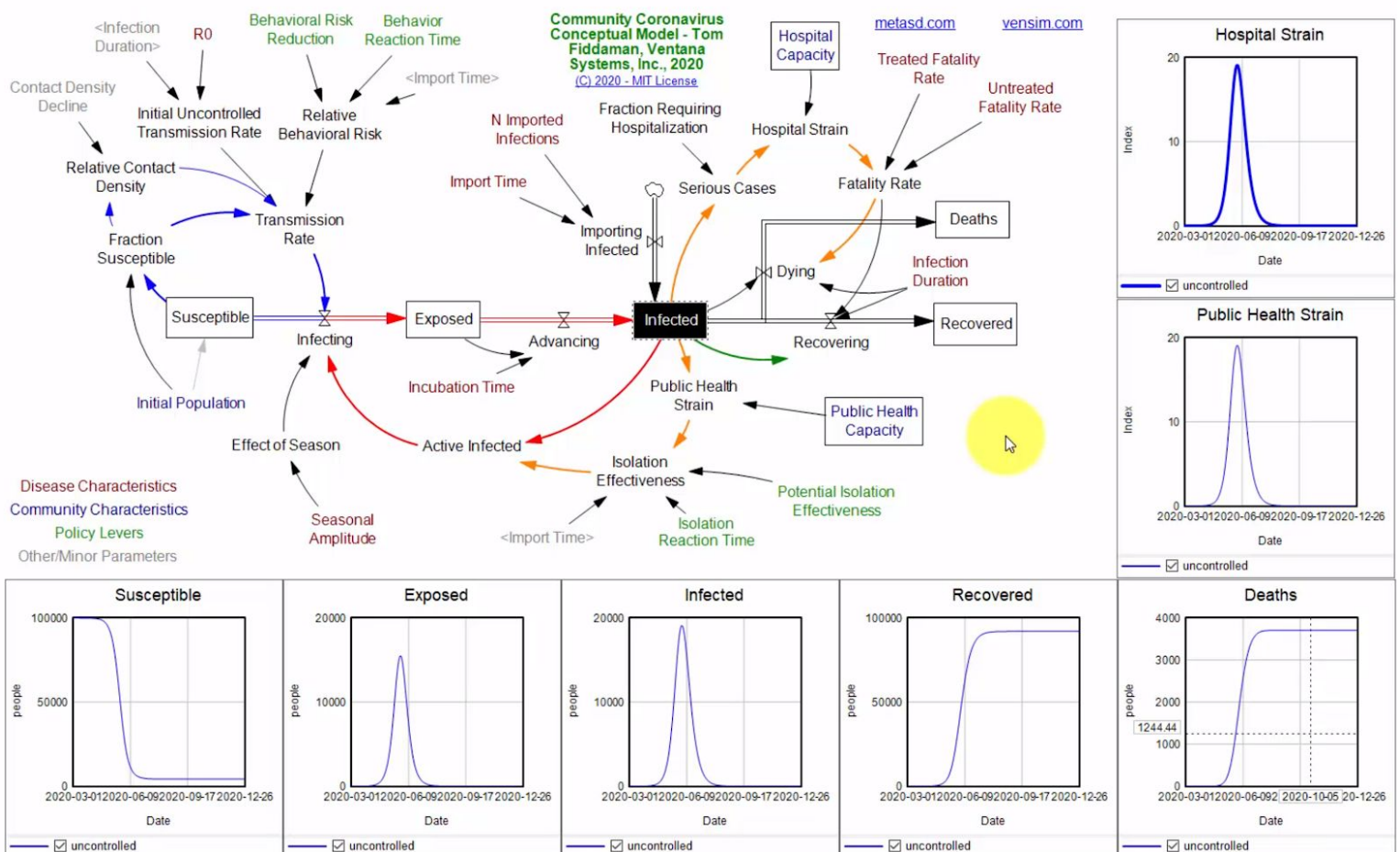

Figure 3. Corona system dynamics model, Tom Fiddaman

IV. RT-PCR testing should be massively scaled up to include every province and more population sub-groups in order to identify and separate the infected from the susceptible.

A. Surveillance

1. **Who should be tested?** The DOH should move from just testing the severe and critical persons under investigation (PUIs) to testing also (1) patients who are close contacts and (2) frontline health care workers. This will increase the sensitivity of the testing strategy and speed up the isolation of the infected.
2. **Where should they be tested?** The DOH should help LGUs establish provincial-level public or private laboratories for RT-PCR testing and capacitate RHUs and private clinics for specimen collection. A centralized database and SMS should be used for storage and notification, respectively.
3. **What test should be used?** RT-PCR should still be the preferred testing modality. However, since GenXpert machines are already installed in all regions and some provinces, the point-of-care coronavirus diagnostic test developed by Cepheid should be used to speed up and decentralize testing. [1]
4. **How to improve testing processes?** The public should be informed of who should be tested and where they can be tested. Specimen collection and testing should be decentralized and feedback of results should be rapid. RHUs should be trained to serve a gatekeeper function. Telemedicine should be used to screen and to refer patients for testing.

B. Contact tracing
1. With the user's consent, utilize GPS location data to inform them of their risk of contact with confirmed cases based on their proximity by time and place to a COVID-19(+) case.
2. Online geographic information system (GIS) maps with precise locations and times can also be used for the same purpose.
3. A close-contact call center should be established for contact tracing and quarantine monitoring.
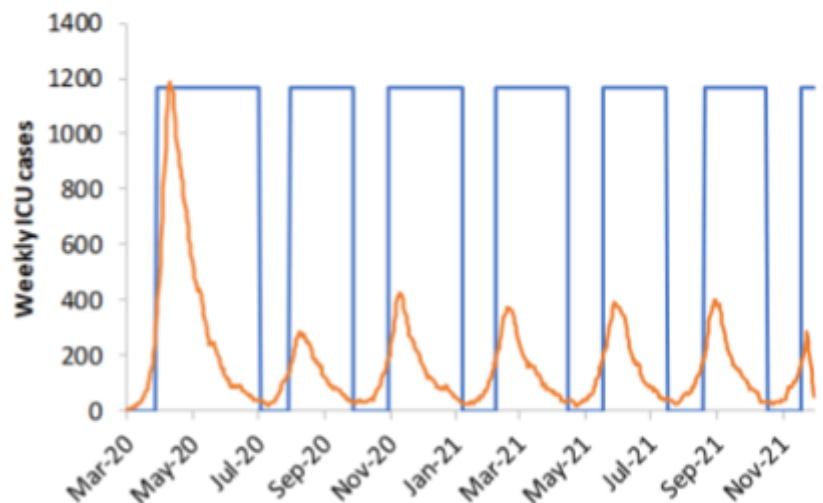

Figure 4: Illustration of adaptive triggering of suppression strategies in GB, for R0=2.2, a policy of all four interventions considered, an "on" trigger of 100 ICU cases in a week and an "off" trigger of 50 ICU cases. The policy is in force approximate 2/3 of the time. Only social distancing and school/university closure are triggered; other policies remain in force throughout. Weekly ICU incidence is shown in orange, policy triggering in blue.

[1]"Xpert Xpress SARS-CoV-2 - FDA." Accessed March 24, 2020. https://www.fda.gov/media/136314/download