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STRATEGY 1: FTTIS+V

Find, Test, Trace, Isolate, Support and Vaccinate to bring the pandemic under control

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#ProjekMuhibah introduces ten strategies to address the socio-economic challenges caused by the COVID-19 pandemic in Malaysia. Our analyses and proposals will help Malaysia build back better, towards a more resilient and equitable economy, a more economically secure workforce, and a stronger and more supportive community.

INTRODUCTION

At the time of writing (15th of June, 2021), we are already more than two weeks into the Full Movement Control Order (FMCO) or the "total lockdown" phase of the 3rd Movement Control Order (MCO 3.0) in Malaysia. Although the total number of COVID-19 cases dipped below 5,000 for the first time this month (4,994 cases on the 14th of June, 2021), we are still unsure as to how long this total lockdown will continue for and more importantly, what are the strategies which are being employed by the Malaysian government to bring this pandemic under control (beyond continuing to shut down most of the economy).

Many public health experts and policy makers around the world have advocated for a Find, Test and Trace, Isolate and Support (FTTIS) framework as a comprehensive policy approach to bring down the number of COVID-19 cases. Now, with the availability of vaccines, we want to add Vaccination to this policy approach (FTTIS+V), in a targeted manner, with close attention being given to geographical areas and industries where cases continue to remain at high levels, in spite of the lockdown.

The following summarises the FTTIS+V framework:

FTTIS is a framework for controlling pandemics, and with vaccine doses becoming available in more significant quantities, Vaccinate (+V) forms a more recent addition.

Find aims to identify potential new infection clusters, known as "hotspots." Once identified, remediation measures can be put in place to contain the spread of infections.

Test and **Trace** are the bedrock for controlling the pandemic, as long as herd immunity has not been achieved.

Isolate, or quarantine in other words, is the next step in the prevention framework. Isolating those who tested positive prevents them from transmitting the virus.

Support for those who are isolated is critical, both on the medical front and on the economic front.

Vaccinate is the last, but perhaps the most impactful component of the framework. High vaccination rates need to be achieved for the pandemic to be truly under control, especially in the COVID-19 red zones, and for economic activity to resume, slowly but surely.

FIND: MODELS FOR FINDING INFECTION HOTSPOTS

Finding hidden and potential hotspots before they turn into a significant new infection cluster is critical in preventing a runaway increase in cases. Once potential clusters are found, remedial measures can be put in place to limit the spread of infections linked to that hotspot.

In essence, hotspots can be identified through the use of statistical models, either based on traditional methods (including Bayesian statistics) or more recent Big Data and Machine Learning techniques. Beyond epidemiology, similar models exist for the identification of forest fire hotspots, for example. The Selangor Task Force on COVID-19 (STFC) built a model to identify hotspots, based on such a forest fire modeling approach, referred to as the **"dry bushes"** method.

The effectiveness of these models depends entirely on the **quality of the data provided**, and on the **calibration of the model to that data**. By now, there are millions of data points available, in the form of MySejahtera check-ins. Those can be linked to positive cases and known clusters to discover the originating patterns of the infections. Moreover, this data can be complemented with data sets from other government agencies and the states, for example the locations of foreign worker dormitories, or very densely populated housing areas. These data sets must also be complemented with local knowledge such as the movement patterns of workers in industrial zones from their workplace to their accommodation and some of the commercial and private areas they usually congregate in when not working. The government introduced just such a model with HIDE, but its results were disappointing and its shambolic implementation ended up causing more uncertainty and greater disruption, exactly the opposite of what was hoped.

The Hotspot Identification Dynamic Engagement, or HIDE, model was designed by Bank Negara Malaysia (BNM) and introduced in early May, with the objective of trying to identify hidden or potential hotspots, and taking preventive measures to stop infections from spreading.

However, the vast majority of the initial list of hotspots consisted of shopping malls in the Klang Valley, quickly leading to questions on the effectiveness and value of the model. Moreover, its introduction and the implementation of remediation measures was characterised by uncertainty and reversals of direction, ultimately culminating in an order to all locations on the list to close for three days, with less than 24 hours' notice.

After this initial fumble and subsequent vehement criticism, there has been no more mention of HIDE or potential hotspots. Still, the approach ***remains relevant***, and should be revisited to improve the data sources, the model and the implementation of remedial actions.

In order to increase the usefulness and impact of the model, its design, calibration, validation (including backtesting) and

predictions should be rigorous and transparent. This is essential to ensure it inspires confidence in all stakeholders, not least from the businesses that could be affected by being identified as a hotspot.

An even better approach would be to **share both the model and its data (suitably anonymised) publicly**, so that contributors with a wide range of skills and experience can propose refinements, enhancements and perhaps new avenues of thought altogether. Such *distributed innovation* has seen success in dealing with the pandemic in the past, for example in Taiwan.[1] (But as Taiwan's recent experience shows, even the best models will fail if a government becomes complacent in its attitude in fighting this pandemic. In the case of Malaysia, we are on the opposite spectrum of being complacent given the nature of our response thus far.)

Once the model's predictions are accurate to a high degree of confidence, they should be shared with the states, local authorities and other relevant agencies for additional review, and so that they can start planning the most effective remediation steps. The inclusion of these additional stakeholders enables **specific on-the-ground knowledge to be factored in**, for example to deal with foreign worker quarters in FELDA plantations or longhouses in Sarawak. The model also needs to be updated from time to time to take into account new information and data, including from new patterns arising on how the pandemic is spreading as a result of new strains or variants and also changes in behavior of various groups in response to the lockdowns and changes in government policy towards undocumented migrants, for example.

Remediation steps for a potential infection hotspot

When a potential hotspot has been identified, remediation actions should be put in place to slow and contain the spread of infections. The overarching objective of the containment is to reduce the number of hospitalisations and reduce the pressure on the healthcare system in general, so the remediation actions should be designed with this objective in mind.

Some of the specific actions that should be considered here are:

- **Comprehensive testing of high-risk groups** in the identified location, for example senior citizens, people with co-morbidities and clusters of very dense housing.

- **Targeted restrictions** can be implemented on high-risk activities in the area, for example indoor working and meetings, indoor dining, social gatherings etc.

- Where possible, **reduce the density of housing**, for example in foreign worker dormitories. In this context, more rigorous application of the foreign worker housing act (Act 446) would go some way in reducing the potential for infections in this group.[2]

More recently, the availability of vaccines opens another possibility, which is to vaccinate high risk groups in hotspots, in particular senior citizens and people with co-morbidities. While this may not slow the spread of the virus, it could help in reducing the pressure on the healthcare system.

TEST AND TRACE: THE FOUNDATION

Controlling a pandemic rests on identifying those who carry the virus and isolating them from the rest of the population, for as long as they are infectious. This requires knowing who is a carrier, and therefore testing is the foundation. Without large-scale testing, many carriers will remain undetected, especially those who are asymptomatic. **Ramping up testing, and by extension keeping the test positivity rate well under 5%, is critical.** Governments, either at the federal or state level, should not be hesitant to increase the number of tests for fear of increasing the number of detected cases. Failure to have a comprehensive testing strategy would mean a higher probability of community spread if positive cases remain undetected.

Testing can be made even more effective by putting in place **large-scale preventive testing programmes**, especially targeting high-likelihood populations such as foreign workers living in dense dormitories, or residents of high-density housing blocks. Depending on the results of those exercises, it is possible to conclude whether a potential hotspot has been found and put in place remediation measures, as described above.

According to COVID-19 related data from ourworldindata.org[3], the number of tests in Malaysia during weekdays in the month of June (thus far) has exceeded 100,000. The mentality adopted by some policy makers previously, that we should not pursue testing in a very aggressive manner because it will unveil too many cases, seems to have stopped, for now at least. But there remains much to be desired in terms of transparency on the overall testing strategy which is manifested by the lack of transparency in the kind of testing data which is being shared. For example, even though this figure is available, **the daily briefings** by the Director General of Health (or what used to be daily briefings) **do not include the overall % positive rate, the number of tests done per state and the % positive rate by state**. Indeed, granular data at the district level within a state is actually available but this data is not shared by the Ministry of Health including to the state governments which have been the worst affected by this pandemic. In addition, we are not sure of the breakdown of the daily tests. For example, how many of the daily tests are RTK Antigen versus the more accurate but more costly PCR tests? How many of these tests were done by the Ministry of Health and how many were done by the private sector? How many of the PCR tests were conducted on individuals who already tested positive using the RTK Antigen tests? This kind of data breakdown is important in the refinement of the larger strategy to control the COVID-19 virus.

Beyond these large-scale programmes, rapid testing with RTK antigen test kits should also be made widely available. This can enable testing at the "point of interaction," e.g. a factory floor or office, and even allow self-administered home testing, as is now possible in several countries. Very soon, self-testing kits will be available for purchase at the local pharmacy.

The Selangor state government has been the most aggressive in implementing a

comprehensive testing programme since the start of MCO 3.0. From the 8th of May until the 10th of June, mass RTK Antigen testing was conducted in every one of the 56 state assembly seats in the state.[4] A total of 97,565 tests were done out of which 3,342 positive cases (3.43%) were identified. Such mass testing programmes provide a sense of urgency amongst the population, especially during a time when the number of cases are high. It also decreases the sense of stigmatisation and fear which some people may have when thinking about whether or not to go for testing. **These exercises also trained and improved the capacity of the state government and the relevant stakeholders** such as the elected representatives to do outreach to the local population which is important when it comes to continued vaccine registration and ensuring that as many people who have registered as possible show up to get vaccinated at the respective vaccination sites. At the time of writing, the state governments of Penang and Johor have indicated that they will implement mass testing programmes but the details have not been announced yet.

The Selangor state government has also recently announced the provision of a limited number of self-testing kits for its residents. The details of how this programme will be executed has not been announced at the time of writing but it is something to be welcomed as it provides the opportunity to introduce people to self-testing kits. Being able to use self-testing kits which can show results in a relatively short period of time (of about 15 minutes) is a crucial component of allowing other sectors of the economy to remain open (such as food processing factories) and to open up other sectors of the economy at a later period of time.

Ensuring comprehensive testing is not only a function of resources and logistics; there are related policy elements at play as well. For instance, some high-likelihood populations, like undocumented foreign workers, may be unwilling to come forward for fear or detainment or deportation. Relatedly, the requirement to pay for quarantine in designated centres can also be dissuasive. Employers may also want to avoid the disruption caused to their activities. All these are obstacles that need to be addressed through **policy coordination across multiple agencies, and clear and consistent communication**.

Tracing is also fundamental in this context, given the large proportion of "community spread" in new cases – meaning that the infection was not linked to a known cluster or origin. More comprehensive tracing of a new case's contacts is the only way to identify other "silent carriers" of the virus and isolate them. Here too, resources should be ramped up, primarily by hiring additional tracers, so that the data collected through MySejahtera check-ins can finally be used for its intended purpose. Again, for the sake of transparency, the process of tracing close contacts should also be made public by the Ministry of Health (MoH) so that individuals who may have come into contact with a COVID-19 positive patient would know what to do or who to contact when they suspect that they are a close contact, regardless of whether they exhibit any symptoms or not.

ISOLATE CARRIERS OF THE VIRUS TO PREVENT TRANSMISSION

After targeted or preventive testing, isolating (or quarantining) those who tested positive from the main population is the step that will prevent further transmission.

The current strategy followed by the government is to admit patients with moderate to severe symptoms to Sungai Buloh hospital, and asymptomatic or mild cases in the quarantine centre set up at MAEPS. However, the conditions in the quarantine centres and the requirement to pay for the cost, in particular for foreign workers, could be dissuading people from testing.

Instead of forcing carriers of the virus with mild or no symptoms to quarantine in government run centres, they should be allowed to quarantine in their own dwellings, as long as those comply with some minimum conditions in terms of physical distancing and separation from other members of the household. Of course, this also requires **better systems to ensure patients actually respect quarantine**. This can be done by employing contact tracers who can also call up COVID-19 positive patients who are asymptotic or have mild symptoms to make sure that they are quarantining at home. House visits can also be made by these contact tracers.

Similarly, employers of **foreign workers** should have the option to quarantine workers who test positive in their own quarters, as long as they are suitable for quarantine (e.g. lower density of occupancy, significantly separated from the other workers.)

Another special case is the prison population, who by design (high density) are more at risk of being infected than the general population. **Prison overcrowding** obviously compounds this risk, and indeed some of the biggest and most persistent clusters of infection are linked to prisons. Hence, extraordinary measures should be considered in this respect, for example early release of minor offenders or those nearing the end of their sentence, in order to reduce the population. Conversely, any action that would result in a significant increase in prison population, for example a crackdown on illegal immigration, is ill-advised in this period.

Hence, the policy that was recently announced and also implemented by the Home Minister to “round up” undocumented migrants and to detain them in the cramped detention centres for migrants actually ends up being counter productive because it will most likely lead to an INCREASE in the number of COVID-19 cases among the detainees. At the same time, such a move will also DISSUADE undocumented migrants from signing up and taking the vaccine (when more supplies become available) because they fear getting arrested by the authorities.

SUPPORT FOR POSITIVE PATIENTS IS NECESSARY

Once patients have tested positive for the virus, and they have been isolated, they do **need to be supported, both medically and economically**. The medical support should be self-explanatory. Those who tested positive and are isolated at home should receive regular follow-ups on their condition, at least for the duration of their isolation period. For patients with serious symptoms, this follow-up should last longer, in particular to track the evolution of symptoms associated with "long COVID."

Some categories of patients will also require **economic and logistical support**, for example in cases where the breadwinner of the household has to isolate, or when there are dependents who require assistance. While this may seem onerous at first glance, it is essential to put in place such support systems to ensure people consent to testing and isolation in the first place.

This is one policy area which seems to have been neglected by the state as well as federal governments.

VACCINATE: THE PATH TO HERD IMMUNITY

Vaccination is the clearest path to reach a level of "herd immunity" that will bring the pressure on the healthcare system back down to a more normal level, and therefore remove the need for lockdowns. Vaccination therefore forms the ultimate pillar of the FTTIS+V framework.

By extension, and with vaccine doses now becoming available in significant numbers, the process to vaccinate the population should proceed as quickly as possible, focusing on the most vulnerable population groups first, namely the elderly and people with co-morbidities. Herd immunity is usually defined as 70%-80% of the population having received a full course of the vaccine. Based on the experience of the early stages of the vaccine roll-out, the process will have to be ramped up considerably.

Malaysia's vaccination process started in late February 2021. It proceeded slowly initially, predominantly due to supply constraints. The initial doses were reserved for frontline personnel and the elderly, with inoculations managed through the National Immunisation Programme (NIP). The NIP relies on a mix of vaccines, in the early stages mainly the Pfizer/BioNTech and AstraZeneca (AZ) vaccines.

Faced with concerns regarding side effects of the AstraZeneca vaccine, and the multiple cancellations or "no-shows" that surfaced in the NIP, the government changed tack and opened AstraZeneca vaccinations to all on a voluntary, first-come first-serve basis. That initiative was a success, and caused a noticeable uptick in vaccination rates. The government decided to refine this approach with the second batch by giving priority to senior citizens, before finally deciding to again include the AZ vaccine in the overall NIP portfolio.

Overall, **vaccine hesitancy** remains relatively high, although the proportion seems to be declining. Moreover, the entire vaccination process essentially relies on the MySejahtera app, and hence requires a relatively high degree of digital literacy, which may put some groups out of reach. The government should bear this in mind and increase efforts to convince everyone to get vaccinated and facilitate registrations for those who face challenges.

The total number of vaccine registrations is at 13.8 million as of the 14th of June 2021 representing 59% of the targeted population. This means that we still need to reach out to 21% of the population to encourage them to register in order to reach the herd immunity target of 80%. As of the 14th of June 2021, 4.7m doses of vaccines have been administered with 3.3m having received the 1st dose and 1.4m having received both doses. On the same day, the record high in terms of daily vaccinations was reached - 197,963. With the continued opening of mass vaccination centres and the upcoming involvement of private General Practitioners (GPs) in the vaccination programme, it is likely that the daily number of vaccinations will be between 200,000 and 300,000 doses a day in the months of July and August when a large proportion of the Sinovac and Pfizer vaccines will be arriving in Malaysia.

If the supply of vaccines is not disrupted (as per the schedule below), it is likely that Malaysia would exceed the 10 million vaccinated mark by the end of August. If this target is achieved by the end of August, the challenge will be to encourage more people (including the vaccine hesitant) to register to take any of the vaccines available.

With the arrival of more vaccines into the supply chain, the speed at which factory workers get vaccinated becomes very important in controlling the spread of the virus. Workplace clusters now form the majority of new clusters and most of these clusters involve **factory workers**. Since a large % of COVID-19 outbreaks involve factories in Selangor and to a lesser extent, Kuala Lumpur, the factory workers in the Great Klang Valley area should be given priority for the programme which has been announced by the Ministry of International Trade and Industry (MITI) at the Federal level (called PIKAS) and also the industry vaccination programme announced by the Selangor state government earlier last month.

Last but not least, the ongoing challenge of increasing the level of confidence in registering and then later taking the vaccines among the **migrant community**, especially those who are undocumented, remains.

Without a large majority of the factory workers and the migrant community vaccinated, the target of achieving herd immunity will be an elusive one.

Figure 1: Estimated arrival of various COVID-19 vaccines as of the 11th of June, 2021

MALAYSIA'S COVID-19 VACCINATION STRATEGY						
NPRA Approval	**Conditional registration in Malaysia**				**Not approved yet**	
Developer	Pfizer BioNTech	AstraZeneca / Oxford	COVAX / AstraZeneca	sinovac	康希诺生物 CanSinoBIO	The Gamaleya National Center
Vaccine Name	BNT162b2	AZD1222	AZD1222	CoronaVac	Convidecia	Sputnik V
Developer Country	US-Germany	UK	Global	China	China	Russia
Doses Ordered by Federal Government	44.8 million	6.4 million	6.4 million	12 million	3.5 million	6.4 million
Manufacturer/ Distributor	Pfizer (Belgium)	Siam Bioscience (Thailand)	SK Bioscience (South Korea)	Pharmaniaga (fill-finish) (Malaysia) Sinovac (China)	Solution Biologics (fill-finish) (Malaysia)	Duopharma (distributor) (Malaysia)
Regimen	Two doses	Two doses	Two doses	Two doses	Two doses	Two doses
Population Coverage	70%	10%	10%	18.75%	10.9%	10%
People Covered	22.4 million	3.2 million	3.2 million	6 million	3.5 million	3.2 million
TOTAL COVERAGE	**41.5 million people (130% of 32 million population)**					
COST	**Ceiling Budget: RM5 billion (as of April 27, 2021). Among others: Vaccine procurement and logistics: RM2.5 billion Vaccination outsourcing to private medical practitioners: RM210 million**					
Technology	mRNA	Chimpanzee adenovirus vector	Chimpanzee adenovirus vector	Inactivated ("killed" coronavirus)	Adenovirus 5 (Ad 5) (Common cold virus)	Human adenovirus vector
Efficacy against symptomatic disease from Delta variant (B.1.617.2)	First dose: 33% Second dose: 88% (Public Health England Study: May 22, 2021)	First dose: 33% Second dose: 60% (Public Health England Study: May 22, 2021)	First dose: 33% Second dose: 60% (Public Health England Study: May 22, 2021)	Unknown	Unknown	Unknown
Price Per Dose	<RM100 (includes delivery to vaccination sites) (Malaysia) US$19.50 (US)	Non-profit (Malaysia) US$4 (US)	Optional Purchase: US$3.50 (self-financing participant countries)	Unknown (Malaysia) US$17 (Indonesia)	Unknown (Malaysia)	Unknown (Malaysia) <US$10 (International markets)

Source: Ministry of Science, Technology and Innovation, *(data as of June 11, 2021)*

CONCLUDING REMARKS

What we have tried to show in this first Strategy is the need to have a comprehensive plan to bring down the COVID-19 numbers and to ensure that they remain at a low number.

Our suggested framework is the **FTTIS+V framework**. Other frameworks which have worked in other countries can also be adopted, with customisation to the Malaysian context.

The important point here is that the plan must be well thought out, well tested on the ground and then updated regularly to take into account updated information. Even as the number of vaccinations goes up, the need for such a systematic and comprehensive plan remains, especially if we want to slowly but surely open up the economy, sector by sector.

REFERENCES

1. https://www.jmir.org/2021/5/e24294
2. We understand that the Selangor state government is in the process of drafting new guidelines which will allow for accommodation or foreign worker quarters of a better quality and compliant with Act 446 to be built on site in factories with sufficient land space. This is a welcome move not just to control the pandemic but also to improve the quality of life for the foreign workers and at the same time, increase compliance by manufacturing companies to global standards in terms of the treatment of workers.
3. https://ourworldindata.org/coronavirus/country/malaysia
4. https://twitter.com/stfc_selangor/status/1403593849096663047?s=20

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REFSA Brief is a series of briefs and opinion pieces that aim to analyse pertinent socio-economic issues and encourage discussions in policy issues across the public, private and the third sector.

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